WSPID 2015 – ABSTRACTS

ORAL PRESENTATIONS
VACCINE SAFETY
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Over the past 60 years we have enjoyed immense public health benefits from an ever-expanding portfolio of vaccines. We now stand at a crossroads, where patients and families have significant safety concerns about these life-saving vaccines and the prevalence of the diseases they prevent is quite low. What can we do, as scientists and providers, to slow the growth in vaccine hesitancy and avoidance? How can we improve public awareness of the overall safety of vaccines? And how can we use modern tools of systems vaccinology to dissect the host immune response (and adverse event response) to improve upon our currently available vaccines?
Infection control in low-middle income countries

THE GROWING THREAT OF ANTIMICROBIAL RESISTANCE TO CHILD

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Antimicrobial resistance (AMR) is one the biggest issues the medical community is facing today, with increasing prevalence of resistantstrains continuing to be reported. In addition to treatment. The emergence of gram-negative bacterial (GNB) resistance is a concern especially in Intensive care units (ICU) and immunocompromised patients. ICU have a disproportionately high incidence of nosocomial infections compared to number of patients and this incidence continues to rise. Many of these infections are catheter related blood stream hospital acquired blood stream infections; ventilator and associated pneumonia. In addition, medical equipment is also a risk factor for horizontal transmission of nosocomial organisms. The high incidence of resistance may be due to high burden of antimicrobial use in this population causing selective pressure. In Brazil and Latin America, the frequency of GNB in hospital-acquired bloodstream infections surpass those of Gram-positive with an important frequency of multi-resistant infections. In Latin America, around 60% of GNB isolates are resistant to third generation Cephalosporin and we can verify an increasing resistance to carbapenems. The European point prevalence survey (PPS) of antimicrobial reported a significantly higher prevalence of antibiotic use in intensive care and hematology-oncology wards. We have performed a PPS in our hospital in São Paulo and identified that use of antibiotics are more frequent in patients in Pediatric Intensive care. The Global Antimicrobial Resistance, Prescribing and Efficacy in neonates and Children (www.garpec.org) is one initiative which aims to promote collaborative research, and collection and sharing data between participants at a regional and global level to accumulate an evidence base for developing appropriate stewardship and HAI interventions based on antibiotic prescribing patterns and resistance surveillance data.
Inflammation is a biological response of vascular tissues to harmful stimuli, triggered by pathogens, damaged cells, or irritants such as environmental substances like pollen. It’s a protective attempt by the body to remove the injurious stimuli and to initiate the healing process. Inflammation is part of the innate immune response providing broad spectrum non-specific response to infection as compared to adaptive immunity, which is specific for each pathogen.

A rise in the blood plasma levels of CRP, a pentameric protein, is an indication of acute systemic inflammation. CRP is an acute-phase protein possesses the physiological role of binding to phosphocholine expressed on the surface of dead or dying cells and some types of bacteria in order to activate the immune system.

In a clinical trial testing the safety and efficacy of inhaled Nitric Oxide (NO) we observed that short durations of high concentrations of NO reduce systemic inflammatory response, while not causing lung injury or other signs of adverse effects.

NO is a short acting vasodilator that is use in infants with pulmonary hypertension. We have developed a higher dose formulation, 160ppm, of NO that has a broad range antimicrobial activity in vitro, ex vivo, and in animal models. Inhalation 160 ppm NO for 30 minutes, 5 times daily, for 5 consecutive days, was shown to be safe and well tolerated in hospitalized infants 2-12 months with acute viral bronchiolitis and CF patients.

The ability to exploit NO beneficial action within the human body and its effect on immunological response in severe microbial pneumonia is fascinating. Thus, the implication of using NO versus other anti-inflammatory agents will be discussed from clinical pediatrics practice point of view.
Over the last 2 decades, our understanding of the epidemiology, pathogenesis, and etiology of pediatric pneumonia has grown substantially. The implementation of vaccination against influenza in young children and of conjugate vaccines targeting Haemophilus influenzae type b and Streptococcus pneumoniae have significantly reduced the incidence of bacterial pneumonia, particularly that associated with hospitalization. Second-generation pneumococcal vaccines have expanded protection against the most relevant serotypes, including those linked to antibiotic resistance. Since mortality rates are greater in developing settings, there is hope that these benefits promptly reach the poorest areas of the world. Novel diagnostic techniques have confirmed the role of respiratory viruses, both as single agents or in mixed infections. Still, better methods are needed to define more precisely the role of these viruses and improve diagnosis of infections caused by Mycoplasma and Chlamydia. The emergence of CAP caused by MRSA represents a new therapeutic challenge.

Management of children with CAP is based on the clinician’s assessment of the most likely infecting pathogens, their susceptibility profile, and the seriousness of disease. For the child not very ill, an expectant approach is advised. Amoxicillin, in low or high dosage (based on prevalence of penicillin-resistant strains) is recommended when laboratory tests suggest a bacterial etiology or when chest radiographs reveal infiltrates/effusions. For school-aged children, use of a macrolide should be considered. For the hospitalized child, the administration of penicillin or cephalosporin depends on the prevalence of pneumococcal resistant strains. In patients with a life-threatening pneumonia, and suspicion of a staphylococcal infection, the use of oxacillin/nafcillin or vancomycin/linezolid is based on MRSA occurrence rate. Since bacterial CAP usually ensues after a viral infection, development of effective drugs/vaccines against viruses is urgently needed.
S. aureus is a ubiquitous microorganism, colonizing the nares of approximately 30% of humans at any given time. S. aureus is also a remarkably successful pathogen and is the most common cause of skin and soft tissues infections, musculoskeletal infections, bacteremia, and infective endocarditis. The challenge of S. aureus is compounded by evolving antimicrobial resistance and the vast virulence factor repertoire maintained within the genome.

In this presentation, we will discuss new insights into colonization and disease, focusing primarily on the host response to S. aureus. We will discuss emerging concepts related to the host response to invasive staphylococcal disease, seeking to define what is required to successfully navigate severe staphylococcal infections.
Group A Streptococcus (GAS) causes >500,000 deaths per year. Three vaccine candidates are currently progressing towards clinical trials and all target the surface M protein. The M protein, encoded by the \textit{emm} gene, has a variable amino acid sequence, resulting in antigenic diversity and it is the substrate for the \textit{emm}-typing and \textit{emm}-cluster schemes defining 223 different \textit{emm}-types and 48 different \textit{emm}-clusters respectively.

Marked epidemiological differences have been demonstrated, especially between high-income countries and resource-poor regions. A lower number of \textit{emm}-types are found in high-income settings, with 5 predominant \textit{emm}-types accounting for > 50\% of circulating isolates. In marked contrast, in low-income settings there are a large number (up to 80) of different \textit{emm}-types with none predominant.

Recent discoveries offer an exciting new approach to developing global vaccines. Animal and \textit{in vitro} studies suggest that cross-protection can be induced against different \textit{emm}-types. The \textit{emm}-cluster system serves as a framework to investigate this cross-protection phenomenon and has identified coverage gaps in the formulation of the current vaccine candidates.

A systematic review of >55,000 streptococcal infections was undertaken to analyse the distribution of strains across countries, continents and clinical manifestations. Strains associated with acute rheumatic fever (ARF) often belong to \textit{emm}-clusters associated with skin infections, further suggesting a role for skin infection in ARF. Only a few \textit{emm}-clusters are responsible for most of the disease burden. Even in countries associated with a high diversity of circulating \textit{emm}-types, just 4 \textit{emm}-clusters (E4, E6, D4 and E3) account for > 50\% of the infections. The 10 most prevalent \textit{emm}-clusters are identical across continents and account for >80\% of infections. The \textit{emm}-cluster identifies vaccine target priorities and raises new hopes for a global vaccine.
Progress in decreasing child mortality depends on reducing the 2.9 million neonatal deaths each year, and approximately equal number of stillbirths. Around a quarter of neonatal deaths are directly due to infection, and a half of all stillbirths. Improving the prevention and management of infections in infancy in resource-poor regions is critical. Interventions must be based on a strong evidence base, with robust scientific reporting, from both pragmatic clinical trials, and the development of surveillance systems. These will improve our understanding of aetiology, where important questions remain, guide development of the most urgently needed vaccines, and inform case management; particularly as access to care is increased through outpatient care, where referral is not possible, and in view of reducing antimicrobial susceptibilities.
Thursday, November 19, 2015

WSPID-0580
Emerging, zoonotic and tropical diseases

TRENDS IN SALMONELLA ASSOCIATED WITH INVASIVE AND NON-INVASIVE INFECTIONS OVER A TEN-YEAR PERIOD IN THE GAMBIA, WEST AFRICA.

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Background

There are large data gaps in the epidemiology of diseases caused by Salmonella enterica in West Africa. Laboratory-based systematic surveillance of Salmonella is necessary to monitor infection and disseminate information on antibiotic susceptibility patterns to public health authorities especially with the emergence and spread of multidrug resistant clones.

Methods

Data on Salmonella isolated from various clinical specimens across the Gambia from 2005 to 2015 was collected and analysed retrospectively. Antibiotic sensitivity testing was performed by disc diffusion method. Serotyping of Salmonella isolates was performed using standard microbiology technique.

Results

Of the 245 Salmonella isolates reported, 193 were serotyped. 11% (22/193) were Salmonella Typhi (S. Typhi), while 88% (171/193) were non-typhoidal Salmonella (NTS). Most of the isolates were from blood and stool, some were found in urine, cerebrospinal fluid and abscesses. The prevalence of Salmonella in stool ranged from 1 – 2% among children less than five years old. The prevalence in blood cultures was 0.7% (84/11750). Overall, 171 (70%) of the salmonellae were susceptible to all the antibiotics tested while the rest expressed intermediate resistance or resistance to at least one antibiotic. At least a third of the salmonellae were from hospitalized individuals and the most common diagnoses included sepsis, malnutrition and diarrhoea.

Conclusions

NTS is more associated with invasive and non-invasive infections across all ages in the Gambia. There is evidence of multi-drug resistance which warrants vigilant monitoring and surveillance.
**EBOLA VIRUS DISEASE IN CHILDREN IN SIERRA LEONE: A RETROSPECTIVE COHORT STUDY**

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**Background:** The Ebola virus disease (EVD) outbreak in West Africa has claimed over 9800 lives with >24000 cases. Infected children <5 years have a high mortality rate but little is known about disease progression and possible predictors of outcome. Circumstantial factors such as transfer distances from Ebola Holding Units to Treatment Centres and admission with a caregiver may impact on mortality.

**Objective:** To identify clinical, epidemiological and management risk factors for mortality in EVD positive children.

**Study Design:** Retrospective observational cohort.

**Study population:** All children <12 years old admitted to 11 Ebola Holding Units in the Western Area of Sierra Leone from 1/8/14-1/4/15

**Methods:** Retrospective data were collected from site admission books, case investigation forms and clinical records, and cross-referenced with district-wide laboratory results, burial records and child protection records. Data such as caregiver presence were collected by interviewing staff members in the absence of documentation. Follow up telephone calls were made to guardians post-discharge. Univariate and multivariate analysis were performed to identify features independently associated with mortality.

**Results:** Data analysis is ongoing. 310 EVD positive children were admitted, aged between 1 month & 12 years (median 6 years). 127 (41%) were unaccompanied. Amongst 283 (91%) with outcome data available, the mortality rate was 57%. Factors potentially impacting on mortality such as age, clinical features, delayed attendance, transfer distance, caregiver accompaniment, and medications received are being examined.

**Conclusion**

We anticipate this will be the most comprehensive description of EVD in children to date, with multiple lessons for future management.
IN VITRO ANTIPLASMODIAL ACTIVITY OF BIOSYNTHESIZED SILVER NANOPARTICLES USING PSYCHOTRIA NILGIRIENSIS AGAINST MALARIAL PARASITE, PLASMODIUM FALCIPARUM

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BACKGROUND: The utilization of various plant resources for the biosynthesis of metallic nanoparticles is called green nanotechnology, and it does not utilize any harmful chemical protocols. The present study reports the plant mediated synthesis of silver nanoparticles using the fruit extract of Psychotria nilgiriensis, which acts as a reducing and capping agent. The aim of the present study was to assess the anti-plasmodial activity of synthesized AgNPs against the malarial parasite, Plasmodium falciparum.

METHODS: The obtained nanoparticles were characterized using UV-visible spectroscopy; EDX (energy-dispersive X-ray), SEM (Scanning electron microscope), XRD (X-ray diffraction) and Fourier transform infrared (FTIR) analysis. The efficacy of green synthesized AgNPs at different concentrations (25, 50, 75 and 100µg/ml) were tested on P. falciparum.

RESULTS: Synthesized AgNPs particles were confirmed by analysing the excitation of surface plasmon resonance (SPR) using UV–vis spectrophotometer at 422 nm. The scanning electron micrograph showed structures of spherical, cubic shape, and the size range was found to be 40–60 nm. The EDX spectra showed the purity of the material and the complete chemical composition of the synthesized AgNPs. The synthesized AgNPs showed significant anti-plasmodial activity when compared to aqueous leaf extract of P. nilgiriensis. The maximum efficacy was observed in synthesized AgNPs against P. falciparum (IC50=100 µg/ml; 100%) respectively.

CONCLUSIONS: This method is considered as a new approach to control the malarial parasite, P. falciparum. Therefore, this study provides first report on the anti-plasmodial activity of synthesized AgNPs using P. nilgiriensis against P. falciparum.
MOSQUITO STING, A STING TO THE HEART!

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Background: Dengue fever is one of the most significant re-emerging tropical diseases, and viral tropism is still not known to target heart tissues. There have been some previous reports of myocardial involvement in dengue, but this association has not been completely established. The present study was conducted to evaluate cardiac involvement in dengue viral infection.

Methods: From July 2012 to March 2013, patients hospitalized with dengue, confirmed through dengue nonstructural protein 1 and/or immunoglobulin M detection, were included in this study. Diagnosis of heart involvement was based on clinical, electrocardiogram, and chest x-ray findings. Their troponin I and CPK-MB levels were determined. Patients with abnormal biomarkers underwent echocardiography.

Results: One hundred patients with dengue were evaluated and 20 patients (20%) presented with elevated biomarker levels. Compared to controls, they had higher leukocyte (P < .001) and platelet counts (P < .001). There was no difference according to clinical dengue classification severity; duration of symptoms; or prevalence of secondary infection or co-infection between the 2 groups. Fifteen patients had sinus tachycardia, 2 had sinus bradycardia and one had complete heart block requiring pacing. Depressed left ventricular ejection fraction (LVEF) was identified in 10 and left ventricular segmental abnormalities with preserved LVEF in 5. All 20 patients had pericardial effusion and 1 had cardiac tamponade. One patient died in the myocarditis group.

Conclusions: Dengue viruses were shown to cause cardiac disease with manifestations ranging from elevation of biomarkers to myocarditis. Presence of heart involvement in dengue infection is neither unusual nor fatal.
LEPTOSPIROSIS CASES AMONG VENEZUELAN CHILDREN AND ADOLESCENTS: A NEGLECTED ZOONOTIC DISEASE

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Background and aims: Leptospirosis perhaps is the most under-reported zoonosis especially in children, with few reports on its presentation and outcome in Latin America. The aim of the study was to describe profile of leptospirosis cases in Venezuelan children and adolescents.

Methods: We analyzed 3506 serum samples of patients aged under 18 years received in the national reference laboratory between 2003-2014. Laboratory diagnosis was performed using the Microscopic Agglutination Test (MAT). Epidemiological, clinical and laboratory data of cases were obtained from medical records completed by the physician.

Results: A total of 79 (2.25\%) cases of leptospirosis were diagnosed by MAT, 55 and 24 cases among adolescents aged 13 to 17 and children under 12 years old, respectively. The majority of patients were boys (82\% in adolescents vs 79\% in children, p = 0.7). Most common signs and symptoms in cases were fever (99\%), jaundice (75\%), headache (68\%), and myalgia (62\%). The adolescents group had significant higher rates of myalgia (p<0.05). Children presented classical features of Weil disease in 8.3\% vs 5.5\% of adolescents. High total bilirubin levels and thrombocytopenia were more observed in adolescents than pediatric group (77\% vs 22\%; p=0.06 and 75\% vs 25\%; p=0.4, respectively). Animal contact was present in 60\% of cases.

Conclusions: Leptospirosis can be overlooked in children and adolescents because spectrum of disease is similar to other febrile illnesses frequently in our clinical settings, such as dengue, malaria and hepatitis. Severe leptospirosis may be fatal in childhood, whereby clinical suspicion, with paraclinical and epidemiological data are vital for timely diagnosis.
suPAR was suggested as a marker of disease severity and mortality in SIRS/sepsis. We compared plasma levels of suPAR, PCT, and CRP in children with febrile neutropenia (FN) (group 1, n=29), SIRS/sepsis (group 2, n=27) and control subjects (group 3, n=27). The optimum diagnostic cut-off point, the area underneath the ROC curve (AUC), sensitivity, specificity, negative predictive value (NPV), and positive predictive value (PPV) for each test in SIRS/sepsis, as well as CRP and PCT in FN patients are presented in the table. In FN group, suPAR levels were not significantly different compared to control group. suPAR level was associated with mortality in both FN and SIRS/sepsis patients, and, correlated with duration of fever in FN patients. As conclusion, suPAR has a diagnostic accuracy in children with SIRS/sepsis and has a prognostic value in febrile neutropenic patients.

<table>
<thead>
<tr>
<th>Evaluated parameter</th>
<th>SIRS/sepsis</th>
<th>Febrile Neutropenia</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>suPAR*</td>
<td>CRP mg/L</td>
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<tr>
<td>Optimum diagnostic cut-off*</td>
<td>3.8</td>
<td>6.7</td>
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<tr>
<td>Area under the ROC curve</td>
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<td>0.985</td>
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<td>Sensitivity</td>
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<td>96</td>
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<tr>
<td>Specificity</td>
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<tr>
<td>NPV</td>
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<tr>
<td>PPV</td>
<td>96</td>
<td>92</td>
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* ng/mL for suPAR and PCT, mg/L for CRP

** Not available because of low AUC value
HIGH PREVALENCE OF ENTEROVIRUS AND PARVOVIRUS B19 DETECTION IN HEART TISSUES OF CHILDREN WITH ACUTE MYOCARDITIS BY USING SYNDROME-BASED PCR PANELS AND ITS DIAGNOSTIC IMPLICATIONS

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Background and Aims: Myocarditis is a major cause of sudden, unexpected death in children. The diagnosis of myocarditis is challenging, as the list of potential infectious causes is extensive. Conventional diagnosis depends on clinical and histological criteria, and on culture identification. However, culture can be time consuming, less sensitive, and frequently not possible because of unavailability of appropriate specimens. Formalin-fixed, paraffin-embedded (FFPE) heart tissues are often the only specimen available, particularly for the sudden fatal cases. Sensitive and specific molecular assays, specially optimized for FFPE tissues, are needed for rapid and accurate identification of etiologic agents.

Materials and Methods: Nucleic acids were extracted from FFPE heart tissues of 70 children (70% infants, received during 2006-2014) with clinical and histopathologic diagnosis of myocarditis and evaluated by panels of PCR assays for enterovirus, parvovirus B19 (PVB19), adenovirus, cytomegalovirus (CMV), influenza, human parainfluenza (HPIV), respiratory syncytial (RSV) viruses, Mycoplasma pneumoniae, Chlamydia and Trypanosoma cruzi. Amplified PCR products were also sequenced. Furthermore, immunohistochemical (IHC) assays were performed.

Results: 56% (39/70) of cases were positive by PCR/RT-PCR. Enterovirus was detected in 38% (15/39) while PVB19 was identified in 18% (7/39). Other pathogens (M. pneumoniae n=3, CMV n=2, HPIV1 n=2 and influenza virus, adenovirus, Chlamydia and T. cruzi; n=1 each) were also identified. Co-infection of pathogens was detected in 15% (6/39). Antigens were demonstrated in 38% (14/39) by IHC.

Conclusions: The systematic application of myocarditis PCR panels on FFPE heart tissues detected high prevalence of enterovirus and parovirus B19, identified the co-infections and may expand diagnostic opportunities.
MOLECULAR MINING BY CUSTOMIZED AUTOMATED MICROARRAY ASSAY FOR GENOTYPING S. PNEUMONIAE—PRELIMINARY REPORT.
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Background and Aims:
Pneumococcal serotype identification is a prerequisite to understand pathogenesis, optimize vaccine development and for disease surveillance. Conventional antibody-based typing methods are expensive, subjective with cross reactions and a number of strains are non-typeable. To contend with these issues a novel automated microarray assay based on specific gene sequences in the CPS region was evaluated to identify 30 pathogenic serotypes of S. pneumoniae. These 30 serotypes account for 90% of pneumococcal infections.

Methods:
The efficacy of the custom designed microarray to determine the serotypes of S. pneumoniae was assessed using 30 standard strains procured from Staten serum institute, Copenhagen, Denmark. A total of 15,150 probes for 90 serotypes were spotted onto 8x15 K format oligonucleotide chip. For each serogroup/type 3 to 18 specific probes of 60-bp were designed from published records of Sanger institute (http://www.sanger.ac.uk/Projects/S.pneumoniae/CPS) and Genbank. Data retrieved was analysed with feature extraction software. Sequence alignment with Clustal W provided the serotype homology data.

Results:
Amongst 30 strains tested 18(60%), serotype 1, 2, 3, 4, 5, 7F, 8, 10A, 14, 15A, 15F, 17A, 17F, 19A, 19F, 20, 23F, 33F were identified specifically. 12(40%) serotype 6B, 9N, 9V, 11A, 12F, 15B, 22F, 18C, 12A, 12B, 15C, 22A were identified correctly along with homologous types. The homologous strains shared 99.9%-100% sequence identity in the probe region. The serotype results were confirmed with the Quellung assay.

Conclusion:
The customized oligonucleotide microarray was able to identify all the serotypes. Bioinformatics analyses of available capsular operon sequences suggest that remaining serotypes could also be identified by using the assay. However further studies are required to distinguish homologous serotypes by identifying specific sequences in the whole genome which is currently under investigation.
Background and Aims: Kawasaki Disease (KD) in infants ≤6 months of age is associated with delayed outcome, worse outcome, and higher rates of incomplete KD. However, only small case series focusing in this age group have been published. We characterized the KD course of these patients (pts) in Latin America (LA).

Methods: Retrospective study of the clinical course of KD in infants ≤6 months among 40 hospitals in 16 LA countries, between Jan-1-2009–Dec-31-2013. Complete and incomplete KD was defined based on the 2004 AHA guidelines. Subjects were classified by coronary artery (CA) status (aneurysmatics, dilated, or normal based on worst echo).

Results: Among 1036 pts with KD during this period, 61 (5.9%) were infants ≤6 months. Of these, 39 (63.9%) were male. Clinical suspicion of KD was the reason for hospitalization in 31 (50.8%). Final diagnosis was complete KD in 38 (62.2%) and incomplete KD in 23 (37.7%). 54 pts (93.1%) were treated at ≤ 10 days of illness. 58 (95.1%) pts received IVIG, of which 1 (1.7%) was IVIG-resistant, and 4 (6.8%) were treated late (> 10 days of fever). ≥1 echocardiogram was obtained in 59 (96.7%) pts. Worse CA status was: normal in 42 (71.1%), aneurysmatics in 7 (11.8%) and dilatated in 10 (16.9%). Follow up echo was performed in 36 (61%) pts.

Conclusions: This is the largest multicenter retrospective study of KD in infants ≤6 months in LA children. The rate of incomplete KD and IVIG-resistance was lower than previously reported. Further studies looking at the echocardiographic abnormalities seen in these pts are needed in LA.
RESPIRATORY VIRAL COINFECTION AND DISEASE SEVERITY IN CHILDREN: A SYSTEMATIC REVIEW

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Background: After development of molecular biology diagnostic tools, studies reported detection of two or more respiratory viruses in about 30% of children with respiratory infections. However, prognostic role of these coinfections in pediatrics remains unclear.

Aims: Evaluate relation between respiratory viral coinfection and illness severity in children.

Methods: The protocol of this review was registered in PROSPERO with number CRD42014007250, where detailed search strategy is shown. Literature search was performed in the following databases: MEDLINE (through PUBMED), EMBASE, EBSCO, LILACS and grey literature up to 24 March 2014 by two reviewers, with no language restriction. Studies assessing severity of viral coinfection in patients younger than 18 years through bi or multivariable analysis were included. Two reviewers also assessed quality and risk of bias of studies using EPHPP tool. A third reviewer resolved disagreements. Statistical analysis was performed using Review Manager 5.1.

Results: Of 4717 records screened, 39 were included in analysis. Viral coinfection was found to decrease risks of hospitalization (Figure 1), need of intensive care (Figure 2), particularly in toddlers, and mechanical ventilation, although this last finding is not maintained excluding weak quality studies (Figure 3). Death, need of oxygen, length of hospitalization and oxygen were not different between groups.

Conclusions: According to these findings, coinfection decreases risks of hospitalization and need of intensive care. Although particular virus-virus interaction could reduce severity, high heterogeneity (82%) in first outcome and few studies supporting second reinforce need of further studies to clarify this question.
ASSOCIATIONS BETWEEN VIRAL AND BACTERIAL POTENTIAL PATHOGENS IN THE NASOPHARYNX OF CHILDREN WITH AND WITHOUT RESPIRATORY SYMPTOMS

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Background: Nasopharyngeal bacterial colonization is necessary for subsequent respiratory and/or invasive infection. Our study aimed at comparing nasopharyngeal bacterial colonization rates between children with and without symptoms of an acute viral respiratory tract infection (ARTI), and examining associations between identified microorganisms.

Methods: Children 3 months-6 years old with and without an ARTI were recruited and a questionnaire was filled. Nasopharyngeal samples were examined for \textit{Streptococcus pneumoniae} (SP), \textit{Haemophilus influenzae} (HI), \textit{Moraxella catarrhalis} (MC), \textit{Staphylococcus aureus} (SA) and \textit{Streptococcus pyogenes} (SPyo) by culture. Viruses were detected with polymerase chain reaction (PCR).

Results: Median age of the 386 recruited children was 23.4 months, and 127 had no respiratory symptoms. More asymptomatic subjects were found negative for all bacteria tested (p<0.01). SP (p<0.01), MC (p=0.001) and mixed bacterial colonization patterns were more frequent among symptomatic children (p<0.05). Colonization of symptomatic, virus positive children with MC was higher than in asymptomatic and/or virus negative children (p=0.005). The highest HI and MC colonization rates were recorded in association with influenza virus. A strongly negative association between SP and SA, a higher rate of HI detection among SP colonized children, and an increased likelihood of MC detection in the presence of HI were observed. HI colonization was more likely in the presence of RSV and MC colonization was associated with RV detection.

Conclusions: Viruses are associated with different nasopharyngeal bacterial colonization patterns. Observed pathogens’ associations may play a role in disease, and continuous surveillance is required to follow possible effects of interventions such as vaccines.
Background and Aims: In 2013, the REKAMILATINA network (Red de Enfermedad de Kawasaki en América Latina) was established to study the epidemiology and clinical aspects of Kawasaki Disease (KD) in Latin America (LA). We describe the first prospective multicenter study of the epidemiology, clinical aspects, and treatment of KD in LA children.

Methods: Multinational multicenter surveillance study of KD in children, from 36 hospitals in 15 LA countries: Mexico, Guatemala, Honduras, El Salvador, Costa Rica, Panama, Cuba, Dominican Republic, Colombia, Ecuador, Peru, Brazil, Uruguay, Chile, and Argentina. Study period: June-1-2014 to June-3-2015.

Results: 249 patients (pts) were enrolled in this study. 145 (58.2%) were male; 98% required hospitalization. Median age at admission was 25 (2-437) months, distribution by age groups was the following: <6 months, 4.0% pts; <24m, 46.4% pts; <5yr, 83.5% pts; and >5yr, 16.5% pts. Hospitalization length of stay was 5 (1-49) days. Days of fever at admission were 7 (1-45) days. Baseline echocardiogram was abnormal in 104/249 (41.8%) pts, with coronary artery dilatations and/or aneurysms detected in 43/249 (17.3%) pts. In 1 (0.4%) pt, an acute myocardial infarction was documented. 1 and 2 doses of IVIG were given in 233 (93.6%) and 25 (10.0%) pts, respectively. Aspirin, steroids, and infliximab were given in 98%, 13.7%, and 0.8%, respectively. No deaths occurred.

Conclusions: In LA children, KD is associated with a late clinical diagnosis and a significant rate of cardiac abnormalities at initial presentation, particularly coronary artery lesions. Awareness and prompt recognition of KD should be improved across LA countries.
EFFECTIVENESS OF LIFELONG ANTIRETROVIRAL THERAPY FOR HIV-POSITIVE PREGNANT AND LACTATING MOTHERS ON ELIMINATION OF MOTHER TO CHILD TRANSMISSION OF HIV IN UGANDA

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Background: In 2012, Uganda adopted the provision of lifelong combination antiretroviral therapy (ART) to HIV positive pregnant and lactating mothers (option B+) in an effort to reduce mother to child transmission (MTCT) of HIV to less than 5%. We examined the effectiveness of the option B+ strategy on reducing MTCT of HIV.

Materials and Methods: We performed a retrospective cohort analysis of data abstracted from health facility records of 1,129 pregnant or lactating mothers and their babies enrolled on option B+ between January and March 2013 in a representative sample of 145 health facilities in 24 districts of central region of Uganda. The MTCT rates were determined using survival analysis and factors associated with HIV transmission were evaluated using Cox proportional hazard modelling.

Results: The majority 1,095 (97.0%) were initiated on Tenofovir/Lamivudine/Efavirenz regimen. The median CD4 count at ART initiation was 524 cells/µl (IQR, 346-736 cells/µl). The MTCT rate at 1st PCR was 3.2/100 person months (PM) (95% CI 2.4-4.3) while that at final HIV rapid test was 4.4/100 PM (95% CI 3.3-5.8). Poor adherence to ARVs by mothers (taking < 75% of the prescribed tablets) [adjusted Hazard Ratio (aHR) 1.89 (95% CI 1.30-2.73) and a baby receiving no ARVs (aHR 1.22 (95% CI 1.03-1.45) were associated with increased risk of MTCT of HIV.

Conclusion: These findings suggest that the option B+ strategy is effective in reducing MTCT of HIV. Poor maternal adherence to drugs and failure to provide babies with ARVs increase the risk of transmission.
Molecular Epidemiology of HIV in Children of a Third Level Hospital in Lima, Peru

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Actually exist limited information about genetic diversity and molecular epidemiology of HIV in Peru. In 2012, estimated that 3200 child under 15 years are infected with HIV and we have poor information about them.

We studied a group of 52 patients including 8 children that have complications with their highly active antiretroviral therapy (HAART) in 2013-2014. Were analyzed the sequences of the protease (PR) and reverse transcriptase (RT) by genetic sequencing and compiled earlier studies of patients that had genotyping in previous years. All sequences were used to resistance analysis (HIVdb) and phylogenetic study.

In children the age mean was 10.5 years. Prevalence drug resistance mutations were PI Minor Resistance Mutations and NRTI Resistance Mutations. For all the samples, the most important risk factor were the districts were the patients from (p = 0.03, OR = 1.703, CI = 1.057-2.744). We reported new subtypes to Peru: BD, BF1 and B potential recombinant, and BD for the children. In the phylogenetic analysis our results show that exist shifting distribution of genotypes with 2 separated groups of BD, B potential recombinant and like D. The recombinant subtypes are concentrated in the center of the city and expand to the margins in the geographical analysis. We reported high genotype diversity in children including samples of same patients in different years that reflect problems of adherence to treatment and presence of quasiespecies in the same patient.
ASSOCIATIONS BETWEEN INFANT DIETARY INTAKE AND FEEDING PRACTICES PRIOR TO 6 MONTHS OF AGE AND EARLY RAPID WEIGHT GAIN AMONG HIV-EXPOSED UNINFECTED INFANTS

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BACKGROUND AND AIMS: Few studies have evaluated dietary intake of HIV-exposed, uninfected (HEU) infants. HEU are potentially at risk for cardiovascular disease due to adverse in-utero exposures, and feeding practices of the infant could compound this risk. We determined dietary factors associated with rapid weight gain (RWG) among HEU infants from birth to 6 months followed at the University of Miami HIV Screening Program.

METHODS: We performed a cross-sectional analysis of data collected on HEU infants. Covariates included demographics, birth, maternal and gestational characteristics, ARV exposures, dietary factors. Logistic regression was used to determine dietary factors associated with RWG defined as a greater than 0.67 SD change in weight-for-age Z-score from birth to assessment.

RESULTS: A total of 86 full-term HEU infants aged 4 months (range 0.3 to 6 months) were included in this analysis. Fifty-five percent of women were obese. Overall, 39.5% of infants exhibited RWG. A significant association between consumption of infant cereal and RWG (OR, 5.45; 95% CI, 1.60–21.80) was found after adjusting for birth weight, current age, energy intake, and early solids introduction. Those infants who consumed the highest tertile of protein were less likely to gain weight rapidly after adjusting for the same covariates (OR, 0.15; 95% CI, 0.02–0.93).

CONCLUSIONS: These data suggest that macronutrient balance and the type of complementary food introduced is associated with RWG in young HEU infants in the United States. Dietary counseling to families of HEU should reinforce current feeding practice recommendations of the American Academy of Pediatrics.
PREDICTORS OF NEUROLOGICAL OUTCOME OF TUBERCULOUS MENINGITIS IN CHILDHOOD: A PROSPECTIVE COHORT STUDY FROM A DEVELOPING COUNTRY

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Background: Prospective longitudinal studies from developing countries in children with Tubercular meningitis (TBM) are lacking.

Aims and objectives: To determine predictors of survival and morbidity in children with TBM.

Methods: This was a single center prospective cohort of children diagnosed with TBM. All children treated with standard regimens were followed up at 6 months and 12 months after discharge. Outcome was assessed using Pediatric Cerebral Performance Category Scale.

Results: Of the 130 children, 38 (29%) children died in hospital. Of the 92 survivors, 34 children were either severely disabled (n=28), or comatose/vegetative (n=6) at discharge. At six months 87% of the survivors were either normal (n=62) or mildly disabled (n=17, on PCPC scale). On univariate analysis, clinical stage III at admission (RR 2.78, 95% CI 1.77-4.38, p<0.001), raised intracranial pressure (RR 2.85, 95% CI 1.32-6.18, p=0.002), infarcts on neuroimaging (RR 2.36, 95% CI 1.4-3.97, p=0.001), CSF sugar <20mg/dl (RR 2.33, 95% CI 1.3-4.19, p=0.01), nosocomial sepsis (RR 2.58, 95% CI 21.35-4.93, p=0.004), cerebral salt wasting (15.2% vs 0%, p<0.001) and ventriculitis after shunt surgery (RR 3.13, 95% CI 1.32-7.39, p=0.009) were associated with poor outcome. On multivariate analysis the factors associated with poor outcome were a stage III at admission (adjusted OR 4.4, 95% CI 1.7-11.2, p=0.002) and presence of infarcts on neuroimaging (adjusted OR 2.6, 95% CI 1.1-6.6, p=0.037).

Conclusions: In this cohort of children in resource constraint setting, in-hospital mortality was high. However, survivors showed remarkable improvement with two thirds returning to normal functional status at 6 months follow up.
**HIGH RATES OF HIV SEROCONVERSION DURING PREGNANCY IN PORTO ALEGRE, BRAZIL**

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**Background and Aims:** Primary HIV-1 infection during pregnancy is associated with high rates of HIV mother-to-child transmission. We evaluated HIV MTCT rates at Hospital Conceicao in Porto Alegre, Brazil from 2006 to 2013.

**Methods:** Women were tested during pregnancy with rapid HIV testing also performed during labor. Infants were followed prospectively for determination of HIV infection status.

**Results:** Of 48,560 deliveries in 7 years, 3.4% occurred in HIV-infected women; 1,132 of these women had postnatal follow-up at our institution. Infant outcomes were determined for 949 children (83.8%) accompanied for HIV exposure. 371 women (32.8%) were identified as having HIV at the time of labor. HIV MTCT was 8.7% (25/288) in women identified in labor as opposed to 0.8% (5/607) in women who received prenatal care and cART \((p < 0.001)\). Miscarriages were nearly twice as frequent in women identified as having HIV during labor, 2.7% (10/371) as compared to women who received prenatal care and cART, 1.4% (11/761) \((p = 0.02)\). No differences were observed in frequencies of early infant deaths \((3\%)\) and loss to follow-up \((16\%)\). HIV-1 seroconversion in pregnancy incidence was \(0.9/1,000\) \((CI 0.6-1.2/1,000)\): 42 of 371 women \((11.3\%)\) were identified during labor. HIV MTCT was 19% in this group.

**Conclusions:** HIV seroconversion during pregnancy is an ongoing problem in Porto Alegre with a high risk of HIV MTCT. Women with unidentified HIV infection appear to carry a 2-fold higher risk of miscarriage. Strategies for identification of seroconversion risk during pregnancy (partner testing) need to be widely implemented.
THE EFAVIRENZ-RESISTANT P225H MUTANT OF HIV-1 CORRELATES WITH THE HOMOZYGOUS GENOTYPE OF THE CYP2B6 RS3745274*G ANCESTRAL VARIANT IN CHILDREN WITH VERTICALLY ACQUIRED HIV INFECTION

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Background and aims: Children with vertically acquired HIV infection are at high risk of antiretroviral failure due to resistant mutants of HIV-1. Furthermore, host-specific genetic polymorphisms of the CYP2B6 gene impair the metabolism of Efavirenz, a first-line antiretroviral treatment. We aimed at determining the frequencies of Efavirenz-resistant mutants of HIV-1 in infected children with failure treatment to investigate associations with CYP2B6 genotypes.

Methods: Prospective study in 28/64 HIV-1 vertically infected children presenting with failure to treatment with Efavirenz. The study was carried out in the Municipal Program of Prevention of DST/AIDS of the city of Campos dos Goytacazes, Rio de Janeiro, Brazil. Identification of Efavirenz-resistant mutants of HIV-1 was by genome sequencing. Genotyping of the CYP2B6 single nucleotide polymorphisms rs3745274, rs2279343, rs28399499, rs12721655, rs3211371 and rs3826711 was by primer-specific extension. Association of variables with outcome was estimated by determination of relative risks with confidence intervals.

Results: The most frequent Efavirenz-resistant mutants of HIV were K103N (28.1%) and G190A (9.4%), V106M (6.3%), P225H, K101Q (both at 7.8%). Minor frequency mutants included: Y188L, V108L, K103S, G190Q, K101P, V106I, A179D and M230I. The homozygous CYP2B6 genotype rs3745274-GG was associated with the Efavirenz-resistant P225H mutant of HIV-1 P225H (RR: 2.889, IC95\% 1.655 to 5.043, p=0.0155).

Conclusions: The homozygous CYP2B6 genotype rs3745274-GG correlated with the occurrence of the Efavirenz-resistant P225H mutant of HIV-1. The CYP2B6 genotype rs3745274-GG is known to be associated with low Efavirenz plasma concentration. Genotyping of CYP2B6 polymorphisms provides further insights in the mechanisms of Efavirenz HIV treatment failure in pediatric patients.
Thursday, November 19, 2015

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TB and HIV

PREVALENCE AND FACTORS ASSOCIATED WITH FAILURE TO ACHIEVE TREATMENT SUCCESS IN KENyan CHILDREN WITH TUBERCULOSIS IN 2013
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3National Tuberculosis Leprosy and Lung Disease Program, Ministry of Health, Nairobi, Kenya

Background and Aims: We sought to determine the prevalence and factors associated with failure to achieve treatment success in Kenyan children with tuberculosis (TB) to allow for prioritization of resources and optimization of paediatric TB care.

Methods: Data records of children with TB were imported from the national web-based surveillance system (TIBU) for the year 2013, de-identified and analyzed in a cross-sectional study. Treatment success was defined as the sum of cured and treatment completed. Failure to achieve treatment success included treatment failure, death, loss to follow-up and not evaluated. Independent factors associated with failure to achieve treatment success were analyzed in a generalized linear model in STATA 13.1.

Results: A total of 9,360 records of pediatric TB patients with a median age 6 years [IQR 2-11] were analyzed. Of these, 979 did not achieve treatment success giving a prevalence of 10.5% (95% CI 9.83-11.08). Age < 5 years (PR= 1.67 [95% CI 1.25-2.25] p=0.001) and a positive HIV status (PR= 2.01 [95% CI 1.59-2.56] p<0.001) were independent factors associated with failure to achieve treatment success when adjusted for patient sex, type of tuberculosis, sputum smear status and type of health sector.

Conclusion: One in 10 children with tuberculosis enrolled into the Kenya TB Program do not achieve treatment success. Targeted care for children under 5 years and those who are HIV-TB co-infected may improve treatment success in the Kenya TB Control Program.
WSPID-0885
TB and HIV

DIAGNOSTIC YIELD OF XPERT MTB/RIF ASSAY AND MYCOBACTERIUM TUBERCULOSIS CULTURE ON RESPIRATORY AND NON-RESPIRATORY SPECIMENS AMONG KENYAN CHILDREN WITH AND WITHOUT HIV

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Background: Microbiological confirmation of TB among young children is challenging. The objective of our study was to assess the yield of TB culture and Xpert MTB/RIF on respiratory and non-respiratory specimens among children with and without HIV in Kenya.

Methods: In an ongoing study in Kisumu, Kenya, children under 5 years suspected of having TB were enrolled based on history of symptoms (cough >4 weeks, fever >1 week, malnutrition > 3 weeks) and presence of parenchymal abnormalities on chest radiograph. HIV status was determined by PCR testing (age <18 months) or serologic assay (age ≥18 months). For each enrolled child, two of the following specimens were tested by liquid TB culture and Xpert MTB/RIF: nasopharyngeal aspirate, induced sputum, gastric aspirate, string test, stool, and urine; one blood specimen was tested by culture.

Results: As of May 2015, among 233 enrolled children (median age 24 months, interquartile range 11-45 months) with final culture results, 6/58 (10%) children with HIV and 23/175 (13%) children without HIV had confirmed TB based on at least one positive specimen by Xpert MTB/RIF or culture. Among children with confirmed TB, the proportion with at least one culture or one Xpert MTB/RIF positive by specimen type is shown in table 1 (with HIV) and table 2 (without HIV).

Conclusions: Nasopharyngeal aspirate and stool can be readily collected and show promise as alternative specimens to gastric aspirate or induced sputum for culture or Xpert MTB/RIF-based detection of TB in young children with and without HIV in Kenya.

<table>
<thead>
<tr>
<th>Specimen type</th>
<th>Positive TB Culture</th>
<th>Positive Xpert MTB/RIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastric aspirate*</td>
<td>83</td>
<td>5/6</td>
</tr>
<tr>
<td>Induced sputum*</td>
<td>50</td>
<td>3/6</td>
</tr>
<tr>
<td>Stool</td>
<td>80</td>
<td>4/5</td>
</tr>
<tr>
<td>Nasopharyngeal aspirate</td>
<td>67</td>
<td>4/6</td>
</tr>
<tr>
<td>String test</td>
<td>67</td>
<td>4/6</td>
</tr>
<tr>
<td>Blood</td>
<td>25</td>
<td>1/4</td>
</tr>
<tr>
<td>Urine</td>
<td>17</td>
<td>1/6</td>
</tr>
</tbody>
</table>

* Specimens typically used for "gold standard" testing

<table>
<thead>
<tr>
<th>Specimen type</th>
<th>Positive TB Culture</th>
<th>Positive Xpert MTB/RIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastric aspirate*</td>
<td>16/22</td>
<td>10/22</td>
</tr>
<tr>
<td>Induced sputum*</td>
<td>35</td>
<td>7/20</td>
</tr>
<tr>
<td>Stool</td>
<td>23</td>
<td>8/23</td>
</tr>
<tr>
<td>Nasopharyngeal aspirate</td>
<td>48</td>
<td>11/23</td>
</tr>
<tr>
<td>String test</td>
<td>40</td>
<td>8/20</td>
</tr>
<tr>
<td>Blood</td>
<td>14</td>
<td>3/21</td>
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</tbody>
</table>

* Specimens typically used for "gold standard" testing
CAREGIVER ORS FLUID CHARTS VERSUS STANDARD CARE FOR THE MANAGEMENT OF SOME DEHYDRATION SECONDARY TO ACUTE DIARRHOEA AMONG KENYAN CHILDREN: A RANDOMISED CONTROLLED TRIAL

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Background: Diarrhoea is a leading cause of mortality. Although caregivers play a critical role in the management of diarrhea, they have not been fully engaged in hospital settings. In this study we evaluated the effect of a caregiver administered fluid chart on hydration status and hospitalization among children with some dehydration secondary to acute diarrhea.

Study Procedure: An open-label randomized controlled trial was conducted at Mbagathi District Hospital in Nairobi, Kenya. Eligible children aged 2-59 months were assigned to the use of oral rehydration solution (ORS) fluid charts in which the caregiver recorded the child’s hourly intake of ORS, frequency of vomiting and diarrhea (intervention) or control arm in which ORS was administered without charting. Instructions were given to both arms on the use of ORS. The primary outcome measure was hospitalization following 4 hours of treatment. The secondary outcome was acceptability of the charts to caregivers determined by in-depth interviews.

Results: A total of 252 patients were evaluated for the primary endpoint. Hospitalization after 4 hours was 7/122 (5.7%) in the intervention, versus 20/130 (15.4%) in the control group (RR, 0.37 [95% CI, 0.16, 0.85]). Twelve out of fifteen (80%) of the caregivers in the intervention arm reported that the fluid charts were beneficial and enabled them to participate in the child’s management.

Conclusion: Use of the fluid charts was associated with a 63% reduction in hospitalization and was well accepted by the caregivers and therefore represents a promising innovation for monitoring administration of ORS in outpatient settings.
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WSPID-0111
Enteric infections and vaccines

AEROMONAS-ASSOCIATED DIARRHEA IN CHILDREN UNDER 5 YEARS: THE GEMS EXPERIENCE

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Background: We report the epidemiology and risk factors for diarrhea associated with Aeromonas species in children between 0-59 months of age with moderate-to-severe acute watery diarrhea or dysentery in South Asia.

Methods: The Global Enteric Multicenter study (GEMS) was a community based, matched case-control study conducted at 3 sites in south Asia and 4 sites in Africa. Children <59 months with moderate to severe diarrhea (MSD) were enrolled. A pooled, age-stratified, multivariate logistic regression analysis was done. Adjusted odds ratios and 95% CI are reported.

Results: A total of 12,110 cases and 17,291 age and gender matched controls were enrolled. Aeromonas was identified as a significant pathogen for MSD in Pakistan and Bangladesh. A total of 736 cases of Aeromonas were identified from these two sites. Aeromonas was the sole pathogen in less than 5% of cases across all age strata. Cases of Aeromonas were likely to present with dysentery, particularly in the 0-11 month (OR 1.4 95% CI 1.0-2.0) and 12 to 23 month age group (OR 1.8 95% CI 1.3-2.5). There was an interaction between Aeromonas and shigella and between Aeromonas and HAZ. The odds of Aeromonas increased with increasing degree of stunting, being highest for severe stunting (OR 10.1; 955 CI 3.6-28.9). Matched odds ratio for Aeromonas were higher in the presence of Shigella (mOR 6.2, 95% CI 1.9-20.2.).

Conclusion: Aeromonas is a significant pathogen for MSD in Pakistan and Bangladesh. Presence of dysentery and co-occurrence with other pathogens, notably Shigella spp are significant features of AAD.
EVALUATION OF THE SAFETY, HUMORAL AND INTESTINAL IMMUNOGENICITY OF ONE OR TWO DOSES OF INACTIVATED POLIO VACCINES IN INFANTS VACCINATED WITH BIVALENT ORAL POLIO VACCINES.

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7Vaccines, Vax-Trials, Panama, Panama
8Vaccines Unit, FIDEC, Miami, USA
9Polio, Gates Foundation, Seattle, USA

Background and Aims: Polio eradication recommendations suggest bivalent (bOPV) should replace trivalent (tOPV) oral poliovirus vaccine, until complete replacement by inactivated polio vaccines (IPV). We investigated whether 1–2 IPV and 3 bOPV doses are superior to 3 bOPV doses alone.

Methods: This multicenter, open, randomized, controlled study enrolled healthy infants attending well-care clinics in Colombia, Dominican Republic, Guatemala and Panama from May 2013 to February 2015. All received bOPV (or tOPV as control) at 6, 10, 14 weeks of age, or bOPV with IPV at 14 weeks, or bOPV and IPV at 14 and 36 weeks, with mOPV2 challenge at 18 or 40 weeks. Neutralizing polio serotype 2 antibodies were determined in blood and stools. Safety was assessed throughout the study period.

Results: After one IPV dose, type 2 seroconversion was 73.3–80.4% at week 18 ((p<0.01 vs. bOPV only). A further 11% of infants seroconverted to type 2 within one week of oral mOPV2 challenge indicating most of these infants (67%) were primed by one IPV dose. At week 40, 99.4–100% seroconverted after two IPV doses (p<0.01). Types 1 and 3 seroconversion rates were >95% for all study groups. bOPV, tOPV and IPV all had similar safety profiles.

Conclusions: One IPV dose after 3 bOPV doses gives ≥98% seroconversion to types 1 and 3, a response equivalent to 2 tOPV doses, and provides individual protection in > 90% of infants against type-2. Two IPV doses after 3 bOPV doses achieved 100% seroconversion for type 2.
WSPID-0760
Enteric infections and vaccines

IMMUNOGENICITY OF POLIOVIRUS VACCINES IN CHRONICALLY MALNOURISHED INFANTS: A RANDOMIZED CONTROLLED TRIAL IN PAKISTAN.
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²World Health Organization, World Health Organization, GENEVA, Switzerland
³Aga Khan University, Paediatrics and Child Health, Karachi, Pakistan

Background and Aims; We compared whether inactivated polio vaccine (IPV) can be used to rapidly close the immunity gap among stunted infants in Pakistan.

Methods; Phase 3, multicenter 4-arm RCT conducted at 5 PHC centers in Karachi, Pakistan. Infants, 9-12 months were stratified by length for age Z score into stunted and normally nourished. Infants were randomized to receive one dose of either bivalent OPV (bOPV) alone or bOPV+IPV. Baseline seroprevalence of PV antibodies and serum immune response to study vaccine dose were assessed by neutralization assay. Vaccine PV shedding in stool was evaluated 7 days after a bOPV challenge dose.

Results; At baseline, the seroprevalence was 85.6% (n=386), 73.6% (n=332), and 70.7% (n=319) in malnourished children against PV types 1, 2 and 3 respectively; and 94.1% (n=448), 87.0% (n=441) and 83.6% (n=397) in the normally nourished group (p<0.05). One dose of IPV+bOPV given to stunted increased their sero-protection (PV1, n=201, 97.6%; PV2, n=198, 96.1% and PV3, n=189, 91.7%) to parity with normally nourished children who had not received IPV (p=<0.001). Seroconversion and boosting for three serotypes was more frequent in children received IPV+bOPV than in those with bOPV only (p<0.001) in both strata. Shedding of PV in stool did not differ between study groups and ranged from 2.4% (n=5) to 7.1% (n=15). In stunted the shedding was reduced after bOPV+IPV compared to bOPV only.

Conclusion; Chronically malnourished infants were more likely to be unprotected against polioviruses than normal infants. bOPV+IPV helped close the immunity gap better than bOPV alone.
SINGLE-DOSE UNIVERSAL HEPATITIS A IMMUNIZATION IN ARGENTINA: HIGH PREVALENCE OF PROTECTIVE ANTIBODIES UP TO 8 YEARS FOLLOWING VACCINATION

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Background: Single-dose Hepatitis A Virus (HAV) vaccination was implemented for all Argentinean children aged 12 months in 2005, instead of the standard two-dose schedule. Previous studies demonstrated a dramatic decline in HAV infection rates, fulminant hepatitis, and liver transplantation along with low viral circulation and high prevalence of protective antibody response 4 years following the intervention. This study assessed long term seroprotection against HAV after vaccination with this novel scheme.

Methods: Children who received one dose of HAV vaccine at 1 year of age, at least six years before enrollment, were included at five centers in Argentina between March 2013 and April 2014. Demographic and socio-economic characteristics were collected through a questionnaire. Blood samples were tested for IgG anti-HAV antibodies. Antibody titers ≥10 mIU/mL were considered seroprotective. Logistic regression analysis was done to evaluate associations between different variables and seroprotection.

Results: Of 1088 children included, 95.6% lived in urban areas, 83.9% had safe water access and 52.5% had sewers at home. Mean age was 8.72 years, and mean post-vaccination interval was 7.68 years (Range 6.3-9.2 y). Of the total, 97.4% (95% CI: 96.3%-98.3%) had protective antibodies against HAV. No association between demographic or socio-economic variables and seroprotection was found. Geometric mean concentration (GMC) of antibody titers (IgG) against HAV was 170.5 mUI/mL (95% CI: 163.2-178.2 mUI/mL).

Conclusions: Single-dose universal hepatitis A immunization in infants resulted in sustained immunologic protection up to 8 years in Argentina. These findings, along with the low current disease burden, confirm the success of the intervention.
Background and aims

Noroviruses are important causative agents of acute gastroenteritis in adults and children. With the imminent development of norovirus vaccines, more information is needed on the medical and financial burden of norovirus disease in children. We studied the importance and associated costs of acute gastroenteritis caused by noroviruses and rotaviruses in children seen in Tampere University Hospital in a two-year prospective study before universal rotavirus vaccination and extrapolated the results to the whole of Finland.

Methods

Noroviruses and rotaviruses were studied from stools by RT-PCR. The severity of gastroenteritis was assessed using the 20-point “Vesikari” score. Costs of hospitalization and outpatient visits were derived from public sources.

Results

Of the 858 cases of acute gastroenteritis with adequate stool samples, norovirus caused 257 (30.0%) and rotavirus 437 (53.8%). By the score ≥11/20, 18% of norovirus and 31% of rotavirus cases were severe. By extrapolation, we estimated that, in children, NoV causes about 920 hospitalizations and 1780 outpatient visits annually in Finland (pop. 5.5 million). We further estimated that the direct annual medical costs of norovirus gastroenteritis in children in Finland were about 57% (low estimate 38%, high estimate 64%) of those of rotavirus.

Conclusions

The medical and financial burden of norovirus gastroenteritis is substantial, supporting norovirus vaccination of children. The cut-off price for norovirus vaccine would be higher than that of rotavirus vaccine, but still affordable.
**Background:** Our laboratory has developed a combined non-live rotavirus (RV) and norovirus (NoV) vaccine candidate consisting of recombinant polymeric human RV VP6 protein (rVP6) and NoV GII-4 and GI-3 virus-like particles (VLPs) (Blazevic et al. Vaccine 2011;29(45):8126-33.). Polymeric (tubular) rVP6 induces protection against heterologous RV infection in mice (Lappalainen et al. Hum Vaccin Immunother 2014;10(7):2039–47).

**Objectives:** This study was aimed to study the effect of rVP6 on NoV-specific immune responses in mice. Furthermore, activation and maturation of antigen presenting cells (APC) by rVP6 in vitro was investigated.

**Methods:** Mice were immunized with a suboptimal dose (0.3 µg) of GII-4 or GI-3 VLPs combined with 10 µg of rVP6, and NoV-specific immune responses were measured. Raw 264.7 cell line mouse macrophages were incubated with the rVP6 and different controls, and cell surface molecule expression and cytokine production were tested.

**Results:** rVP6 administered in combination with suboptimal doses of NoV GII-4 and GI-3 VLPs exerted an adjuvant effect on NoV-specific antibody responses resulting in sparing of the NoV VLP antigen dose and broadening the responses. Stimulation of immortalized mouse macrophages (Raw 264.7) with rVP6 in vitro induced a significant increase in antigen presentation molecules (MHC II), co-stimulatory molecules (CD40, CD80 and CD86), and pro-inflammatory cytokines (TNF-alpha and IL-6).

**Conclusions:** Polymeric rVP6 does not only induce protection against RV infection in vivo but also induces, through APC activation and maturation, an adjuvant effect on NoV-specific immune responses. Overall, these findings support the use of rVP6 in a combined RV-NoV vaccine candidate.
MENINGOCOCCAL DISEASE INCIDENCE IN ARGENTINA: THREE YEARS OF PEDIATRIC HOSPITAL-BASED SENTINEL SURVEILLANCE


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Background Meningococcal disease (MD) is a medical emergency and a serious public health problem. MD surveillance is crucial to provide baseline epidemiological data before implementing preventive measures.

Objective To estimate the burden and clinical-epidemiological pattern of MD through hospital-based surveillance in Argentina.

Methods 3 years prospective active surveillance of MD in patients≤15 years conducted at 6 pediatric hospital sentinel units (Mar/2012-Feb/2015).

Results Out of 184360 hospitalized patients, 1444 (0.78%) had suspected meningitis or MD and met the inclusion criteria. Of these, 268 (18.6%) presented acute bacterial meningitis (ABM), 168 of which (62.7%) were culture confirmed cases and 40 (23.8%) were N.meningitidis (Nm). In the 100 patients with culture negative ABM, PCR in CSF or serum samples was positive for Nm in 30 cases (30.0%). Twenty-four patients presented other MD forms, resulting in a total of 94 with MD (incidence: 5.1 per 10,000 hospitalized patients CI95% 4.0-6.8). Fifty four (57.4%) boys, 47.9%<1 year, median of age 12.5 months (1 month-15 years). Clinical presentations were (n; %):
- meningococcemia and meningitis (35; 37.2%), meningitis (28; 29.8%), meningococcemia (15; 16.0%), arthritis (7; 7.4%), occult bacteremia (5; 5.3%), meningococcemia and other foci (7; 7.4%). Complications: 27.7%; CFR: 9.6% (9/94). Nm serogroups were identified in 84 samples: B (43; 51.2%), W (37; 44.0%), C (3; 3.6%) and Y (1; 1.2%). Serogroup W was associated with <1 year of age OR 3.12 (1.13-8.76) and meningococcemia was associated with lethality p=0.0038.

Conclusions In this study, the burden of MD in hospitalized children occurred in infants and young children. The use of PCR in clinical samples increased the rate of MD detection. The predominant serogroups were B and W. Serogroup W was associated with <1 year and meningococcemia had higher risk of fatal outcome.
PASSIVE IMMUNIZATION WITH A MONOCLONAL ANTIBODY AS A GLOBAL STRATEGY FOR PREVENTING RSV DISEASE IN INFANTS

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Background: RSV causes disease globally. The most severe illness occurs in the first six months of life, so active infant immunization is unlikely to provide a solution. MEDI8897 is a mAb being developed as a passive RSV vaccine for preterm and term infants. Compared to palivizumab, the in vitro potency has been improved by 200-fold and half-life extension technology has been introduced.

Method: We randomized 136 adults in a blinded, placebo-controlled study to evaluate the safety and pharmacokinetic parameters of MEDI8897. Volunteers received a single dose of 100 or 300mg IM or 300, 1000, or 3000 mg IV and were followed for 1 year.

Results: 91.2% of subjects completed the study. Adverse events were similar for MEDI8897 (62.7%) and placebo (61.8%) and no dose-dependent signals were observed. There were no deaths or related SAEs. The mean half-life was extended to 85-117 days across all dose-levels. Anti-drug antibody incidence was low (13.7% MEDI8897 and 15.2% placebo) and did not impact the pharmacokinetics.

Conclusion: In healthy adults, MEDI8897 had a favorable safety profile and the serum half-life was increased by 3-4 fold. ADA did not impact PK or safety. Preclinical and clinical data collected to date, suggest that a single fixed IM dose of MEDI8897 can protect infants for a full RSV season. In temperate climates, MEDI8897 can be dosed prior to the RSV season and in tropic climates it can be dosed at birth. Studies are ongoing in healthy preterm infants in the USA, Chile and South Africa.
OBSERVATIONAL STUDY OF THE DURATION OF PROTECTION OF INFANT BCG VACCINATION IN ETHNIC MINORITY GROUPS IN ENGLAND.

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Background

Studies in Brazil and in US (American-Indians) have found indications that BCG protection lasts several decades – this needed confirming.

Establishing duration of protection is of relevance given disease risk is highest in young adults and the proportion that is pulmonary disease, the main source of onward transmission, increases with age. We took advantage of the UK’s change in their BCG vaccination programme in 2005 when universal school aged vaccination was discontinued and the programme of selective vaccination of high risk (usually ethnic minority) infants was enhanced.

Methods

We carried out an observational study in England of cases of tuberculosis and frequency-matched population-based controls in UK born minority ethnic groups aged 0–19 years. We studied vaccine effectiveness as a function of time-since vaccination using a case-cohort analysis based on Cox regression for most efficient use of controls. Multiple imputation was used to handle observations with missing data for vaccination status.

Results

We recruited over 700 cases and 700 controls based on a 60% response rate for both types of subjects. After adjustment for several potential confounders the initial results indicate a vaccine effectiveness of approximately 50% up to 15 years post-vaccination. More exploratory findings suggest the protective effect may last up to 20 years.

Conclusions

This new evidence may be useful for decisions on TB vaccine programmes (e.g. timing of new vaccines) and for cost effectiveness studies. Assessment of new vaccines will also need to show they offer protection against TB greater than that offered by BCG alone.
HELICOBACTER PYLORI INFECTION IN YOUNG ASYMPTOMATIC CHILDREN IS ASSOCIATED WITH A DECREASE IN SLC5A8 EXPRESSION, A CANCER REPRESSOR GENE.

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Background: *H. pylori* is a Gram-negative bacillus that infects half of the world’s population at some point in their lives and is a cause of gastric cancer in adults. Our previous studies in Chilean cohorts suggest that SLC5A8, a cancer suppressor gene, may have decreased expression levels in young children infected with *H. pylori*.

Aims: To determine if SLC5A8 expression is decreased in asymptomatic children persistently infected with *H. pylori*.

Methods: Gene expression assays were performed in 50 persistently infected and 44 non-infected children younger than 6 years of age; laboratory staff was blind to *H. pylori* infection status, as determined by a validated stool Elisa. One blood sample was collected, and RNA was extracted using Direct-zol RNA (Zymo research). cDNA was obtained with High-Capacity RNA-to-cDNA (Applied Biosystems®), and gene expression was assessed by q-PCR with customized taqman probes for SLC5A8 and ACTB using the ΔΔct method. Results are expressed as relative units of SLC5A8 expression. Data analysis was performed using GraphPad Prism 5.0.

Results: Demographics, symptomatology and family history were similar between cases and controls, but SLC5A8 gene expression was decreased in infected children compared to controls, 0.12 (IQR 0-2.62) vs. 1.89 (IQR 0-8.94) p=0.002.

Conclusions: *H. pylori* infection is associated with suppression of the cancer suppressor gene SCL5A8 in young asymptomatic children. Further study is necessary to examine the persistence of suppression over time, as well as the possible role this may play in the development of future disease.

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IMPACT OF TEN-VALENT PNEUMOCOCCAL CONJUGATE VACCINE (PCV10) AGAINST HOSPITAL-DIAGNOSED PNEUMONIA AMONG VACCINE-ELIGIBLE CHILDREN IN FINLAND

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Background: PCV10 was introduced into the Finnish National Vaccination Programme (NVP) in September 2010 using 2+1 schedule (vaccination at 3, 5, and 12 months). Uptake is estimated at 92%. We evaluated the impact of PCV10 against hospital-diagnosed pneumonia (HDP) among vaccine-eligible children during the first three years after NVP introduction.

Methods: The target cohort eligible for NVP (children born 06/2010-09/2013) was compared with two season and age-matched (3-42 months) reference cohorts before NVP introduction (Figure). Period 01/2009-08/2010 was excluded because of a nation-wide PCV10 trial conducted in Finland. Hospitals’ in- and outpatient discharge notifications with ICD-10 diagnoses (three first) compatible with pneumonia (J10.0; J11.0; J12-J18; J85.1 or J86) were collected from national Care Register and used for calculation of HDP rates before and after NVP implementation. No radiological evaluation data were available. Episode duration of 90 days was used.

Results: The rate of any HDP episodes was 10.2/1000 person-years in the combined reference cohorts and 9.0/1000 person-years in the target cohort. The relative rate reduction was 13% (95% CI 9-16) and the absolute rate reduction 1.3/1000 person-years. For hospital-treated primary pneumonia the relative and absolute rate reductions were 24% (95% CI 19-28) and 1.3/1000 person-years, respectively. Number of empyema diagnoses (ICD-10 J86) was small.

Conclusions: This study provides evidence for the impact of the 10-valent PCV against pneumonia in a routine vaccination program setting.
IMMUNOGENICITY, REACTOGENICITY AND SAFETY OF THE 10-VALENT PNEUMOCOCCAL NON-TYPEABLE HAEMOPHILUS INFLUENZAE PROTEIN D-CONJUGATE VACCINE (PHID-CV) FOLLOWING A 3+1 SCHEDULE IN INFANTS WITH SICKLE CELL DISEASE

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Background and aims: Sickle cell disease (SCD) increases susceptibility to invasive pneumococcal disease. This phase III, open-label, single centre trial in Burkina Faso (NCT01175083) assessed the immunogenicity, reactogenicity and safety of PHID-CV administered in 2-3-month-old SCD and non-SCD children. Results for 3+1 infant vaccination are presented here.

Methods: 100 infants, aged 8-11 weeks at enrolment, were stratified according to SCD status (50 SCD; 50 non-SCD) and received PHID-CV according to a 3+1 infant schedule (co-administered with routine paediatric vaccines). Immunogenicity/reactogenicity/safety outcomes were evaluated.

Results: Anti-pneumococcal and anti-protein D immune responses were in similar ranges in SCD and non-SCD infants (Tables 1, 2). Geometric mean antibody concentrations and opsonophagocytic activity titres increased after booster vaccination. Adverse events were reported at similar rates in SCD and non-SCD infants. Serious adverse event were reported for 3 SCD and 9 non-SCD infants; 2 were fatal (Salmonella meningitis [SCD], worsening malnutrition [non-SCD]); none were assessed as causally related to vaccination.

Conclusions: The immune response induced by PHID-CV primary and booster vaccination in infants did not appear to be affected by SCD status. No safety concerns were identified.

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CLINICAL DEVELOPMENT FOR MONOCLONAL ANTIBODIES COMBINATION THERAPY TO TREAT AND
PREVENT NEONATAL PERTUSSIS
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Background and aims: Pertussis is a significant public health problem despite near-universal vaccination and continues to cause up to 300,000 deaths worldwide each year, primarily among unvaccinated infants. Antibiotic therapy is ineffective, presumably due to lack of clearance of pertussis toxin (PTx), a major virulence factor of B. pertussis bacterium.

Methods: SYN-005 was engineered to treat and prevent pertussis in infants to decrease morbidity and mortality, reduce PICU admissions and shorten hospitalization. SYN-005 is a cocktail of two uniquely potent and synergistic humanized mAbs, designed to neutralize PTx and manufactured by recombinant CHO cell lines. SYN-005 was evaluated in mouse and baboon pertussis models. Clinical development of SYN-005 is planned as a single dose, IM injection to be administered at birth to infants in geographic areas where pertussis is endemic, once the nonclinical safety and pharmacology profile is established.

Results: In the animal studies, compared to the untreated controls, treatment with SYN-005 rapidly blunted the rise in white blood cell count, accelerated bacterial clearance from the nasopharynx, and shortened the course of coughing. No signs of toxicity were noted. The data from nonclinical studies and the approach for clinical development will be presented.

Conclusions: Synthetic Biologics intends to pursue clinical development of SYN-005 if safety is established. A dose-ranging study in the newborn target population is proposed which will measure serum levels of SYN-005 over time using the WHO standard as a reference. Efficacy and safety assessments will be performed with the goal of determining a trend towards protection.
VACCINATION IN THE IMMUNOSUPPRESSED HOST

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Over the past several decades, the number of immunocompromised children has expanded greatly with increasing numbers receiving novel chemotherapeutic and immunomodulatory agents, making them susceptible to a number of vaccine preventable diseases. In addition new vaccines are also under development for some of the most problematic infections for immunocompromised subjects, including cytomegalovirus and herpes zoster. However, the immunocompromised population is a very heterogeneous group. The characteristics of their immunosuppressed states and their management differ greatly among the various patient groups and many new immunosuppressive therapies are being developed and used in expanding numbers of patients. Cancer chemo- and radiotherapy has changed substantially with monoclonal antibodies and targeted anticancer drugs. However, the number of clinical trials assessing vaccination responses in patients receiving these modern therapies remains limited. This is an important challenge that must be addressed in the future. Data from existing vaccine studies in the immunosuppressed populations will be presented and additional needed research will be reviewed.
EMERGENCE AND RE-EMERGENCE OF CHIKUNGUNYA VIRUS INFECTION

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The past years has seen a dramatic increase in chikungunya infection, highly debilitating, characterized of crippling joint pains and fever which may persist for weeks to years. Oftentimes, the disease is misdiagnosed due to clinical similarities with other infections especially caused by flaviviruses. Only recently when clinicians became fully aware of the disease when it re-emerged and caused epidemics with millions of cases, demonstrating its ability to spread and infect large population. Unfortunately, there is still no specific treatment or vaccine against chikungunya infection. Dense population and lack of herd immunity likely contribute to the occurrence of chikungunya epidemics. It continue to spread among countries and re-emerged as a true global burden. My presentation will focus on the epidemiology, clinical features, diagnostic tests, treatment and preventive care and lessons learned during outbreak investigations, essential to define disease burden.
Bacterial pathogens are continually evolving new and more profound mechanisms of antibiotic resistance under antibiotic selection pressure from medical use of antibiotics as well as commercial use in livestock, poultry, and aquaculture. While beta-lactam, macrolide and glycopeptide resistance is increasingly common in Gram positive community-acquired pathogens, the most profound resistance is noted in Gram negative organisms in hospitals, often with pathogens harboring multiple resistance mechanisms. These Gram negative pathogens (including Klebsiella, Pseudomonas, and Acinetobacter) are responsible for serious and life-threatening hospital-acquired infections, and may display resistance to virtually all currently available antibiotics. Significant advances have occurred for Gram positive pathogens in the development and study in children of more potent beta-lactam, glycopeptide and lipopeptide antibiotics. For resistant Gram negative pathogens, significant advances have occurred in the development and study of more stable beta-lactamase inhibitors, aminoglycosides, fluoroquinolones and tetracyclines. Many agents have entered large clinical trials in adults, with a few recently approved by regulatory agencies for adults. Following legislative guidance, both FDA and EMA have mandated investigational studies of these agents in neonates, infants and children. Daptomycin and ceftaroline have completed large pediatric clinical trials for Gram positive infections, soon to be submitted to regulatory agencies for approval for children. New Gram-negative agents are only now beginning to enter prospective, randomized, comparative trials in children.
MATERNAL INFLUENZA IMMUNIZATION GLOBAL PERSPECTIVE ON RESEARCH AND IMPLEMENTATION

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The World Health Organization (WHO) influenza vaccine policy recommendations aim to protect vulnerable high-risk groups from severe disease. In a 2012 update of its influenza vaccine position, WHO recommended that countries considering the initiation or expansion of programmes for seasonal influenza vaccination should prioritize pregnant women over other high risk groups (young children, the elderly, persons with certain chronic illnesses, and health care workers). However, many countries, mostly with low or middle income, have not yet introduced this strategy into their national immunization programs, partly due to lack of guidance and data required to inform implementation decisions and other barriers to implementation.

In follow up to a call from its Strategic Advisory Group of Experts (SAGE), WHO is addressing such barriers by developing disease and economic burden data, vaccine safety and performance, economic impact of vaccination, manufacturing, regulatory and implementation related aspects. The resulting information is translated into technical guidance and tools assisting countries introducing maternal influenza immunization. For example, WHO is developing health economics guidance for the evaluation of economic burden of influenza disease, influenza vaccine cost effectiveness, and a maternal influenza immunization program costing tool.

WHO is currently synthesizing an implementation guide that summarizes these tools and guidance to provide advice on best-practices delivery of influenza vaccine to pregnant women to national decision makers. This implementation guide is being produced with the advice of a group of global vaccine delivery experts. Countries can adapt this guide for their country-specific needs and may adapt it for other vaccines targeting pregnant women that may be introduced.
INFLUENZA IMMUNIZATION OF PREGNANT WOMEN
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Background: There are limited data on the efficacy of influenza-vaccination during pregnancy against confirmed influenza-illness in HIV-uninfected and HIV-infected women and protection of their infants.

Methods: Two separate double-blind, randomized, placebo-controlled trials of trivalent inactivated influenza vaccine (IIV3) were undertaken during 2011 in HIV-infected women; and during 2011 and 2012 in HIV-uninfected women. Immunogenicity, safety and vaccine efficacy (VE) of IIV3 in pregnant women and their infants until 24 weeks post-partum were evaluated. Immune responses were measured by hemagglutination inhibition (HAI) assay and confirmed influenza-illness was diagnosed by reverse-transcription polymerase chain reaction (PCR-Cl) of respiratory samples.

Results: Study cohorts included 2116 HIV-uninfected and 194 HIV-infected women. One-month post-vaccination, higher sero-conversion rates and proportions with HAI titers ≥1:40 were observed among IIV3-recipients compared to placebo-recipients in both cohorts. Furthermore, newborns of IIV3-recipients compared to placebo-recipients also had higher HAI titers and proportions ≥1:40.

The per-protocol PCR-Cl attack rates (ARs) among HIV-uninfected placebo-recipients and their infants were 3.5% and 3.4%, respectively. Corresponding numbers in IIV3-recipients were 1.6% and 1.8%, for VE of 54.4% [95% confidence interval (CI): 19.5% to 74.2%] and 45.6% (95%CI: 2.4% to 69.7%), respectively. Among HIV-infected women, the AR of PCR-Cl was 17.0% in placebo-recipients and 5.0% in IIV3-recipients, VE: 70.6% (95%CI: 23.0% to 88.8%). There were no differences in adverse events between the study arms, except more injection-site reactogenicity in IIV3-recipients.

Conclusion: Influenza vaccine was safe and immunogenic in HIV-uninfected and HIV-infected pregnant women and partially-protected the women and HIV-unexposed infants against confirmed influenza-illness.
SPRING GUIDANCE FOR STUDIES AND PUBLICATIONS REPORTING INFECTIONS IN NEWBORNS

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BACKGROUND

Infection accounts for around a third of 2.8 million neonatal deaths, and the estimated 6.9 million cases of possible severe bacterial infection (pSBI) annually also result in an unknown burden of morbidity, including long-term severe impairment. Globally, neonatal infection data are sparse and poorly reported, with discrepancies in definitions used, and key methodologies absent. We aimed to maximise data comparability in published studies, to increase utility for meta-analyses, burden estimates and intervention evaluation. This guidance aligns with STROBE and relevant extensions but is specific to neonatal infection research.

METHODS

A literature review was conducted of highly cited, or high impact, published papers on neonatal infection from seven global regions (1996-2015). This generated a preliminary list of potential reporting recommendations, on which wider expert opinion was gained through an online survey circulated to global neonatal and infection professional networks. A two-day international expert consensus meeting was held (June 1st-2nd 2015), with 19 global experts, including infectious disease specialists, neonatologists, microbiologists and epidemiologists, as well as key funders and programmatic experts.

RESULTS

21 highly cited (3 from each region) and 11 high impact papers were reviewed, generating a list of 125 potential reporting items. The survey was completed by 145 participants from 36 different countries. Using these inputs, the expert consensus group refined this list to around 30 key reporting recommendations, deemed to be critical for high quality reporting, which are currently undergoing a process of reiteration and review, aiming for rapid dissemination from September 2015.
THE CORRELATION OF BRAIN OXYGENATION CHANGES DUE TO SEPSIS AND NEURODEVELOPMENTAL OUTCOME AT 2 YEARS OF AGE

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BACKGROUND AND AIMS: Neonatal sepsis and the inflammation stress remain major factors that influence the neurological development. Our aim was to evaluate the correlation of brain oxygenation in septic neonates, measured by Near Infrared Spectroscopy (NIRS) and estimated via TOI (Total Oxygen Index), to the neurodevelopmental outcome estimated via Bayley-III Infant Toddler Scale Test.

METHODS: A prospective study was held in the 2nd NICU of AUTH, Greece, during 6/2012-12/2014. Neonates with confirmed sepsis and matched controls underwent 3 NIRS measurements on day 1, 3 and 7 of the episode. All subjects underwent Bayley-III evaluation at 18-24 months of age.

RESULTS: Forty-two subjects were enrolled (21 cases, 21 controls), with matched neonatal characteristics (birthweight, gestational age).

Both cases and controls had equal TOI initially (63.6±6 vs 67.9±9), however, septic neonates presented a significant lower TOI_{min} and important decrease of brain oxygenation on the seventh day of the episode, (TOI_{day7} 57.2±9 vs 69.3±5.3, TOI_{min} 55.1±7 vs 63.5±5, Decrease -6.4±12 vs 1.3±10, p<0.05).

Cognitive and motor development were evaluated for both groups. While controls showed no correlation of brain oxygenation and Bayley scores, however, infants with history of neonatal sepsis presented strong correlation of TOI_{min} to the Cognitive percent score (p<0.05) and also strong correlation of TOI decrease during the episode and the Motor percent score (p<0.05).

CONCLUSION: Neonates undergoing sepsis are susceptible to episodes of decreased brain oxygenation. In fact, the degree of those desaturation periods seems to be linearly correlated to diminished neurodevelopmental outcome, regarding the cognitive and motor skills.
THE ROLE OF THE TNF CLUSTER OF CYTOKINES, MACROPHAGES AND MYELOID CELLS IN LPS-MEDIATED SENSITIZATION TO PERINATAL HYPOXIA-ISCHEMIA BRAIN INJURY

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Background: Materno-fetal infection and hypoxia-ischemia (HI) around birth are contributing factors to neonatal encephalopathy, affecting up to 16/1000 babies annually in low-income countries. This synergy is mediated by the TNF cluster of cytokines, and its deletion abolishes LPS sensitization to HI.

In this study, we investigated the independent effects of TNFα, LTα and LTβ, members of the TNF cluster, using mouse models of global gene deletion, as well as cell-type specific deletion of TNFα in myeloid cells (MAC1-CRE) and lysozyme+ macrophages (MLys-Cre). We also used T-cell deficient nude mice to investigate the acquired immune system.

Methods: P7 pups underwent unilateral carotid ligation followed by 30min 8% oxygen exposure (n=10/group). 12h prior, animals received intraperitoneal LPS (0.6 µg/g) or saline administration. 48h later, mice were transcardially perfused and brains assessed for infarction, cellular activation (microglia, astroglia and endothelium) and TUNEL+ cell death and statistically measured using one-way ANOVA followed by post-hoc TUKEY.

Results: LTα knockouts revealed moderate reduction in LPS-mediated sensitization. Conversely, deletion of LTβ had a detrimental effect, significantly increasing brain damage (p<0.1%). TNFα-/− showed a trend towards greater damage, but its deletion in MAC1-expressing cells resulted in minimal protection and deletion in MLys+ cells was strongly neuroprotective (p<1%). Finally, nude animals demonstrated abolishment of LPS-mediated sensitization to HI (p<5%).

Conclusion: TNF cluster abolition of LPS sensitization may be due its role in the peripheral immune system rather than a direct effect of these cytokines in the brain. This supports our results showing that LPS sensitization requires T-cell function.
THE IMPLEMENTATION OF GROUP B STREPTOCOCCUS PREVENTION GUIDELINE AND ITS IMPACT IN EARLY-ONSET NEONATAL SEPSIS IN A BRAZILIAN MATERNITY

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Background and aims: Guidelines for prevention of group B streptococcal (GBS) infection has successfully reduced early-onset neonatal sepsis (EOS) in developed countries. Nevertheless, GBS prevention has not been standard practice in Brazil and other developing countries. We evaluated the impact of GBS guidelines in a public maternity in Brasilia, Brazil.

Methods: From January 2014, we started screening the high-risk women admitted in the hospital and antibiotic prophylaxis during labor according to CDC guidelines for GBS prevention. We present a descriptive study comparing the period of 2012-2013 with the period of 2014-May 2015. We defined EOS as a positive culture result for blood obtained from infants aged ≤72 hours plus treatment with antibiotic therapy for ≥5 days. The numbers of cases and total live births (LB) were used to calculate incidence.

Results: Among 13627 LB during 2012-2013, 39 infants developed EOS (2.9 cases per 1000 LB). GBS was the most common agent isolated (20%, 0.59 per 1000 LB), followed by Staphylococcus aureus (18%) and Escherichia coli (10%). During 2014-May 2015, 183 vaginal-rectal swabs were collected from high-risk women, 40 (22%) were positive. Among 6148 LB, 10 infants developed EOS (1.6 cases per 1000 LB). There were no case of GBS and 1 case of E. coli (10%).

Conclusions: Although GBS colonization among pregnant women was high, the EOS incidence has decreased after a GBS prevention guideline was implemented and no case of neonatal GBS has occurred during 17 months. Implementation of evidence-based guidelines is necessary in Brazil to reduce EOS.
**Microbiome Modulates T-Cell Populations in Respiratory Syncytial Virus Infected Mice.**

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**Objective:** Microbial colonization of mucosal surfaces is essential for efficient neonatal immune development. Inadequate balance between microbiome composition and innate or adaptive immune system might contribute to RSV induced disease severity. To investigate if microbial composition affects RSV induced immune responses, microbiome alterations were studied in a mouse model for primary RSV infection and FI-RSV induced vaccination model for enhanced disease.

**Methods:** Microbiome composition was altered in C57BL/6 mice using either LPS, dietary intervention with scGOS/lcFOS/Bifidobacterium breve M-16V or broad spectrum antibiotic treatment prior to RSV infection. Fecal taxonomic composition and lung RSV-specific immune responses were determined.

**Results:** Lower microbial diversity induced by broad spectrum antibiotics correlated with decreased IFN-gamma producing CD4+ and CD8+ T-cells 6 days after viral challenge. Although no effect of the antibiotic treatment induced microbiome modulation was detected on viral load and body weight after infection, the immunological change was accompanied by an altered DC migration (reduction of CD103+ DCs and increased CD11b+ DCs) and lower RSV specific IgG2α levels in serum. TLR-4 stimulation using LPS prior to the RSV infection increases the RSV specific Th1 responses and reduces cell influx in the lungs. In contrast, dietary intervention using specific microbiome modulating diet scGOS/lcFOS/Bifidobacterium breve M-16V prior to the RSV infection seems to reduce the virus specific Th2 responses.

**In Conclusion:** These data subscribes the importance of the neonatal microbiome development in the induction of immune responses to respiratory pathogens like RSV.
CORRELATES OF PROTECTION OF SEROTYPE-SPECIFIC CAPSULAR ANTIBODY AND INVASIVE GROUP B STREP TOCCUS DISEASE IN SOUTH AFRICAN INFANTS

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Background: Vaccinating pregnant women may prevent invasive Group B Streptococcus (GBS) disease in their young infants. In a low-middle income setting, we sought to determine an association between natural maternal antibody responses and the development of invasive GBS disease.

Methods: We undertook a matched case-control study in Johannesburg, South Africa. Maternal and infant antibody concentrations were compared between serotype-specific Ia and III GBS cases and homotypic controls (mother colonized with the same serotype), and non-homotypic controls (mothers either non-colonized or colonized with other GBS serotypes).

Results: The median maternal serotype Ia and III antibody concentrations (in µg/mL) were 0.05 (IQR: 0.02-0.24; n=27) and 0.14 (IQR: 0.08-0.33; n=29) in cases, and 0.29 (IQR: 0.06-1.60; n=43) and 0.29 (IQR: 0.13-0.58; n=31) in homotypic controls, respectively. A lower proportion of cases (18.5% and 20.7%) as compared to homotypic controls (46.5% and 35.5%) had a serotype Ia and III maternal antibody concentration ≥0.5 µg/mL, with adjusted odds ratios of 0.18 (95% CI: 0.04-0.73) and 0.27 (95% CI: 0.05-1.56) respectively. Using Bayesian modeling, we demonstrated >90% reduction in risk of invasive GBS disease with maternal antibody concentrations ≥5 µg/mL and ≥3 µg/mL for serotype Ia and III, respectively.

Conclusions: Maternal capsular antibody concentrations are associated with the risk of invasive GBS disease in infants. In a low-middle income setting with a high burden of invasive disease, we have demonstrated a sero-correlate of protection for GBS serotypes Ia and III which could facilitate vaccine licensure.
ASSOCIATION BETWEEN MATERNAL GROUP B STREPTOCOCCUS (GBS) SURFACE-PROTEIN ANTIBODY CONCENTRATIONS AND INVASIVE DISEASE IN THEIR INFANTS.

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Background: A trivalent Group B streptococcus (GBS) polysaccharide-protein conjugate vaccine targeted at pregnant women is being developed to include prevention of invasive disease in their infants. In addition, numerous GBS surface-proteins have also been shown to be immunogenic and could be potential vaccine candidates. We aimed to determine the association between maternal IgG antibodies to select GBS surface-proteins and invasive GBS disease in their infants <90 days age.

Methods: A matched case-control study was undertaken in Johannesburg, South Africa between November 2012 and February 2014. We measured maternal and infant antibody levels to GBS Immunogenic Bacterial Adhesin (BibA), Fibrinogen-binding protein A (FbsA) and pilus island (PI) proteins of PI-1, PI-2a, PI-2b.

Results: Using a Bayesian framework the absolute risk of disease did not differ between cases and colonized controls with increasing antibody concentrations for the five studied surface-proteins. There was, however, a relative risk reduction in invasive disease associated with FbsA, with an adjusted odds ratio of 0.04 (95%CI: 0.01-0.69) at antibody levels ≥10 000AU/mL. No correlation was observed between surface-protein and capsular serotype antibody concentrations.

Conclusion: We have not demonstrated an association between the naturally occurring FbsA, BibA and PI GBS surface-protein antibodies and the risk of invasive disease in young infants. These surface-proteins may not be suitable GBS vaccine candidates.
RESULTS OF A MASS IMMUNIZATION CAMPAIGN WITH 4-COMPONENTS SEROGROUP B MENINGOCOCCAL VACCINE (4CMENB) IN QUEBEC, CANADA

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Background: In 2003, a virulent Serogroup B ST269 meningococcal clone emerged in Quebec. The Saguenay-Lac-Saint Jean (SLSJ) region was particularly affected with a Serogroup B disease rate of 3.6/100,000 person-years in 2006-2012, more than 10 times the Canadian average. Genotyping showed that 96% of ST-269 strains may express two antigens similar to 4CMenB vaccine components: fHbp peptide 15 and NHBA peptide 21. On this basis, a mass immunization campaign targeting individuals 2 months to 20 years of age resident or attending school in SLSJ was launched. The campaign started in May 2014 and recruitment ended in December 2014.

Methods: Active monitoring of vaccine uptake and reinforced meningococcal disease surveillance was implemented. Vaccine effectiveness was estimated by different methods including dynamic time-series modelling and younger/older meningococcal disease cases ratio.

Results: 82% of the 58,000 target people received ≥ 1 vaccine dose and 70% a second dose. As of June 2015, no case of meningococcal disease had been recorded in vaccinees, meaning a 100% protection during the first year following administration of the first vaccine dose. In March-April 2015, two Serogroup B cases occurred in unvaccinated adults in the SLSJ region. The estimated effectiveness of the campaign to reduce disease incidence was 75%.

Conclusions: Results are in line with a high level of short-term direct protection conferred by 4CMenB. The campaign failed, however, to provide strong indirect (herd) protection in adults. Note: Philippe De Wals for the Quebec Meningococcal Disease Surveillance and Evaluation Group
IDENTIFYING HLA-PROMISCUOUS T-CELL EPITOPES OF THE VP1 CAPSID PROTEIN OF HUMAN RHINOVIRUS SPECIES C

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Background: Human Rhinoviruses (RV) are amongst the most frequent cause of infection in the world. RV infections are associated with exacerbations of asthma and RV-induced wheeze in infancy is an important predictor of the development of asthma. The newly identified RV-C species has been linked to more severe symptoms of asthma and an increased risk of hospital admission.

AIM: Identify whether RV-C immunodominant T-cell epitopes are restricted to a particular HLA haplotype.

Methods: 53 overlapping synthetic peptides covering the entire VP1 protein of one genotype of the RV-C (QPM) were purchased from Mimotopes (Vic, Australia). T-cell proliferation was measured in vitro by ³H-thymidine incorporation in a cohort of 20 healthy adult donors. Human Leukocyte Antigens (HLA) typing was conducted using DNA extracted from saliva (Oragene kit, DNA Genotek) of all 20 donors (IIID/Murdoch University, Perth).

Results: We identified four RV-C immunodominant peptides that triggered T-cell proliferation in more than 50% of the donors. When compared to donors from groups DR1, DR4, DR8 and DR16, donors from groups DR7 and DR11 showed a significantly higher proliferative response to the RV-C peptides, and specifically to one immunodominant peptide located in the C-terminal region. Another immunodominant peptide, located in the N-terminal region, appeared to be HLA-unrestricted as it triggered proliferative response in all DR groups, except DR8.

Conclusion: This is the first study to map T-cell epitopes in a genotype of RV-C and to report HLA-promiscuity for selected immunodominant RV-C peptides. These findings are valuable tools for future diagnostics, therapies, and/or vaccine development.
EFFECTIVENESS OF THE MENINGOCOCCAL C CONJUGATE VACCINE IN THE BRAZILIAN NATIONAL IMMUNIZATION PROGRAM

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Background and aims: In 2010, the Brazilian National Immunization Program (NIP) implemented the meningococcal C (MenC) conjugate vaccine for children under 2 years of age using a 2+1 scheme of doses. This study aimed to estimate the effectiveness of this vaccination program.

Methods: The MenC conjugate vaccine effectiveness (VE) was estimated based on the Brazilian Notifiable Disease Surveillance System with data on confirmed cases of Invasive Meningococcal Disease (IMD) from 2011 to 2014. We have studied all serogrouped IMD cases affecting children, with known immunization history, supposed to have received at least a dose of MenC vaccine according to Brazilian NIP recommendations. The proportion of MenC IMD cases has been compared to the proportion of IMD by other serogroups in children known to have had at least one dose of the vaccine.

Results: Among 1,341 cases of confirmed IMD among children supposed to have received at least 1 dose of MenC vaccine, 391 (29.2%) met the inclusion criteria. The MenC VE has been estimated as 88.0% (95%CI = 80.8 – 92.6). Among infants (< 1 year), VE = 92.6 % (95%CI = 80.9 – 97.1). Among children, 1 to 4 years, VE = 87.0% (95%CI = 76.8 – 92.7).

Conclusions: Our results are in agreement with those observed in others countries. The duration of protection needs to be evaluated in order to define the appropriate timing for booster doses. Sample size and the inclusion of children who had at least 1 dose of the vaccine are possible study limitations.
10-YEAR FOLLOW-UP ON IMMUNOGENICITY AND SAFETY OF THE HUMAN PAPILLOMAVIRUS (HPV)-16/18 AS04-ADJUVANTED VACCINE ADMINISTERED TO 10-14-YEAR-OLD GIRLS


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6Vaccine Value and Health Science, GSK Pharmaceuticals India Ltd., Bangalore, India
7Vaccines Discovery and Development, Late Clinical Development, XPE Pharma and Science for GSK Vaccines, Wavre, Belgium
8Vaccines Discovery and Development, GSK Vaccines, Wavre, Belgium
9Vaccines Discovery and Development, GSK Vaccines, King of Prussia PA, USA

Background and aims: This open-label extension study (HPV-025/NCT00877877) is a 10-year follow-up of the immunogenicity and safety after 3 doses of the HPV-16/18 AS04-adjuvanted vaccine administered to 10-14-year-old girls in a phase III, randomized, controlled, observer-blinded trial (NCT00196924). We present end-of-study results.

Methods: The study was approved by Institutional Review Boards/Ethical Committees. Written informed consents/assents were obtained from all participants/parents/guardians before enrolment. Humoral immune responses were determined by enzyme-linked immunosorbent assay. Serious adverse events (SAEs) were assessed throughout the follow-up.

Results: 10 years after the first vaccination, in the Month 120 according-to-protocol immunogenicity cohort (N=418), all subjects analyzed were seropositive for HPV-16 and HPV-18 antibodies. Geometric mean titers (GMTs) were 1589.9 EL.U/mL [95%CI: 1459.8-1731.6] for HPV-16 and 597.2 EL.U/mL [95%CI: 541.7-658.5] for HPV-18 in subjects seronegative at baseline for the type analyzed. HPV-16 GMT was 53.4-fold higher and HPV-18 GMT 26.3-fold higher than GMTs of the respective types after natural infection in 15-25-year-old women (NCT00122681). GMTs were 3.8-fold (HPV-16) and 2.5-fold (HPV-18) higher than GMTs of the respective types, 9.4 years after vaccination in 15-25-year-old women for whom vaccine efficacy was demonstrated (NCT00518336). During the 10-year follow-up, 99 out of 557 subjects in the HPV-025 total vaccinated cohort (17.8%, 95%CI: 14.7-21.2) reported 155 SAEs; none were vaccine-related, led to study withdrawals or were fatal to participants.

Conclusions: The HPV-16/18 AS04-adjuvanted vaccine induced a sustained serum antibody response up to 10 years after administration of the first dose in 10-14-year-old girls, and exhibited an acceptable safety profile.

Funding: GlaxoSmithKline Biologicals SA
PNEUMOCOCCAL CONJUGATE VACCINE IMPACT ON CHILDREN MORTALITY: AN ANALYSIS OF DATA FROM COLOMBIA, 2002-2012
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Background: The introduction of pneumococcal vaccination with conjugate vaccines (PCV) in Colombia has been differential between Bogota and the rest of the country. Currently there are no measurements of its effectiveness.

Objective: To evaluate the impact of PCV on pneumonia mortality among Colombian children younger than four years old between 2002 and 2012.

Methods: An ecological analysis using data from secondary sources, taking as exposure variable the pneumococcal vaccination in pre- (2002 - 2006) and post-implementation (2009 - 2012) periods for Bogota and the rest of Colombia. Annual and average mortality rates due to all-cause pneumonia were estimated for the pre- and post-vaccination periods. The impact was estimated by absolute risk reduction (ARR), relative risk reduction (RRR) and vaccine effectiveness (VE) as the inverse of the risk ratio (1-RR).

Results: Bogota: the trend in pneumonia mortality rate decreased from 30.3 to 11.8 deaths per 100,000 children (p<0.001). Among children younger than four years old, the ARR was 6.5 and 100,000; and the VE was estimated in 21.8% (CI 95% 10.2-31.9%). Rest of Colombia: pneumonia mortality rate decreased from 31.8 to 16.1 deaths per 100,000 (p<0.001). The ARR was 5.0 per 100,000; and the VE was estimated in 17.1% (CI 95% 12.4-21.6%). By age groups, less than one-year-old children registered the highest decrease in mortality in the post-vaccination period with a VE of 47.6% in Bogota and 43.0% in the rest of Colombia. Conclusion: A decreasing trend in pneumonia mortality rates associated with PCV introduction was observed.
EVALUATION OF DIFFERENT REGIMENS OF ANTIBIOTIC PROPHYLAXIS FOR ACUTE APPENDICITIS IN CHILDREN.

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**Aim.** To evaluate efficacy of different antibiotic prescription strategies for acute appendicitis in children.

**Materials and methods.** 654 children between the ages of 3 and 15 years (mean age 10.1 ± 2.91 years) hospitalized with acute nonperforated appendicitis from 2000 to 2010 were included in this study. There were three regimens of antibiotic administration: 1 - single IV injection of amoxycillin + clavulanate 20-30 minutes prior the incision; 2 - IV injection of amoxycillin + clavulanate in the same dose, followed by postoperative administration; 3 - postoperative treatment. Efficacy of the treatment evaluated with the rate of surgical site infections (SSI) in each group.

**Results.** The rate of SSI in group 3 (control) was 15.1 case in group 1 (0.9% vs. 5.62%; p=0.038), 5 cases in group 2 (1.81% vs. 5.62%; p=0.019). SSI increased mean length of stay in the hospital on 5.35 days and direct costs by 457,96$ per one patient. Mean direct costs for treatment of 100 patients in 1 and 2 groups were 67560$ and 76889$ respectively. The average course of postoperative antibiotic treatment was 6.3 days. The mean amount of antibiotic injections was 1 in group 1, 17 in 2 and 24 in group 3.

**Conclusion.** Perioperative antibiotic prophylaxis in appendectomy lowers the rate of SSI to 0.9%. Single IV injection of amoxycillin + clavulanate is effective for SSI prophylaxis in appendectomy. Follow up postoperative antibiotic treatment doesn’t provide the additional decrease of SSI rate and increases the costs of treatment.
Antimicrobial resistance/Antibiotic control

RECENT EMERGENCE OF HIGHLY MACROLIDE-RESISTANT PNEUMOCOCCUS IN BANGLADESH – RELATION TO ANTIBIOTIC USE AND GENETIC DETERMINANTS.

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2International Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, USA
3Pediatrics, Stanford University School of Medicine, Stanford, USA
4Respiratory Diseases Branch, Centers for Disease Control and Prevention, Atlanta, USA

Background and Aims: Non-susceptibility of Streptococcus pneumoniae in Bangladesh has been limited to cotrimoxazole. We examined 418 invasive pneumococcal isolates, accumulated during 2004 to 2014, i) for susceptibility to common antibiotics, including genotypic analysis for macrolide resistance, and ii) relatedness of macrolide resistance to azithromycin consumption.

Methods: Isolates were screened for antibiotic susceptibility by disk diffusion. Non-susceptible strains were subjected to E-test to reveal minimum inhibitory concentrations. Erythromycin non-susceptible strains were examined for mutations using PCR. Data on azithromycin consumption was gathered from IMS.

Results: Non-susceptibility to cotrimoxazole remained high; ranged 77-69% during 2004-2014. Emergence of macrolide resistance appeared in 2008 and reached 46% in 2014, caused by mutation(s) in ermB and/or mefA (Figure 1). Increase in macrolide resistance showed direct link with increased use of azithromycin (r=0.8572, p=0.0031) (Fig 2). Erythromycin resistance was predominantly associated with serotypes 19F (35%), 6B (28%) and 23F (26%); serotypes 2, 1, 5 and 12A showed no resistance.

Conclusions: Use of azithromycin is an important factor in emergence of macrolide non-susceptible pneumococcus through gene mutations.
MANAGEMENT OF HELICOBACTER PYLORI INFECTION IN ADOLESCENTS WITH DIFFERENT DURATIONS OF FUNCTIONAL DYSPEPSIA AND ERADICATION TREATMENT HISTORY

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Background and Aims. Dramatic increase of antibiotic resistance is the most important reason for H. pylori (HP) treatment failure, especially in less-developed countries, where eradication rates are much lower than in western countries, for the same treatment regimens. Aim of our study was to clinically identify groups of patients with higher probability of antibiotic resistance for the more stratified use of bacterial culture and antibiotic susceptibility testing.

Methods. 132 adolescent patients with functional dyspepsia (FD) aged from 9 to 18 years and 33 aged-matched controls were included in the study. Active HP infection was diagnosed when serum anti-HP IgG measured by ELISA, and HELIC ammonia breath test were both positive.

Results. HP prevalence was significantly lower in patients with longest (3+ years) duration of FD (see table 1: 29.6±1.6% and 71.4±5.6%, for the groups 1 and 3; p<0.01). Since only 6 % of these patients never received eradication treatment, active HP infection was either a result of reinfection or inefficient eradication.

Table 1: HP prevalence and eradication treatment background in adolescents with different duration of FD

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>(FD duration &lt; 1 year)</td>
<td>(FD duration 1-3 years)</td>
<td>(FD duration &gt; 3 years)</td>
<td></td>
</tr>
<tr>
<td>n=21</td>
<td>n=49</td>
<td>n=62</td>
<td>n=33</td>
</tr>
<tr>
<td>HP prevalence, %</td>
<td>71.4±5.6*</td>
<td>58.8±4.3</td>
<td>29.6±1.6</td>
</tr>
<tr>
<td>Eradication treatment-naive patients, %</td>
<td>75.1±4.2</td>
<td>42.6±2.3</td>
<td>6.2±0.4</td>
</tr>
</tbody>
</table>

*p<0.01 for the groups 1 and 3

Conclusions. HP-positive adolescents with a long duration of FD, and history of prior eradication treatments should be considered for HP antibiotic resistance testing to prevent eradication failure.
EMERGENCE OF PENICILLIN-NONSUSCEPTIBLE PNEUMOCOCCAL SEROTYPE 35B AMONG U.S. CHILDREN

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\textbf{Background:} Streptococcus pneumoniae serotype 35B is a nonvaccine serotype associated with high rates of penicillin-nonsusceptibility. Its prevalence has increased since the introduction of the pneumococcal conjugate 13-valent vaccine. We describe the epidemiology of serotype 35B in US children.

\textbf{Methods:} We identified patients with serotype 35B invasive pneumococcal disease (IPD) from 1994-2014 at 8 US children’s hospitals from our surveillance database. Pneumococcal isolates were collected prospectively. Serotyping and antibiotic susceptibility testing were performed at a central laboratory. Multidrug resistance (MDR) was defined as penicillin-nonsusceptibility (MIC $\geq$ 0.12 $\mu$g/ml) plus resistance to $\geq$2 non-β-lactam antimicrobials. Multilocus sequence typing was performed on 2008-2014 isolates. Descriptive statistics were used.

\textbf{Results:} We identified 76 serotype 35B cases (1994-2014); 54% occurred in 2010-2014. In 2014, the most common serotype was 35B, accounting for 14% of IPD cases. The median age was 19 months (IQR 8.4 -72.0). Thirty-five patients (46.1%) had an underlying condition. Bacteremia represented 43.4% of cases, meningitis 23.7%, pneumonia 10.5% and bone/joint infections 7.9%. 87% of isolates were penicillin-nonsusceptible and 14.6% had a penicillin MIC $\geq$2μg/ml. 17.1% of isolates were MDR. The most common genotype was ST558 (30/53; 56.6%), 17% of them were MDR. ST156 (associated with MDR vaccine serotypes like 9V) represented 11.3% of the isolates; 83.3% were MDR. ST156 was first observed in 2011.

Conclusions: Serotype 35B has emerged as the most common serotype causing IPD in 2014 in our study. High rates of penicillin-nonsusceptibility and MDR are concerning. Genotyping suggests capsular switching has occurred between vaccine serotypes and serotype 35B.
Objectives: To investigate changes in emm types and major virulence factors of Streptococcus pyogenes (group A streptococci, GAS) isolated from Chinese children.

Methods: We analyzed 392 GAS isolates from 1993–1994, 2005–2008, and 2011–2013. The isolates were assigned to emm types and then assayed for twelve superantigen genes, five DNase genes, the phospholipase A2 gene (sla) and fibronectin-binding protein genes.

Results: Twenty-three emm types were identified from the isolates, the most prevalent being emm12 (53.1%) and emm1 (28.1%). emm12 increased significantly over the three time periods (8.5% vs. 58.9% vs. 91.2%, P=0.000), while the emm12.0 subtype percentage decreased (100% vs. 89.9% vs. 48.1%, P=0.000) and emm12.19 increased (0% vs. 0.7% vs. 32.7%, P=0.000). emm1 displayed volatility across the three time periods (20.7% vs. 35.2% vs. 7.0%, P=0.000). Among the emm12 isolates, the carriage rates for speG and speK increased, while speA, speC, speJ, spd3, and fba decreased (P<0.05) during these periods. Among the emm1 isolates, speK increased and smeZ decreased (P<0.05). In the emm subtypes, the speK percentage in emm 12.19 was higher than the percentages of speH and speJ, while sda was lower than that of emm12.0 (P<0.05). There was no differences in the presence of erythromycin genes or resistance profiles of the two subtypes.

Conclusion: Over time, emm12 became the most prevalent emm type while the emm12 subtype changed significantly. Strains with same emm type had different virulence factor distributions over the study periods. The characteristics of the virulence factors in the emm12 subtypes differed.
THE GLOBAL ANTIBIOTIC RESISTANCE AND PRESCRIBING IN NEONATES AND PAEDIATRICS (GARPEC) NETWORK: A PILOT FEASIBILITY STUDY.

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2N/A, PENTA Foundation, Padua, Italy
3Paediatric Infectious Diseases, St George’s University, London, United Kingdom
4Paediatric Infectious Diseases, Children’s Hospital of Philadelphia, Philadelphia, USA

Introduction: Knowledge gaps about the global antimicrobial resistance (AMR) burden, particularly among neonates and children, must be addressed to formulate and monitor effective responses.

Methods: A pilot study evaluated the feasibility of global, web-based (REDCap) surveillance (GARPEC) for paediatric and neonatal blood stream infections (BSI) and AMR patterns. 12 hospitals from 10 countries across 6 WHO geographical regions provided data for all paediatric and neonatal BSIs over 1-2 months in 2015. Information on clinical guidelines, stewardship activities and microbiology laboratory services were recorded.

Results. Facilities ranged in size from 32-900 beds. All facilities used antibiotic treatment guidelines, ranging from in-house (n=10) to formal national or regional guidelines (n=7); 7 had paediatric antimicrobial stewardship programmes. The commonest stewardship strategy was education (n=6), and the least common pre-authorisation pathways (n=2) and antibiotic order forms (n=2). 142 BSI episodes with 147 isolates (Table 1) were recorded, 51 (35.9%) were in neonates. Empiric antibiotic choice was captured for 135 of the episodes. Combination therapy was used in 91 (67.4%). The commonest agents were 3rd generation cephalosporins (34%) and glycopeptides (30%) although usage differed across age groups.

Conclusion: This pilot demonstrates the feasibility of web-based neonatal and pediatric BSI and AMR surveillance data collection across a wide range of settings. Such efforts should be scaled up and harmonized to address critical gaps in knowledge.

<table>
<thead>
<tr>
<th>Organism</th>
<th>N (isolates)</th>
<th>Cumulative %</th>
<th>Resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Klebsiella spp.</td>
<td>35</td>
<td>24%</td>
<td>ESBL: 44%; carbapenem resistant: 20%</td>
</tr>
<tr>
<td>Staphylococcus aureus</td>
<td>34</td>
<td>47%</td>
<td>MRSA: 41%</td>
</tr>
<tr>
<td>Escherichia coli</td>
<td>17</td>
<td>59%</td>
<td>ESBL: 24%; carbapenem resistant: 0%</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>12</td>
<td>67%</td>
<td>Carbapenem resistant: 25%</td>
</tr>
<tr>
<td>Streptococcus pneumonia</td>
<td>8</td>
<td>72%</td>
<td>Penicillin non-susceptible: 13%</td>
</tr>
<tr>
<td>Enterococcus faecalis</td>
<td>7</td>
<td>77%</td>
<td>Vancomycin resistant: 0%</td>
</tr>
<tr>
<td>Acinetobacter baumannii</td>
<td>7</td>
<td>82%</td>
<td>Carbapenem resistant: 43%</td>
</tr>
<tr>
<td>Enterobacter spp.</td>
<td>7</td>
<td>86%</td>
<td>3rd generation cephalosporin resistant: 43%</td>
</tr>
</tbody>
</table>

Table 1: 9 most common pathogens isolated from neonatal and paediatric BSIs in the GARPEC 2015 pilot, representing 86% of all BSI isolates.
ESBL: extended spectrum beta lactamase
MRSA: methicillin resistant Staphylococcus aureus
GLOBAL ANTIMICROBIAL RESISTANCE, PRESCRIBING, AND EFFICACY IN NEONATES AND CHILDREN (GARPEC) NETWORK: POINT PREVALENCE SURVEY (PPS) OF ANTIMICROBIAL USE

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Background: Measuring the impact of global antimicrobial resistance (AMR) is an important step to determine the scope of the problem. Gaps in knowledge about the use of antimicrobials among hospitalized neonates and children worldwide must be addressed to inform the implementation and monitoring of effective stewardship activities. The GARPEC project aims to implement standardized web-based surveillance methods for antimicrobial use in hospitalized children and neonates worldwide with the overall goal of improving prescribing.

Methods: A one-day cross-sectional web-based (REDCap) pilot PPS of antimicrobial prescription was conducted over 2 months in 2015. Demographic and clinical data were collected, as well as information on drug, dose, and mode of administration for all active antimicrobial prescriptions among neonates and children on participating wards at 8am on the day of the PPS.

Results: 12 hospitals from 10 countries participated, covering all 6 WHO geographical regions. Antimicrobial use varied across countries and between children and neonates. Overall, the 3 most commonly prescribed antimicrobials were ceftriaxone (11.1%), amikacin (5.9%), and vancomycin (5.1%). Among neonates, gentamicin (10.7%), meropenem (10.7%), and nystatin (9.0%) were most often prescribed, while ceftriaxone (14.1%), amikacin (5.2%) and metronidazole (5.1%) were most commonly used among children (Table 1).

Conclusion: This pilot study demonstrates the feasibility of conducting global antimicrobial prescription surveillance among hospitalized children and neonates through a web-based system. The success of the pilot study should be built upon to establish a long-term sustainable global neonatal and paediatric hospital antimicrobial use surveillance network.

Table 1: Commonly prescribed antimicrobials among hospitalized neonates and children from the GARPEC 2015 pilot PPS.

<table>
<thead>
<tr>
<th>Antimicrobial</th>
<th>Overall prescriptions (n, %)</th>
<th>Neonatal prescriptions (n, %)</th>
<th>Pediatric prescriptions (n, %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceftriaxone</td>
<td>146 (11.1%)</td>
<td>2 (0.7%)</td>
<td>144 (14.1%)</td>
</tr>
<tr>
<td>Amikacin</td>
<td>78 (5.9%)</td>
<td>25 (8.7%)</td>
<td>53 (2.5%)</td>
</tr>
<tr>
<td>Vancomycin</td>
<td>08 (0.6%)</td>
<td>24 (8.3%)</td>
<td>44 (4.3%)</td>
</tr>
<tr>
<td>Gentamicin</td>
<td>62 (4.7%)</td>
<td>31 (10.7%)</td>
<td>31 (3.0%)</td>
</tr>
<tr>
<td>Meropenem</td>
<td>00 (0.3%)</td>
<td>31 (10.7%)</td>
<td>29 (2.8%)</td>
</tr>
<tr>
<td>Metronidazole</td>
<td>58 (4.4%)</td>
<td>0 (0.1%)</td>
<td>52 (5.1%)</td>
</tr>
<tr>
<td>Nystatin</td>
<td>31 (2.4%)</td>
<td>26 (9.0%)</td>
<td>5 (0.5%)</td>
</tr>
</tbody>
</table>
ORAL AMOXICILLIN VERSUS BENZYL PENICILLIN FOR INDRAWING PNEUMONIA IN KENYAN CHILDREN: A RANDOMIZED CONTROLLED NON-INFERIORITY TRIAL

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Background. Limited evidence of the effectiveness of oral amoxicillin for the treatment of indrawing childhood pneumonia in sub-Saharan Africa has hampered the adoption of World Health Organization case management guidelines.

Methods: We conducted an open-label, pragmatic randomized controlled noninferiority trial at 6 Kenyan hospitals. Eligible children aged 2–59 months were randomized to receive amoxicillin or benzyl penicillin and followed up for the primary outcome of treatment failure at 48 hours. A noninferiority margin of risk difference between amoxicillin and benzyl penicillin groups was prespecified at 7%. The trial was approved by the KEMRI National Ethical Review Committee and written informed consent was obtained from all participants prior to enrolment.

Results. We recruited 527 children. Treatment failure was observed in 20 of 260 (7.7%) and 21 of 261 (8.0%) of patients in the amoxicillin and benzyl penicillin arms, respectively (risk difference, −0.3% [95% confidence interval, −5.0% to 4.3%]) in per-protocol analyses. These findings were supported by the results of intention-to-treat analyses. Treatment failure by day 5 postenrollment was 11.4% and 11.0% and rising to 13.5% and 16.8% by day 14 in the amoxicillin vs benzyl penicillin groups, respectively. Four patients died (overall mortality 0.8%) during the study, 3 of whom were allocated to the benzyl penicillin group. The presence of wheeze was independently associated with less frequent treatment failure.

Conclusions. These findings confirm noninferiority of amoxicillin to benzyl penicillin, provide estimates of risk of treatment failure in Kenya, and offer important additional evidence for policy making in sub-Saharan Africa.
WSPID-0331
Pneumonia and pneumococcal vaccine

WOULD A MIXED 10-VALENT + 13-VALENT PNEUMOCOCCAL CONJUGATE VACCINATION SCHEDULE A COST-EFFECTIVE OPTIONS FOR ROUTINE IMMUNIZATION OF CHILDREN?

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Background: Evidence on the relative merits of 10-valent (PCV10) and 13-valent (PCV13) pneumococcal conjugate vaccines is accumulating, including data on a mixed schedule consisting of 2 or 3 primary infant PCV10 doses followed by a PCV13 toddler dose.

Aim and methods: To assess the potential of a mixed schedule, and extensive review of studies published in peer-reviewed journals or presented at scientific conferences was performed.

Results: PCV10 and PCV13 are effective to protect against invasive diseases caused by serotypes included in their formulation + cross protection against 6A, and against 19A for PCV10. PCV13 has the advantage to protect against serotypes 3 and 5, and also to induce herd protection against 19A and 5, not against 3 seemingly. An immunogenicity study in Central Europe showed that mixed 2+1 and 3+1 schedules induced functional antibody levels similar or even higher than PCV13 only schedules for the majority of serotypes tested. In a case-control study in Quebec, a mixed 2+1 schedule was found to be as effective as a PCV10 only or a PCV13 only schedule against invasive pneumococcal disease. In a clinical trial in the UK, pain scores were significantly higher in the PCV13 group compared to the PCV10 group. Although no precise marketing data are available, experience showed that PCV10 is usually offered at a lower price than PCV13 for tender purchase.

Conclusions: A mixed 2 PCV10 + 1 PCV13 schedule could be a cost-effective option in the context of a substantial difference in vaccine prices.
Background and aims  Pneumonia is a major killer; however, no data of its risk factors have been published from Afghanistan. Prevalence of pneumococcus, a common bacterial cause of pneumonia, and its serotypes are unknown. We aim to investigate the risk factors for child death due to pneumonia and pneumococcal serotype distribution in Afghanistan.

Methods  We enrolled 639 under-5 years children who fulfilled the World Health Organization (WHO) criteria for clinical pneumonia in Abu Ali Sina Balkhi Regional Hospital, Mazar-e-Sharif, Afghanistan. Institutional Review Boards of Nagasaki University and Balkh Public Health Department, Afghanistan approved this study. Informed written consent was taken from the parents.

Results  Case fatality rate of pneumonia was 12.1% (75/617) (95% CI: 9.6-14.9); most of deaths (81.3%) occurred in first day of hospitalization. Risk factors associated with death included malnutrition (Odds ratio, OR: 9.49; 95% CI: 2.71-33.07), age less than one month (OR: 11.1; 95% CI: 3.36-36.6), fever (>39°C) (OR: 7.31; 95% CI: 4.18-12.8), chest in-drawing (OR: 2.97; 95% CI 1.48-5.92), cyanosis (OR: 7.21; 95% CI: 3.78-13.7), and delayed capillary refill time (OR: 26.8; 95% CI: 9.42-76.4). Female sex was a risk factor (OR: 4.24, 95% CI: 1.40-12.8) for death among malnourished children. Pneumococcus was detected in 124/326 (38.0%) children sampled with 22 different serotypes/serogroups identified. The thirteen-valent conjugate vaccine (PCV13) covered 41.1% of the serotypes.

Conclusions  Early detection and treatment of serious pneumonia cases, and dietary interventions for malnutrition are urgently needed in Afghanistan. Low coverage of prevalent serotypes by PCV13 vaccine warrants further studies.
WSPID-0858
Pneumonia and pneumococcal vaccine

IMPROVISED STRATEGY FOR DETECTION AND TYPING OF S. PNEUMONIAE WITH SINGLE PCR SEQUENCING IN CULTURE NEGATIVE SERUM SAMPLES OF INDIAN CHILDREN
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Background and Aims

The identification and typing of S. pneumoniae gets hampered by the difficulties in growing the organism from clinical specimens. Conventional serotyping methods are expensive, time-consuming and not applicable for culture-negative specimens. Hence, there is a need to develop simple and cost effective method for the detection and typing of S. pneumoniae. The study aims to identify and serotype S. pneumoniae in culture negative serum samples by single PCR sequencing method.

Methods

Blood cultures were performed for 351 children diagnosed of invasive pneumococcal disease. Serum samples from these patients were subjected to PCR targeting 1Kb region of capsular polysaccharide synthesis locus. Positive samples were subsequently sequetyped by Sanger sequencing.

Results

Pneumococcal infection was positive in 28 (8%) children by blood culture and 112 (32%) by PCR. Quellung test identified Serogroup/types (SGTs) 1 (n=7), 14, 6B, 6A, 5, 10, 11A, 19F, 19A, 20, 9V (each n=2) 7F (n=1). Sequetyping of 112 PCR positive samples identified SGTs- 6B (n=14), 1, 14 (each n=12), 9N (n=10), 19F, 23F (each n=9), 9V (n=8), 5, 18C, 20 (each n=6), 3, 6A, 19A, 10F, (each n=4), 11A (n=2), 7F, 35C (each n=1). 100% correlation was found between quellung and sequetyping in culture positive samples. 21 strains were identified along with other homologous types.

Conclusion

With enhanced sensitivity, accuracy and speed of performance, single PCR sequencing strategy appears to be a robust tool for identification and typing of S. pneumoniae. However, the protocol needs to be standardized for discriminating homologous strains.
Background and aims: The aetiological diagnosis of infection by *Streptococcus pneumoniae* in children is difficult, and the use of indirect techniques is frequently warranted. We aimed to study the use of pneumococcal proteins for the serological diagnosis of pneumococcal infection in children with pneumonia.

Methods: We analysed paired serum samples from 13 children with invasive pneumococcal pneumonia (positive control group) and 23 children with pharyngitis (negative control group), all aged<5 years-old. Children with pharyngitis were evaluated for oropharyngeal colonisation, and none of them carried *S. pneumoniae*. We used a multiplex bead-based assay with eight proteins: Ply, CbpA, PspA1 and 2, PcpA, PhtD, StkP and PcsB. The optimal cut-off of antibody level increase for the diagnosis of pneumococcal infection was determined for each antigen by ROC curve analysis.

Results: The positive control group had a significantly higher rate of≥2-fold rise in antibody levels against all pneumococcal proteins, except Ply. The cut-off of≥2-fold increase in antibody levels was accurate for pneumococcal infection diagnosis for all investigated antigens. However, there was a substantial increase in the accuracy of the test with the use of a cut-off of≥1.52-fold rise in antibody levels for PcpA. When using the investigated protein antigens for the diagnosis of pneumococcal infection, the detection of response against at least one antigen was highly sensitive (92.31%) and specific (91.3%).

Conclusions: The use of serology with pneumococcal proteins is a promising method for the diagnosis of pneumococcal infection in children with pneumonia. The use of a≥2-fold increase cut-off is adequate for most pneumococcal proteins.
UPPER AIRWAY RESPIRATORY VIRUSES AND BACTERIA IN CHILDREN PRESENTING TO AN EMERGENCY DEPARTMENT IN A TEMPERATE CLIMATE WITH COUGH AS A SYMPTOM.

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⁵Department of Emergency Medicine, Queensland Children’s Health Services, South Brisbane, Australia

BACKGROUND & AIMS: We describe the point prevalence and seasonality of upper airway microbes detected in children presenting with cough as a symptom to a tertiary emergency department.

METHODS: A cohort study of children aged <15 years presenting to an emergency department with cough as a symptom. Anterior nasal swabs were collected at baseline and PCR tested for 7 bacteria and 17 viruses at the Queensland Paediatric Infectious Diseases laboratory.

RESULTS: Between December 2011 and August 2014, swabs were collected from 827 children; median age was 27.7 months (IQR 13.9 – 60.3), 498 (61%) were male. Bacteria were detected in 75.3% of children, commonly M. catarrhalis (53.4%), S. pneumoniae (46.5%) and H. influenzae (29.6%). Detection of ≥ 2 bacteria occurred in 43.7%. Detection of virus was lower; 60.4% positive for any virus, commonly human rhinovirus (18.5%) and respiratory syncytial virus (16.2%); ≥ 2 viruses were detected in 10.5%. 48.5% were both virus and bacteria positive. Figure 1 presents temporal trends; children with both bacteria and virus were more common in winter than other seasons (RR 1.67, 95%CI 1.12 – 2.47).

CONCLUSIONS: Bacteria were more commonly identified in the upper airways of children with cough than viruses however co-detection occurs in almost a half of children. How the multiplicity of microbes and their interactions relate to clinical outcomes remains to be defined.
Background:
Streptococcus Pneumoniae represents an important cause of morbidity and mortality. In January 2012, Argentine introduced PCV-13 to the National Immunization Program. The aim of this study was to calculate consolidated Pneumonia and pneumococcal disease incidence following PCV-13 routine vaccination.

Methods:
A population-based surveillance study was carried out in the 4 centers with X-ray equipment of Concordia. Between April 2014-March 2015 clinical data, vaccination status and digital chest X-rays were recorded from children under 5 years of age with pneumonia and pleural effusion. A pediatrician and a radiologist interpreted the digital images independently. Bacterial etiology was investigated in blood and/or in pleural fluid. Results were compared with previous data (2002-2005) from the pre-PCV-13 vaccination era.

Results:
148 patients under 5 years old with pneumonia were assisted during the study period. Of these, 30.4% had consolidated pneumonia (incidence: 36/10,000). This represents a significant reduction (50.7%) compared with previous data (73.2/10,000), RR:0.49 (IC95:0.34-0.67). Pleural effusion incidence was 2.6/10,000 (74.7% reduction compared with previous data 10.3/10000), RR:0.25 (IC95:0.18-0.35). Incidence of pneumococcal disease could not be estimated as pneumococcal isolation was negative in all cases.

Multivariate analysis of post-PCV-13 vaccination era showed that incidence of consolidated pneumonia was significantly lower in toddlers who received booster dose than in those with an incomplete schedule OR: 0.26 (0.09-0.72).

Conclusions:
A significant decline in consolidated pneumonia and pleural effusion incidence in <5 year old children was evidenced in Concordia after the introduction of PCV13 into national immunization program. We remark the importance of the booster dose for the success of the intervention.
EFFECTIVENESS OF 13-VALENT PNEUMOCOCCAL CONJUGATE VACCINE AND IMPACT OF PNEUMOCOCCAL VACCINATION PROGRAMMES IN EIGHT EUROPEAN COUNTRIES: RESULTS OF SPIDNET MULTICENTRE STUDIES

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Background and aim: SpIDnet conducts active population-based surveillance for invasive pneumococcal disease (IPD) in eight countries. By 2010, 10- and/or 13-valent pneumococcal vaccines (PCV10/13) replaced the seven-valent pneumococcal conjugate vaccine (PCV7). We measured the PCV13 effectiveness and the impact of PCV10/13 vaccination programmes on IPD in children <5 years.

Methods: To measure effectiveness, we compared the vaccination status of IPD due to vaccine serotypes (cases) to that of nonPCV13 IPD (controls) reported from January 2012 to December 2014. We calculated pooled effectiveness as (1-odds ratio)*100, adjusted for age, sex, underlying conditions, notification year and centre. To measure impact, we calculated incidence rate ratios (IRR) comparing additional PCV13 serotypes (PCV13non7) and nonPCV13 IPD incidences in each four years of the PCV10/13 period to the PCV7 period by centre. We calculated pooled IRR and 95% confidence intervals (CI) using random effect meta-analysis.

Results: Effectiveness of at least one dose PCV13 was 87.3% (95%CI: 77.5; 92.8) against PCV13 IPD (n=435) and 82.8% (95%CI: 67.8; 90.8) against PCV13non7 IPD (n=373). The pooled PCV13non7 IPD IRR was 0.72 (95%CI: 0.50; 1.05), 0.56 (95%CI: 0.39; 0.78), 0.38 (95%CI: 0.24; 0.58) and 0.30 (95%CI: 0.16; 0.54) for year 1-4, respectively. The pooled nonPCV13 IPD IRR was 1.14 (95%CI: 0.79; 1.65), 1.49 (95%CI: 0.97; 2.31), 1.67 (95%CI: 1.22; 2.28) and 1.62 (95%CI: 1.09; 2.42) for year 1-4, respectively.

Conclusions: PCV13 presented a high effectiveness. PCV13 serotype IPD incidence decreases while nonPCV13 incidence increases. SpIDnet continuation is essential to further monitor changes of non-PCV13 incidence under PCV13 use.
SEVERE AND FATAL PNEUMONIA IS PREVENTABLE WITH APPROPRIATE INTERVENTION

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The high number of childhood pneumonia deaths in the world is unknown, as most still occur outside the health system, in the poorest communities in the world. What is known is that, outside the neonatal age group, pneumonia remains the dominant cause of child death in settings with significant child mortality. The numbers may have dropped, but the problem remains huge. Prevention of severe and fatal pneumonia rests on improvements in the home environment, improved nutrition, immunization, and effective treatment of cases of pneumonia. Smoke, either from fuel used for cooking and heating, or from cigarettes smoked by adults, is a potent cause of childhood pneumonia. While interventions are in place to reduce pollution, many children continue to grow up in a smoky environment, and in some areas of the world this is growing steadily worse. Crowding is also an important risk factor, and recent data show how important bed sharing with another sick child can be. The most potent risk factor for pneumonia is malnutrition. Maternal factors lead to low birth weight, a form of malnutrition, while undernutrition or malnutrition during the first year of life render children susceptible to pneumonia. Vaccines to prevent measles and pertussis have certainly saved many children from pneumonia death, and over the past 15 years, vaccines against Haemophilus influenzae type b and Streptococcus pneumoniae have also prevented many cases. Whilst prevention of pneumonia is ideal, it is certain that for the foreseeable future children will continue to suffer from pneumonia. It is therefore vital for children to access effective pneumonia treatment as early as possible and to minimize the risk of progression to more severe pneumonia and death.
DENGUE VACCINE: ITS TIME HAS COME

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The uniqueness of the dengue viruses and the spectrum of disease resulting from infection have made dengue vaccine development difficult. Several vaccine candidates are currently being evaluated in clinical studies. The candidate currently at the most advanced clinical development stage, a live-attenuated tetravalent vaccine based on the chimeric yellow fever-dengue virus (CYD-TDV), has progressed to Phase 3 efficacy studies. Several other live-attenuated vaccines as well as subunit, DNA, and purified inactivated vaccine candidates are at earlier stages of clinical development. Additional technological approaches, such as virus-vectored and Virus-Like particles (VLP)-based vaccines are under evaluation in preclinical studies.

The burden borne by the health and medical resources of dengue affected countries is enormous and nowhere is the burden greater than in the South East Asia and the Western Pacific Regions of WHO where the incidence of dengue continues to increase. It is good news that a safe, effective dengue vaccine is on the horizon. While the stands to be a critically important achievement in the fight against dengue; we need to understand how to implement this new tool effectively which requires firm commitments from all dengue affected countries if the effective prevention and control of dengue are to be met.

The Asian Dengue Vaccination Advocacy (ADVA) is a dedicated scientific forum that aims to disseminate information and make recommendations about dengue vaccine introduction strategies in Asia. ADVA provides a common scientific advisory platform for cooperation and exchange among various stakeholders in Asia to promote dengue prevention with the key strategies for introduction of dengue vaccine and demonstrate the region’s commitment to tackling the disease.
The World Health Assembly (WHA), the annual meeting of the Ministers of Health of Member States of the World Health Organization (WHO), first committed to polio eradication when it adopted resolution 41.28 in 1988 calling for the worldwide eradication of the disease by forming Global polio eradication Initiative (GPEI). At this time more than 125 countries were endemic with the disease with more than 350,000 children paralyzed for life by polio each year. GPEI has reduced the global incidence of polio by more than 99% yet failed to eradicate polio even after twenty-five years of its efforts. Taking in to account of all Lessons learnt from past experience, a new strategy was implemented in 2013. The goal of this “Polio End game Strategy” is to complete the eradication and containment of all wild, vaccine-related and Sabin polioviruses, such that no child ever again suffers paralytic poliomyelitis in the world. Political instability, armed conflicts, disintegration of health systems and difficulties of access are still the same major obstacles to the success of this new strategy. Unpredictable behavior and spread of Vaccine Derived Polio Virus (VDPV) could be another potential threat especially among countries with a wide immunity gap and poor Vaccine coverage. Among other strategies, early withdrawal of oral polio at least in countries where there was no wild polio for many years could reduce the risk of developing Vaccine derived polio virus (VDPV).
EBOLA VIRUS DISEASES EPIDEMIC IN WEST AFRICA: SUCCESS AND FAILURE

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Background and aims: The current Ebola virus disease (EVD) epidemic in West Africa, started in December, 2013 in the village of Meliandou in Guinea and is the largest, most complex and most severe in history. The success and failure in the control is provided.

Methods: Literature from Pubmed, Google Scholar and World Health Organizations Updates.

Results: The EVD is caused by a novel variant of Zaire Ebolavirus species (EBOV, Zaire) named EBOV/Mak. The epidemic spread into cities in six West African countries -Guinea, Liberia, Sierra Leone, Senegal, Nigeria and Mali – affecting 27,084 West Africans and killing 11,156 as at 29 May, 2015. Community education on the spread of the disease, intensive search for all cases, establishing dedicated treatment centres and safe burial of those who died led to stopping the epidemics in Senegal, Mali and Nigeria within a short time. But, there were challenges in the remaining three West African countries.

Conclusions: Applying these strategies, the outbreak was declared over in Liberia on 9 May, 2015, and the situation appears to be nearing an end in Guinea and Sierra Leone.
ANTIBIOTIC TREATMENT OF MULTI RESISTANT BACTERIAL INFECTIONS

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According to the World Health Organization (WHO) antibiotic resistance is defined by resistance of a microorganism to an antimicrobial drug that was originally effective for treatment of infections caused by it. Bacterial resistance is present in all almost pediatric hospitals, including wards, neonatal intensive care unit (NICU) and pediatric intensive care unit (PICU).

In this setting, the main multidrug resistant Gram positive are: MRSA, S.pneumoniae resistant to penicillin and Enterococcus resistant to vancomycin. The main Gram negative resistant are: Enterobacteae (Escherichia coli, Klebsiella spo, Proteus mirabilis) Extended-spectrum β-lactamases (ESBL) producers, Carbapenem-resistant Pseudomonas aeruginosa and Carbapenem-resistant Acinetobacter baumannii. Other emergent resistant agents are Enterobacteae resistant to carbapenems or Colistin.

Several factors contributes to increase of resistance to common antibiotics in pediatric and newborns: misuse of antibiotics, including wrong dose, unnecessary time of use, equivocal indication, wrong interval of prescription, lack of governmental policies to restriction of use, lack of new antibiotics available.

Options to treat resistant Gram positive bacteria includes: Vancomycin, Daptomycin and Linezolide to MRSA, Clindamycin or Rifampin to Streptococcus resistant to penicillin, and Linezolide or Rifampin to Enterococcal species resistant to vancomycin. For Enterobacteae ESBL producing organisms options include Meropenem, Imipenem-cilastatin or ertapenem for urinary tract infections. Ciprofloxacin, Trimethoprim-sulfamethoxazole, Nitrofurantoin, Oral fosfomycin (for cystitis) and Aminoglycosides (for cystitis) are alternatives. For Carbapenem-resistant Pseudomonas aeruginosa options are prolonged infusion meropenem plus aminoglycoside or fluoroquinolone or colistin. For Carbapenem-resistant Acinetobacter baumannii the options are also prolonged infusion meropenem plus aminoglycoside or fluoroquinolone or colistin and for Carbapenem-resistant Enterobacteaeaceae the options are prolonged infusion meropenem plus aminoglycoside or fluoroquinolone or colistin. Alternative regimen include tygecicline and intravenous fosfomycin.
TREATMENT OF MALARIA IN THE ERA OF RESISTANCE. CURRENT TRENDS AND CHALLENGES

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Malaria remains one of the most devastating infectious diseases with approximately 207 million cases and more than 600,000 deaths each year, most of them among children under the age of 5 in sub-Saharan Africa. Of the five species of Plasmodium causing human infection, P. falciparum is responsible for the vast majority of the mortality and morbidity associated with the illness. WHO-recommended Artemisinin based combination therapies or ACTs, introduced in the 1990s, are the most effective drugs we have ever had to treat malaria. However, there is serious concern that malaria parasites are developing widespread resistance to this vital treatment. One important factor is thought to be the use of oral artemisinins as a monotherapy in place of ACTs, and failure to complete such treatment. Other contributing factors are the use of substandard and counterfeit anti-malarial drugs and the difficulty of controlling malaria within migrant populations. Selection pressure - genetic mutations of wild-type genes in the parasite render them insusceptible to antimalarial drug treatment – is also thought to be important. Malaria drug resistance to the widely used ACTs is firmly established in Western Cambodia, Thailand, Vietnam, Eastern Myanmar and Northern Cambodia, with signs of resistance emerging in Central Myanmar, Southern Laos and Northeastern Cambodia. Containing antimalarial drug resistance in Southeast Asia – and preventing the spread of resistance through Asia to Africa and beyond – has become a global public health priority. In regions such as Southeast Asia, where malaria transmission is relatively low, containment programs aim to accelerate the elimination of P. falciparum parasites by identifying and treating to cure all cases of malaria, as a way to stop the spread of resistance entirely. In areas where there is high malaria transmission, decreasing the risk of a spread of resistance is possible through an increase in malaria control efforts. Efforts to define further the social and economic conditions that contribute to the spread of malaria and promote antimalarial resistance, including the marketing of monotherapies and counterfeit drugs, are essential steps for preventing artemisinin-based drugs from following the path of chloroquine. In face of the repeated history of drug development followed by the emergence of resistance, it is also critical that investments continue to be made in the development and production of new generations of antimalarial therapies. Although chloroquine remains the go-to treatment for P. vivax, this strategy is now under threat from the emergence and spread of chloroquine resistant strains. P. vivax has also developed drug resistance to sulfadoxine-pyrimethamine (SP) and potentially other antimalarial drugs such as mefloquine. However, because it is difficult to diagnose resistant strains, strategies to detect and track drug resistant P. vivax are limited. Continuous monitoring of drug resistance in malaria-endemic countries along with research into the various contributing factors will enable health authorities and practitioners to more effectively prevent drug resistance from spreading.
Tuberculosis (TB) in children has some particularities that make laboratory diagnosis more difficult than in adults. The disease is usually paucibacillary and respiratory samples are difficult to obtain.

Tuberculin skin test (TST) is usually used to detect *Mycobacterium tuberculosis* infection and decision on whether the patient has latent TB infection (LTBI) or active disease depends on the presence of clinical and radiological findings. Limited specificity (due to prior BCG immunization or nontuberculous mycobacteria infection) and false negative results in patients with immunosuppressive conditions contribute to the assay limitations.

The availability of interferon-gamma release assays (IGRA) in the turning of the century provided medical doctors with a diagnostic tool with greater specificity than TST. However, poor performance in immunodeficient patients and in the extremes of age are still cause for concern.

In Brazil, a country with a moderate prevalence of TB, the rate of infection was recently shown to be 69.5% for immunocompetent children and adolescents exposed to adults with active pulmonary tuberculosis. Agreement between the TST and IGRA was 83.1% in those TB exposed children and adolescents, suggesting a comparable performance of TST and IGRA.

Whereas molecular assays have brought hope of a faster and with greater sensitivity and specificity test for adult patients (>90%), pediatric patients still have smaller sensitivity, 75%.

To conclude, TB diagnosis is still challenging in all countries. The availability of immunological and molecular assays represent diagnostic tools that might add to but not necessarily solve the difficult clinical situations when investigating TB in pediatric patients. Meanwhile, pediatricians should decide on the better approach for each situation, taking into consideration available assays and the risk of treating or not that specific patient.
Tuberculosis (TB) remains a substantial cause of morbidity and mortality in children globally, with the World Health Organization estimating 550,000 incident TB cases in children, and 80,000 deaths from TB in HIV-uninfected children globally in 2013. Multidrug-resistant (MDR)-TB is a growing problem in both adults and children that threatens global TB control. Data in the last decade has identified that the traditionally recommended paediatric doses of the first-line TB drugs resulted in lower drug exposures in children than in adults. The growing number of children requiring treatment for MDR-TB has highlighted the lack of pharmacokinetics and safety data for the second-line TB drugs in children. Along with the recent conditional approval of two new TB drugs, these developments have catalyzed interest in optimizing the treatment of TB in children. This presentation will discuss the challenges involved in evaluating TB drugs in children, and will present an approach to doing so in the context of the rapidly evolving landscape of novel TB drugs, novel regimens and emerging treatment strategies for both drug-susceptible and drug-resistant TB. Recent updates to the recommended dosing of the traditional first-line TB drugs and ongoing work on optimizing the first line drugs will be reviewed. Emerging data on the PK and safety of secondline TB drugs, and planned work on optimizing the doses of key secondline agents, will be presented. Finally, planned TB treatment trials in children and priority issues for future work will be highlighted.
Drug resistant tuberculosis (DR-TB) is an emerging threat to global health. According to the most recent WHO estimate during the year 2013 there were 480,000 new multidrug resistant (MDR) TB cases and about 210,000 deaths. The exact number of children with DR-TB is unknown because bacteriological confirmation and drug susceptibility testing (DST) results are usually not available since childhood TB is a paucibacillary disease. It was recently estimated that in 2010 there were 32,000 MDR cases among children. Outcome of childhood MDR TB is favorable with successful treatment reported in >80% of the patients. Physicians should not hesitate to treat children for DR TB even when DST results are not available if there is a history of contact with an adult DR-TB case or when treatment with first-line drugs fails. The development and widespread use of new molecular tests may facilitate bacteriological diagnosis of TB and drug resistance in adults and children. Children with MDR TB should be treated with at least four first and second line drugs to which the strain is susceptible. Treatment must be given daily under direct observation and duration is at least 18 months although 12-15 months may be adequate when disease is not extensive. Nutrient and vitamin supplementation and infection control measures are important parts of patient management. Adverse effects to second line drugs are common and close monitoring is required. Pharmacokinetic data of second-line TB drugs in children are scarce and there is a lack of child-friendly formulations. There is a need for further research to establish optimal dosing, shorter and fully oral regimens and investigate the use of new TB drugs in children.
Respiratory tract infections are a major global health concern, accounting for high morbidity and mortality, especially in young children and elderly individuals. Traditionally, it is thought that bacterial respiratory tract infections, including otitis media and pneumonia, are caused by a limited number of pathogens like S. pneumoniae, S. aureus and H. influenzae. However, the importance of the upper respiratory tract (URT) microbiota in respiratory health has become more apparent over the last years. Analogous to the gut microbiome, the respiratory microbiome at equilibrium is thought to be beneficial to the host by priming the immune system and providing colonization resistance, while an imbalanced ecosystem might predispose to bacterial overgrowth and development of respiratory diseases.

Recently, we and others have obtained evidence for the existence of different respiratory microbiota profiles, that are related to environmental drivers, to stability of microbiota and health characteristics over time. In this lecture I will present the latest evidence from our infant cohort studies on development of respiratory microbiota in infancy in relation to environment, health and respiratory diseases. Moreover, I will provide new information on how the respiratory microbiota may modulate the host response to acute viral infections.
MATERNAL VACCINATION FOR PREVENTION OF PERTUSSIS IN YOUNG INFANTS: OPPORTUNITIES AND CHALLENGES
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Bordetella pertussis infections pose the greatest risk to infants and young children prior to receipt of their first dose of pertussis vaccine. One potential way to prevent or modify infant disease is to immunize the pregnant mother to prevent both maternal disease and to deliver transplacental antibody to her infant. Efficient transplacental transmission of pertussis antibody has been documented. Recent large scale immunization programs have shown that maternal immunization is highly effective in preventing infant pertussis disease, while documenting vaccine safety in both the pregnant woman and infant. However, data indicate that the presence of maternal antibody can interfere with infant responses to primary immunization with pertussis and other vaccines. In addition, maternal antibody levels after immunization wane rapidly. The Advisory Committee for Immunization Practices at the Centers for Disease Control and Prevention in the United States has recommended pertussis vaccination of all pregnant women with each pregnancy to reduce the burden of pertussis disease in infants. This is being implemented with moderate success. Vaccine safety is being documented in pregnant women after repeated pertussis vaccinations. A number of other countries have implemented similar approaches or are considering them. It is hoped that this approach will control pertussis disease and reduce pertussis associated mortality in infants.
Pneumonia is the leading cause of death in children. Pneumonia mortality increases exponentially as infant mortality rises, so impacting on pneumonia deaths is an important lever to reduce infant deaths. While access to antibiotics is life saving, prevention of pneumonia deaths with vaccines has become a reality in the past 3 decades and particularly in the last decade in developing countries. The rollout of Hib and pneumococcal conjugate vaccine (PCV) has been a great public health success story of the new millennium. Not only do these vaccines prevent death from pneumonia in immunized infants, but unimmunized infants can be protected by the vaccine impact on carriage, which can lead to the virtual elimination of the strains included in the vaccine. The major constraint to vaccination is cost, and new strategies focused on maintenance of herd protection, rather than individual protection, may further reduce the cost of these vaccines. A further challenge remains in the prevention of neonatal pneumonia and here there is significant promise in the development of maternal immunization strategies to protect newborns from diseases such as RSV, pertussis and sepsis due to group B streptococci.
BURDEN OF BACTERIAL AND VIRAL MENINGITIS

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Meningitis is an important cause of morbidity and mortality especially in children worldwide. With an incidence of 12/100000/year, viral meningitis is almost threefold as frequent as the bacterial meningitis. Despite improvement of general management, antibiotic therapy especially in bacterial meningitis and increasing availability of vaccines, meningitis is still associated with a significant burden of sequelae. Treatment options to improve long-term outcome are warranted. The mechanisms leading to central nervous system inflammation involve different pathogens as bacteria and viruses as well as immune cells. The cerebral injury that occurs in meningitis is largely due to a host-mediated inflammatory response. This process is triggered on the one hand by the direct effect of toxins and other virulence factors and on the other hand by epithelial, endothelial, neuronal and inflammatory cells. An overview of the burden of bacterial and viral meningitis will be given.
IS MEASLES ERADICATION FAILING?

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Following the stunning success of the global small pox eradication program, idealistic epidemiologists began to look for the next global eradication target. Throughout the 1980s the prospect of polio eradication was debated, with the potential for eradication pushed hard by Latin American health leaders, who had implemented a continent-wide program to control and eliminate polio, with a strategy based on campaigns. In 1988 WHO finally relented and passed a resolution pledging to eradicate polio by the year 2000. The 1990s saw a massive effort to eradicate polio consuming most of WHO resources in many of the most difficult countries, although it was obvious to many involved that the 2000 goal was going to be impossible. Throughout that period there was much debate about the next eradication target, with measles the chosen candidate. The morbidity and mortality due to measles was known to be enormous, despite the efforts of the anti-vaccine lobby to portray the disease as trivial. Although many argued that better vaccines would be needed, the WHO position was that new measles vaccines were not needed, but a strategy based on 2 doses for every child, supplemented by periodic campaigns, would be sufficient. As polio eradication dragged on, with escalating costs, measles eradication was pushed into the future. Now, 15 years after the polio target was passes, measles continues to re-emerge with outbreaks around the world emphasizing just how difficult measles eradication will be. It is time for a realistic assessment of its feasibility.
Cardiovascular and metabolic diseases are the leading causes of mortality and morbidity worldwide and their incidence is increasing. Previously considered as diseases of adults that could largely be explained by traditional risk factors, they are increasingly conceptualised as developing sub-clinically from early life onwards. Inflammation is a central to pathogenesis, but the drivers of early life inflammation - including infection - have received relatively little attention. This presentation will review the emerging evidence that early life and childhood infection and inflammation may influence cardiometabolic risk trajectories and therefore provide a largely over-looked opportunity for primordial and primary prevention.
Acute viral respiratory infections are the most common illnesses experienced by people of all ages worldwide. Molecular techniques have increased virus detection. However, most studies are hospital-based. Moreover, recent community studies used highly-selected subject populations, lacked suitable controls, had restricted sampling frequencies and observation periods, small subject numbers, a limited spectrum of virus testing and had research personnel collecting respiratory specimens.

The Observational Research in Childhood Infectious Diseases (ORChID) project is a dynamic birth cohort study to determine the: (i) population-based epidemiology and disease burden of acute respiratory illnesses in young Australian children; (ii) relative pathogenicity of novel and established viruses associated with respiratory illnesses; and (iii) shedding kinetics of respiratory viruses.

Between 2010 and 2012, 158 unselected women were recruited antenatally and for the next 2 years their newborn babies followed until 18-24 months of age. Parents kept a daily symptom diary, generating 88,032 child-days of observation (76.3% of expected), including 20,645 (23.5%) child-days of respiratory symptoms during 1,652 acute respiratory (1370 upper; 282 lower) illness episodes. Parents collected 11,218 (68.0% of expected) weekly nasal swabs, which were mailed into the laboratory and tested for 17 viruses. Overall, 3,015 (26.9%) swabs tested positive for respiratory viruses (286/3015, 9.5%, ≥2 viruses), with 919/1315 (69.9%) upper and 217/280 (77.5%) lower respiratory illnesses respectively. Rhinoviruses predominated, accounting for 2,339 (79.6%) positive swabs and affecting 148 subjects (94%) at least once.

The epidemiology and burden of acute respiratory illnesses in young children, the nature and distribution of the 17 respiratory viruses, their attributable risk for respiratory symptoms, and preliminary sequence data for determining the cause of prolonged rhinovirus shedding will be presented and research opportunities utilising this rich data set and biobank outlined.
Aim
To investigate the feasibility of incorporating targeted salivary cCMV testing within the Universal Newborn Hearing Screening (UNHS) program in Queensland following a ‘refer’ result on the newborn hearing screen. The aim is to ensure a CMV pathology result within 21 days, with treatment commenced, if required, within 28 days in >90% tested.

Methods
In three Queensland maternity hospitals in Brisbane and Townsville (18 200 births/year) infants ‘referred’ after UNHS are offered a salivary swab for CMV PCR at the point of referral to audiological services. Informed written consent and swab is taken by the hearing screener. Parents of babies with a positive CMV PCR are notified, babies medically assessed, and where appropriate, offered treatment.

Results
Initial modelling on numbers of children with SNHL identified from UNHS suggested 3-5 babies per year might be detected. Over 13 months, 168 babies were eligible, 149 screened, 14 declined, 4 missed, and 1 not recruited. The mean age at salivary swab was 5 days, with 1 infant swabbed on day 24 outside protocol. Pathology results received within 2 days and family and GP’s notified within 2 days. 147/149 were CMV negative, 2 positive (1 false-positive). A CMV swab was taken and a result known within 21 days of life in 100% of eligible infants. Two babies outside the study area had SNHL diagnosed through UHNS and were subsequently identified with otherwise asymptomatic cCMV at 3 and 4 months old respectively.

Conclusion
Incorporating targeted salivary CMV testing within the UNHS program in Queensland is feasible. The number detected is small and may suggest that the rate of cCMV in this population is lower than expected. Targeted treatment can be delivered where required.
TREATMENT OF INFANTS AND CHILDREN WITH ART - WHAT HAVE WE LEARNT?
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Background: 88% of the 2.6 million HIV-infected children reside in sub-Saharan Africa (sSA). In recent years, WHO has overhauled their treatment guidelines and the proportion of children accessing ART has more than doubled globally. However, only 30% of HIV-infected children in sSA were treated with ART in 2014.

Aim: To explore the response of children treated with ART in sSA.

Results: A South African study of >6000 children documented virological suppression in at least 80% throughout the first 36 months of ART. Cumulative mortality in southern Africa during the first 12 months of ART was 8.7%. Furthermore, the 3-year probability of virological failure was 19.3%. Community adherence support significantly improved patient retention, shown in a cohort study. Growth response was studied in >17000 children. While height-for-age improved throughout the first 3 years of ART, initial significant gains in weight-for-age and weight-for-height reversed during the 2nd & 3rd years. HIV-infected children in rural settings are vulnerable, exhibiting sub-optimal ART outcomes. ART reduces the risk of tuberculosis by 49–85% and high rates of bacteraemia during the first 3 months of ART declines thereafter more than 20-fold. The Mississippi baby centred attention on young infants. An analysis of >30000 children showed that relatively few infants start ART, increasing from 12% of all children initiated on ART in 2005 to 19% in 2010. A more recent analysis of ≈5000 infants starting ART at a median age of 5.9 months showed that >85% had advanced disease. The 3-year mortality probability of 16% and LTFU of 29% suggested that the starting age was too high.

Conclusion: Research is ongoing and includes evaluating the cancer risk of children treated with ART.
POSTER PRESENTATIONS
In 2010, Brazil introduced PCV10 in the National Immunization Program for children up to 2 years-old. The aim of this study was to evaluate the effect of PCV10 introduction in Streptococcus pneumoniae serotype 19A (Spn19A) isolated from invasive pneumococcal disease (IPD). All Spn19A isolates (1 per IPD) from the IAL-SP database corresponding to the period 2005-2009 (pre-PCV10, n=119) and 2011-2013 (post-PCV10, n=131) were tested for antimicrobial resistance (CLSI, 2012). Among the total of 250 Spn19A isolates, 139 (55.6%) were submitted to Multi Locus Sequence Type (MLST), comprising...

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VIRAL AETIOLOGY BY MEANS OF PCR IN CHILDREN WITH ASEPTIC MENINGITIS

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Background: Knowledge of the viral causes of the meningitis may improve clinical management and provide important information to guide public health interventions. We aimed to determine the viral aetiology in children with aseptic meningitis.

Methods: From January 2011 to December 2014, a total of 204 patients aged ≤ 12 years presenting acute symptoms and/or signs of presumed meningitis were selected from patients attending in Pediatric Emergency Unit of University Hospital. According to the cerebrospinal fluid (CSF) analysis, 137/204 (67%) patients with aseptic meningitis documented by pleocytosis with mononuclear cell predominance and negative Gram stain/bacterial culture, were eligible to the study. All CSF specimens were submitted to Polymerase Chain Reaction (PCR) to determine the viral aetiology.

Results: Among 137 children with age from 2 months to 12 years (median=4 years), viral etiology was defined in 55/137 (40%). Enterovirus was detected in 46 children (83.6%). Figure 1. The majority of cases occurred in younger children between 1 to 4 years and in this age group, 31 (67.4%) were male (Figure 2).

Conclusions: As shown in previous studies, enteroviruses were the most prevalent cause of the viral meningitis in younger children. Despite of improvement in the diagnosis by CFS PCR, the aetiology of up to 50% of aseptic meningitis remained unknown.
EPIDEMIOLOGY OF INFECTION AMONG CHILDREN WITH CANCER AND FEVER AND NEUTROPENIA IN A PEDIATRIC HOSPITAL IN MEXICO CITY

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Infections are major causes of morbidity and mortality in pediatric cancer patients. Epidemiology of infection among these patients varies by region, especially between high-income and low-income countries. We aimed to describe the epidemiology of fever and neutropenia (FN) episodes among children with cancer at our hospital.

Methods

Our eligible population included patients aged <18 years receiving cancer-directed therapy who were admitted to Hospital Infantil de Mexico Federico Gomez with FN (single oral temperature >38.0°C and an absolute neutrophil count <500/uL) between July 2014 and March 2015. We prospectively collected data from records. Descriptive statistics were used to report the findings.

Results

A total of 239 FN episodes were documented in 150 patients. Mean age was 7 years and 51% were male. Most episodes (63%) occurred in patients with hematological malignancies. The most frequent diagnoses were: fever of unknown origin (74%) septic shock (5%), and pneumonia (4%). 5 patients died. Etiology was identified in 56 cases, 33 of them were isolated in cultures. Most common bacterium were: E. coli (10), P. aeruginosa (5) and S. viridans (4). Clostridium spp. toxin A and B were positive in 7 patients. Among 30 patients with suspicion of viral respiratory tract infection,16 RT-PCR were positive, with rhinovirus presented in 11 patients.

Conclusion

The majority of cancer patients with febrile illnesses survive in our hospital. Diagnoses are made predominantly through clinical findings. Etiology is infrequently determined. Efforts should be directed towards improving blood culture technique and microbiology technology to better inform therapeutic decisions.
A LONGITUDINAL STUDY OF NASAL BACTERIAL COLONISATION, INCLUDING STREPTOCOCCUS PNEUMONIAE, IN A COHORT OF INFANTS AND THEIR MOTHERS, FROM SOUTH INDIA.

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Pneumococcal disease and its prevention can only be understood in the context of epidemiological data on colonization of the nasopharynx. This is complex, involving many serotypes and unencapsulated strains, and affected by numerous factors including other bacterial species, respiratory viral illnesses, crowding, breast feeding, immunization, smoke exposure and antibiotic use.

Surveillance of colonization can provide data on serotypes prevalent in a community, essential with the introduction and anticipated increasing use of Pneumococcal Conjugate Vaccines (PCV). Using standardised sampling and culture protocols will permit comparison with studies from other regions and will permit use of newer molecular techniques.

We have enrolled 180 mother infant dyads and have taken nasopharyngeal swabs (NPS) monthly from mother and baby. IRB approval was obtained from CMC Vellore. Swabs are stored frozen in skim milk, tryptone, glucose, glycerol enrichment medium (STGG). Such samples are suitable for analysis by culture, serotyping and for future molecular detection (by PCR, microarray and microbiomic 16S rRNA gene sequencing) of Streptococcus pneumoniae, other bacterial species and respiratory viruses.

Undertaking a longitudinal study in an infant cohort will provide much greater depth of information than cross sectional surveys, on the natural history of colonisation, including acquisition rates, duration and mother-child transmission data, strengthened by some clinical data. (199 words)

We present some results below:

Graph 1: Number of samples available from mothers and babies.

Figure 2: Number of isolates from NP swabs taken from babies.

Figure 3: Number of isolates from NP swabs taken from mothers.
PREVALENCE AND FACTORS ASSOCIATED WITH NEISSERIA MENINGITIDIS CARRIAGE

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Background and aims: Although Neisseria meningitidis typically colonizes humans asymptptomatically, it has the potential to invade the pharyngeal mucosa causing fatal disease. The proportion of meningococcal carriers in a population is age dependent; adolescents and young adults having the highest prevalence. Therefore, they are the main source for spread of the agent to young children and infants. The aims of this study were to estimate the prevalence of N. meningitidis carrier among adolescent and to identify factors associated with carriage.

Methods: Between September and December 2014, we performed a cross-sectional carriage study in a random sample of 1,200 students, 11-19 years of age, attending 138 public schools in the city of Salvador, Brazil. Oropharyngeal swabs were collected and N. meningitidis was identified by culture and PCR.

Results: The overall prevalence of N. meningitidis carriage was 5.1% (95% CI 4.0-6.0). There was no difference in the prevalence by age group. Of the colonized participants, 57.4% carried a non-groupable N. meningitidis, while 13.1% carried serogroup B, 9.8% serogroup E, 8.2% serogroup Y, and 3.3% carried serogroups C, W or Z. The prevalence of N. meningitidis was 1.57 (0.93 – 2.69) greater in adolescents who reported household exposure to smoking, compared to those who did not, and 1.59 (0.97 – 2.61) greater among those who reported visiting pubs or discos in the previous month compared to those who did not.

Conclusions: This study provides estimates of carriage prevalence in Brazilian adolescents which have important implications to optimize the Brazilian meningococcal vaccination program.
Background and aims:

Global measles elimination requires ongoing surveillance to monitor cases and evaluate control measures. Although China has not yet achieved measles elimination, they hope to achieve this goal by 2020. Elimination of endemic measles transmission in China will require a better characterization of risk factors for acquisition in order to inform future vaccination and programmatic activities. In this paper, we examine trends in measles epidemiology in Tianjin, China from 2005-2014.

Methods:

This study describes measles cases reported to the Tianjin CDC from 2005 to 2014, and compares demographic characteristics of measles cases to non-cases.

Results:

Measles cases ranged from 0-84 years. Nearly one-quarter of all measles cases (24%) occurred in infants (<1 year). Children 1 to 18 years comprised 21.6% of the cases while adults accounted for more than half (54.3%). Over the ten year study period, adults made up an increasingly higher proportion of cases.

Countrywide Supplementary Immunization Activities (SIAs) were followed by significant, but short-lived, reductions in measles cases in the succeeding year with cases rebounding to pre-SIA or even greater levels within 3 years.

Conclusions:

Measles continues to be characterized by endemic transmission in China. Over the last decade, measles cases in children have decreased following repeat SIAs but the overall burden of disease in infants and adults has increased. Continued use of disease surveillance programs to detect and characterize cases in order to guide effective interventions will be necessary if Tianjin is to realize the goal of measles elimination.
MEASLES IMMUNITY AND ILLNESS IN TIANJIN, CHINA
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**Background and aims:**

Interrupting measles transmission requires herd immunity of approximately 95%. Many studies report vaccination coverage rather than population-level susceptibility when characterizing herd immunity although the latter is more informative to assess control efforts. We examine the incidence of measles and prevalence of measles antibodies in persons from Tianjin, China.

**Methods:**

From 2011-2015, we collected blood spots for measles testing from a population-based sample of 2818 people, including 1200 people age 1-49 and 809 mother-infant pairs in Tianjin, China. We compare measles serological results to cases from the disease surveillance system during that time.

**Results:**

Overall, 72.8% of the sample tested positive for measles IgG antibodies. Most children 1-9 years (97.5%) tested IgG positive; the lowest levels of IgG positive occurred in infants (37%) and individuals 30-39 years (81%). Vaccination-ineligible infants under 8 months had 16.9\% IgG positive (Figure 1) and were the group with the greatest burden of disease (15.1\% of cases).

![Image of bar chart showing measles serological results and disease cases.](image)

**Conclusions:**

Children over 1 year of age in Tianjin have high levels of herd immunity against measles. Infants and adults 30-39 years accounted for the majority of cases and have levels of herd immunity below thresholds required to interrupt measles transmission. China needs to both increase herd immunity against measles in adults while also preventing vaccine-ineligible infants from acquiring disease to realize national measles elimination.
SEROPREVALENCE OF HEPATITIS A IN MEXICAN INDIVIDUALS AGED 10 TO 25 YEARS: RESULTS FROM THE NATIONAL HEALTH AND NUTRITION SURVEY (ENSANUT) 2012

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2Vaccines, GlaxoSmithKline, Mexico, Mexico

Background and aims: Hepatitis A (HA) is a persistent public health problem in medium and low resource settings prevented by improved sanitation and vaccination. In Mexico, reported incidence (15.45 to 19.07 per 100,000 inhabitants) has been mostly related to outbreaks. The Mexican national immunization program does not include the HA vaccine. This study aimed to estimate the seroprevalence of antibodies to HA among adolescents and young adults.

Methods: The ENSANUT 2012 is a probabilistic, multi-stage, stratified, cluster household survey conducted by INSP from October 2011 to June 2012. The present analysis encompasses an age-stratified random sample of 1,557 individuals aged 10 to 25 years. IgG antibodies against HA virus were measured by chemiluminescent microparticle immunoassay (ARCHITECT® System HAVAb-IgG, Abbott) to estimate crude and age group-specific seroprevalence of HAV antibodies.

Results. Of 1,557 individuals, 1,098 (65.3%; 95%CI: 61.7–68.7%) tested positive: 53.7% (95%CI: 48.3–59.08%) in 592 children aged 10–14 years; 61.0% (95% CI: 54.0–67.6%) in 495 individuals aged 15–19 years; and 82.6% (95% CI 76.0 – 87.7%) in 470 individuals aged 20–25 years. Older age (odds ratio [OR] 4.0) autochthonous origin (OR 15.1), rural residence (OR 2.4) and low socioeconomic level (OR 4.3) were associated to seropositivity.

Conclusions. Mexico still presents intermediate seroprevalence to HA, with median age at HA seroconversion below 10 years. Further assessment of the determinants of infection and opportunities for prevention would inform policy design.

Disclosure: This study was funded by the Mexican Secretariat of Health and by GlaxoSmithKline Biologicals SA.
SEROPREVALENCE OF HEPATITIS B IN MEXICAN INDIVIDUALS AGED 10 TO 25 YEARS: RESULTS FROM THE NATIONAL HEALTH AND NUTRITION SURVEY (ENSANUT) 2012.

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Background and aims: Hepatitis B (HB) virus may cause chronic infection that can have severe consequences, including cirrhosis and liver cancer. Mexico established universal vaccination for HB in 1999. This study aims to estimate the seroprevalence of markers of HB among adolescents and young adults in Mexico.

Methods: The ENSANUT 2012 was a probabilistic, multi-stage, stratified, cluster household survey conducted by Instituto Nacional de Salud Pública from October 2011 to June 2012. The present analysis encompasses an age-stratified random sample of 1,557 individuals, aged 10 to 25 years. HB surface antigen and IgG antibodies against HB surface and core antigens were measured by chemiluminescent microparticle immunoassay (ARCHITECT® System; Anti-HBs, Anti-HBcII, and HBsAg, Abbott). Serostatus groups were defined according to the US Centers of Disease Control and Prevention criteria. The association of susceptibility with age was inferred by simple logistic regression.

Results. Number and proportion of individuals by serostatus are shown in the table. There were no individuals classified as chronically infected. Individuals aged 20 to 25 years were more likely to be susceptible (odds ratio [OR] 3.6; 95%CI: 2.6–5.0) than younger individuals.

<table>
<thead>
<tr>
<th>Age, years</th>
<th>Number (%) of Individuals by hepatitis B Serostatus</th>
<th>Mean (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Susceptible</td>
<td>Immune by vaccination</td>
</tr>
<tr>
<td>10 to 14</td>
<td>270</td>
<td>46.6</td>
</tr>
<tr>
<td>15 to 19</td>
<td>262</td>
<td>57.2</td>
</tr>
<tr>
<td>20 to 25</td>
<td>363</td>
<td>73.5</td>
</tr>
<tr>
<td>Total</td>
<td>895</td>
<td>58.1</td>
</tr>
</tbody>
</table>

Conclusions. Despite the National Immunization Program in Mexico recommending HB vaccine at birth and at 12 years of age in unvaccinated adolescents, almost half of adolescents 15 to 19 years are susceptible to HB infection.

Disclosure: This study was funded by the Mexican Secretariat of Health and by GlaxoSmithKline Biologicals SA.
COST-EFFECTIVENESS EVALUATION OF ALTERNATIVE MENINGOCOCCAL ACWY CONJUGATE (MENACWY-TT) VACCINATION IN BRAZIL


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Background and aims: Neisseria meningitidis causes life-threatening cases of invasive meningococcal disease (IMD). In Brazil, the current MenC vaccination (CV) program is implemented for infants (3, 5, 12 months of age) since 2010. This study modelled the cost-effectiveness of a vaccination schedule including MenACWY-TT. The effect of a potential increase in serogroup W IMD incidence (Wcases), as observed in Chile between 2010 and 2012, was investigated.

Methods:
A population static model reproduced annual epidemiologic IMD patterns over a 100-year time horizon, from reported Brazilian IMD incidence. Vaccination effectiveness was based on estimated vaccine efficacy, duration of protection, reported Brazilian IMD serogroup and age distribution, and expected vaccination coverage. Lifetime costs and quality-adjusted life-years (QALYs) lost were assigned to each model IMD for CV and a proposed schedule, substituting, in the CV, the 12 month vaccine by MenACWY-TT (BoosterV). A vaccine price of R$100/dose was assumed. A discount rate of 5% was used for costs and QALY lost. IMD, lifetime costs, QALYs lost and the incremental cost-effectiveness ratios (ICER) were calculated. In sensitivity analysis, the Wcases were increased by 10 fold. The max MenACWY-TT cost-effective vaccine price (ICER <=3 GDP/capita-R$67,206) was assessed.

Results:
Compared with CV, BoosterV would avert 3,645 IMD and save R$16 Millions. The BoosterV would be cost-effective up to R$106 (R$121 undiscounted) per dose. Under increased Wcases, BoosterV would be cost-effective up to R$126 (R$193 undiscounted).

Conclusion:
Replacing the 12 month MenC dose by MenACWY-TT could be a dominant (saves costs and QALY) or cost-effective strategy in Brazil.
MUMPS – REEMERGING INFECTION AND PITFALLS IN THE LABORATORY DIAGNOSTICS IN VACCINATED POPULATION

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Background: Mumps vaccine was implemented into national pediatric vaccination schedule in the former Czechoslovakia in 1987, which led to the significant decrease in the incidence. However, the incidence of mumps has been increasing even in the vaccinated population since 2005 and this trend has not been explained yet. Laboratory confirmation of the acute infection is complicated by the absence of specific IgM in vaccinated population.

Aims: To compare the clinical course of mumps in vaccinated and unvaccinated population
To determine the role of specific IgA antibodies detection in the diagnostics

Material and methods: The study prospectively included patients with confirmed infection and evaluated clinical and laboratory features and complications. The diagnostics was based on RT-qPCR (swab of the parotid duct) and serology.

Results: A total of 83 patients were included, 41 (49.4%) vaccinated and 36 (43.4%) unvaccinated. In 6 patients (7.2%) the vaccination status was unknown. 19 patients (22.8%) required hospitalization (33.3% unvaccinated and 17.1% vaccinated; p=0.12). Most frequent complications were orchitis (12x), meningitis (6), pericarditis (1) and were more frequent in unvaccinated patients (30.6% vs.19.5%, p=0.29). The positivity of IgM and IgA antibodies in acute serum samples differed in previously vaccinated (36.8% and 57.9%, respectively) and unvaccinated patients (77.8% and 81.5%).

Conclusion: The incidence of mumps has been increasing and the inclusion of 3rd vaccine dose in adolescence could improve the epidemiological situation. Complications were more frequent in unvaccinated patients. The inclusion of detection of specific IgA could improve the diagnostics.

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NASOPHARYNGEAL COLONIZATION WITH POTENTIAL BACTERIAL PATHOGENS IN PRESCHOOL CHILDREN WITH ACUTE RESPIRATORY INFECTIONS IN BUCHAREST, ROMANIA, DECEMBER 2014 TO FEBRUARY 2015 – A CASE-CONTROL STUDY

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Background: interpersonal closed contacts from day care centers (DCC) might facilitate transmission of potential bacterial pathogens followed by invasive infections and nonsuppurative complications

Aim: to analyze the association between attending DCC and carriage of nasopharyngeal bacterial potential pathogens

Methods: study design: 1:1 case control study based on hospitalized children under 6 with a nasopharyngeal swab collected between December 2014 and February 2015. Cases were defined as children who reported attending a DCC within two weeks before hospital admission. Controls (children not attending a DCC) were sorted in alphabetical order of family names. By random selection from control group’s list, each case was matched with a control having same gender, month of onset and age.

Results: data set counted 288 sampled patients including 115 (39.9%) with a bacterial potential pathogen (BPP) isolated from nasopharyngeal swab. By BPP species the carriage rate was 1.0% for Moraxella catarrhalis, 10.1% for Streptococcus pneumoniae, 11.8 % for Haemophilus influenzae, and 16.7% for group A Streptococcus (GAS).

Attending a DCC was significantly associated with GAS carriage (Match Odds Ratio : 3.50; 95%Confidence Interval (1.20 – 12.35); p value: 0.0339) but not with non-GAS pathogens (OR: 1.71; 95%CI: (0.67 – 4.63); p: 0.3588).

Conclusions: day care centers should have in place mechanisms to control GAS transmission in order to prevent both invasive GAS infections and also nonsuppurative complications.

Key words: bacterial potential pathogens, nasopharyngeal carriage, day care center
Background and aims: Introduction of PCV7 in childhood UMVs led to major decreases in vaccine type (VT) IPD, but increases in NVT-IPD attenuated its overall impact on IPD. The two higher-valent PCVs (PHiD-CV, PCV13) differ from PCV7 in serotype number, immunogenicity and, for PHiD-CV, in carrier proteins and conjugation chemistry. This review evaluates effects of higher-valent PCVs on VT/NVT/overall IPD in <5-year-olds.

Methods: Systematic search of published literature and surveillance data in countries with IPD data available for ≥1 year pre- and ≥2 years post-PHiD-CV/PCV13 introduction in UMVs. Percent changes in VT/NVT/overall IPD were calculated using incidence rate ratios. NVT refers to non-PCV13 serotypes.

Results: Marked decreases in VT and overall IPD were seen with both vaccines. In previously PCV-naïve countries, trends for increased NVT-IPD were observed post-PHiD-CV introduction. No data from PCV-naïve countries implementing PCV13 met inclusion criteria (search ongoing). Preliminary analyses show that in countries previously using PCV7, no increases in NVT-IPD beyond those already seen with PCV7 were observed post-PHiD-CV introduction; instead, NVT-IPD decreased by 3%-56%. In countries where PCV13 replaced PCV7, NVT-IPD increased by 12%-93%. Furthermore, a time-series model estimated that post-PCV13 in the US, NVT-IPD was 2% lower than predicted in the absence of PCV13.

Conclusions: Changes in NVT-IPD varied between countries, likely influenced by local epidemiology, vaccination coverage and schedule and use (or not) of catch-up in different settings. This summary raises the question whether the specific higher-valent formulation used may also affect the extent of NVT-IPD.

Funding: GlaxoSmithKline Biologicals SA
WHAT IS THE REAL ROLE OF RESPIRATORY VIRUSES IN INFANTS LESS THAN SIX MONTHS OF AGE WITH UPPER RESPIRATORY TRACT INFECTIONS?

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Aim: The aim of this study was to determine the frequency of respiratory viruses responsible for upper respiratory tract infections during the 2013-2014 influenza season in infants less than 6 months of age.

Methods: Nasal swabs were obtained from patients with symptoms suggestive of an influenza-like illness (ILI) between January and April 2014. Specimens were evaluated by RT-PCR (for detection of Influenza A, H1N1, Influenza B, Rhinovirus, Coronavirus NL63, 229E, OC43, HKU1, Parainfluenza 1, 2, 3, 4, Human metapneumovirus A/B, Bocavirus, Mycoplasma pneumoniae, Respiratory syncytial virus (RSV) A/B, Adenovirus, Enterovirus, Parechovirus) to help identify the causative viral pathogens.

Results: A total of 150 patients with ILI were enrolled in the study. A respiratory virus was successfully detected in 126 (84%) infant; RSV in 41 (32.5%), Rhinovirus in 17 (13.4%), Metapneumovirus in 15 (11.9%), Coronavirus in 11 (8.7%), Adenovirus in 5 (3.9%), Parainfluenza virus in 2 (1.5%) and Bocavirus in 2 (1.5%) infants. Thirty-three (26.1%) patients were found to be co-infected with both two viruses. The frequency of the symptoms fever, cough, nasal congestion, fatigue, irritability and feeding problems were similar between RT-PCR positive and negative patients. Although rhinorrhea and developing complications were significantly more frequently seen in RT-PCR positive patients (p=0.023 and p=0.019, respectively). Multiple viral infections were not associated with severe disease.

Conclusion: With an overall viral pathogen detection rate of 84%, findings of our study present that influenza viruses were not seen in infants less than 6 months of age, whether RSV and multiple viral infections were the most common causes in this age group.
COMPARISON OF ANTIBIOTIC SUSCEPTIBILITY AND VIRULANCE FACTORS OF STAPHYLOCOCCUS AUREUS STRAINS CAUSING COMMUNITY ACQUIRED AND HEALTH-CARE ASSOCIATED PEDIATRIC INFECTIONS

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Background: The number and variety of virulence factors of S. aureus contribute to infections. MRSA has emerged as a community-acquired infection recently. This makes difficult to choice empirical antibiotic treatment.

Aim: For S. aureus species the knowledge of enterotoxins and PVL gene as virulence factor, identification if antimicrobial sensitivity patterns, agr types and sequence types and in resistant cases to obtain SCCmec types will be helpful to decide empirical therapy and future health politics

Material and method: Total of 150 isolates of S. aureus isolated from the cultures of the outpatient or inpatient child patients in Ankara University Faculty of Medicine Department of Pediatrics in January 2011 and December 2012.

Results: Antibiotic resistance was observed such as penicillin 93.8%, ampicillin-sulbactam 6.5%, clindamycin 5.5%, trimethoprim-sulfamethoxazole 3.3%. mecA was detected positive in 6% of S. aureus strains. Two of S. aureus strains which MRSA was detected genotipically, SCCmec type III and SCCmec type V and in five of them SCCmec type IV were detected. PVL was positive in 8.7% of all S. aureus strains. SET-I ve SET-G were the most common detected enterotoxins. In both community-associated and healthcare-associated MRSA strains, agr type 1 was detected most commonly. The most common sequence types were ST737 in 11 patients than ST22 in seven patients and ST121 in six patients.

Conclusions: In our community CA-MRSA infection is not common. The overlap of both community and health service related S. aureus species sequence types is consistent with the recent trend around the world.
LOW PREVALENCE OF KINGELLA KINGAE CARRIAGE IN CHILDREN AGED 6-48 MONTHS IN SYDNEY, AUSTRALIA

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A prospective observational study was conducted to estimate the prevalence of oropharyngeal carriage of Kingella kingae in healthy preschool Australian children and to compare rates of asymptomatic carriage of K. kingae to rates of carriage in similarly aged children with osteomyelitis or septic arthritis. Screening for carriage of Streptococcus pyogenes, S. pneumoniae, S. agalactiae, Staphylococcus aureus, Haemophilus influenzae, and Kingella kingae was undertaken using a single bacterial throat swab and standard laboratory procedures. Recruitment of 2 cases and 100 controls occurred from October until December 2014 at the Children’s Hospital at Westmead. The median age of control children was 24.0 months (range 6.1-48.8 months). 52 children were male and 36 attended day-care facilities. 41 children had siblings aged less than 5 years and 67 children had siblings of any age (including adults). K. kingae carriage was detected in 1 of 2 children with calcaneal osteomyelitis, but not in any of the 100 asymptomatic control children. Rates of carriage of other organisms in control children were: 30% S. aureus, 21% H. influenzae, 2% S. pneumonia and 2% S. pyogenes. Thirty-eight children were found to be colonised with Kingella denitrificans. Our results suggest that prevalence of K. kingae carriage in preschool children in Sydney is very low and support local and national guidelines that recommend flucloxacillin as empiric first-line therapy for children with osteoarticular infections. Studies conducted over the winter months and in other Australian centres could help answer outstanding questions regarding differences in carriage rates of K. kingae in children.
KNOWLEDGE LEVEL ABOUT HUMAN PAPILLOMAVIRUS (HPV) OF PARENTS OF BOYS VACCINATED WITH THE QUADRIVALENT HPV VACCINE IN CAMPOS DOS GOYTACAZES, BRAZIL

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Introduction: Human papillomavirus (HPV) is a sexually transmitted virus with a high outcome of morbidity and mortality. In addition to being the primary cause of cervical cancer agent, it is also related to malignant processes in anus, penis and oral cavity. In March 2014, Campos dos Goytacazes-RJ became the first city in Brazil to immunize boys between 11 and 13 years.

Methods: Cross-sectional observational study. There were been randomly selected 200 responsible for the boys who spontaneously appeared in the main vaccine room. Questionnaires and the data were categorized by continuous and dichotomous variables entered in the EpiData® database and analyzed by the tool EPIData® Analysis®

Results: Among the 200 guardians who responded to the questionnaire, 185 (92.5%) had knowledge of the Human Papillomavirus, 188 (94%) have heard about the vaccine in any medium of communication, but only 121 responsible (60.5%) have already talked to their children about HPV; A total of 102 (51%) of the respondents, said that ignores the mechanism by which the vaccine works; Only 99 (49.5%) parents relate genital warts related to HPV, while 132 (66%) reported that HPV can cause cancer.

Conclusion: Although it can be concluded that the population has a good degree of knowledge, partly it was due to the spread of knowledge by the media with the early introduction of the quadrivalent HPV vaccine to 11-15 years old girls since 2010 in this municipality. Aspects of prevention, clinical manifestations of the virus and stimulation of familial dialogue on the issue involving the sexual sphere must be improved.
EARLY IMPACT IN REDUCING CERVICAL ABNORMALITIES IN CAMPOS DOS GOYTACAZES-RJ, BRAZIL, AFTER INTRODUCTION OF THE QUADRIVALENT HPV VACCINE FOR GIRLS 11-15 YEARS OLD IN 2010

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Introduction: Human papillomavirus (HPV) is a real challenge in terms of public health. Tracing through Pap Pap test associated with the use of condoms and HPV vaccines are strategies for preventing this condition. The municipality of Campos dos Goytacazes implemented in September 2010 the quadrivalent HPV vaccine to girls 11-15 years old in a hybrid strategy of vaccination (schools and health centers).

Methods: Historical cohort that evaluated the impact of HPV vaccination as a protective factor against high and low risk of HPV abnormalities. Results of the pap smear test obtained from the the Brazilian Minister of Health SISCOLO system were categorized in Low grade abnormalities (LGA) and High grade abnormalities (HGA). This preliminary study focused in LGA rates, which were estimated for 1-month period and stratified by four age groups(< 20; 20-24; 25-30; >30 years) from 2007 to 2014. A quantitative comparison of LGA temporal trends before and after vaccination was done with Quasi Poisson regression analysis. Protective effect of the vaccine on the timeline was assessed by calculating relative risk (RR), in each age group.

Results: There was a significant decrease of more than 60% in LGA in women < 20 years old, and less almost 50% for the other groups. HPV vaccine was a protection factor, because of the RR result in all age groups (P<0.0001). Conclusions: although the studies show that the pre HPV neoplastic lesions may be reversible spontaneously, it’s undeniable that the vaccine contributed greatly to the high reduction rates, associated with high vaccination coverage. These results are the first in Brazil.
Introduction

Despite an efficient vaccination available, burden of pertussis has been widely reported worldwide for a couple years. The aim of this study was to review the cases of pertussis in children in our hospital between 2011 and June 2015 and to analyse their characteristics.

Methods

This is a retrospective monocentric study on patients aged 0 to 18 in which PCR for Bordetella Pertussis was positive in the nasopharyngeal aspiration sample. All the data were reviewed from the medical records, including symptoms, diagnosis, demography and outcome data.

Results

Sixteen children were affected with a median age of 2 months (range: 6-512 months). Nine patients were below 6 months-old and were the most severely ill. Seven of them necessitated oxygen requirement in our paediatric ward and 3 had been transferred to paediatric intensive care unit.

We numbered 6 patients who presented apnoea with cyanosis. Apparent life threatening events (ALTE) occurred in 3 of them and one deceased with a streptococcus pneumoniae co-infection. In the most severe cases the vaccination schedule wasn’t complete due to young age or parents’ refusal.

To identify the contaminant contact remains difficult and the cocoon-strategy hadn’t been respected in those situations.

Conclusions

Pertussis is a worldwide re-emerging problem with variable courses of the disease but often more severe among the youngest patients. The multidisciplinary teams including midwives, gynaecologists and paediatricians should work together in order to provide an optimal vaccination status of the young parents and the children, preventing then the new cases.
PERTUSSIS DIAGNOSIS METHODS: CULTURE, REAL-TIME PCR AND SEROLOGY - SAO PAULO, BRAZIL

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Background and aims: Pertussis occurs worldwide despite extensive immunizations. In Brazil, pertussis diagnosis is based on culture and Real-Time PCR methods for laboratory diagnosis. Both methods lack sensitivity at the later stage of the disease. Therefore, IgG anti-pertussis toxin enzyme-linked immunosorbent assay (PT ELISA) was introduced. A preliminary study was performed until 2012, and to confirm our observations, we increased sampling. The aim of this study is to describe the results obtained by these methods in our routine diagnosis to better estimate disease burden.

Methods: From January/2010 to December/2014, nasopharyngeal swabs and serum samples (n=1,132) were collected from patients with cough, suspected of pertussis and analyzed by culture, Real-Time PCR and PT ELISA, respectively. Patients were separated into age groups: <1 year (n= 667), and >7 years (n=465).

Results: During the period studied, 154 were positive for B. pertussis by Real-Time PCR and/or culture and 278 for serology. Among them, 140 were positive in children of <1 year for culture/Real-Time PCR and 83 were positive for serology. In patients of > 7 years, 14 were positive for culture/Real-Time PCR and 195 for serology.

Conclusion: Culture and Real-Time PCR were useful to diagnose initial phase of disease and among young children, as expected. PT ELISA confirmed cases mostly among adolescents, adults, and household contacts, and in the later phase of the disease being an excellent method additional for improve diagnosis of pertussis. Thus, these methodologies are complementary.
LOW OCCURRENCE OF PERTACTIN-NEGATIVE-BORDETELLA PERTUSSIS STRAINS IN BRAZIL

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Background and aims: Global Vaccination with whole-cell pertussis (wP) was introduced in the past, reducing pertussis circulation. Acellular vaccine (aP) has been adopted by many countries as it presents fewer side effects, but in Brazil, the whole cell vaccine is the one used. Although aP has been effective against the disease, its impact on B. pertussis strains seems to be different, allowing these pertactin-negative strains to emerge and spread worldwide. The aim of this study was to verify if pertactin-negative strains of B. pertussis can be isolated in Brazil, as reported by several countries.

Methods: A total of hundred and six strains isolated mainly from children in Brazil during 2012-2014 were screened by ELISA pertactin detection. They were serotyped for species-specific antigen O1 and fimbrial antigens and by pulsed-field gel electrophoresis (PFGE) using XbaI restriction enzyme.

Results: One hundred and four strains tested were positive for pertactin and 2 (2%) were negative. Twenty PFGE profiles were identified, according to the Instituto Adolfo Lutz nomenclature, with little genetic difference between them. The predominant serotypes were Fim3 (52%), followed by Fim2 (39%) and Fim2, 3 (9%).

Conclusion Our findings were expected as wP has been used in Brazil since its introduction. The occurrence of pertactin-negative variants were observed in countries where wP was replaced by aP in the last decades. Further studies using a larger number of strains are required for monitoring the presence of genetic mutations and, consequently, the efficiency of the whole-cell vaccine in our country.
CLIMATIC VARIABLES IN A TROPICAL REGION AND HOSPITALIZATIONS FOR ZOSTER
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Background and aims: Circumstances related with the re-activation of the virus Varicella-Zoster are not well described. Nonetheless, they are associated with a reduction of its specific cell immunity. In temperate zones, the incidence of Zoster seems to have a seasonality pattern. This is possibly related to variations in exposure to ultraviolet radiation. Until now, this association has not been reported in tropical regions. The aim of the present study is to describe possible relationships between climatic factors and the number of hospitalizations for Zoster in a tropical region.

Methods: Descriptive retrospective study including patients hospitalized with Zoster in a referral hospital for infectious diseases in Fortaleza, northeast of Brazil, located between latitudes 3º43’02”S and 3º32’35”S. Spearman rank correlation test was performed to examine the relationship between monthly Zoster hospitalizations and climatic variables.

Results: 509 patients were hospitalized with Zoster between 2002-2012 [mean (range) of 50.9 (23-66) patients/year and 7.1 (2.8 – 4.7) patients/month, respectively]. The number of hospitalizations due to Zoster didn’t correlate with the average monthly rainfall [12.9 (3.5-23.7)mm; r = -0.2156, p = 0.5010], relative humidity [77.4 (70.8-84.4)%; r = -0.2615, p = 0.4116], neither with the average monthly maximum temperature [31.1 (30.4-32.0)ºC; r = 0.2163, p = 0.4995] and monthly minimum temperature [23.7 (22.3-25.1)ºC; r = -0.0553, p = 0.8646].

Conclusions: Monthly variations in temperatures, humidity and rainfall were not associated with Zoster hospitalizations. Perhaps changes in ultraviolet radiation in tropical settings are not so different to interfere in Zoster incidence.
Background and aims: Cost-of-illness data on varicella-related complications in children are essential for the development of an appropriate management strategy. The objective of this observational, retrospective study (HO-13-14142) was to assess the clinical and cost burden of varicella hospitalizations in Mexican population aged ≤18 years.

Methods: Medical chart information from a major reference pediatric hospital in Mexico City (National Institute of Pediatrics) obtained for the period 2012-2014 was reviewed. Hospitalized varicella cases, including nosocomial cases, with/without complications were identified based on ICD-9/-10 codes. Clinical (complications, medical management and outcomes) and cost data (MXN/USD) are reported.

Results: During the study period 195 hospitalized cases and contacts were identified (71.3% were health care associated infections). Complications were reported in 5.6% of cases, of which skin and neurological complications were frequent. The median length of hospitalization was 18 (range 12-68) days. Antivirals were prescribed in 67.7% of cases. Seven cases (3.6%) required intensive care, including three with respiratory support. Eight fatal cases were reported due to complications not associated with varicella. Median hospitalization costs were MXN114,786 (USD7,494) with per day cost of MXN6,377 (USD415).

Conclusions: Although varicella disease is considered a mild disease, the financial burden of varicella and its related complications in hospitalized cases is high. Such costs should be considered by decision makers when preventive measures, including vaccination, are evaluated in Mexico.

Acknowledgements

GSK group of companies: María Yolanda-Cervantes, Edurne Gómez-Roig and Gustavo Martínez for their study contributions; Ingrid Leal (publications management), Adriana Guzman (publications’ coordination assistance), and Amrita Ostawal (medical writing).
WHAT IT TAKES TO PUT INTO PRACTICE AN IMPLEMENTATION RESEARCH TRIAL: FIELD CHALLENGES AND LESSONS LEARNED FROM PROJECT NIGRAAN

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Background:

Pakistan’s Lady Health Workers program (LHW-P) was launched in the year 1994. Despite, the fact that this LHW-P covers 60% of rural population it has little impact in reducing morbidity and mortality related to two major childhood killers in Pakistan including diarrhea and pneumonia. This paper explores implementation challenges encountered in the execution of various phases of project NIGRAAN, based in Badin- Sindh province of Pakistan.

Methods:

This study used a qualitative approach in which data was obtained from in-depth interviews (IDIs). Interviews were conducted with members of Project NIGRAAN research team, officials of the LHW-P, LHWs and LHSs. Thirteen IDIs were conducted in total with key informants of the study. The documents reviewed for supportive information to clarify some of the implementation challenges included project protocol, annual report and meeting minutes of all project NIGRAAN, weekly meetings and six monthly meetings with government officials. Thematic qualitative content analysis was done by using grounded theory. In addition, a conceptual framework was also adapted to map out the implementation challenges in detail.

Results:

This study showed that lack of refresher training sessions; poor supportive supervision, logistic issues, delayed salaries, lack of performance based incentives and transport are the most important barriers hindering successful implementation of LHW-P.

Conclusion:

Our study highlights the need for strengthening of current LHW-P by addressing transport, supplies and logistics issues.
IMPACT OF 10-VALENT PNEUMOCOCCAL CONJUGATE VACCINE ON THE ECONOMIC BURDEN OF PNEUMONIA HOSPITALIZATIONS IN CHILDREN IN BRAZIL

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Background and aims: Community-acquired pneumonia is a significant health burden in children globally. Pneumococcal conjugated vaccine/PCV can lead to significant impact on pneumonia economic burden. After the introduction of 10-valent PCV(PCV10) in Brazil in March/2010, we aimed to estimate its impact on pneumonia hospitalization disease and economic burden in children.

Methods: Pneumonia hospitalization rates in children aged 2-23m were estimated considering discharge diagnosis (ICD10 J12-J18) in the National Hospitalization database (SIH-SUS). Population estimates were based on National census. Monthly rates were estimated for the pre (January/2005-December/2009) and post-PCV10 (January/2011-December/2013). We conducted an interrupted time series analysis. Based on pre-vaccination rates, we estimated predicted hospitalization rates/100,000. Primary cost was obtained using micro-costing methodology. Costs of pneumonia cases were estimated including medical, and non-medical costs in Reais, and converted to USD and Int$ using official exchange rates, adjusted for inflation. The estimated number of averted cases was multiplied by the estimated cost per pneumonia case. Univariate sensitivity analysis was conducted considering varying costs of cases.

Results: After PCV10 introduction, an estimated 127,483 cases on hospitalized pneumonia were averted in children aged 2-23m. The total averted costs was R$106 million Reais ($Int1 63million, and USD 51million), of which 57% would occur in the 2-11m age group, where disease burden is higher (Table 1). In sensitivity analysis, estimated averted pneumonia costs varied from R$98-403million.

Conclusions: Three year after its introduction in Brazil, PCV10 was associated with a relevant reduction in disease and economic burden of all cause pneumonia hospitalization in the children.

<table>
<thead>
<tr>
<th>Year</th>
<th>Age group</th>
<th>Predicted number of cases</th>
<th>Observed number of cases</th>
<th>Number of averted cases</th>
<th>Cost per hospitalized pneumonia case in Reais (R)</th>
<th>Total estimated costs of averted hospitalized pneumonia cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>2-11m</td>
<td>107,933</td>
<td>87,446</td>
<td>20,487</td>
<td>775,50</td>
<td>15,887,669</td>
</tr>
<tr>
<td></td>
<td>12-23m</td>
<td>83,777</td>
<td>67,987</td>
<td>15,790</td>
<td>780,00</td>
<td>12,316,200</td>
</tr>
<tr>
<td></td>
<td>2-23m</td>
<td>191,719</td>
<td>155,433</td>
<td>36,267</td>
<td>28,203,869</td>
<td>41,459,687</td>
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<tr>
<td>2012</td>
<td>2-11m</td>
<td>107,619</td>
<td>82,650</td>
<td>24,969</td>
<td>824,88</td>
<td>20,956,429</td>
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<td></td>
<td>12-23m</td>
<td>82,276</td>
<td>63,321</td>
<td>19,032</td>
<td>829,67</td>
<td>14,790,279</td>
</tr>
<tr>
<td></td>
<td>2-23m</td>
<td>189,889</td>
<td>145,888</td>
<td>44,001</td>
<td>26,386,704</td>
<td>55,307,796</td>
</tr>
<tr>
<td>2013</td>
<td>2-11m</td>
<td>107,304</td>
<td>80,246</td>
<td>27,058</td>
<td>873,64</td>
<td>23,638,951</td>
</tr>
<tr>
<td></td>
<td>12-23m</td>
<td>80,763</td>
<td>60,619</td>
<td>20,144</td>
<td>878,71</td>
<td>17,700,734</td>
</tr>
<tr>
<td></td>
<td>2-23m</td>
<td>189,067</td>
<td>140,865</td>
<td>47,201</td>
<td>41,359,483</td>
<td>66,556,893</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>569,664</td>
<td>442,186</td>
<td>127,483</td>
<td>105,010,262</td>
<td>163,324,377</td>
</tr>
</tbody>
</table>
BACKGROUND AND AIMS: Nigeria is important to polio eradication because of a large number of importations into polio free countries is from Nigeria. It is the only country endemic for Wild Polio Virus 1 and 3 as well as circulating Vaccine Derived Polio Virus type 2. The review was carried out to identify problems for the persistence of endemic polio in Nigeria and measures to counteract them.

METHODS: We reviewed the pertinent literature; published and unpublished including documents of the Global Polio Eradication Initiative (GPEI) partners and other organizations. The literature were selected based on language, timeliness, content availability and relevance to the theme of the review.

RESULTS: The challenges facing the Polio Eradication Initiative (PEI) in Nigeria were found to fall into three categories as shown in the figure.

Some of the innovations towards adapting to the threats to the PEI include a strong government accountability framework, change from type 2 containing OPV to monovalent and bivalent OPVs for supplementary immunization activities, sustaining environmental surveillance in key states with an overall improvement in SIA quality.

CONCLUSIONS: There has been an improvement in coverage of routine immunization and vaccination campaigns, with reduction in the number of new cases of polio. The last mile however remains with a need to further improve, to complete the journey towards polio elimination.
RESPIRATORY SYNCYTIAL VIRUS A AND B PRESENT MARKEDLY DIFFERENT DISTRIBUTION PER MONTH AMONG CHILDREN WITH ACUTE RESPIRATORY INFECTION IN A TROPICAL CITY

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Background and aims: To describe the frequency, seasonality and age of infection by Respiratory Syncytial Virus (RSV) A and B among children with acute respiratory infection.

Methods: This prospective cross-sectional study enrolled children aged 6-23 months with fever, sneeze, running nose, nasal blockage, or cough for ≤7 days, from September 2009 to October 2013, in Salvador, Brazil. Exclusion criteria were transference from other hospital or report of previous episode of wheezing. Upon recruitment, demographic and clinical data were collected along with nasopharyngeal aspirates (NPA). A custom-designed nCounter® probeset containing viral targets for RSV A and B was tested in the NPA.

Results: This study group comprises 560 cases. The mean age was 11.4±4.5 months and there were 287 (51.3%) females. Overall, 139 (24.8%) cases had RSV detected in NPA. RSVA was found in 74 (13.2%) and RSVB was found in 67 (12.0%). RSVA was more frequent from August to January in comparison with the period from February to July (18.2% vs. 6.4%, p <0.001). RSVB was more frequently found (p<0.001) between March and June (36.0%) than from July to October (1.0%) or between November and February (1.6%). RSVA was more common among children above 1 year of age (17.8% vs. 1.8%; p=0.021). No difference was found in the distribution of RSVB in regard to age strata (11.5% vs. 12.2%; p=0.8).

Conclusion: The distribution of cases per month was markedly different for RSVA and RSVB. One quarter of the patients had RSV detected. RSVA compromised more frequently children aged ≥1 year.
SERVICE PROFILE OF FLU-LIKE ILLNESS IN SENTINEL SURVEILLANCE, BRAZIL IN 2014.
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\textsuperscript{1}Department of Communicable Disease Surveillance. Surveillance Secretariat of Health, Ministry of Health, Brasilia, Brazil

Background and AIMS

Respiratory diseases have a major impact on public health and are referred to as a major cause of hospitalization of children. Influenza-like illness (ILI) is featured in individuals who have sudden onset of fever, even if referred, accompanied by cough or sore throat and at least one of the following symptoms: headache, myalgia or arthralgia, in the absence of other specific diagnosis. The objective of this paper is to present results of monitoring in sentinel units (SU) of ILI in Brazil in 2014.

Methods

Descriptive study. Data analysis, according to number of visits to spontaneous demand and ILI recorded in the Information System of Epidemiological Surveillance of Influenza by age, region and gender.

Results

In 2014 were recorded 11,134,800 calls for spontaneous demand in sentinel units health for ILI, peaking in Epidemiological Week (EW) 26. Of these, 2836,028 (25.5%) were calls for the age-range of 0 to 9 years, these 508,028 (18%) had clinical picture of ILI, and 244,861 female and 263,837 male. 41.9% of cases were recorded in children under two years. The Southeast region recorded 32.4% of the country's cases.

Conclusions

Influenza is an important public health problem in Brazil. Monitoring the ILI in sentinel units distributed in a representative manner by Brazil allows you to monitor cases of ILI, know the circulating viruses and the most affected age groups and organize the health system for decision making.
PREVALENCE AND VIRAL CO-DETECTION RATES AMONG CHILDREN WITH LOWER RESPIRATORY TRACT INFECTION HOSPITALIZED IN NORTHEASTERN BRAZIL (THE PREVINE STUDY)


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Background and aims: Few studies, each limited to a single city, have investigated the prevalence of different respiratory viruses among children with low respiratory tract infections (LRTI) in Northeastern (NE) Brazil. The aim of the study was to determine prevalence of respiratory syncytial virus (RSV) and seven other viruses in children hospitalized for LRTI from this region.

Methods: From April 2012 to March 2013, children aged up to 24 months hospitalized for LRTI, in the participating centers at the cities: Aracajú, Salvador, Recife, and Maceió, had a nasopharyngeal aspirate collected and analyzed for viruses by RT-PCR: RSV, influenza, parainfluenza, adenovirus, rhinovirus, metapneumovirus, bocavirus, and coronavirus.

Results: 507 children were enrolled, 204 subjects tested positive for RSV, a prevalence of 40.2%. With the exception of rhinovirus (17%), all other individual virus had prevalence rates lower than 6% (Table 1). Viral Co-detection (at least two different viruses) was observed in 13.8% of tested samples, the most common being RSV and rhinovirus (3.7%), followed by RSV and bocavirus (2.0%).

Conclusion: This is the first multicenter cross-sectional study conducted in 4 different cities of the NE Brazil. In agreement with previous reports from NE and from other Brazilian regions, RSV is the most prevalent virus detected in cases of LRTI that requires hospitalization. Moreover, other viruses are often present, commonly co-detected with RSV.

Table 1. Overall detected virus prevalence.

<table>
<thead>
<tr>
<th>Virus</th>
<th>Prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any</td>
<td>66.5</td>
</tr>
<tr>
<td>RSV</td>
<td>40.2</td>
</tr>
<tr>
<td>Rhinovirus</td>
<td>17.0</td>
</tr>
<tr>
<td>Metapneumovirus</td>
<td>5.9</td>
</tr>
<tr>
<td>Bocavirus</td>
<td>5.5</td>
</tr>
<tr>
<td>Parainfluenza</td>
<td>5.5</td>
</tr>
<tr>
<td>Adenovirus</td>
<td>3.7</td>
</tr>
<tr>
<td>Influenza</td>
<td>3.2</td>
</tr>
<tr>
<td>Coronavirus</td>
<td>0.0</td>
</tr>
<tr>
<td>Any co-detection</td>
<td>13.8</td>
</tr>
</tbody>
</table>
RESPIRATORY SYNCYTIAL VIRUS (RSV) AND OTHER RESPIRATORY VIRUSES SEASONALITY AMONG CHILDREN HOSPITALIZED FOR LRTI IN NORTHEASTERN BRAZIL (THE PREVINE STUDY)


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8Medical Affairs, AbbVie Brazil, São Paulo, Brazil

Background and aims: Viral seasonality could vary among different regions of Brazil. We investigated the seasonality of eight respiratory viruses in children hospitalized for low respiratory tract infection (LRTI) in four capitals from Northeast (NE) region, and their relation with meteorological data.

Methods: From April 2012 to March 2013, children, aged up to 24 months and hospitalized for LRTI at the participating centers (Aracajú, Salvador, Recife, and Maceió), had a nasopharyngeal aspirate collected and analyzed by RT-PCR: RSV, influenza, parainfluenza, adenovirus, rhinovirus, metapneumovirus, bocavirus and coronavirus. Seasonal trends were explored assessing monthly frequency of proven viral infections. Meteorological variables of interest were obtained from the Meteorology National Institute (INMET) database, their relationship with viral infections rates were obtained using measures of association.

Results: 507 children were enrolled, 66.5% tested positive. Monthly viral prevalence is shown in Figure 1; RSV infection was the major driver of viral infections prevalence. The higher prevalence rate occurred from April to July 2012, and January to March 2013. Viral infections were associated with increasing temperature and decreasing humidity separately, but the interaction test also suggested the combination of these two meteorological conditions with the increase in the RSV prevalence.

Conclusion: NE region has a distinct seasonal pattern, knowledge of the viral seasonality is important for adequate implementation of prophylactic measures to address pediatric LRTI.
Background and aims. Influenza (FLU) is an acute infectious respiratory disease. Although FLUA is responsible for the majority of seasonal infections, FLUB disease is common in children and young adults, and causes seasonal epidemics every 2-4 years. Influenza strains circulating during a seasonal epidemic may be type A/H1N1pdm09 and A/H3N2, strains of influenza B lineages Victoria and Yamagata. In Brazil, the vaccine provided public health is trivalent, consisting of only one of the two influenza B strains. There is little or no cross-reactive protection between the influenza B lineages, this means that good protection against the circulating virus relies on correctly predicting the prevalent influenza B lineage in any season. We describe the burden of influenza B infections in Southern Brazil during a 3-years period.

Methods. Cross-sectional study. Influenza viruses were detected using real-time RT-PCR. A total of 8,660, 6,863 and 2,882 respiratory samples were investigated during the years 2013, 2014 and 2015 (up to June), respectively.

Results. The positivity rates found were 20%, 12.5% and 5%, respectively. FLUA and FLUB cocirculated throughout the period. For 2013, 2014 and 2015 seasons, FLUB accounted for 45.5%, 7.4% and 38.7% of all influenzas, respectively. The highest incidence was in young adult.

Conclusions. Studies involving epidemiological, clinical features and molecular characteristics of influenza infections are essential for the introduction of preventive and therapeutic intervention by health surveillance units. The identification of strains circulating in the community is a great benefit, providing the information needed for the definition of the annual composition of vaccines.
VERTICAL TRANSMISSION OF HIV-1 IN SOUTHERN BRAZIL: A NEED FOR UNIVERSAL HIV-1 SCREENING AND PROMPT ART INITIATION

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2Department of Infectious Diseases, Hospital Nossa Senhora da Conceição, Porto Alegre, Brazil
3Department of Pediatrics Division of Infectious Diseases, David Geffen School of Medicine at UCLA, Los Angeles CA, USA
4Epidemiology Nucleus, Hospital Nossa Senhora da Conceição, Porto Alegre, Brazil

Background and Aims In the vertical transmission of HIV, elevated maternal viral loads, absence of ART (antiretroviral therapy) during gestation, maternal HIV seroconversion during pregnancy, and maternal syphilis co–infection are important risk factors.

Materials and Methods We explored the independent effects of elevated maternal viral load (>1000 copies after 35 weeks), ART (antiretroviral therapy) use, and maternal syphilis co–infection on MTCT (Mother To Child Transmission) of HIV in Porto Alegre, Brazil through multivariate analysis.

Results From 2008 -2013, 28,527 women gave birth at our institution. Although the overall HIV seropositivity rate was 3.4%, 553 HIV+ pregnant women (1.9%) attended our HIV MTCT clinic with infant outcomes determined for 469 babies (84.8%). Fourteen HIV-1 infected infants were identified (3%). No maternal ARV use during pregnancy, elevated maternal viral load, and HIV-1 seroconversion during pregnancy carried a significant HIV MTCT risk. Maternal syphilis co–infection was not significantly associated with increased risk of HIV MTCT (small sample size). Thirty-two infants (8.3%) were born to VDRL+ mothers (387 mothers with known VDLR status) two VDRL+ children were HIV-infected . HIV MTCT was 6.2% in VDRL+ mothers vs. 3.1% in VDRL - mothers (p> 0.05).

Conclusions Universal prenatal HIV/VDRL screening with timely ART initiation are still in need of implementation. The role of syphilis co–infection in HIV MTCT requires further investigation.
In 1974, WHO established the EPI to ensure that all children have access to routinely recommended vaccines. Since then, global coverage with the four core vaccines (Bacille calmette guérin vaccine [for protection against tuberculosis], Diphtheria-tetanus-pertussis vaccine [DTP], Polio vaccine, and Measles vaccine) has increased from <5% to ≥ 84%. Coverage with the third dose of DTP vaccine (DTP3) by age 12 months is a key indicator of immunization program performance. Estimated global DTP3 coverage has remained at 83%-84% since 2009, with estimated 2013 coverage at 84%. Global coverage estimates for the second routine dose of Measles-containing Vaccine (MCV2) are reported for the first time in 2013; global coverage was 35% by the end of the second year of life and 53% when including older age groups. Results showed that more than 111 million infants received vaccines in 2013 to protect them from deadly diseases. These infants account for about 84 percent of the world’s children, but an estimated 21.8 million infants remained unvaccinated, according to new estimates from WHO. Three of WHO’s regions reported very high immunization coverage: the Western Pacific with 96 percent; the European Region with 96 percent; and the Region of the Americas with 90 percent. Coverage was slightly lower in the: Eastern Mediterranean Region at 82 percent; in the South-East Asia Region at 77 percent; and in the African Region at 75 percent. Improvements in equity of access and use of immunization services will help ensure that all children are protected from vaccine-preventable diseases.
With the global focus towards elimination of onchocerciasis especially in endemic countries like Nigeria, a study to determine the status of onchocerciasis and knowledge of people towards eliminating onchocerciasis was conducted in Odogbolu and Remo Local Government Area, Ogun State, Nigeria; using the rapid epidemiological mapping tool for onchocerciasis. Four hundred and twenty respondents from six riverine communities were physically examined for nodules and questionnaire administration. The results showed a nodular rate of 17% and 30% in the two LGA’s. Most respondents (69%) and (87%) of respondents in both LGA’s had knowledge of the disease among other reasons. 50% and 54% of respondents in both LGA’s maintained that itching is the major symptom, while 72% in Odogbolu and 49% in Remo North agreed that the use of Ivermectin can check the spread of the disease, as against 26% and 23% who attributed prevention to good hygiene. The need for Government and health agencies to embark on massive health education about the disease is advocated so as to eliminate the negative effect of the disease with infected individuals.
MORPHOTAXONOMY AND DISTRIBUTION OF INDOOR MOSQUITOES IN PRIVATE RESIDENTIAL HOUSES INHABITED BY UNIVERSITY STUDENTS, ABEOKUTA, NIGERIA.

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Proper identification is vital in studying and combating mosquito-borne diseases and in planning effective vector control measures. Studies were conducted from January to March 2015 to morphologically identify indoor biting and resting mosquitoes and assess mosquito species abundance in students' residential areas, Abeokuta, Nigeria. Mosquitoes were collected from 24 systematically stratified houses in Isolu and Ilupeju communities using Pyrethroid-Based Insecticide Knockdown Method (PKC). The mosquitoes were sampled tri-weekly and identified to species level in the laboratory using morphotaxonomy identification keys and a dissecting microscope. Three species of mosquitoes namely, Anopheles gambiae sensu lato, Culex quinquefasciatus, and Aedes aegypti were caught and identified during the study. Anopheles gambiae sensu lato accounted for the highest number of mosquitoes caught (41.88%) followed by Aedes aegypti (29.06%) and Culex quinquefasciatus (29.06%). Sixty-three (53.85%) mosquitoes and 54 (46.15%) mosquitoes were collected from Isolu and Ilupeju respectively. The abdominal conditions of the stomach revealed that majority of the vectors collected were unfed (60.7%). Anopheles gambiae s.l had the highest percentage of fed abdominal status (76.10%) followed by Aedes aegypti (13.04%) and Culex quinquefasciatus (10.86%). Indoor resting densities per room per night of Anopheles, Culex, and Aedes mosquito in Isolu were 2.1, 1.3 and 1.9 respectively while that of Ilupeju was 2.0, 1.6, and 0.9 respectively.

Further molecular identification of sub-species complex of An. gambiae sensu lato in addition to longitudinal research for effective and practical outdoor and indoor mosquito identification are advocated.
BEYOND VACCINATION: CONTACT TRACING FOR MENINGOCOCCAL MENINGITIS IN THE AFRICAN MENINGITIS BELT

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Background and Aims:

Endemic and epidemic meningococcal meningitis is a major cause of morbidity and mortality in sub-Saharan Africa. Case fatality and neurological sequelae rates remain at high. The current policies of the World Health Organization aim to contain epidemics but largely ignore endemic cases, which equate to almost half of all cases. This presentation addresses the role of chemoprophylaxis in reducing spread in endemic situations, as well as discussing the difficulties which may be encountered during the administration of chemoprophylaxis.

Methods:

A systematic review of literature relating to chemoprophylaxis and contact tracing has been undertaken. The author’s experience in treating endemic meningococcal meningitis in a paediatric hospital in Western Chad in 2013 will also be used to illustrate specific difficulties.

Results:

Contact tracing with chemoprophylaxis may have some role in reducing meningococcal cases in endemic areas. Mass vaccination has been shown to be the most effective strategy for tackling both endemic and epidemic cases. Efforts at chemoprophylaxis are hindered by difficulties in both tracing contacts and providing contacts with the required medication. Chemoprophylaxis can be used as a method to extend public health capacities in the developing world beyond vaccination campaigns in wake of the Ebola crisis.

Conclusions:

The evidence regarding the effectiveness of chemoprophylaxis is limited, especially in developing countries. Contact tracing and administering chemoprophylaxis create new logistical challenges. Improving the capacity of health systems to perform contact tracing is, however, critical to the overall improvement in public health measures for many infectious diseases, including meningitis.
FEASIBILITY OF COLLECTING CLINICAL DATA AND SAMPLES AT THE TIME OF DELIVERY IN A LOW-MIDDLE INCOME SETTING

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Background and aims

This was an observational study to assess the feasibility of key operational aspects of maternal clinical and immuno-correlate studies in a low-middle income setting.

Methods

Between December 2013 and June 2014 pregnant women attending for routine antenatal care or delivery at a large tertiary centre in Soweto, South Africa, were enrolled. Socio-demographic and medical information was collected from women and infants at enrolment and delivery. Maternal blood/cord blood samples were collected at delivery. Enrolment numbers, proportion of deliveries with maternal/cord blood pairs and completeness of clinical data collection were reported descriptively.

Results

Overall 3032 women were enrolled in the six month study period, 85% at delivery. There were 2450 deliveries, corresponding to 2483 mother-infant pairs, that met study inclusion criteria and delivered at ≥34 weeks. Of these, 97% had paired maternal/cord blood collected. Completeness of data collection was high for infant clinical data, maternal demographic, behavioural and HIV status data (available for >95% deliveries). Maternal CD4 and viral load counts were not consistently available. Data collection for obstetric factors was more challenging, especially variables with a time measurement e.g. duration from rupture of membranes to delivery was available for only 40% of deliveries.

Conclusions

Acceptability of enrolment and collection of maternal/cord blood at delivery was high. The latter was aided by specific operating procedures and ethical approval of deferred consent for cord blood collection. Streamlining of data collection is recommended to increase antenatal enrolment and collection of maternal obstetric data in this setting.
UNIDENTIFIED HEPATITIS C DURING PREGNANCY IN PORTO ALEGRE, BRAZIL; A MISSED OPPORTUNITY FOR IDENTIFICATION, PREVENTION AND TREATMENT

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2Pediatric Gastroenterology, Hospital da Criança Conceição, Porto Alegre, Brazil
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Background and Aims Hepatitis C infection in women of reproductive age in southern Brazil is increasing; universal prenatal screening is not routine. We aimed to assess the frequency of hepatitis C seropositivity in this population.

Methods We conducted a cross-sectional study from 01/2011 to 12/2014 of HCV seropositivity during pregnancy at Hospital Conceicao Porto Alegre. Potential associations were explored via chi-square, Fisher's exact and Student's t-tests.

Results 20,755 pregnant women delivered over 4 years. Miscarriages were excluded. Data was available for 18,078 pregnant women and 18,434 newborns. 55.8% of women with live births (n=9979) and 94% with stillbirths (n=104) underwent HCV antibody testing; 99.8% of women were tested for HIV. HCV seroprevalence in women with live births was 0.9% (95% CI=0.7%-1.1%, n=89) and 2.8% (95% CI=0.6%-7.8%, n=3) in stillbirths. HIV-Hep C co-infection occurred in 22 women (0.2%) despite an HIV prevalence of 4.7% (n=477). 77% of Hep C+ women (70/91) were HIV negative; 95% of HIV+ women (455/477) were Hep C-negative. Stillbirths were higher among anti-HCV+ pregnant women (3.3% vs. 1.1%) (RR=3.1; 95% CI=1.0-9.6; p=0.07).

Table 1. Comparisons of anti-HCV+ and anti-HCV- pregnant women

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Anti-HCV+ (n=91)</th>
<th>Anti-HCV- (n=9743)</th>
<th>df*</th>
<th>CI 95%</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, years</td>
<td>31.0±6.2 (20-44)</td>
<td>26.0±6.0 (13-53)</td>
<td>5.0</td>
<td>4.6 vs 7.2</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Parity</td>
<td>4.1±2.3 (1-11)</td>
<td>3.4±1.6 (1-14)</td>
<td>1.6</td>
<td>0.2 to 1.1</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Gestational age, wks</td>
<td>39.7±3.0 (24-41)</td>
<td>38.6±2.5 (20-42)</td>
<td>0.7</td>
<td>0.3 to 1.4</td>
<td>0.022</td>
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<tr>
<td>Birth weight, grams</td>
<td>2043±771.9 (500-5030)</td>
<td>3173±941.2 (283-3940)</td>
<td>-177.9</td>
<td>-399.2 to -16.7</td>
<td>0.031</td>
</tr>
</tbody>
</table>

*df: difference between the means using Student's t-test. Multiple gestations were excluded.

Conclusions Universal screening for HCV during pregnancy should be performed; a minimum of 23 cases/year would be expected at our institution. HCV seropositivity appears to be associated with stillbirth, shorter gestational age, and lower birth weight. High rates of HIV-Hep C coinfection were not noted.
CROSS-SECTIONAL STUDY ASSESSING THE SEROPREVALENCE OF HEPATITIS A AND VARICELLA IN A 1-24-YEAR-OLD POPULATION IN EMBU DAS ARTES (SAO PAULO, BRAZIL)

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Background and aims: Hepatitis A (HAV) and varicella (VZV) are common vaccine-preventable diseases; infection susceptibility varies among populations. This cross-sectional study (GSK study identifier: 113609) assessed HAV and VZV seroprevalence in 1-24-year-olds in Embu das Artes, São Paulo, Brazil (Oct2011-May2012).

Methods: Subjects/parents/guardians provided written informed consent. Subjects were recruited from basic healthcare units and primary/secondary schools in Embu das Artes. Blood samples were collected/tested for anti-HAV and anti-VZV antibodies (ELISA). Seroprevalence was assessed by age group. Associations between seroprevalence and selected risk factors were assessed using logistic regression models.

Results: A total of 983 subjects were enrolled. Of 966 and 937 subjects with available results, 23.9% tested positive for anti-HAV and 80.5% tested positive for anti-VZV antibodies. HAV seroprevalence increased with age, but 42.4%-72.5% of adolescents/young adults were susceptible to infection. VZV seroprevalence was high since infancy (Table). A statistically significant association was observed between seropositivity rates and the number of household members (5-9-year-olds, P=0.0021), low versus medium income (20-24-year-olds, P=0.0034) and informal versus formal employment (20-24-year-olds, P=0.0090) for HAV, and varicella history (1-9-year-olds, P<0.0001) for VZV.

Conclusions: While VZV seroprevalence was high from early age, HAV seroprevalence remained at lower levels. The knowledge of VZV and HAV seroprevalence at baseline, before national vaccination introduction, will allow to evaluate the impact of the vaccination program.

Funding: GlaxoSmithKline Biologicals SA
CROSS-SECTIONAL STUDY ASSESSING NEISSERIA MENINGITIDIS CARRIAGE IN A 1–24-YEAR-OLD POPULATION IN EMBU DAS ARTES (SAO PAULO, BRAZIL)

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Background and aims: Pharyngeal carriage of Neisseria meningitidis (N. meningitidis) is considered a prerequisite for invasive meningococcal disease. This cross-sectional study (GSK study identifier: 113609) assessed prevalence of and factors associated with N. meningitidis oropharyngeal carriage in 1-24-year-olds in Embu das Artes, São Paulo, Brazil.

Methods: Subjects/parents/guardians provided written informed consent before any study-specific procedures. Subjects were recruited from basic healthcare units, primary and secondary schools in Embu das Artes. Oropharyngeal swabs were collected/tested for N. meningitidis; serogroups were determined for positive samples using latex agglutination test and polymerase chain reaction. Prevalence was assessed by age group. Associations between carriage state and selected risk factors were assessed using logistic regression models.

Results: A total of 983 subjects were enrolled. Of 967 evaluable subjects, 9.0% tested positive for N. meningitidis. Prevalence was highest for subjects aged 15-19 (12.6%) and 10-14 years (12.5%). Most positive samples were non-groupable (60.9%), followed by serogroups C (18.4%) and B (12.6%) (Table). No statistically significant associations were observed between carriage state and risk factors except ‘the number of household members’ (15-19-year-olds, P=0.0316).

Conclusions: This descriptive study of N. meningitidis demonstrated highest pharyngeal carriage states among older adolescents. The predominant serogroup identified was serogroup C, closely followed by serogroup B. These results may have important implications in determining future vaccination strategies in Brazil.

Funding: GlaxoSmithKline Biologicals SA
USE OF MOBILE PHONES FOR EFFECTIVE AND COORDINATED MANAGEMENT OF CHILDHOOD DIARRHEA AND PNEUMONIA - THE NIGRAAN IMPLEMENTATION RESEARCH PROJECT

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**Background and Aims:** The fourth evaluation report of Lady Health Workers (LHWs) program identifies weak supervision by lady health supervisors (LHSs) as a factor in low performance of LHWs in community case management (CCM) of under-five diarrhea and pneumonia. It is itself explained by poor coordination between them.

We aim to establish the utility of mobile phones for improved coordination between LHSs and LHWs for better CCM of diarrhea and pneumonia.

**Methods:** SMS-based tracking of diarrhea and pneumonia cases was added to existing MIS of LHW program in district Badin. LHSs were trained and given mobiles for real-time communication with LHWs. The primary expected outcomes were timely case detection and follow up visits, resulting in improved supervisory feedback by LHSs.

**Results:** A total of 34 LHSs and 170 LHWs were enrolled. During May 2014 to March 2015, 2141 cases of diarrhea and 2434 of pneumonia were tracked. 92% of identified cases were reported within 24 hours of identification. LHSs undertook timely follow up visits and provided feedback to LHWs on case management in 32% cases. Surveillance revealed that due to shortage of supplies, LHWs prescribed ORS to 29% diarrhea and antibiotics to 2% pneumonia cases with high referrals (85%). This set up also allowed random selection of health workers for clinical skills assessment. All LHSs and 72% LHWs contributed to case reporting.

**Conclusion:** Effective coordination through mobile phones has potential to improve LHW case management skills for diarrhea and pneumonia.

**Funding:** Alliance for Health Policy and Systems Research, WHO Geneva.
HIGHLY SEROPREVALENCE OF CHLAMYDIA PNEUMONIAE AMONG AGRARIAN SCHOOLCHILDREN IN YILI PREFECTURE, XINJIANG PROVINCE, CHINA

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More and more evidences indicated that Chlamydia pneumoniae is one of the most common pathogen caused community-acquired respiratory tract infections in all ages, specifically in children. To better understand the seroprevalence of C. pneumoniae, C.psittaci and C.trachomatis in agrarian schoolchildren in Yili Prefecture, a joint project was conducted by the China CDC and Yili Prefecture CDC in 2011. A total of 766 schoolchildren (412 of male and 354 of female) aged from 6-12 years old were recruited from Yining City (256), Gongliu County (255) and Zhaosu County (266) respectively. Blood samples were collected and separated sera were used for testing IgG antibodies against C. pneumoniae, C.psittaci and C.trachomatis by using micro-indirect immunoflorescence assays (mIFA). The average seroprevalence of C. pneumoniae, C.trachomatis and C.psittaci in children were 39.5% (305/777), 2.1% (16/777) and 0 (0/777) respectively. The seroprevalence of C. pneumoniae in Gongliu County (40.8%) and Zhaosu County (44.4%) were significantly higher than that in Yining City(32.4%) (p<0.05),which we proposed that the differences was associated with the cold weather of the Gongliu County and Zhaosu County. No statistically significant differences were found between the male and the female groups and between the two age groups (6-9 years old and 9-12 years old) and among the five minorities including Kazak, han, mongolian, uigur, Kirgiz. Here we concluded that the positive rate of C.pneumonia IgG antibody is quite high in schoolchildren in rural areas of Yili Prefecture and C.pneumonia infection should be differentiated from other pathogens for acute respiratory infections.
A BASELINE CROSS SECTIONAL STUDY ON KNOWLEDGE, ATTITUDE & PRACTICE OF CONDOM USE AMONG HIGH RISK ADOLESCENT FEMALE STUDENTS OF TERTIARY INSTITUTIONS IN SOKOTO, NIGERIA

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BACKGROUND

Abstinence and faithful monogamy has been very difficult as means of HIV prevention, recent campaigns have been directed more towards condom use. Unfortunately, despite increase in risky sexual behaviours among teenagers and youth, issues about sex and condom use are still being regarded as abomination in most Muslim dominated part of Nigeria. And as such, pro-condom campaign has always been on the lower ebb and females tend to be more on the receiving end.

METHOD

We conducted a descriptive cross sectional study of 190 teenage female students of tertiary institutions ages between 16 and 19 years in Sokoto between June & September 2014 using random sampling technique.

RESULT

Average age was 17 years. Of these, 87.5% had very good knowledge of HIV/AIDS. 100% were aware of male condom, 56.8% were aware of female condom, 12.5% had seen female condom. 15.9% used condom regularly, 35.6% used it occasionally, 48.5% never used condom. 79.8% were unsure of their partners’ faithfulness. 87.9% said condom use was at the discretion of the male partner.

CONCLUSION & RECOMMENDATIONS

The knowledge and awareness of HIV/AIDS & condom was high. However, the practice of condom use was not commiserate with the level of knowledge and the decision to use condom was the prerogative the male partner. Females therefore, need to be empowered to be able to take decision as regard to safe sex practices.
BACKGROUND

Commercial sex workers are high risk individuals and have been implicated in many studies as the reservoir of HIV infection. There have been a lot of programs targeting this group; in fact recent studies have shown that most of them observe strict universal precautionary and preventive methods. However, there has been lot of worries regarding sexual behaviors of females in higher institutions. This is more worrisome in the Muslim dominated part of Nigeria were culture & religion restrict openness in issues concerning sexual activities.

METHOD

We conducted a descriptive cross sectional study of 500 female students of tertiary institutions in Sokoto between June & September 2014 using random sampling technique.

RESULT

297 (59.4%) of the respondents were found to be sexually active. Of these, 79.2% had very good knowledge of HIV/AIDS. 43.6% had between 2 and 5 sexual partners within one month period preceding the survey. 12.5% had oral sex, 32.3% used condom regularly, 27% used occasionally, 40.7% never used condom.

CONCLUSION & RECOMMENDATIONS

The knowledge of HIV/AIDS among female students of tertiary institutions in Sokoto is high. However the level risky sexual behaviour among them is also high. And the use of such simple protective measure as condom is low. We therefore intend to conduct a further study aim at determining factors that promote these risky sexual behaviours and low condom use among sexually active females of tertiary institutions in Sokoto, Nigeria.
ASSESSMENT OF IMMUNO-VIROLOGICAL RESPONSE TO ART IN CHILDREN LESS THAN 15 YEARS OF AGE IN ADAMA REFERRAL HOSPITAL, ADAMA TOWN, OROMIA REGIONAL STATE, ETHIOPIA

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Background: Introduction of antiretroviral therapy (ART) in sub-Saharan Africa was a hot debate due to many concerns about adherence, logistics and resistance. WHO clinico-immunological approaches for initiation and monitoring of ART in the region lacks viral load determination and drug resistance monitoring.

Aims: To evaluate the virological efficacy and immunological recovery of HIV/AIDS pediatric patients <15 years of Age on ART.

Methods: a cross-sectional study was conducted on Pediatrics patients taking ART at Adama hospital during February 11 to June 2014.

Result: A total of 100 children age <15 years of age who started ART during February 2011 and June 2014 were analyzed. Mean age at the start of ART 87.79± 41.35 months & mean follow up periods after initiation of ART was 21.24 months (SD=10.860).

The mean CD4+ T cell count was 521.04 cells/mm3 (SD=311.118), 698.84 cells/mm3 (SD=400.545), 851.94 cells/mm3 (SD=576.808), 872.13 cells/mm3 (SD=637.627) at 6 months, 12 months, 24 months and 36 months after initiation of ART respectively.

Virological failure (HIV RNA >=1000 copies) was found in 24% of patients. Virological treatment failure (HIV RNA copies>= 1000 copies) was commonly found on 18 males. Significant association was observed between virological treatment failure and duration of months on antiretroviral treatment (p-value=0.028).

Conclusion: Having adherence level <95%, Male sex, longer duration on ART was found to be the independent risk factors for virological treatment failure.

Based on above data inclusion of routine virological monitoring is the most important follow up parameter for patients on ART to detect early treatment failure.
DEADLINE CHIPMENT OF DRIED BLOOD SPOT AND RESTITUTION OF RESULTS IN DECENTRALIZATION TO ACCESS INFANT EARLY DIAGNOSIS OF THE CHILDREN EXPOSED OF HIV IN MALI.

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⁵SOLTHIS, Solidarité Thérapeutique et Initiatives contre le Sida (SOLTHIS), Paris, France

Introduction

The decentralization to access infant early diagnosis mother-child transmission of VIH, deadline chipment of dried blood spot and restitution of results constitutes a reality in Mali.

Methodology: It is a descriptive retrospective studies of born children exposed to HIV benefitted the Prevention of the Transmission Mother Child (PMTCT) or no in regions of Bamako, Kayes, Koulikoro, Ségou and Sikasso in 2013. The studied variables were the deadline of withdrawal, of realization of the tests and the transmission mother-child rate.

Results: We achieved 1528 PCR (51% of boys). The median age in the first PCR was 2 months, and 6 months in the second PCR. The median deadline between transmission date of DBS and date of their receipt to INRSP was 5 days. The median deadline between date of DBS and date of their receipt to INRSP was 5 days. This deadline was longer for the sites situated out Bamako (p=0.001): 20 versus 3 days (I1Q: 1-6). The median deadline between the date of withdrawal and the date of result is 20 days and middle value is 34.5 days. This deadline is 15 days in Bamako against 40 days out Bamako (p <0.001). The transmission was 0.7% in case PTME against 48.6% no PTME.

Conclusion: the decentralization of the access to early diagnosis is well real. However the deadline between the withdrawal and the result is long in decentralized zone. The strategy of the PTME reduces the transmission of VIH efficiently to a vestigial rate 0.7%.
INFLUENCE OF BIRTH COHORT AND ETHNICITY ON THYMIDINE ANALOGUE MUTATIONS INCIDENCE RATE IN A PERINATALLY HIV INFECTED COHORT

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Background: The association of birth cohort and ethnicity with the incidence rate (IR) of thymidine analogue mutations (TAM) in HIV infected children is limited. We undertook this study to determine if such association exists for perinatally acquired HIV.

Methods: We study perinatally HIV infected children on cART who have more than 1 genotype test between 1998-2009. The IR of TAMs was expressed as per 100 person-years and 95% CI and stratified by birth cohort and ethnicity.

Results: 66 children were included. The population was mainly female (57.6%), black (74.2%) with a media of follow up of 10.1 years (IQR 6.6-14.4); the age at the first genotype was 6.2 (2.19-9.68) years. At the time of detection of first TAMs most were viremic (HIV RNA 4.1 log₁₀ copies/ml), had near normal CD4 (27%) and 60 were in viral failure (defined as an HIV RNA ≥ 400 copies/ml). The overall IR was 8.9 per 100 PY IQR (4.8-16.5). When the data were parsed by birth cohort and ethnicity, adolescents and blacks had the highest IRs of TAMs (Table).

Conclusion: Our data show that adolescents and blacks are the populations at greatest risk to have TAMs. Further studies are necessary to understand the interplay of ethnicity and retention in medical care with the emergence of TAMs.

<table>
<thead>
<tr>
<th>Birth cohort</th>
<th>Person-years</th>
<th>Events</th>
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<tr>
<td>1980-1990 (n=8)</td>
<td>20.2</td>
<td>-</td>
<td>-</td>
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<tr>
<td>1991-1995 (n=29)</td>
<td>36.6</td>
<td>7</td>
<td>19.2 (9.1-40.2)</td>
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<td>9.9 (2.5-39.6)</td>
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<td>35.5</td>
<td>1</td>
<td>2.8(0.4-20.0)</td>
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<tr>
<td>Black (n=49)</td>
<td>5.5</td>
<td>1</td>
<td>18.2(2.6-129.2)</td>
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<tr>
<td>Non-black (n=17)</td>
<td>106.9</td>
<td>9</td>
<td>8.4(4.4-16.2)</td>
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</table>
Viral Suppression and ARV Resistance Among Perinatally HIV-Infected (PHIV+) Pregnant Women


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Background - Our objective is to describe viral suppression and ARV resistance mutations in an ongoing cohort of PHIV+ pregnant women in Rio de Janeiro, Brazil.

Methods – An analysis of pregnancy data among PHIV+ women was performed, those with viral load (VL) > 1.000 copies/mL had genotyping. Descriptive analysis was performed using SPSS 18.0.

Results – From February 2011 to August 2014, we followed 22 PHIV+ pregnant women. Median age at prenatal entry was 19y (IQR 17.6-21.0), 86% had AIDS diagnosis; 81% of current sexual partner knew women HIV status. Median age at HIV diagnosis was 8.3y (IQR 4.0-13.6), median age at sexual debut was 16y (IQR 14-18). At prenatal entry, 4(18%) were on first ART, 8(36%) on second and 9(41%) on third ART or beyond; 1 had no data; 17/22(77%) had VL >50 copies/mL at prenatal entry, 16 had genotyping exam. 15/22 PHIV have results of VL near delivery: 6/15(40%) had VL bellow <50 copies/mL. Among those who had genotyping at prenatal entry, 11/16(69%) had mutations associated with ARV resistance. Table 1 shows resistance profile of 16 PHIV+.

Based on genotypic results, 6 switched HAART treatment and 10 continued treatment previously prescribed. No vertical transmission occurred among those individuals who had completed follow-up.

Conclusions – Management of ART during pregnancy of PHIV+ is specially challenging. Effective counseling, strategies and interventions targeting patient retention and individualized ART are needed and may be crucial to achieve viral suppression in a highly ART exposed subpopulation with expected adherence difficulties.
VIRAL SUPPRESSION AND ARV RESISTANCE AMONG PERINATALLY HIV-INFECTED (PHIV+) PREGNANT WOMEN

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Background – Our objective is to describe viral suppression and ARV resistance mutations in an ongoing cohort of PHIV+ pregnant women in Rio de Janeiro, Brazil.

Methods – An analysis of pregnancy data among PHIV+ women was performed, those with viral load (VL) > 1,000 copies/mL had genotyping. Descriptive analysis was performed using SPSS 18.0.

Results – From February 2011 to August 2014, we followed 22 PHIV+ pregnant women. Median age at prenatal entry was 19y (IQR 17.6-21.0), 86% had AIDS diagnosis; 81% of current sexual partner knew women HIV status. Median age at HIV diagnosis was 8.3y (IQR 4.0-13.6), median age at sexual debut was 16y (IQR 14-18). At prenatal entry, 4 (18%) were on first ART, 8 (36%) on second and 9 (41%) on third ART or beyond; 1 had no data; 17/22 (77%) had VL >50 copies/mL at prenatal entry. 16 had genotyping exam. 15/22 PHIV have results of VL near delivery: 6/15 (40%) had VL below <50 copies/mL. Among those who had genotyping at prenatal entry, 11/16 (69%) had mutations associated with ARV resistance. Table 1 shows resistance profile of 16 PHIV+.

Based on genotypic results, 6 switched HAART treatment and 10 continued treatment previously prescribed. No vertical transmission occurred among those individuals who had completed follow-up.

Conclusions – Management of ART during pregnancy of PHIV+ is specially challenging. Effective counseling, strategies and interventions targeting patient retention and individualized ART are needed and may be crucial to achieve viral suppression in a highly ART exposed subpopulation with expected adherence difficulties.
ANALYSIS OF THE CULTURAL AND PSYCHOSOCIAL FACTORS ASSOCIATED WITH ADHERENCE TO ANTIRETROVIRAL THERAPY IN ADOLESCENTS WITH PERINATAL HIV-1 INFECTION IN PANAMA FROM A GENDER PERSPECTIVE

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BACKGROUND: Adherence is vital for the effective treatment of HIV-positive adolescents. This study explored the cultural and psychosocial factors associated with adherence among adolescents with perinatal HIV-1 infection in Panama from a gender perspective.

METHODS: A cross-sectional study of 38 adolescents with perinatal HIV-1 infection on antiretroviral therapy was conducted in two pediatric hospitals in Panama City, approved by Institutional Review Board. A questionnaire developed for the study was used to explore cultural factors, psychophysical well-being, adherence, viral load (VL), and CD4 cell counts.

RESULTS: Of the 38 patients, 20 (53%) were female and 18 (47%) were male, with a mean±SD age of 14±1.6 years. An adult supervised the intake of medication in 87% of cases, comprising mostly female relatives (28 female relatives vs. 5 male relatives). Although 10 (26%) patients had an undetectable VL and 4 (11%) showed no CD4 suppression, only 18 patients (47%) reported getting sick only once a year. Only 17 (45%) patients recalled correctly their medication. The most common reason (68%, 16/34; 4 did not respond) for missing a dose was “I forgot”. While more male patients were likely to describe an action plan if they ran out of medication (p=0.05), more female patients gave more excuses for missing doses (p=0.02)

CONCLUSIONS: Most adolescents still depend on their female caregivers to remember taking their medication. Most of the adolescents responded that they feel healthy, making treatment adherence more difficult. Educational programs that involve the adolescent patients and also family members are warranted to improve adherence.
RISE AND FALL IN RATE OF MOTHER-TO-CHILD TRANSMISSION OF HIV BETWEEN 1999 AND 2015 IN THE CITY OF CAMPOS DOS GÖYTACAZES, RIO DE JANEIRO, BRAZIL

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Background and aims: In the absence of any interventions the rate of mother-to-child transmission (MTCT) of HIV ranges from 15-45% worldwide. Prevention measures effectively reduced the rate to 0-2%. We report the rise and fall in MTCT rate in a 15-year period (1999-2015) study in the city of Campos dos Goytacazes (population 500,000 habitants), RJ, Brazil.

Methods: Retrospective, observational study carried out in the Municipal Program of Prevention of MTCT. Secondary data were from medical records and analyzed in three sub-periods (1999-2003, 2004-2007 and 2008-2015). Access to triple antiretroviral therapy (prophylaxis or treatment) for pregnant women was universal. Babies exposed were observed up to 24 months. Viral loads in infants were determined by the rapid test at 1 and 4 months. Rates of transmission, frequencies of variables associated with transmission and relative risks of variables were determined.

Results: Rates of transmission varied from 6.8% (3/44) in 1999-2003, 7.7% (6/78) in 2004-2007 to 4.4% (9/205) in 2008-2015. In the last period, lost to follow-up was 4.6% (10/205), with 1 death before treatment. Vaginal delivery (RR 10.81, 95%CI: 2.85-41.03, p=0.006), diagnosis during delivery (RR 7.87, 95%CI 2.11-29.85, p=0.0064) and breastfeeding (RR 8.04, 95%CI: 2.29-28.27, p=0.0106) contributed to the fall in transmission rate. Triple antiretroviral therapy during pregnancy was highly effective in reducing rate of transmission from 10.3% (6/58 untreated) to 2% (3/147 treated).

Conclusions: Vertical transmission remains a Public Health challenge in this setting. Efforts must be concentrated in early diagnosis of maternal HIV infection, with judicious use of antiretrovirals.
EPIDEMIOLOGY AND CLINICAL PROFILE OF HIV AND SYPHILIS IN PREGNANT AND CHILDREN IN SAN ISIDRO’S MOTHER TO CHILD HOSPITAL ARGENTINA. OBSERVATIONAL COHORT STUDY

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Perinatal transmission of congenital syphilis (CS) and HIV are major public health problems. Argentina added PAHO initiative to reduce perinatal transmission syphilis/HIV rates.

Objectives: From patients treated in San Isidro (SI) Mother to Child Hospital:
Estimate syphilis/HIV percentage in pregnant.
Describe epidemiology-clinical profile and Perinatal Transmission (PT) HIV/syphilis.

Inclusion criteria: pregnant and children with syphilis/HIV. Syphilis: VDRL³4 with Treponemic Test+
Exclusion Criteria: no consent.

Results: 2591 Pregnant:
9 HIV+(0.35%)
56:syphilis(2.16%).
12% <18y.
Association with appropriate control and high school (p=0.009).

56 pregnant: 4 abortions + 1 stillbirth whose mothers have untreated syphilis. These 5 pregnant have 0 controls.

HIV PT:0%, 4/4 pregnant:TARV

Conclusions: Most pregnant with adequate treatment have asymptomatic newborns. All pregnant
with loss of product of conception were never treated in hospital.
HIV Perinatal Transmission was nule.
% of positive syphilis six times the % of HIV.
Clear association between high school and pregnant control.
Discussion: Emphasizes importance of sexual health education.
Although San Isidro’s health system provides enough resources for syphilis/HIV attention, high proportion of patients didn’t use them.

This research was funded by 'Carrillo Oñativia Grant” from Argentina National Health Ministry.
PREVALENCE OF LIVER FIBROSIS IN HIV- INFECTED ADOLESCENTS AND YOUNG ADULTS DIAGNOSED BY NON-INVASIVE METHOD

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Background: Non-infectious complications, including liver fibrosis, have become significant causes of morbidity and mortality in the long term in HIV-infected patients.

Aims: To determine the prevalence of liver fibrosis in a cohort of HIV-infected adolescents and young adults outpatients in the Department of Pediatric Infectious Diseases of UNIFESP using liver elastography.

Methods: Cross-sectional study approved by the Ethics Committee Institutional Research; obtained signature of informed consent form. The measurement of the elasticity of the liver parenchyma was performed in 61 subjects using fibrous scan; Elasticity indexes > 9KPa were considered indicative of significant fibrosis and indexes between 6.1 and 8.9 kPa were considered indeterminate values. Clinical data, laboratory and demographic surveys were obtained.

Results: The median age was 18 years (10-26 years), and 58/61 (95%) patients infected by vertical transmission, 7 (11.5%) had previous pregnancy, 56/61 (91%) belonged to the clinical category B and C, 30/61 (49%) had severe immunosuppression. Six of 61 patients (9.8%) had significant liver fibrosis (> 9KPa) and 16 patients (26.2%) showed indeterminate results (6.1-8.9KPa). There was no statistically significant association between fibrosis and the following variables: time of antiretroviral therapy and use of ddI, nadir CD4 + T cells, current lymphocytes T CD4 + count and viral load.

Conclusion: Liver fibrosis should be investigated during the follow-up of HIV-infected adolescents and young adults receiving antiretroviral therapy.
Background and Aims: Progressive multifocal leukoencephalopathy (PML) is a severe demyelinating disease of the central nervous system caused by the reactivation of polyomavirus in immunosuppressed patients. This study aims to describe cases of PML in HIV-infected adolescents.

Method: Review of five perinatal HIV-infected adolescents’ records, followed in an university service to assess the following data: age at diagnosis of HIV infection and PML, neurological manifestations, evolution and laboratory data.

Results: Median age of HIV and PML diagnosis were 10 and 18 years respectively. Initial neurological manifestations included hallucinations, paresthesia, dysarthria, diplopia, choreic movements, involuntary trembling and headache. Polyomavirus was isolated from cerebrospinal fluid (CSF) of all patients: characterized JC in three of them, BK in one and the last one had no differentiation. The patient with polyomavirus BK had no motor impairment, but had altered state of consciousness. The biochemical and cellularity in CSF was normal in all patients, the median plasma HIV viral load was 456,000 copies / mL and CD4+ lymphocyte count was 15 cells / mm³. The patients were not adherent to antiretroviral therapy (ART) and three of them had already received more than 5 ARVs schemes. Two patients died in less than 18 months after the beginning of PML and the others showed some type of neurological sequelae during the follow-up.

Conclusion: Polyomavirus should be part of the differential diagnosis of neurological manifestations in HIV-infected adolescents with severe immunosuppression.
The availability, proper and consistent use of highly active anti-retroviral therapy (HAART) has greatly improved the survival of children with paediatric HIV/AIDS. These children who now survive to adolescence deserve to know their diagnosis for proper self-care and prevention of transmission to others. Our country is yet to document disclosure guidelines and we set out to find the rate of disclosure and barriers, if any, that may prevent the disclosure of this stigmatising chronic disease to infected children in our community. A semi-structured questionnaire was administered to 104 consenting parents/related care-givers of HIV/AIDS children aged 6-17 years in the paediatric infectious diseases clinic of University of Uyo Teaching Hospital, Uyo, Nigeria from January to June 2015. Biological mothers constituted 69 (66.3%) of the study population. The rate of disclosure was 11 (10.6%) and age at disclosure ranged from 9-16 years with a mean age of 11.9 years. Disclosure was significantly affected by age and level of schooling of children, (p=0.0001). Ninety-four (90.4%) respondents admitted that disclosure will be beneficial in terms of better adherence to HAART, among others. Seventy-four (71.2%) prefer to defer disclosure till 15 years of age. Common reasons for non-disclosure included child becoming sad 24 (23.1%), blaming parents, 21 (20.2%), and not understanding the need to keep the diagnosis secret to avoid stigmatisation 7 (6.7%). We recommend that parents/care-givers be helped to overcome their fears and appropriate the benefits of disclosure of HIV diagnosis to their children/wards at appropriate age.

**Keywords:** caregivers, HIV disclosure, children, Nigeria.
INFANT HIV INFECTION IS ASSOCIATED WITH LACK OF MATERNAL AND INFANT ANTI-RETROVIRAL PROPHYLAXIS: 5 YEAR EXPERIENCE FROM A PMTCT PROGRAMME IN THE NORTH-EAST REGION OF NIGERIA.

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INTRODUCTION
Nigeria bears 25% and 10% of global MTCT and paediatric AIDS burden respectively. Efficacious combination ARVs for HIV infected mothers and infant prophylaxes are deployable interventions to eliminate MTCT of HIV. This study describes the results of a sub-regional PMTCT programmes in Nigeria.

MATERIALS AND METHODS
Records of HIV positive mothers and their infant pairs in a sub-regional PMTCT programme from 2009 – 2014 in three states of Gombe, Yobe and Bauchi were analysed.

RESULTS
2,125 HIV positive mother and their infants were analysed; 60% (1273/2125) of HIV positive mothers were receiving HAART before pregnancy, 24% (519/2125) started HAART during pregnancy, 168 (7.9%) did not receive any anti-retroviral before, during or after delivery. 52 (2.5%) HIV positive pregnant women received AZT, NVP and SdNVP.

2,113 HIV exposed infants had DNA-PCR. 96.8% (2045/2113) were negative and 3.2% (68/2113) positive. 1.1% (24/2113) was repeated because of problems with first test. 74% (1442/1932) of infants received NVP prophylaxis, 192 (9.9%) infants had no prophylaxis; 129 (6.7%) AZT; and 102 (5.3%) AZT/NVP. 5.1% (99/1932) of mother-infant pairs received neither ART nor prophylaxis. 24% (16/68) of HIV positive infants and mother pairs received neither prophylaxis nor ART.

MTCT rate was 16% (16/99) when neither mother nor infant received ART/prophylaxis;

8% (7/88) when mother alone received ART; 5.9% (3/51) when infant alone received prophylaxis and only 1% (28/1570) in mother-infant pairs who received ART and prophylaxis.

CONCLUSION
The PMTCT cascade needs to be strengthened to reduce infant HIV infections.
BACKGROUND. The most common diseases, contributing to the rapid progression and the development of adverse outcomes in HIV-infected patients are opportunistic infections (OIs).

RESULTS: We found high levels of optical density to viruses (virus herpes simplex-1, cytomegalovirus) and bacteria (Chlamidia trachomatis, Mycoplasma pneumonia, Ureaplasma urealyticum), which once again proves the persistence of a large number of OIs pathogens in the child organism, high risk of reactivation in the background of expressed immunosuppression, and is a high risk factor of adverse outcomes.

In children <12 months were not identified clinically significant forms of herpetic infections, while levels of Ig G antibodies to HSV-1 and CMV were extremely high. However, with age, the frequency of clinical manifestations of infection is increasing significantly (the frequency of the clinical manifestations of HSV-1 infection presented in 3,74% children of 12-35 months, in 5,22% of children 36-59 months, in 13,98% children ≥60 months.

Infections, caused Ureaplasma urealyticum and Mycoplasma pneumonia often occured in acute or chronic form, manifested as bronchitis and focal pneumonia.

Particular relevance in the pediatric population acquired Mycobacterium tuberculosis. In a cohort of HIV-infected children, the incidence of tuberculosis (TB) reached 69.54% and increased with age.

CONCLUSION: The spectrum of OI in children with HIV/AIDS characterized by the "iceberg" type of carrier and determined by the age and unfavorable epidemiological situation, proving the feasibility of developing strategies to maximize their early detection and prevention, including vaccination.
DOSE-RESPONSE RELATIONSHIP OF TENOFOVIR WITH HIV-1 SUPPRESSION AND AN EX VIVO MODEL OF TISSUE INFECTIBILITY IN ADOLESCENTS

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Background: The gut-associated lymphoid tissue is the principal site of active viral replication and drug resistance. Compartmental PK profiles of tenofovir (TFV)/tenofovir disoproxil fumarate (TDF) will be quantified. The ex vivo infectibility assay will be validated using HIV-1 adolescent rectal biopsies.

Methods: Measure TFV/TFV-DP in rectum, plasma, and PBMC by LCMS/MS between older (18-21 years) HIV+ subjects on tenofovir compared to historical adult data. Rectal biopsies will be assessed for HIV-1 RT PCR. Assess viral growth (p24) of HIV-1 biopsies challenged with two titers of R5 HIV-1BaL, and assess suppression with tenofovir pre-treatment.

Results: TFV levels were 41-191 ng/mL in plasma, 0.1-15.4 ng/mg in rectal tissue in 6 HIV+ well-controlled subjects. Tissue HIV RNA 24-69 copies/µg RNA. All HIV-1 mucosal biopsies challenged with HIV-1 were infected. The EC50 of adolescent p24 was 6.5 days (6.08-6.97; 95% CI) vs 3.6 days (3.5-3.75; 95% CI) in adults, P < 0.01. By day 10, there was no difference in total p24. P24 was completely suppressed in pretreated tissues exposed to TCID50 HIV-Bal 10⁵, while p24 was moderately decreased when challenged with TCID50 HIV-Bal 10⁴.

Conclusions: The ex vivo infectibility model is valid for adolescent gut mucosal tissue. There is a significant delay in viral growth in adolescent vs adult explants. Low dose tenofovir is effective in preventing HIV-1 Bal infection of adolescent explants. Similar to adults, HIV+ adolescents have expected ranges of plasma tenofovir, but minimal levels of rectal TFV on chronic tenofovir. Tissue HIV RNA were detectable (n=3) indicating viral replication.
Background and aims: Adolescents living with HIV/aids have the right to make choices regarding their own sexuality, as far as they respect the rights and safety of others. This study aims to assess knowledge of reproductive and sexual rights among HIV-infected adolescents and how they experience sexuality.

Methods: Cross-sectional study: 80 perinatally HIV-infected Brazilian adolescents completed a questionnaire assessing sexual practice and knowledge about sexuality, HIV transmission and pregnancy. The study was approved by the ethics committee of institution; participants signed the informed consent form. Descriptive statistics was used to describe the study population.

Results: Thirty two(40%) boys and 48(60%) girls with a median age of 16.9(13.6-19.9 years); 37(46.3%) were formerly dating and had initiated sexual life with a median age of 15 years. More than half(72.5%) of respondents reported not having disclosed the HIV diagnosis to the partner and 28.9% reported irregular condom use. Seventy three(91.3%) were unaware of the recommendations about sexual post exposure prophylaxis (PEP) and 40(50%) did not know what to do in the case of a condom rupture. The desire to have children was reported by 66(82.5%) of adolescents, however 38(47.6%) had doubts about having children being HIV+. The opportunity to discussing with parents and health professionals about dating and pregnancy in adolescence was reported by 36 (45.1%) and 50(62.5%), respectively.

Conclusions: Adolescents living with HIV/aids experiences sexuality with risky behaviors. The level of knowledge about reproductive and sexual rights was found to be low, highlighting the need of discussing these issues with this population.
HIV is a global pandemic. According to the WHO AIDS Epidemic Update 2009, 2.1 million children <15 years were infected with HIV, 91% occurred in sub-Saharan Africa. HIV has affected the epidemiology of childhood pneumonia, changing the spectrum of pathogens, antimicrobial susceptibility of bacteria and prognostic outcome. More than 70% of HIV-infected children will suffer at least one episode of a pulmonary infection in the course of their illness. The pneumococcal conjugate vaccine demonstrated vaccine efficacy of 20% in HIV-uninfected children and 13% in HIV-infected children in South African using WHO standardized chest X-ray interpretation criteria. The chest X-ray remains the most readily available and the commonest imaging modality for childhood pneumonia. A combination of clinical findings with pattern recognition on chest X-ray narrows the differential diagnosis. We present a pictorial review of chest X-ray findings in HIV-infected children. TB is the commonest opportunistic infection in HIV-infected children in Sub-Saharan Africa, with increased risk of complicated pulmonary TB. The radiological hallmark of primary childhood TB is lymphadenopathy. *Pneumocystis jiroveci* pneumonia is a common cause of severe pneumonia and death in HIV-infected infants with a peak age incidence of 4–5 months. Streptococcus pneumonia and Staphylococcus aureus are common bacterial co-infections in childhood HIV. Common viral pathogens include respiratory syncytial virus, influenza, cytomegalic virus, varicella zoster and measles. Immune reconstitution inflammatory syndrome is defined as a paradoxical worsening of symptoms and radiological signs due to recovery of the immune system, and is not due to recurrence or relapse of disease/infection.
Background: Studies have shown a change in the pattern of AIDS mortality, and the impact of highly active antiretroviral therapy (HAART) on the survival of children with AIDS by vertical transmission of HIV. Our purpose was to estimate the survival rate and the factors associated with survival time in a cohort of children infected with HIV.

Methods: A retrospective 11-year cohort study was conducted with Brazilian vertically HIV-infected children using patients’ charts. Medical records, death certificates and the Ministry of Health’s mortality database were verified for mortality and cause of death. The diagnosis of AIDS was according to CDC / 1994.

Results: 177 patients with AIDS were included in the study, 97 female (54.8 %) and the median age at admission was 30 months (interquartile range (IQR): 5-72 months). The total time of the follow-up of patients was 11 years, with a median of 5 years (IQR: 2-8 years). In the period there were 26 deaths (15%). The median survival time was 10.2 years (95% CI: 9.6 to 10.7). Variables with statistical significance in the final model of Cox were the age group to enter the service (p = 0.019); the percentage of CD4 + T lymphocytes < 15% (p = 0.005); Pneumonia P. Jiroveci (p = 0.007).

Conclusions: The use of HAART for children without serious immunological abnormalities or AIDS-related illnesses was a predictor of longer survival. The improvement in the diagnosis so that HAART is started early tends to contribute to survival of HIV-infected children.
PERINATAL HIV TRANSMISSION: 8 YEARS OF EXPERIENCE

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Aim: The aim of this study is to evaluate the characteristics of HIV-exposed infants followed in a pediatric HIV center in Turkey and to describe the cases with vertical transmission of HIV infection.

Patients and methods: Clinical and laboratory features of HIV infected mothers and their exposed infants, followed from our department between 2007 and 2015 were retrieved from medical records retrospectively.

Results: A total of 32 HIV exposed infants were followed in 8 years. Diagnosis of HIV infection was made before pregnancy in 46.9%, during pregnancy in 31.3% and during delivery in 21.8% of mothers. Nine mothers (28.1%) had not received antiretroviral therapy during pregnancy. Four infants (12.5%) did not receive antiretroviral prophylaxis. Cotrimoxazole prophylaxis could be given to 60% of infants. The HIV infection rate was 6.2% (2/32 infants). One of these infants was delivered vaginally and his mother’s HIV status was detected during delivery. The mother of other infected infant was diagnosed only 3 weeks before birth and delivered with cesarean section. Both mothers had high load of HIV RNA just before delivery. One of the infants infected with HIV was died at 4 months due to lung infection and sepsis.

Conclusions: This study reveals a high rate of perinatally transmitted HIV infection and mortality. Even so, our findings indicate the defects in the prenatal care of the pregnant. Prevention of late or missed diagnosis of HIV infection during pregnancy should be achieved and HIV infected pregnants should be followed up by specialized centers for HIV.
Disclosure of HIV diagnosis to infected children presents a unique challenge to healthcare workers and caregivers despite reported benefits. This poorly addressed clinical practice leads to low disclosure rates, and children may accidentally learn of their HIV diagnosis with resultant negative outcomes. This study aims to assess rate of inadvertent HIV disclosure to children and its subsequent impacts on socio-medical outcomes.

A qualitative study was conducted using focus group with consenting caregivers of HIV-infected children aged ≥7 years attending the Paediatric Infectious Disease Clinic of the Barau Dikko Teaching Hospital, Kaduna, Nigeria and in-depth interviews with a subset who learnt of their HIV status by non-formal disclosure processes. Only 29 (13.4%) of 217 HIV-infected children studied knew their diagnosis, 13 (44.8%) of whom inadvertently learnt of their status. The most frequent means of inadvertent disclosure were health talks and peer interactions in clinic. Contrary to parental reasons for nondisclosure, children who accidentally learnt of their HIV status understood the disease and only 1/13(7.7%) had disclosed to a third party. Anger by 69.2% was directed to caregivers for not being taken into confidence rather than for HIV transmission. Poor sleep, poor appetite, poor school attendance, poor adherence and psychological features of withdrawal and aggression were most frequent responses to inadvertent disclosure. All children with inadvertent disclosure had an evidence of either clinical or immunologic failure or both.

There is the need to emphasize formal disclosure processes in routine clinical care as an integral part of comprehensive care of HIV-infected children.
Pacients infected with HIV virus (HIV(+)) have renal changes resulting from virus itself and from use of antirretroviral (ARV). Tenofovir is ARV used in treatment of HIV(+) patients and although clinical studies have demonstrated safety for its use, there’re some evidences that medication can cause kidney damage. There’re still no consensus on the monitoring required for patients using the medication. The pediatric infectious diseases service – HCRP established an evaluation protocol for all HIV(+) patients. The objective is describe the alterations found in the evaluation conducted so far. Survey data from renal function’s tests and tubular changes in infected HIV(+) patients doing follow-up in HCRP. Survey period: January 2014 to September 2015 (so far there in partial data). Data evaluated of all patients: creatinine clearance (CrCl); urine rotine (UR). In presence of proteinuria was obtained ratio (protein)/(creatinine) (Pu/Raw) in urine. Data evaluated only for those taking TDF: Phosphorus resorption rate, FeNa, FeK, ratio (urinary uric acid)/(sérum uric acid) and (urinary calcium)/(sérum calcium). CrCl was obtained from 40 patients, CrCl 2 were 87 and 89 ml/min/1.73m², one of them uses TDF. Within the 28 evaluated UR tests, 11 had proteinuria; 8 making use of TDF and conducted assessment Pu/Raw: 3 showed ratio >0.2. There were 17 reviews of renal tubular changes, 11 (64%) with alterations. Results shows importance of monitoring the glomerular and tubular renal function in patients taking ARV, especially those taking TDF. The routine assessments established at the service will allow long-term evaluated the relevance of this monitoring.
THE EFFECTS OF SPEECH TRAINING, GUIDEBOOK AND SIMULTANEOUS METHOD, ON THE KNOWLEDGE AND ATTITUDE OF STUDENTS ABOUT HIV/AIDS

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Introduction:
A great percentage of AIDS infections occur in youth. Since that, teaching and finding the most efficient teaching methods in order to improve their information (knowledge) and attitude also to create a positive one and to create preventive measures in the young, is of great significance and priority.

Methods: 7 schools were randomly selected from different Mashhad educational districts. From these schools, 650 students were randomly selected and divided into 4 groups: 1- education with lecture, 2- education with guidebook, 3- lecture and guidebook, 4- without any education. Firstly, basic knowledge and attitude of students on AIDS were evaluated. Then their educational needs and curriculum were designed. Then 2 weeks after conducting the education, student's knowledge (study groups) and attitude were evaluated.

Results: Average Points for knowledge and attitude before education were 25.86 and 23.70 that were elevated to 27.68 and 25.27 after education. There was no statistical difference between average points of all 4 groups' knowledge and attitude before education. After education, average point of knowledge was 28.33±5.6 in lecture group, 28.19±6.26 in guidebook group, 29.77±4.49 in lecture and guidebook group and 26.90±4.95 in control group. After education, average points of attitude was 25.77±3.7 in lecture group, 25.62±3.47 in guidebook group, 25.27±3.87 in lecture and guidebook group and 23.98±3.56 in control group. Statistical analyses showed that there is significant difference between points before and after education in the 3 study groups.

Conclusion: To improve student's knowledge, education by both lecture and guidebook, and to improve their attitude or to create a positive one, lecture method are preferred.
IMMUNOLOGIC AND VIROLOGIC RESPONSE IN HIV-1 INFECTED CHILDREN AFTER 24 WEEKS OF HIGHLY ACTIVE ANTIRETROVIRAL THERAPY

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Background and aims: Studies on immunologic and virologic response to NNRTI based Highly Active Antiretroviral Therapy (HAART) in pediatric population are scarce in low and middle-income countries. Hence, we undertook this study to unveil the effect of HAART in a cohort of treatment-naive HIV-infected pediatric population.

Methods: Laboratory parameters including CD4%, CD4 count and HIV-1 viral load level estimation were performed in HIV-1 infected children at baseline and 6 months of HAART.

Results: The median (IQR) age of the 74 enrolled patients was 36 (24-108) months. A significant increase was observed at the end of six months of HAART, with a median increase of 11% (6-15%) in CD4% (p<0.0001) and 281 (114-534) cells/µL in CD4 T cell count (p<0.0001). Thirty-three (44.5%) children were found to have greater than 25% CD4 percentage with 19 (26%) children exhibiting a positive immunological response (≥15% increase in CD4%) to HAART. Children had a high initial viral load: 2.5 X 10\textsuperscript{5} copies/mL. Plasma viral load was found to be significantly decreased from the baseline levels (p<0.0001). At end of 6 months of HAART, viral load was undetectable in only 27 (36.4%) children; Twenty-one (28.3%) children had 47-<500 copies/mL and 10 (13.5%) children still had >10000 copies/mL.

Conclusions: The result of this study indicates the effectiveness of NNRTI based HAART in pediatric population; however, there is concern about inadequate viral suppression at 6 months of treatment.
ECHOCARDIOGRAPHIC ABNORMALITIES IN PEDIATRIC PATIENTS INFECTED WITH HUMAN IMMUNODEFICIENCY VIRUS

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Background and Aims: Clinical manifestations of pediatric AIDS are numerous, including cardiovascular diseases (average incidence of 20%). The most frequent findings are systolic and diastolic dysfunction and left ventricular (LV) dilatation. We aim to describe echocardiographic abnormalities in HIV children and their correlation with clinical and laboratory data.

Methods: Descriptive study by review of medical records of children with HIV at a university hospital in São Paulo, between 2009 and 2014. Children with congenital heart disease or cardiovascular disease attributable to other causes and those without echocardiogram were excluded.

Results: We selected 76 patients in the study period. Of these, 26 showed any abnormality in the echocardiogram (34.2%) and 11 (14.5%) were included. The mean age was 16.8 years, mean HIV viral load 510.8 copies (2.7 log) and 7 of them undetectable, mean CD4+ count 689.4 cells (26.2%) and mean hemoglobin level 13.7 g/dl. Clinical categories were distributed: N=1; B=5 and C=5. All 11 patients were on antiretroviral therapy. LV dilatation was the most frequent abnormality (n=8), followed by ventricular dysfunction (n=2), pulmonary hypertension (n=2), right ventricular dilatation (n=1) and LV eccentric hypertrophy (n=1). Only one patient had moderate cardiac dysfunction with restriction to physical activity.

Conclusion: We identified 14.5% of patients with echocardiographic abnormalities detected in routine care, of which dilatation of the LV was the most frequent. All, but one child, were asymptomatic, which supports the inclusion of echocardiogram on routine follow up of HIV infected children.
Background

Immunocompromised patients, notably those with severe neutropenia are often hosts of invasive fungal infections. Most of those caused by Candida and Aspergillus species. Saprochaete capitata, formerly known as Geotrichum capitatum, is an invasive and fatal agent in immunocompromised people but rarely reported in a non-malignant hematologic disease.

Case report

A previously healthy 6 year-old female child, who developed fever for more than 7 days associated with severe pancytopenia, was transferred to a tertiary pediatric hospital for diagnosis evaluation. Hemophagocytic Lymphohistiocytosis (HLH) was suggested. The patient also had positive serology for Dengue virus, which was considered HLH’s trigger. Bone marrow biopsy showed severe aplasia. One month later, under severe neutropenia, Saprochaete capitata was isolated in blood from peripheral vein and central venous catheter, and bone marrow cultures. The specie was initially identified by MALDI-TOF mass spectrometry. Its rRNA sequencing showed 100% similarity with Saprochaete capitata. The cultures remained positive even after dual therapy with voriconazole and amphotericin B. Despite granulocytes infusion, corticosteroids and cyclosporine, the patient persisted with severe neutropenia, dying 18 days after the first positive culture.

Conclusion

Saprochaete capitata emerges as an agent of fungal infection in immunocompromised patients with non-malignant hematologic disease. Despite aggressive antifungal therapy, poor outcome is probably due to non-recovered immune response and poor control of the underlying disease, in the context of an infection with high mortality rates.
GENETIC VARIABILITY OF HEPATITIS B VIRUS X GENE AND ITS EFFECT ON DISEASE PROGRESSION IN INFECTED PATIENTS

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Aim: This study was designed to investigate the prevalence and pattern of HBV X gene mutations and their clinical significance in different disease categories in infected patients.

Results: In the studied population (n=424), HBV genotypes D (D1, D2, D6, D8), E and C were detected in 93.4%, 4.48% and 2.12% samples respectively. Analysis of the HBx gene polymorphism showed that mutations in the amino acids at positions V88F, H94Y, I127T, K130M, V131I, F132Y/I/R, S42P and A47T were observed in all categories (inactive, active, cirrhotic and hepatocellular carcinoma (HCC)). However, the double mutation K130M + V131I and triple mutations I127T + K130M + V131I and K130M + V131I + F132Y were found to be significantly more common in HCC patients.

Conclusion: We propose that such mutations could be used as possible prognostic markers for the development of HCC as these genetic changes might occur at an earlier stage of the disease and gradually increases the risk of HCC as the disease progresses.
HEPATITIS C VIRUS INDUCED APOPTOSIS IN HEPATOCYTES.
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Infection by Hepatitis C virus represents a major global health problem by causing multi-cellular dysfunctions in the infected cells. In many cases HCV led to hepatocellular carcinoma. The aim of this study was to investigate the apoptotic gene expression in liver of patient during infection. Three apoptotic genes involved in apoptosis; Caspase-3, Bcl-2 and Bax were investigated. Quantitative real time PCR and immunoblotting were used to quantify apoptotic genes. Obtained data showed the levels of liver caspase-3 and Bax were significantly (P<0.05) increased compared control. In contrast, the levels of Bcl-2 were significantly decreased compared to control.

Thus, this study suggests; (A): HCV induced apoptotic gene expression, and (B): apoptotic genes need further investigation to know the tiny details of apoptosis pathways in liver cells.
SUSTAINED EMERGENCE OF INFLUENZA A H1N1 IN SAUDI ARABIA ....WORRISOME

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Background and Aims
In the spring of 2009 the pandemic influenza A H1N1 virus spread globally. Saudi Arabia also witnessed a severe H1N1 pandemic virus epidemic with considerable morbidity and mortality in different parts of the kingdom from June 2009. On the 15th August 2010, the Saudi Ministry of Health declared that the cases of Influenza A H1N1 had drastically declined with no deaths or serious complications.

In this study, we will shed light on the number of cases of Influenza A H1N1 infections in Saudi Arabia from January to December 2014, to encourage improvement of public awareness of H1N1 of the benefits of vaccination and the consequence of not getting vaccinated.

Methods
The Influenza A H1N1 virus was detected in samples collected between January to December 2014 from two major hospitals Prince Sultan Medical Military City and King Abdulaziz Medical City. This is a retrospective study in which we collected the nasopharyngeal swabs from clinically infected patients. The samples were processed for viral diagnosis by GeneXpert (PCR) to provide data on the number of cases of Influenza A H1N1 in Saudi Arabia.

Results
2496 samples from different patients were tested for Influenza A H1N1 from January to December 2014. Overall, there were 305 positive samples, 135 of those samples were positive for Influenza A H1N1, 170 were positive for Influenza A non H1N1.

Conclusion
Influenza A H1N1 emergence continued in Saudi Arabia which is worrisome. Public awareness of H1N1 and the importance of vaccination should be improved.
IDENTIFICATION OF AN EXTENDED HAPLOTYPE CARRYING A NOVEL STOP MUTATION CAUSING PARTIAL IL12RB1 IMMUNODEFICIENCY ASSOCIATED WITH MENDELIAN SUSCEPTIBILITY TO MYCOBACTERIAL DISEASE

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Background and aims: We report four children diagnosed with Mendelian Susceptibility to Mycobacterial Disease due to the same novel germline mutation. The children, from three unrelated families from the Northern Region of the State of Rio de Janeiro, presented with BCGitis and their peripheral blood monocytes failed to produce detectable IFN-γ when stimulated with BCG. The present study aimed to determine whether the novel pathogenic variant represents a germline mutation with a founder effect.

Methods: Allele frequency was determined by single nucleotide primer extension (SNuPE) using genomic DNA from 227 unrelated healthy individuals. IL12RB1 extended haplotypes comprising the novel rs150172855 pathogenic variant and the single nucleotide polymorphisms rs845381 (minimal allele frequency MAF 0.09), rs3833286 (MAF 0.18) were determined by SNuPE for the four affected boys, their parents and 20 unrelated individuals. The extended haplotype span 2.7 Mb.

Results: The four children were homozygous for the same novel c.21G>A (rs150172855) stop mutation in the IL12RB1 gene, which maps to the signal peptide sequence. Their parents were heterozygous. We observed one pathogenic allele in 457 chromosomes in a population subset (allele frequency of 0.002). The IL12RB1 extended haplotype carrying the mutation c.21G>A mutation was rs845381-G, rs3833286-G and rs3746190-T. All four affected boys share this extended haplotype.

Conclusions: The IL12RB1 extended haplotype carrying the mutation c.21G>A mutation is frequent and therefore it may represent the ancestral haplotype by which the germline variant is spreading through non-consanguineous marriages in the Northern Region of the State of Rio de Janeiro.
BACKGROUND: the meningococcal disease has a dynamic epidemiology (1-3). It causes 500,000 cases of invasive disease and 50,000 annual deaths, high mortality (4-6).

AIM: to determining the epidemiological, clinical, genotypic and phenotypic of Neisseria meningitidis serogroup B in Cartagena city 2012-2015.

METHODS: description of cases serogroup B meningococcal from February 2012 to May 2015. The Colombian National Health Institute determined the phenotypic and genotypic characteristics by serosubtyping, serotyping, antimicrobial susceptibility testing, repetitive sequence-based PCR (rep-PCR) and Multi Locus Sequence Typing (MLST).

RESULTS: 38 cases in 3 years were collected. Mean age 16.5 ± 18.5 years. Fifteen patients died (39.5%). Incidence rate 3.9 per 100,000 population, primary attack rate (neighborhood) 30 per 100,000 population. Signs and symptoms: fever 13 (35.1%), somnolence 27 (73%), rash 22 (59.5%), headache 19 (51.4%), vomiting 17 (45.9%), myalgia 13 (35.1%). 86.6% of deceased patients had meningitis and meningococcemia. 10/15 patients died within 24 hours from admission. Three samples of cerebrospinal fluid with negative culture, PCR was performed for the gene ctrA and gene synD being reported positive for meningococcal serogroup B. The most prevalent serotype and serosubtype was B:10,15:nt (60.0%). Cluster A was the most common, and showed genetic relation with the clonal complex ST-41/44 in 64.3%.

CONCLUSIONS: we reported outbreak of meningococcal serogroup B, mortality rate 39.5%, the prevalent serotype and serosubtype was different to identified in Cuba (B:4:P1.15) and the New Zealand epidemic strain (B:4:P1.7b,4), predominance of clonal complex ST-41/44. It is essential to use new vaccine against serogroup B.
CHARACTERIZATION OF FORMAL INFECTIOUS DISEASES CONSULTATIONS AT A TERTIARY PEDIATRIC HOSPITAL: THE COSTARICAN EXPERIENCE

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Background: During the last years, the epidemiological pattern of pediatric infectious diseases (PID) has changed. After controlling vaccine-preventable diseases, infections in the immunocompromised host, the emergence of uncommon pathogens and infections caused by multiresistant pathogens dominate the landscape. Hence, a timely consultation to PID specialists is a priority in order to improve an adequate diagnosis, timely and appropriate empirical antimicrobial treatments, reduce complications, and improve patients’ survival.

Methods: A 3-year period (2012-2014) of consultations to the PID staff members were retrospectively analyzed by gender, month, reason for consultation, referring unit, and time elapsed between consultation reception and its resolution at the National Children’s Hospital "Dr. Carlos Sáenz Herrera", the only national tertiary referral academic pediatric center of Costa Rica.

Results: 3316 consultations were solved during the period, with an annual average of 1105. March, April, October, November were the months with higher number of consultations received (average: 137/month). The majority originated from surgical units 733(22%), especially orthopedics 325(44%), and the remaining referrals (2583) came from medical services, especially the PICU, 663/2583 (26%). Among others, the main reasons for consultation were bacteremia, 357(14%); skin/soft tissue/musculoskeletal infections, 297(11.5%); LRTI’s, 203(7.8%); and fever without a source, 185(7.2%). 80% of consultations were solved in the first 24 hours.

Conclusions: PID physicians play a crucial role in the era of multidrug resistant organisms and antimicrobial stewardship. An increasing demand for PID expertise is noticed. Academic activities to improve knowledge about common PID problems among surgical physicians should be incremented.
ENDEMIC BRUCELLOSIS IN BOSNIAN CHILDREN FROM 2007 TO 2015

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BACKGROUND: Brucellosis in humans occurs when a person comes into contact with an animal or animal product infected with the *Brucella* bacteria. General symptoms of brucellosis are often vague and similar to the flu and they may include: fever, back pain, body-wide aches and pains, poor appetite and weight loss, headache, night sweats and weakness.

OBJECTIVE: Intention of this article is estimation of brucellosis incidence in children during endemics infection in Bosnia and Herzegovina.

METHODS: Authors have collected statistical data from beginning of brucella bacteria infection in late 2007 until today of early 2015 from National Health Institution of Statistics. This article include of reporting cases of children from age 1 h until 18 years in all Bosnia and Herzegovina. Culture results are typically positive, and serology may be difficult to interpret, but enzyme-linked immunoassay (ELISA) testing were more helpful.

RESULTS: Annual reports from Bosnia and Herzegovina found that 50% of cases of brucellosis occurred in individuals aged 19-40 years, whereas about 19% occurred in those younger than 18 years, 25% in those aged 40-60 years, and 6% in those older than 60 years. Incidence rates of 20-30 cases per 1,000,000 people are reported in total population and 4-6 children cases about one fifth cases.

CONCLUSIONS: Consumption of unpasteurized milk and milk products, as well as of raw or undercooked meats, should be avoided. Definitive diagnosis of brucellosis in children is based on culture, serologic techniques, or both. The prognosis is generally excellent.

KEY WORDS: Brucellosis, Children, Endemia, Incidence.
Saccharomyces cerevisiae, known as baker’s yeast, is normally considered a non-pathogenic fungus that very rarely cause invasive infection in immunocompromised host.

**Case:** A 8 years-old boy was admitted to pediatric surgery ICU with respiratory distress. His medical history included cerebral palsy, mental retardation, swallowing dysfunction, gastrostomy, aspiration pneumonia and chronic lung disease. Due to the lack of peripheral venous line, a subclavian central venous catheter (CVC) was inserted. The patient had an episode of diarrhea and feeding intolerance. The formula was changed and probiotic *S. boulardii* 250 mg sachet was administered orally twice a day for 5 days. The diarrhea resolved but he developed fever. After obtaining blood (both from the CVC and peripheral vein), empirical intravenous antibiotic treatment was started. Despite of broad spectrum antibiotics his fever continued. CVC blood culture yielded *S. cerevisiae*. Caspofungin was added to the treatment. Despite antifungal therapy, the fever persisted and *S. cerevisiae* was grown second time in the blood culture drown from CVC on the third day of caspofungin treatment. The CVC was removed and the caspofungin treatment was replaced with amphotericin B. His fever resolved after 72 hours of the amphotericin B and control blood cultures remained sterile. He was successfully treated with amphotericin B.

**Conclusion.** *S. boulardii* is a subtype of *S. cerevisiae* and it has been used in probiotics to treat diarrhoea. There have been increasing reports of fungemia caused by *S. cerevisiae* and its subspecies *S. boulardii*. Due to this serious complication it is recommended that probiotics should be carefully used in ICUs patients.
"SKIN AND SOFT TISSUE INFECTIONS CAUSED BY STAPHYLOCOCCUS AUREUS IN PEDIATRIC PATIENTS IN A REFERRAL HOSPITAL"

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Introduction: Infections of skin and soft tissue IPPB are a frequent cause of hospitalization in our unit. *Staphylococcus aureus* SA has been and is the most common causative pathogen, however increasingly developed resistance to methicillin even producing strains of community.

Objective: determine the prevalence of MRSA in the community IPPB in pediatric patients, demographic characteristics, type of infection and initial empirical treatment.

Material and Methods: Prospective observational cross-sectional study in patients aged 1 month to 15 years admitted to the Infectious Diseases Unit in the period March 2013 to May 2015 with diagnosis of IPPB to SA.

Results: 118 patients diagnosed with IPPB were interned insulated SA, 32 in 2013 (27%), 67 in 2014 (57%) and 19 patients (16%) in 2015. 68% were male and age accounted for <1 year: 9%, 1-5 years: 17% and > 5 years: 74%. In 90% of cases were cellulites: abscessed 76% and not 24%. 71% of strains were resistant to methicillin. The empirical initial treatment was with clindamycin in 83% of cases with good clinical response.

Conclusions: in recent years in our hospital is a considerable increase in IPPB and a high prevalence of MRSA in the community. The infections occurred more often in male, older 5 years. The most frequent type of presentation was the abscessed cellulite, and empirical treatment with clindamycin has been adequate in a high percentage of cases. The finding of a high prevalence of MRSA in IPPB and type of presentation justify the changes made to the initial antimicrobial scheme.
VENTRICULITIS ASSOCIATED DEVICES VENTRICULAR BYPASS EXPERIENCE IN A HOSPITAL OF REFERENCE

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Introduction: Ventricular shunt catheters are used therapeutically in patients with hydrocephalus and brain tumors. The incidence of catheter-related ventriculitis varies from 0% to 22%, mainly occur during surgery and wound infection, microorganisms isolated vary, the most common are skin and seeds large negative rods are usually nosocomial pathogens.

Objective: Determine the frequency, characterizing microorganisms and use of prophylactic antibiotics in ventriculitis devices associated with ventricular shunt in children with a history of hydrocephalus and / or tumors of the central nervous system

Materials and Methods: A descriptive, retrospective, observational, cross-cutting in patients aged 1 month to 15 years from January 2013 to February 20th 2015 in patients in the pediatric ward of HC IPS.

Results: a total of 74 surgeries (28%) of 21 patients were diagnosed with ventriculitis, 11/21 were males and female 10/21, mean age was 61 months, in 2013 five cases were found, 14 cases in 2014, 2 cases until February 2015 diagnosis of hydrocephalus income was 13/21, 8/21 valvular dysfunction, all patients received prophylactic antibiotics prior to surgery with vancomycin. The microorganisms found were: Staphylococcus coagulase negative 9/21, 2/21 SAMS, Pseudomonas aeruginosa 2/21, Acinetobacter baumannii 2/21, K. pneumoniae 1/21, average length of hospitalization was 58 days, treatment adjusted to the sensitivity of the germ.

Conclusion: The frequency of ventriculitis associated with bypass valve was 28%, all patients received antibiotic prophylaxis with vancomycin, in our center was the germ most frequently SCN as literature, with a prolonged hospital stay.
INFECTIONS IN CHILDREN RECEIVING HEMATOPOIETIC STEM CELL TRANSPLANTATION.

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INTRODUCTION: Infections in children receiving hematopoietic stem cell transplantation (HSCT) in developing countries are not well characterized. We aimed at describing their epidemiology in our institution.

METHODS: We included all patients <18 years of age who received a HSCT at Centro Medico Imbanaco, in Cali, Colombia from January 1st, 2012 to February 28th, 2015. Microbiologic studies were performed according to clinical indication and preemptive strategies were used for adenovirus (AdV) and cytomegalovirus (CMV). Patients received antibiotic prophylaxis when indicated.

RESULTS: Sixty-one patients received a HSCT. Fifty of them presented 169 infectious episodes with microbiologic confirmation (2.8 infectious episodes per patient). Table 1 shows the number of patients and their infections per transplant period.

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<th>TABLE. Infections according to the transplantation period</th>
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<td>Bacterial Infections</td>
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<td>Number of infectious episodes</td>
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* Cochran-Armitage Test for tendencies.

** 26% of patients developed a multiresistant gram-negative infection.

CONCLUSIONS: In our series, most HSCT recipients developed infectious complications, especially in the first 100 days. Strategies to optimize prevention of viral and multiresistant bacterial infections are necessary.
HEPATOSPLENIC BARTONELLOSIS. RARE CAUSE OF FEVER OF UNKNOWN ORIGIN
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Introduction: Fever of unknown origin is a diagnostic challenge in daily practice. Although most underlying causes are common, with atypical manifestations, when the investigation doesn’t lead to an obvious diagnosis, infrequent causes should be considered.

Case Report: Previously healthy 9 year old boy, presented with 8 week history of fever. His immunization program was updated; lived in an urban region; didn’t consume unpasteurized dairy; had no recent travels. Physical examination revealed submandibular lymphadenopathy (1.2cm) with no inflammatory signs. Bloodwork: haemoglobin of 11.6g/dL, 12,000 leucocytes, 10% monocytes, 10 mm/h sedimentation rate, reactive c protein 114.1mg/L. Cervical echography showed three solid hypoechoic heterogeneous nodules, largest with 15.3mm. Echocardiogram showed dilated left coronary artery (z-score 2.36), raising the hypothesis of atypical Kawasaki disease and immunoglobulin 2g/Kg was started. Subsequent re-evaluations showed no echographic or clinical improvement. Abdominal echography showed multiple hypoechoic nodules (5-13mm) in both hepatic lobes and spleen, and small mesenteric lymphadenopathies. Afterwards an angio-CT showed those nodules with contrast capitation, suggesting hypervascularity. An excisional hepatic biopsy was performed through laparotomy and pathology reported fibrogranulomatous reaction with abscess, with no evidence of malignancy. Polymerase Chain Reaction was positive for \textit{Bartonella} henselae. A 6 week treatment with rifampicin and ciprofloxacin resolved the fever, hepatosplenic and ganglionar nodules. Further enquiry revealed contact with an infected cat.

Discussion: Hepatosplenic bartonellosis is an atypical and rare presentation of the cat-scratch disease (5-14\%). In this clinical case, the echographic finding of dilated coronary arteries delayed the diagnosis, showing that the anamnesis is key to clinical investigation.
ERYTHROVIRUS B19 INFECTION IN IMMUNOCOMPROMISED CHILDREN: CLINICAL FEATURES AND TREATMENT STRATEGIES
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Background and Aims: Erythrovirus B19 (EV-B19) infection in immunocompromised children presents as red cell aplasia and may lead to chronic anemia due to inability to produce antibodies to eliminate viruses.

Serological diagnosis is impaired due to the ineffective immune response. Polymerase chain reaction (PCR) based methods are recommended. Intravenous human immunoglobulin (IVIG) can be used as treatment in an attempt to neutralize the virus.

We aim to describe clinical features, laboratory and treatment in immunocompromized children with EV-B19 infection.

Methods: Retrospective study by review of medical records of immunocompromised children and EV-B19 infection diagnosed by qualitative PCR in peripheral blood or bone marrow, at a university hospital in São Paulo between 2009 and 2015.

Results: We identified 9 patients, with mean age of 6 years (1-16 years). Underlying diseases included kidney transplantation (n=2), sickle cell anemia (n=1), spherocytosis (n=1), autoimmune hemolytic anemia (n=1), HIV (n=1), combined immunodeficiency (n=1), systemic lupus erythematos (n=1), chronic liver disease (n=1). Five were using immunosuppressive drugs. All had anemia, seven had fever, five worsening of underlying pathology and one presented rash. Seven patients received red blood cell transfusion. Five received IVIG at variable schemes. One of these cleared the virus, three had persistently positive PCR (4-19 months) despite the repeated use of IVIG and one lost follow up.

Conclusion: EV-B19 infection in immunocompromised children can persist for many months as chronic or recurrent anemia. IVIG was unable to clear the virus in most cases. More studies are needed to define treatment strategies in this population.
CAT SCRATCH DISEASE: EXPERIENCE IN A PEDIATRIC HOSPITAL IN BUENOS AIRES, ARGENTINA
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Background: Cat-Scratch disease is an infection due to Bartonella henselae. Regional lymphadenopathy is described as the most common manifestation but systemic disease can occur in a small proportion of cases.

Aims: to describe the clinical presentation of Cat Scratch disease followed in a tertiary referral center in Argentina.

To analyze clinical and laboratory parameters suggestive of invasive disease.

Methods: A descriptive, retrospective study from January 2012 to May 2015. Outpatient follow up charts were reviewed and statistical analysis performed using Epi Info 3.5.4

Results: We identified 144 positive serologic tests. Complete follow up in Infectious Diseases unit was performed in 53 patients. All of them were immunocompetent with a median age at presentation of 96.1 months (range: 24-209). Most cases (88.7%) presented only lymphadenitis. The most common localizations were cervical (23.4%) and axilar nodes (21.2%).

Twelve patients (22.6%) had invasive disease, with nodal involvement in 50% of them. The most frequent invasive compromise was splenic abscess. Fever was significantly associated with invasive disease but laboratory findings were not.

Table 1: Findings

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<th>Invasive Disease</th>
<th>Lymphadenitis</th>
<th>p=</th>
</tr>
</thead>
<tbody>
<tr>
<td>White cell count (mean)</td>
<td>9180</td>
<td>8950</td>
<td>NS</td>
</tr>
<tr>
<td>Absolut neutrophil count (mean)</td>
<td>5206</td>
<td>4636</td>
<td>NS</td>
</tr>
<tr>
<td>C Reactive Protein mg/L</td>
<td>33.8</td>
<td>11.3</td>
<td>NS</td>
</tr>
<tr>
<td>Fever (frequency)</td>
<td>100%</td>
<td>43.9%</td>
<td>0.0003</td>
</tr>
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</table>

Conclusions: Cat-scratch disease must be considered as an etiologic cause of lymphadenopathy. Systemic disease can be present even without nodal compromise. The most frequent invasive disease is splenic abscess. Laboratory abnormalities are not helpful to guide the study. Fever is associated with more risk of invasive disease.
CLINICAL CHARACTERISTICS OF CHILDREN WITH PROLONGED FEVER IN KIKUCHI DISEASE

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Background: Kikuchi-Fujimoto disease (KD) is characterized by lymphadenopathy and fever. Although KD is a benign self-limiting disease, it has a wide clinical spectrum and some cases have prolonged symptoms. We analyzed the clinical characteristics of children with KD focusing on cases with prolonged fever.

Methods: This was a retrospective study of children below 19 years old diagnosed with KD from March 2003 to February 2015 at a single tertiary hospital in South Korea. Electronic medical records were searched for clinical and laboratory parameters.

Results: Among 86 histopathologically confirmed cases of KD, median age was 13.2 years old (IQR 13.2-16.0), and male to female ratio was 1:1.32. Cervical lymph node enlargement (LNE) accounted for 98.8% and fever was detected in 74.4%. Cervical LNE was predominantly unilateral (n=65, 76.5%). Ultrasound showed separated LNE in 44.6% (n=37) and conglomerated LNE in 55.4% (n=46). Median duration of fever was 9 days (IQR 0.25-17.0). In patients with fever lasting ≥2 weeks compared with those <2 weeks, bilateral cervical LNE (40.6% vs. 13.5%, P=0.006), systemic symptoms (81.3% vs. 46.2%, P=0.002), weight loss (40.6% vs. 7.7%, P<0.001), arthralgia (28.1% vs. 6.3%, P=0.002), splenomegaly (28.1% vs. 0%, P<0.001), leukopenia (90.6% vs. 52.0%, P<0.001), and neutropenia (46.9% vs. 21.2%, P=0.009) were significantly more common. Patients with conglomerated LNEs had a longer median duration of fever compared to those with separated LNE (10.5 days vs. 5.0 days, P=0.05)

Conclusions: Bilateral cervical LNE, leukopenia, and sonographic findings of conglomerated enlarged LNs were characteristics associated with prolonged fever in children with KD.
FEVER, ARTHRITIS AND EXANTHEMA: A CLINICAL CASE OF COMPLEX DIFFERENTIAL DIAGNOSIS
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Introduction

Systemic juvenile idiopathic arthritis (s-JIA) is a chronic reumathological disease of childhood, presenting with arthritis, prolonged fever and evanescent exanthema. The differential diagnosis of s-JIA is broad including infectious and post infectious arthritis, malignancy and other autoimmune diseases.

Case report: 21-month-old child, without any relevant past medical history, presenting with fever over 39°C, diarrhea, and limp. Her physical examination was remarkable for walking with a limp and having oropharyngeal hyperemia. Her blood tests showed mild leukocytosis, ESR and CRP elevation. The pelvis x-ray was normal, and the ultrasonography showed fluid on the left hip.

She was admitted to the hospital and started IV antibiotics (flucloxacilin, cefotaxime, gentamycin), and completed a 17-day course. She was febrile from admission to the 6th day, and again from the 10th day until the 19th day. In the 10th day she presented with an evanescent exanthema. ESR and CRP persisted elevated. On the 16th day she started ibuprofen (30 mg/kg/day). On the 20th day she met criteria for macrophage activation syndrome, which remitted spontaneously during the following days. The cultures performed at admission were negative, and the Polymerase Chain Reaction (PCR) in the stool was positive for enterovirus. She was discharged on the 31st day, clinically well and has remained well for 21 months.

Discussion

This case represented a clinical challenge and diagnosis remains difficult to establish. We admit an enteroviral infection triggering a systemic inflammatory response, followed by a complete resolution. However, we cannot exclude an s-JIA with a monocyclic course.
A CASE OF FACIAL CELLULITIS/ABSCESSE CAUSED BY EIKENELLA CORRODENS
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Introduction: Eikenella corrodens is among human bites pathogens that is part of the normal flora the mouth and the gastrointestinal and genitourinary tracts. This pathogen causes various infections such as head-neck infection, sinusitis, pulmonary infection, arthritis and endocarditis in adults. Pediatric infections caused by Eikenella species are less common.

Case: A fourteen year-old girl was admitted with swelling of the left bucca. Her physical examination revealed body temperature, 38.5°C and the first upper left molar tooth decay, swelling of left bucca and tenderness (Figure). White blood cell count was 9700/mm³, C-reactive protein was 90.8 mg/dl. Left premaxillary infraorbital and left nasal soft tissue increment were seen in computerized tomography of orbita. Empirical ampicillin-sulbactam (150 mg/kg/d) therapy was started. But it was changed to clindamycin (40 mg/kg/day) owing to occurrence of angioedema. On the 6th day of therapy, left maxillary fluctuating swelling grew up. Superficial ultrasonography was consistent with an abscess in 37*8*20 mm and abscess was drained. Clindamycin was given for 10 days and she was discharged from the hospital. On the seventh day after discharge, she applied with left maxillary region swelling again. Eikenella Corrodens grew in abscess fluid culture. After ciprofloxacin therapy symptoms resolved.

Conclusions: Oral flora organisms are frequently responsible for head-neck infections due to tooth decay. Most of these infections can be treated with clindamycin. However, E. Corrodens, is a fastidious gram-negative facultative anaerobic bacillus, one of the normal oral flora organisms, is a rare pathogen, is resistant to clindamycin.

Figure.

Keywords: Eikenella corrodens, cellulitis
Efficacy and Safety of Pre-emptive Versus Empirical Antifungal Therapy in Children with Cancer, Fever and Neutropenia

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9Pediatrics, Luis Calvo Mackenna Hospital, Santiago, Chile

Background. Current recommendations propose to begin empirical antifungal therapy at day five of fever in patients with chemotherapy-associated neutropenia. The aim of this study was to determine efficacy and safety of pre-emptive versus empirical antifungal therapy in children with persistent fever and neutropenia.

Methods. Prospective, multicenter, randomized study. Children presenting with persistent high risk febrile neutropenia (HRFN) (fever and neutropenia at day 4 of evolution) at five hospitals in Santiago, Chile, were evaluated with a clinical/microbiological/molecular/imaging study and randomized into a current empirical antifungal management (group A) versus pre-emptive antifungal therapy (group B). The pre-emptive group received antifungal therapy only if the persistent fever and neutropenia was accompanied by clinical/microbiological/molecular/imaging predefined criteria. End point were days of fever/hospitalization/antifungal use, resolving uneventfully/developing invasive fungal infection (IFI)/need for intensive care unit (ICU) and death.

Results. A total of 730 FN episodes were evaluated between June 2012 and March 2015. Of them, 549 (75%) were HRFN episodes and 110 (20%) had persistent fever and neutropenia. A total of 82 were randomized, 40 to group A and 42 to group B. Days of antifungal use were 11 vs 5, P=0.007, with similar days of fever and hospitalization, similar frequency of resolving uneventfully (89%-92%), developing IFI (8%-13%), need for ICU (27%-16%) and death (8%-5%).

Conclusions. Pre-emptive antifungal therapy was as safe and effective as empirical antifungal therapy in children with cancer and HRFN. The reduction of antifungal use, based on stringent diagnostic criteria should favor the adoption of evidence-based management strategies in this population.
GANCICLOVIR PREEMPTIVE THERAPY IN PEDIATRIC LIVER TRANSPLANT RECIPIENTS, BY VIRAL LOAD MONITORING IN A PUBLIC PEDIATRIC HOSPITAL IN ARGENTINA.

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Background: CMV infection is a very common infection after liver transplantation especially the first 3 months. There are different strategies, in patients at high risk (HR) directed prophylaxis with ganciclovir is recommended. However preemptive therapy (PT) is an acceptable strategy. Aims: Analyze the results of monitoring with CMV viral load (VL) and PT with iv ganciclovir.

Methods: Prospective and descriptive study of 31 children at Children's Hospital Ricardo Gutierrez in Buenos Aires, Argentina by weekly determination of CMV viral load by CMV DNA quantification and iv ganciclovir therapy. Two subgroups are described: HR (receptor positive/donor positive/negative) and LR (low risk) donor and receptor negatives. We describe the evolution of CMV infection/reactivation and PT results.

Results: Thirty liver transplant children were 63% females and younger than 18 month, 43% with biliary atresia and 60% with living-related donors. Eighty percent in HR group and 67% (16/24) needed PT, while the 8 remaining patients (33%) in HR, did not. Five in this group (21%: 5/24) were avoided receiving antiviral and benefited with the weekly VL. None of the survivors presented late CMV disease.

Of the 16 patients undergoing PT, none had toxicity discontinuation motivate and 2 of them (12.5%) developed CMV disease with target organ, none died. With the strategy of TA it was avoided applying prophylactic antiviral ev in 5 patients (21% 5/24) HR group and 5 patients (100%) of the group LR.

Conclusions Further studies are needed to demonstrate the benefits of preventive ev therapy. However monitoring should be very narrow because of the risk of CMV disease.
SENTINEL PERTUSSIS SURVEILLANCE AT A TERTIARY HOSPITAL IN GAUTENG, SOUTH AFRICA
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Background

Although vaccination has dramatically reduced the global incidence of pertussis, there has been a resurgence of reported cases in many regions of the world. Suggested reasons include: greater awareness, improved case detection and more sensitive laboratory diagnostics, waning immunity, and increased transmission to young children from adolescents and adults. In contrast to some of these countries, South Africa only introduced acellular pertussis vaccines in 2009. As there is a paucity of local epidemiological data, effective surveillance is urgently needed to inform future prevention strategies.

Methods

A prospective, hospital-based, sentinel surveillance programme was started in Gauteng Province, South Africa. Nasopharyngeal specimens were collected from children suspected with pertussis. Bordetella spp detection was performed using PCR, culture and biochemical identification techniques.

Results

From October 2014 to May 2015, 353 suspected patient-cases were identified and screened; 295 (84%) were enrolled. Sixty-three percent (182/288) were <1 year with those ≤3 months accounting for 33% (96/288). Where PCR results were available (n=285), 20 (7%) were positive for Bordetella spp – 19 for B. pertussis and 2 for B. parapertussis.

Confirmed pertussis cases had a median age of 153 days (2-2160 days). Missed vaccine doses were recorded in 3 cases. Vaccine failure occurred in 3/19 (15.8%) with waned immunity in one case. No Bordetella spp were isolated from 277 cultures.

Discussion

Early data from this study suggest that B. pertussis is an important respiratory pathogen amongst hospitalized children in Gauteng Province. Further investigation is necessary to inform policy decision-making.

Funding acknowledgement: Sanofi Pasteur
SURFACTANT ADMINISTRATION IN SEVERE CASES OF ACUTE RESPIRATORY DISTRESS SYNDROME IN CHILDREN

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²Department of Pediatrics, University Hospital Martin, Martin, Slovakia

It is not only influenza virus H1N1 and coronavirus, which are causes of SIRS and MERS. In our work, we present several cases of children in whom the viral respiratory illness resulted in severe ARDS. These children were immunocompromised either primary, or secondary - following the major surgery due to congenital malformations. ARDS in those children led to severe impairment of oxygenation and ventilation, which threatened the patients with hypoxic damage of CNS and other vital organs. After failure of both conservative approach and conventional ventilation treatment, we have chosen to treat children by surfactant administration. Surfactant treatment allowed us to bridge the critical period and protect the child from hypoxic damage. While the ARDS itself has been managed, treatment being protracted, left certain secondary damage to the lung parenchyma. The use of surfactant in ARDS is not commonly recommended treatment, however, our cases highlight possible benefits in preventing the fatal course. Further studies that would confirm or refute our experience are necessary.
Background and aims: Interleukin-12 receptor B1 (IL12RB1) deficiency is a frequent cause of Mendelian susceptibility to mycobacteria and Salmonella disease. Adverse events to BCG immunization at birth constitute an alert signal of primary immunodeficiency linked to defects in the interleukin-12/interferon-gamma axis. Salmonella infections in those patients are extra intestinal and may be recurrent. Here, we report a pediatric case of recurrent cutaneous manifestations of cutaneous vasculitis, probably related to Salmonella infection.

Case report: White infant presented with axillary adenopathy, ipsilateral to BCG, at six months of age, and treated with Isoniazid (100mg) for six months. Four months later, recidive of adenopathy with fistulization, successfully managed with Isoniazid (100mg) and Rifampim (10mg/kg/day) for 6 months. Cultures from ganglionar punction samples were negative for bacteria, mycobacteria and fungi. At age 4-year, diagnosed with IL12RB1 deficiency using flow cytometry. At age 5-year, he presented with multiple, nonpruritic erythematous lesions on lower limbs and buttocks, which remained after compression, ankle arthritis and no fever. Lesions flared during four months. Blood culture was negative and Widal test reactive for H antigen (flagella B reactive). He was treated with Ciprofloxacin (40mg/kg/day) for 2 weeks with regression of lesions and without flaring. At present, he is under Trimethoprim/sulfamethoxazole prophylaxis.

Conclusions: This report exemplifies a case of Salmonella disease in a child affected by IL12RB1 deficiency, successfully managed with antibiotics.

Figure legend: Lower limb skin biopsy revealing perivascular and interstitial infiltrates of neutrophils
Background and aims: Retropharyngeal abscess (RA) could be a life-threatening emergency. This study is aimed to describe clinical presentation, etiology and outcomes of this rare disease in childhood.


Results: Seven patients were admitted, with a male/female ratio of 2.5:1. Hospitalization rate: 1.9 cases per 10,000 admissions/year (CI95 0.75-3.8). Median age: 42 months (range 10-135). Clinical findings at admission: fever (7/7), neck swelling (5/7), torticollis (4/7), sore throat and dysphagia (3/7), cervical lymphadenopathy (3/7), respiratory distress (1/7). Bacterial cultures were positive in 5/7 cases; 3/7 microorganisms were isolated from blood (2 community acquired methicillin resistant Staphylococcus aureus -CA-MRSA-, 1 Streptococcus pyogenes), 3/5 from purulent material (2 CA-MRSA, 1 Streptococcus viridans). CT scan was performed in all patients. Five patients underwent surgical drainage according to CT findings. All children received empirical antibiotic treatment with intravenous clindamycin plus a third generation cephalosporin; vancomycin was added in 3 patients with complications or CA-MRSA bacteremia. One RA secondary to trauma developed mediastinitis. Other two patients developed complications, both infected with CA-MRSA: 1 mediastinitis and 1 osteomyelitis.

Conclusions: RA is an uncommon disease, affecting more frequently males and children younger than 5 years. RA should be suspected in children with fever, swelling and limited range of motion of the neck. CA-MRSA accounts for over half of all RA, and appears to be associated with complications. Empiric therapy should include coverage for this agent.
LOWER RESPIRATORY TRACT INFECTIONS IN YOUNG CHILDREN: BURDEN OF RESPIRATORY SYNCYTIAL VIRUS HOSPITALIZATIONS, MORTALITY AND RISK FACTORS FOR LIFE-THREATENING DISEASE.

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Background: Acute lower respiratory infections (ALRI) are an important cause of morbidity-mortality.

Aims: to characterize burden of severe ALRI and RSV infections, and identify risk factors for life-threatening disease (LTD).

Methods: Prospective study, 11/01/2012-10/31/2013, hospitalized children

Results: 622 patients were included; virus was detected in 452(72.7%): RSV 372(82.3%), Flu 25(5.5%), HRV 17(3.8%), Parainfluenza-III 17(3.8%), HMPV 14(3.1%), adenovirus 7(1.5%).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>RSV positive (n=372)</th>
<th>RSV negative (n=247)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>203(54.6)</td>
<td>151(61.1)</td>
<td>0.11</td>
</tr>
<tr>
<td>Age in months</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>0-2</td>
<td>71(19.1)</td>
<td>37(15.0)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>3-5</td>
<td>133(35.7)</td>
<td>76(30.8)</td>
<td></td>
</tr>
<tr>
<td>6-11</td>
<td>111(29.8)</td>
<td>65(26.3)</td>
<td></td>
</tr>
<tr>
<td>12-23</td>
<td>57(15.3)</td>
<td>69(27.9)</td>
<td></td>
</tr>
<tr>
<td>Breastfeeding</td>
<td>199(53.4)</td>
<td>163(66.5)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Crowding</td>
<td>164(28.5)</td>
<td>83(34.7)</td>
<td>0.10</td>
</tr>
<tr>
<td>Smoking-at-home</td>
<td>175(47.3)</td>
<td>104(42.1)</td>
<td>0.20</td>
</tr>
<tr>
<td>Parental-asthma</td>
<td>146(39.6)</td>
<td>105(42.5)</td>
<td>0.47</td>
</tr>
<tr>
<td>Anemia</td>
<td>135(53.8)</td>
<td>67(47.5)</td>
<td>0.23</td>
</tr>
</tbody>
</table>

Seventy-eight (12.5%) patients had LTD.

<table>
<thead>
<tr>
<th>LTD by virus(%)</th>
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</thead>
<tbody>
<tr>
<td>RSV: 50/372(13.4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flu: 7/25(28.0)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>HRV: 17/23(3.5)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Parainfluenza-III: 0/17</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>HMPV: 7/14(50.0)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adenovirus: 1/7(14.3)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>None: 9/170(5.3)</td>
<td></td>
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</table>

LTD was associated with RSV (OR:1.81, 95%CI:1.07-3.05), Flu (OR:2.86, 95%CI:1.15-7.10) and HMPV (OR:6.24, 95%CI:2.08-18.68). Multivariate analysis: crowding was a risk factor for LTD (adjustedOR:2.40, 95%CI:1.44-4.02); gender-specific protective effect of breastfeeding was seen in girls with RSV (adjustedOR:0.31, 95%CI:0.11-0.87). Seventy-four (11.9%) children had radiologically confirmed pneumonia, 50 (67.6%) were RSV-positive. Six (1%) children died, all with comorbidity; 3 related to RSV and 2 to Flu.

Conclusions:
- HMPV, Flu and RSV are strongly associated with LTD.
- The majority of RSV infections were in girls.
- Six in ten children with LTD were infected with RSV.
- Characterization of RSV infections could help to define priorities for the use of prophylaxis and usefulness of different prevention/treatment strategies.
Kawasaki disease shock syndrome (KDSS) occurs in 5-7% of cases of Kawasaki disease (KD) and is associated with poorer prognosis, including ventricular systolic dysfunction, coronary artery abnormalities and resistance to intravenous immunoglobulin (IVIG). The rarity of KDSS, and its atypical presentation, may result in delayed diagnosis and treatment.

We describe a 6-year old previously well Asian girl who presented with a 5-day history of fever. She fulfilled full diagnostic criteria for both KD (bilateral conjunctival injection, strawberry tongue, macular rash, unilateral cervical lymphadenopathy, changes in peripheries) and the CDC diagnostic criteria for toxic-shock syndrome. On admission she was hypotensive despite 40ml/kg of fluid resuscitation, poorly perfused, oliguric, thrombocytopenic and coagulopathic. She was given vasoconstrictors, ceftriaxone and clindamycin and immediate IVIG. Her fevers persisted and she received infliximab and a second dose of IVIG within 48 hours of admission. There was rapid clinical and laboratory improvement and she was discharged on low-dose aspirin after 6 days. Echocardiography on admission demonstrated moderate systolic dysfunction, moderate mitral regurgitation, normal coronary arteries and reversal of diastolic flow in the descending aorta, which normalised within 3 weeks. The coronary arteries remained normal. She desquamated on day 11 of the illness.

This case highlights the importance of considering KDSS in patients with haemodynamic instability and the need for early aggressive management to reduce systemic and vascular inflammation. Retrograde aortic flow is a rare feature of KD and further investigation of the prevalence and significance in both KD and KDSS is warranted.
Background. Infection with Epstein-Barr virus (EBV) has been found responsible for about 10% of gastric cancers and a critical co-factor together with H. pylori to induce adult inflammatory gastric lesions.

Aim. To address the role of EBV in early pediatric gastric lesions.

Methods. EBV serology was correlated with EBV genomic sequences in gastric tissue derived from children with recurrent abdominal pain. The study included 198 children that were diagnosed with non-atrophic gastritis (NAG). Gastric biopsies were subjected to two PCRs of increased limits of detection, a first PCR that detects at least 40,000 EBV genomes and a nested PCR that detects 1500. Seventeen (8.58%) samples were positive to EBV, twelve by the first PCR and five by the nested PCR. 54.5% of the EBV positive children were positive to IgM, while 45.4% were only positive to IgG anti-EBV. 45.5% of the children positive to EBV by PCR presented either high IgM and/or high IgG antibody titers over the median of all children tested. Nine (52.9%) of those seventeen were positive to H. pylori antibodies.

Conclusion. EBV preferentially infects B cells, and up to today it is not clear how and when it infects the gastric mucosa. This study found EBV infection in 8.5% of gastric tissues from children with NAG. Interestingly, half of the children positive to EBV genomic sequences were positive to IgM antibodies suggesting that they were in primary infection. This study supports EBV infection of the gastric mucosa early in the viral life cycle.
INVASIVE INFECTIONS BY ESBL PRODUCER K.PNEUMONIAE IN PEDIATRIC POPULATION: CIRCULATING SEQUENCETYPES

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Background and aim

Klebsiella pneumoniae (Kpn) is involved in a variety of infectious diseases in pediatric and adult population, and its association with antibiotic multiresistance is remarkable. Kpn implies 43% of the extended spectrum beta-lactamase (ESBL) enterobacterial producers in the main pediatric hospital of our country: Centro Hospitalario Pereira Rossell (CHPR).

The aim of this study is to characterize the ESBL-Kpn sequencetypes (STs) involved in invasive infections in CHPR.

Methods

Bloodstream (bs) and cerebrospinal fluid (csf) ESBL-Kpn isolates were studied between may/2010-january/2012. blaCTX-M, blaSHV, aac(6')Ib-cr and qnrA, B, S, genes were searched by PCR and sequencing. Pulse field gel electrophoresis was performed to determine clonality between isolates. STs were characterized by multi locus sequence typing (http://bigsdb.web.pasteur).

Results

Eight ST were determined in a total of eleven isolates. Patients came from: intensive care, haematoooncology and pediatric wards. In blaCTX-M-15/aac(6')Ib-cr/qnrB producers, ST14 (bs=2, csf=1), ST45 (bs=1, csf=1), ST48 (bs=1), ST443 (bs=1) and ST268 (bs=1) were detected. In a blaCTX-M-2/aac(6')Ib producer ST37 was detected and in a blaSHV-5 producer ST1310, both from bs source. A bs blaSHV-5/aac(6')Ib but not KPC producer belonged to ST258. Different pulsetypes were detected.

Conclusions

There are reports about ST37, 45, 258 (KPC producers) in Kpn infections in pediatric population, but not for the rest of the STs found in this work. It highlighted the variety of different pulsetypes detected with strong association with oximinocephalosporin resistance principally by blaCTX-M-15, and transferable quinolone resistance genes. The circulation of ST258 without KPC in pediatric population of our country is remarkable.

CSIC
Invasive fungal disease (IFD) is an important cause of morbidity and mortality in hospitalized and immunocompromised children. In recent years, there has been an increase in the incidence of candidemia and a shift towards non-
*Candida albicans* Candias (NCAC) species. *Candida tropicalis* is considered the first or the second NCAC species most frequently isolated from candidemia, mainly in patients admitted in intensive care units, especially with cancer, requiring prolonged catheterization or receiving broad-spectrum antibiotics. Our aim was to characterize BSI due to *Candida tropicalis* in a pediatric population through identification of risk factors associated to invasive candidiasis, as well as the mortality attributed. A retrospective study based on data from patients admitted at oncology pediatric hospital in Brazil was performed from January 2004 to April 2015. It was approved by hospital’s committee of ethics. There were 110 patients with candidemia, of those 9.1% (10/110) with BSI by *Candida tropicalis* were included, median of 10.5 years (range 7 months to 16 years) and 80% (8/10) were male. As underlying disease, Acute Lymphocytic Leukemia was found in 70% (7/10) of cases. Of all risk factors analyzed, 50% (5/10) of patients had 4 or more factors, 100% with previous use of antibiotics and 80% (8/10) neutropenia. All the patients had fever as clinical feature and 50% involvement of other organs. 50% (5/10) of patients died. We conclude that BSI by *Candida tropicalis* had a high incidence, especially in patients with hematologic malignancy disease, neutropenia and previous antibiotic use; and had a high mortality rate.
Infections caused by nontuberculous mycobacteria (NTM) are becoming more frequent, especially in children with immunodeficiency. The most common presentations in children are skin, soft tissue, lymphadenitis and pulmonary infection. We report a case of meningoencephalitis caused by *Mycobacterium avium* in a 13 year-old boy. The case was approved by hospital’s committee of ethics. He had multiple pneumonia and diarrhea previous episodes with hospital admissions. At the age of 5y, he was diagnosed with lymphnode tuberculosis (acid-fast bacilli in a lymphnode biopsy and culture positive for *M. gordonae*). An investigation of IFN-gamma-IL-12/IL-23 was on course. Treatment was initiated with clarithromycin, ethambutol, isoniazid and rifampin. The patient improved clinically and was discharged with the mycobacterial drug scheme. Adherence to treatment was poor and persisted irregularly for 4 years, with 7 hospital admissions due to intracranial hypertension, with severe motor sequel and cognitive impairment. At the age of 13, he had a worsening of the disease and was admitted to the Intensive Care Unit. Cerebral biopsy was suggestive of encephalitis. Treatment for mycobacterial encephalitis was restarted. Streptomycin was added after *M. avium* was isolated by PCR from the cerebral tissue. After 14mo of treatment with good adherence, the patient had an impressive improvement of motor and cognitive functions without new neurological rebounds. We conclude with this case that rare infections like central nervous infection as well as disseminated disease caused by NTM are becoming more frequent, especially in immunocompromised children, that are living longer due to the improvement in diagnostic tools as well as treatment.
INVASIVE FUNGAL INFECTION IN CHILDREN WITH HEMATOLOGIC MALIGNANCY

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Background-Methods. Medical records of all episodes of febrile neutropenia in children and adolescents admitted to the Ankara Children Hematology&Oncology Education-Research Hospital January 2006-December 2014 were analyzed with regard to invasive fungal infection (IFI).

Results. We analysed records of 154 pediatric patients receiving chemotherapy for hematologic malignancy as described; 125 patients with ALL, 29 patients with AML. Sixty (17%) IFIs were observed in 51 (20 females/31 males) patients with the median age of 8.07 years (6 months-18 years). 8 (13.3%) episodes had proven IFI; 7 (11.6%) of them were confirmed by positive yeast blood cultures and in one patient mold had been showed in lobectomy material. The most frequent isolated fungal microorganism was non-albicans candida spp in 5 (8.3%) episodes (2 Candida crusei, 1 Candida tropicalis, 1 unknown) and in 2 (15.3%) Candida albicans. Seven (11.7%) episodes were defined as probable IFI and 45 (75%) episodes were diagnosed as possible IFI.

Crude mortality was 10.3% and attributable mortality was 6.4% during the study period. Mortality was higher in IFI related episodes (10/51;19.6%), when compared to non-IFI episodes (2.05%) (p<0.01). IFI episodes were observed more common in AML patients when compared to ALL patients (p=0.002). As disease status; IFI episodes were more common in patients with relapsed leukemia when compared to patients in remission (p=0.049). Episodes with IFI had a higher CRP and lower platelet counts when compared to non-IFI patients (p=0.019 and 0.005, respectively)

Conclusions. IFIs continue to be a major cause of morbidity and mortality in children with hematologic cancer.
A RARE CASE REPORT: BRUCELLA MELITENSIS ISOLATED FROM ORBITAL ABSCESS OF A SEVENTEEN YEARS OLD YOUNG PATIENT

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BACKGROUND:

Brucella spp. infect humans as an incidental host. Brucella is transmitted through the direct contact, through gastrointestinal tract, through respiratory system or through the conjunctiva.

CASE:

Following admission to the family physician with a complaint of right eye swelling, 17-year-old male patient was treated with tobramycin drop. He was admitted to ophthalmologist after relapsing of the same complaint two months later and treated with penicillin and gentamicin. He admitted to Department of Ophthalmology. Periorbital edema and accumulation of abscess were observed in orbita lateral of the right eye. A cystic lesion was considered and the patient was operated. The cyst was removed and the patient was discharged two days later. After three weeks, he was again admitted to our department because of formation of abscess in the orbita lateral which aspirated. The specimen of orbital abscess was sent for microbiological analysis. The specimen was inoculated onto 5% sheep-blood agar and chocolate agar mediums and incubated in 5-10% CO₂ atmosphere in the laboratory. After 48 hours grey-small colonies were seen in mediums and little cocobacilli in microscopy. The bacteria had oxidase and urease, was identified as Brucella spp with automatized identification system and exhibited agglutination with Brucella melitensis antisera. The patient was treated with rifampicin and doxycycline and the swelling was decreased.

CONCLUSION:

This report was interesting for us being rare case. The source of infection could be direct contact with an infected animal. We could not encounter any orbital abscess infection caused by Brucella spp in Pubmed database.
INFECTIONOUS COMPLICATIONS IN PATIENTS WITH ACUTE LYMPHOBLASTIC LEUKEMIA RECEIVING CLOFARABINE

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Background

Hematopoietic stem cell transplantation (HSCT) is currently the only treatment option for patients with Refractory Acute Lymphoblastic Leukemia. Clofarabine is a potent chemotherapeutic agent used to eliminate Minimal Residual Leukemia (MRL) with the objective of offering a HSCT. There is limited data on the infections associated with the use of this agent. We aimed to describe the infectious complications in children receiving clofarabine.

Methods

Descriptive study of all children receiving clofarabine at Centro Medico Imbanaco in Cali, Colombia from January 1, 2011 until January 1, 2015.

Results

Twenty one patients received 27 cycles of clofarabine. Of these, 17 patients (81%) had a favorable hematologic response, 14 patients (67%) received HSCT and 5 (24%) are awaiting the transplant. There were 46 infectious episodes during the 27 clofarabine cycles (1.7 episodes per cycle). There were 24/46 (52.2%) bacterial and 5/46 (10.8%) fungal infections (4 aspergillosis & 1 aspergillus-mucor co-infection). Viral infections occurred in 16 of the 46 infections (34.7%), including 5 localized (2 herpes zoster, 1 herpes simplex, 1 influenza respiratory infection and 1 adenovirus) and 11 invasive infections (5 BK virus hemorrhagic cystitis (1 with viremia and encephalitis), 3 adenovirus hemorrhagic cystitis (2 with viremia) and 3 cytomegalovirus viremias (1 with encephalitis). Two patients had infection-attributable mortality.

Conclusions

Clofarabine offers favorable hematological response but is associated with infectious complications, including infections rarely seen in the pre-transplant setting. Patients who receive this medication may benefit from anticipatory strategies to prevent adenovirus or cytomegalovirus disease and from aspergillus-active profilaxis.
Background and aims

The incidence of acute pyelonephritis due to extended-spectrum β-lactamase (ESBL) producing Enterobacteriaceae has increased worldwide. This study aimed to investigate the differences of clinical characteristics between children with ESBL-positive organism and those with ESBL-negative organism.

Methods

We retrospectively reviewed the medical records of patients with culture-proven APN, who were admitted to the study hospital from January 2010 to December 2014. Urine specimens were obtained through suprapubic aspiration or aseptic catheterization in all cases. We classified the patients into two groups with ESBL-positive and ESBL-negative groups. Previous history of vesicoureteral reflux (VUR), fever duration, admission period, recurrence rates and prescription of antimicrobial prophylaxis were compared between the two groups.

Results

A total of 672 patients enrolled in this study. E. coli was the most common organism (89.12%), followed by K. pneumoniae (7.10%), E. aerogenes (1.72%), P. mirabilis (1.06%), E. cloacae (0.30%) and P. aeruginosa (0.30%). ESBL-positive rates were 15.52% in E. coli and 24.20% in K. pneumoniae. ESBL-producing E. coli and K. pneumoniae had shown a continuously increasing trend from 6.84% in 2010 to 19.32% on 2014. ESBL-positive group was associated with history of VUR (21.76% vs. 5.82%; P<0.05), longer duration of hospitalization (10.75 vs. 6.50; P<0.05) and more frequent prescription of prophylaxis (23.57% vs. 12.45%; P<0.05). However, there were no significant differences in fever duration, recurrence rates and antimicrobial agents.

Conclusions

Careful selection and use of antibiotics should be recommended for APN in children based on the sensitivity and resistance pattern of uropathogens found in a particular region.
THE CLINICAL INVESTIGATION OF CHILDREN INFECTIONS DUE TO STREPTOCOCCUS MILLERI GROUP IN CHINA

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Objective To investigate the clinical features, treatment and prognosis of purulent infections caused by Streptococcus anginosus (Streptococcus milleri) group.

Methods Associated literatures and clinical data of 27 cases were analyzed retrospectively, who were diagnosed as Streptococcus milleri group infections in Beijing Children’s Hospital from 2012 to 2014.

Results They (from 10 months to 16 years old) were all purulent infections, including head and neck infections (11/27), gastrointestinal infections (5/27), respiratory infections (4/27), central nervous system infections (3/27), sepsis (2/27), urogenital infections (1/27), and purulent pericardial effusion (1/27). Risk factors were found in 8 children. Identification results of Streptococcus milleri group showed: 10 cases of streptococcus anginosus, 9 cases of streptococcus constellatus, and 9 cases of streptococcus intermedius. 8 children had mixed infections with other pathogens, including E. coli (4/8), deputy haemophilus influenzae (1/8), haemophilus influenzae (1/8) and staphylococcus aureus (2/8). Results of drug sensitivity test in vitro showed that most of the strains were sensitive to penicillin / beta lactam antibiotics. 14 children were improved with therapy of cephalosporin antibiotics. 7 children were upgraded from cephalosporin antibiotics to vancomycin or linezolid for the lack of efficacy.

Conclusion Streptococcus milleri group infection diseases were always purulent infections, which may distribute to even every part of our body. There were always mixed infection with other pathogens, the most of which was E.coli. Most of the strains were sensitive to penicillin / beta lactam antibiotics in vitro, however, it was lack of efficacy for some of the patients. The prognosis was better.
HIGH RATE OF HEPATITIS B ENVELOPE ANTIGENAEMIA AMONG HEPATITIS B INFECTED CHILDREN IN A TERTIARY HOSPITAL IN THE POOREST REGION OF NIGERIA: 2008 - 2012.

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Background/Aims

Sub-Saharan Africa is a high endemic area for chronic Hepatitis B infection. Transmission occurs predominantly in childhood with prevalence between 9-39%. Hepatitis e antigen is a marker of high viral replication and correlates with greater infectivity. This study reviews Hepatitis B surface and Hepatitis B e antigenaemia in children in federal teaching hospital Gombe, North East Nigeria from January 2008-December 2012.

Methods

Laboratory records of all children seen at the Out-patient department and/or admitted between January 2008 and December 2012 who tested for Hepatitis B surface antigen and Hepatitis B e antigen were analyzed.

Results

8,818 children were seen at the out-patient department and/ or admitted. 10.4% (917/8818) were tested for HBsAg. 52% (478/917) were females and 48% (439/917) males. Highest number, 369/1719(21%) of children were tested in 2009.

16% (149/917) tested positive for HBsAg: males and females were 54% (80/149) and 46% (69/149) respectively. Average yearly positivity rate was 20% with the lowest, 15.2 % (14/103) in 2008 and highest 37.5% in 2012. 71% (106/149) of HBsAg positive children were 10-18 years; 21% (36/149) were 5-<10 years; 4% (6/149) were 1-<5 years and infants 0.7% (1/49).

Of HBsAg positive children, 28% (42/149) demonstrated HBe antigenaemia. 71% were male (30/42) and females 29% (12/42). Adolescents contributed to more than three-quarters of HBeAg positive children; 76% (32/42); 5-<10 year were 19% (8/42); 1-<5 year were 5% (2/42) and none were among infants.

Conclusion

Majority of Hepatitis B childhood infections are in adolescents and are associated with high HBe antigenaemia.
THE ETIOLOGY OF URINARY TRACT INFECTIONS AND ANTIMICROBIAL SUSCEPTIBILITY: STUDY BASED ON CHILDREN HOSPITALIZED IN 2012*

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Aim: Assessment of the etiology of UTIs and pathogen drug sensitivity in hospitalized children.

Materials and methods: We analyzed 156 medical records of patients with a suspected UTI. Positive urine culture results were found in 113(72.4%) children (60.2%-girls; 39.8%-boys), aged: 2 months-17.9 years (average-23/12 years).

Results: E. coli was the most frequent isolated pathogen – 92.0%(104/113) of patients. The greatest sensitivity of pathogens showed to cephalosporins of the second and third generation (80.5-90.3%). The sensitivity to amoxicillin with clavulanic acid was 71.7% and 41.6% for ampicillin. The length of hospital stay and treatment ranged from 2 to 16 days (average 8.6 days). In 60.2%(68/113) of patients were treated with second cephalosporin, in 17.7%(20/113) with third generation cephalosporins. Only 11.5%(13/113) of them received amoxicillin with clavulanic acid. Before the treatment, 69.9%(79/113) of children had a fever (38-41.7ºC). We found significantly higher levels of CRP in children aged between 2-4 in comparison to other age groups (p=0.0290). In 44.2%(50/113) of children the cystourethrography was performed (22%(11/50 - unilateral or bilateral vesicoureteral-ureter of I/IV degree).

Conclusion: The most common etiological agent of UTIs in children remains E. coli. The sensitivity of urinary pathogens to the commonly used antibiotics is still high, however, finds a large percentage of strains resistant to ampicillin and to amoxicillin with clavulanic acid. The antibiotic recommended for empiric therapy of UTIs in children should be cephalosporins, if there is such a possibility, the treatment should be based on drug sensitivity tests of the organisms grown.

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RESPIRATORY VIRUS IN CHILDREN WITH CANCER UNDERGOING CHEMOTHERAPY

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Introduction: Infections are the leading cause of morbidity and mortality in children with cancer undergoing chemotherapy; respiratory disorders contribute significantly to the number of hospital admissions in this group of patients. Latin American studies described high frequency of viral infection in patients with cancer but it is not clear their importance in the clinical outcome of patients.

Objective: To establish the prevalence to respiratory virus and compare frequency of Invasive bacterial disease, mortality, length of hospital stay in to groups with and without respiratory virus infection.

Methods: Cross-sectional study, from September 2013 to March 2015. All children <18 years of age requiring hospitalization with cancer, probable infection and respiratory symptoms were studied. Retrospectively reviewed medical records, collecting epidemiological, clinical and laboratory data including nasopharyngeal aspirates. The prevalence of viral infection was estimated and association test were used (x2 or Fisher’s exact test) Wascalculated OR with IC95%

Results: Respiratory viruses were detected in 43.3% of 60 episodes occurring in 47 patients. The median age was 6 years ± 3 years. Acute lymphocytic leukemia (55%) was the most prevalent neoplasia. Respiratory viruses were detected in 26 samples: rhinovirus (18/26), parainfluenza (3/26), influenza A H1N1 (1/26), RSV (2/26), bocavirus (2/26). 25% (15) of the cases were nosocomial. There were no deaths. Not were differences in to rate of Invasive bacterial disease or length of hospital stay in to groups with and without respiratory virus infection.

Conclusions: The prevalence of respiratory viruses was relevant in the infectious episode, with no increase in morbidity and mortality.
DIFFERENCES IN CLINICAL CHARACTERISTICS OF LABORATORY-CONFIRMED MUMPS PATIENTS COMPICATED WITH ASEPTIC MENINGITIS AND/OR ORCHITIS

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Background and Aims

It is not well known how the clinical characteristics are different among mumps cases with meningitis, those with orchitis, or with both. We aimed this study to investigate the clinical differences among the laboratory-confirmed mumps with the complications.

Methods

We retrospectively reviewed the medical records and collected the clinical data of mumps patients who had been complicated with meningitis, orchitis, or both who were admitted to Chonbuk National University Hospital, Jeonju, Korea from January 2005 through December 2014. We screened the cases with ICD codes and included only those diagnosed by positive mumps-specific IgM.

Results

We identified a total of eighteen cases of laboratory-confirmed mumps with complications: meningitis only (N=12), orchitis only (N=4), or both (N=2). The mean age of the total was 15.3 years, but there was no difference was seen among groups with the different complications. The mean interval between salivary gland swelling and the complications were 6.5 days in meningitis-only mumps patients, 3.5 days in orchitis-only mumps patients, and 5 days in those with both complications, respectively. The 2 patients who showed both complications presented the symptoms of meningitis and orchitis at the same time. The peripheral white blood cell count, erythrocyte sedimentation rate, and C-reactive protein levels showed no difference among those patients.

Conclusions

In our study, the interval between the sialadenitis and the complication was longer in mumps meningitis cases than in mumps orchitis cases. Other clinical characteristics showed no significant differences among the laboratory-confirmed mumps patients complicated with meningitis and/or orchitis.
EVALUATION OF THE CYTOPENIC CHILDREN ADMITTED WITH RESPIRATORY VIRAL SYMPTOMS

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Background and Aims: Transient cytopenia due to infectious agents is frequent in childhood. Clinical picture changes between mild to life-threatening conditions. In this study, viral etiology of previously healthy children who admitted with viral symptoms and cytopenia was evaluated.

Methods: Children admitted from January to April 2015 were included. Children with chronic diseases and previous neutropenia were excluded. Their demographic features and etiological viral pathogens were evaluated retrospectively.

Results: Thirty one patients (20 male [64.5%), 11 female [35.5%]), whose mean age was 64.2±37.7 months, were included. Symptoms started median 5 (2-10) days before the admission. Admission symptoms were as follows; nasal symptom (n=29, 93.5%), cough (n=29, 93.5%), fever (n=27, 87.1%), GIS symptoms (vomiting, diarrhea, and abdominal pain) (n=21, 67.7%), arthralgia (n=12, 38.7%), myalgia (n=11, 35.5%), skin eruption (n=7, 22.6%), and respiratory distress (n=4, 12.9%). Nineteen (61.3%) children had only neutropenia, 3 (9.6%) had only thrombocytopenia, and 9 (29%) had neutropenia+thrombocytopenia. Twenty one (75%) patients had neutrophil count below 1000/µL, and 7 (25%) had below 500/µL. Mean neutrophil count of neutropenic patients was 705±225/µL, while mean thrombocyte count of thrombocytopenic patients was 97.450±29,000/µL. Respiratory viral PCR was positive in 21 (67.7%) children. The distribution of viruses was as follows; Influenza A, 11 (H1N1, 8; H3N2, 3); influenza B, 5; Rhinovirus, 3; RSV, 2. None of the children had more than one virus. Cytopenia was shown to resolve 13.5±5.9 days after the onset of symptoms.

Conclusions: Viral pathogens accompanying cytopenia are various. The recovery from cytopenia is rapid.
Aim: The aim of the study was to investigate the relation between virulence factor of S. aureus, PVL, with the clinical presentation, severity and the results of the disease and the frequency of coexistence of the other virulence factors. The effects of PVL positivity on the empirical antibiotic treatment was also investigated.

Material and method: Total of 150 isolates of S. aureus were isolated from the cultures of the outpatient or inpatient child patients in Ankara University Faculty of Medicine Department of Pediatrics in January 2011 and December 2012.

Results: PVL was positive in 13 of all S. aureus strains. Ten of them were isolated from skin and soft tissue infections, one from osteomyelitis, one from empyema and one from catheter related infection. The infections did not lead to significant leukocytosis and thrombocytosis. None of the patients died. agr type 3 was found in six of the strains. The sequence analysis was made in 12 strains, ST121 was detected in three of them, ST15, ST22 and ST30 in two each, ST34, ST88, ST1708 in one each. No positivity for mecA was found. All of the strains were resistant to penicillin; whereas no resistance to rifampicine and trimethoprim-sulfamethoxazole was found. Enterotoxin I and G were detected in seven and six of the strains, respectively.

Conclusions: The PVL-positive staphylococcus aureus strains were sensitive to methicilline. Penicillinase resistant beta lactam antibiotics could be used as the first line empirical therapy. PVL positivity is closely related within skin and soft tissue infections.
AN INFREQUENT COMPLICATION OF DIAPER DERMATITIS IN A TODDLER WITH SACRAL AGENESIS: GRANULOMA GLUTEALE INFANTUM

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Abstract:

Background and aims: Granuloma gluteale infantum (GGI) is a rarely seen complication of diaper dermatitis of infancy. It consists of cherry-colored nodules in gluteal region and groins. Most of the cases have a history of treatment with a fluorinated topical corticosteroid agent. Urine and feces irritates the contacting skin parts and make children susceptible to the condition.

Methods:

A 2 years old Turkish female presented to our pediatrics clinic with a red-purple rash and cherry-colored nodules in the diaper area of 1 month duration(fig-1). She was in a follow-up programme for her sacral agenesis anomaly and recurrent urinary tract infections (UTI) and constipation(fig-2). At the beginning she was treated with several topical agents such as provitamin B5 ointment (dexpanthenol), some topical corticosteroids and several moisturizing agents and baby powders with a diagnosis of diaper dermatitis.

Results:

Diaper dermatitis and nodules were resolved with a residual hyperpigmentation and atrophic scarring after 14 day therapy of 30mg/kg/day p/o of cefuroxime for UTI and of topical agents as hamamelis virginiana distilat+ zinc-oxyde cream and difluorocortolone valerat+isoconasol nitrat cream.

Conclusions:

We presented a case of GGI in a sacral agenesis patient which is a rare complication of diaper dermatitis. She was having recurrent UTI and chronic constipation of which irritating factors may have explain the cause of GGI in our case. This rare complication of diaper dermatitis can easily be treated with removal of contributing factors and supportive moisturizing therapy. Differently from the literature fluorinated corticosteroids may have some benefit.
CAN BE CYTOMEGALOVIRUS (CMV) INFECTIONS IMPLICATED IN JUVENILE IDIOPATHIC ARTHRITIS (JIA) ?
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Background:
The viruses can be implicated in arthritis are togavius, pavovirus, hepadnavirus and herpesvirus. Especially, the herpesviruses (EB virus, CMV, varicella zoster, herpes simplex) have been associated with arthritis. EB virus has long been thought to have a primary role in the cause of pathogenesis of rheumatoid arthritis. In general, viral arthritis occurs much more often in adults than in children. CMV is occasionally associated with arthritis and has been isolated from synovial fluid. However, few studies have examined the relationship between CMV infection and JIA. The aim of this study is to determine the etiology of JIA and to evaluate the relationship between the JIA and CMV infection in children.

Methods:
The hospital records of all 207 JIA patients under 16 years old at Hallym University Medical Center were reviewed during 2003 through 2014. The diagnosis of CMV infection was performed by measurement of serum anti-CMV specific IgM and IgG titers. Sera were tested for CMV-specific IgG antibodies using enzyme-linked immunosorbent assay (ELISA).

Results:
The mean age at admission was 7.0 years (3.0-11.0 years) and the sex ratio was 103 : 104 (male : female). The CMV seroprevalence in JIA was 70.5% (CMV positive : negative = 146 : 61). The rheumatic laboratories (RF, ANA, ESR, CRP, HLA-B27) results, there were no significant differences between CMV positive group (n=146) and CMV negative group (n=61) except RF (p <0.05).

Conclusions:
Strong associations between EB virus and JIA have been acknowledged in children, but CMV appears not to be an etiology in JIA children.
MAPPING THE CO-OCCURRENCE OF BACTERIA AND VIRUSES IN HEALTHY AND FEBRILE CHILDREN

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Background and aims

Interplay between bacteria and viruses within the upper respiratory tract may impact pathogenesis of respiratory diseases. We asked if co-occurrence rates for certain organisms are higher than expected based on single prevalence rates in healthy and febrile children.

Methods

The cohort comprised 342 children with and without clinical suspicion of acute infection. Infectious etiology was determined by three independent physicians based on clinical and laboratory investigations. Bacterial and viral strains present in nasal swabs were detected using multiplex-PCRs for 21 common respiratory strains (Seeplex RV15 and PB6). To identify pairs of microorganisms whose co-occurrence rates are higher than anticipated we used hypergeometric statistics.

Results

The expert panel assigned 74 bacterial, 225 viral, 24 bacterial/viral co-infection, and 19 non-infectious diagnoses. The bacterial strains Streptococcus pneumoniae (SP) and Haemophilus influenzae (HI) co-occurred in 34% of the cases, significantly higher (P<10^-9) than anticipated based on their individual prevalence (HI: 43%, SP: 60%, anticipated co-occurrence 26%). SP/HI co-occurrence was 36%, 32%, 54% and 26% across the four diagnostic categories, respectively. SP/HI co-occurrence was enriched in patients with lower respiratory tract infections (RTI) (53%, P<10^-4), but not in upper RTI (31%, P=0.76).

Conclusions

The observed SP/HI co-occurrence rates may suggest synergism between these two bacterial strains, in accordance with previous studies. Statistical enrichment of SP/HI co-occurrence in LRTI but not in URTI may indicate correlation to disease severity. Taken together, our findings highlight the complex dynamics of upper respiratory microbial carriage and may assist in correct interpretation of microbiological lab results.
ASPERGILLUS ROSEOGLOBULOSUS SP., THAT CAUSES INVASIVE PULMONARY ASPERGILLOSIS REFRACTORY TO ANTIFUNGAL THERAPY IN PATIENTS WITH CHRONIC GRANULOMATOUS DISEASE: A CASE REPORT


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The most common cause of invasive aspergillosis (IA) in patients with chronic granulomatous disease (CGD) is Aspergillus fumigatus; other aspergilli rarely cause the disease. Here we represent a clinical case of fatal invasive pulmonary aspergillosis (IPA) in CGD 4 year-old patient and a rare agent of IPA refractory to antifungal therapy. This new species of aspergillosis was chronic and spreaded from the lung to multiple adjacent organs. In our case, Aspergillus was cultured from the thoracic mass aspiration (Figure 1). Voriconazole treatment was started. After DNA sequence analysis Aspergillus roseoglobulosus was found. After 6 months of voriconazole therapy, he was admitted again for right scapular swelling. Computed tomography revealed consolidations with airbronchograms, caviter lesions in right lung, mediastinal lymphadenopathy, abscess formation which destroys right 7th rib, 7th vertebral corpus and spinal muscles (Figure 2). Combination antifungal treatment with voriconazole and caspofungin was started. Weekly granulocyte transfusion and interferon gamma therapy was made. After partial recovery, allogeneic bone marrow transplantation (BMT) from matched sibling full patient was performed. Combined antifungal treatment was continued. Second bone marrow transplantation was performed because of greft rejection. However, the patient died after the second transplantation. To our knowledge this is the first case in the literature as Aspergillus roseoglobulosus refractory to antifungal therapy was published. BMT is the only definitive treatment for CGD. Despite active infection, BMT might be the last chance for treatment of invasive fungal disease in CGD.
We present a 10-year-old girl with acute transverse myelitis after breakthrough varicella, despite receiving a single dose of varicella vaccine at 12 months old. To our knowledge, there has been only one previously published case of postvaricella acute transverse myelitis in a vaccinated child.

She was admitted with the complaints of paralysis in the lower extremities and urinary retention. Sixteen days before, she had experienced a papulovesicular rash consistent with varicella, despite receiving a varicella vaccine at 12 months old. Fourteen days after the resolution of the breakthrough disease, bilateral leg paresthesias, weakness and unsteady gait developed. Breakthrough varicella associated transverse myelitis was diagnosed based on the temporal relationship between rash and onset of clinical symptoms, spinal MRI findings and detection of anti-VZV IgG antibody in the CSF. Magnetic resonance imaging of the spinal cord demonstrated nonenhancing T2 hyperintensity within the spinal cord, from T2 to the conus. Varicella zoster virus DNA was not detected by PCR. Anti-VZV IgG antibody in the CSF was detected, with a result of 4390 U/mL. The serum/CSF ratio of anti-VZV IgG was reduced compared to ratios for total IgG and albumin, consistent with intrathecal synthesis of anti-VZV IgG antibody. She was treated with a high dose of intravenous methylprednisolone plus acyclovir. She began to improve on the seventh day. One month later, she was asymptomatic, and her neurologic examination was normal. Spinal MRI showed a remarkable improvement.

This case report highlights that breakthrough varicella may result with serious complications such as acute transverse myelitis.
PROBIOTIC LEADER STRAINS IN INFECTION CONTROL AND CORRECTION OF ANTIBIOTIC RESISTANCE

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Background and aim: Probiotics are effective against pathogens in human biootope microbiocenoses. Earlier on example of urogenital system “Lactobacillus—Candida” we described probiotic leader strains (PLS) influencing pathogenic strains. The aim was to summarize potential of PLS in infection control.

Methods: Candida and Lactobacillus strains from human urogenital biotope were used. Non-mixed or coupled mixtures (in optimal ratios) of Candida (C.albicans, C.krusei and C.tropicalis) and Lactobacillus (L.acidophilus, L.brevis, L.casei) stock suspensions (1 McF) were incubated in the presence of MRS in polysterene microplate wells for 48 h at 37°C. Biofilm forming (BF) was scanned (registration of polysaccharide aggregates and hydrolase activity), stained with gentian violet, and extracted stain was measured. Calculations were ranged and compared.

Results: 1. BF included cell association, dissociation, growth, reassociation and biofilm stabilization. 2. Proposed algorithm allowed predictions of possible directions of mutual influence between probiotic and pathogenic biotope consortia. 3. The absence of PLS resulted in predicted redistribution of biotope Candida strains in BF ranging sets in species and subspecies depended manner. The presence of PLS (L.acidophilus 124 and L.casei 124b) altered Candida species ecological niches (pathogenic strains as more available to antibiotics). 4. Species of PLS (L.acidophilus and L.casei) were characterized with cell surface and extracellular antipathogenic lectin systems which recognized polymeric polyvalent glycoconjugates and were effective against antibiotic resistant microbial pathogens (suppression of growth, biofilm forming, lysis of biofilms).

Conclusion: Results indicate high potential of PLS in biotope infection control and correction of antibiotic resistance in biotope microbiocenoses.
CLINICAL AND EPIDEMIOLOGICAL CHARACTERISTICS OF HUMAN METAPNEUMOVIRUS INFECTIONS (HMPV), IN COMPARISON WITH RESPIRATORY SYNCYTIAL VIRUS (RSV) A AND B

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Purpose: To identify the clinical and epidemiological characteristics of hMPV infections in children compared to those of RSV A and B.

Method: A retrospective review of medical records was performed for 36 patients with hMPV, 106 with RSV A, and 51 with RSV B infections, from September 2007 to July 2012.

Results: The peak incidence of hMPV infection was observed in May, whereas for RSV infections in November and December, hMPV infection occurred in older patients compared to RSV A and B infection (29.9±32.5 vs. 13.6±15.4 months, P

Conclusion: This study identified characteristics of hMPV infection compared to RSV A and B infection. Seasonality in spring, higher age group, and higher proportion of pneumonia in hMPV infections may be a useful guide for management of respiratory viral infections in children.
Acute respiratory infections (ARI`s) are the most common diseases among children in Russia. The existing drugs have a narrow range of antiviral activity. Umifenovir – the Russian medicine officially allowed for use for prevention and treatment of flu and other ARI`s. Umifenovir exhibits a wide range and potent antiviral activity against a number of viruses including influenza A, B and C viruses, respiratory syncytial virus, adenovirus, parainfluenza type 5 and rhinovirus type 14. Chinese investigators confirmed the wide antiviral spectrum of umifenovir against influenza A, respiratory syncytial virus, human rhinovirus type 14, coxsackie B3 virus and adenovirus type 7 [1-3].

**Aim.** To estimate of clinical effectiveness of umifenovir at children with ARI`s.

**Methods.** We observed 60 admitted children aged 6.2±1.9 years with different ARI`s (Group A – 30 kids used umifenovir within 5 days in a complex treatment and Group B - 30 kids used only symptomatic therapy).

**Results.** We diagnosed an acute bronchitis (18%), acute obstructive bronchitis (34%), obstructive laryngotracheitis (48%) for children. After treatment we have found out compared reduction cough in both groups (p>0.05), but we revealed that duration of rhinitis and fever was 1.4 days less in Group A. Besides we found decrease of duration of disease in Group A on 1.8 days, and the first 2 days of the disease are optimal for the initiation of antiviral treatment.

**Conclusion:** Our investigations confirm clinical effectiveness of umifenovir at children with different ARI`s. Thus Umifenovir have a broad-spectrum antiviral activity and can be used at children from 3-year age.

**Reference.**
PECULIARITIES OF INNATE IMMUNITY IN CHILDREN WITH RECURRENT WHEEZING.
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The problem of recurrent wheezing at children is one of actual among acute respiratory infections. However some questions of immune response are unclear for subsequent prediction in recurrently wheezy children. 

The aim was to study clinical importance of indicators of innate immunity in children with recurrent wheezing and the effectiveness of recombinant interferon α2b in combination with antioxidants in complex treatment.

Methods. 37 children with recurrent wheezing and 16 healthy children were included in this study aged from 1 to 10 years. It was investigated the level of eosinophilia, level of subpopulations of blood lymphocytes, immunoregulation index, the expression levels of TLR-2 and TLR-4, level of proinflammatory monocytes, and also evaluated the effectiveness of therapy. All wheezy children received recombinant alpha-2b-interferon.

Results. We revealed increase of natural killers, proinflammatory monocytes, eosinophils, with increased expression of TLR2, which is in inverse proportion to the frequency of the ARI in wheezy children. We detected higher level of natural killers at children who had in the history bacterial and combined bacterial and virus infections \((r=0.49, p <0.05)\). After a year of treatment of recombinant interferon a2b we revealed reduction ARIs in children with recurrent wheezing, decrease of episodes and duration of wheezing in children.

Conclusion. Revealed changes of innate immunity and the reduction of activity indicators of adaptive management showed signs of deficiency of the immune system in the group of children with recurrent wheezing. Using of interferon alfa-2b in the complex therapy of wheezy children has a positive therapeutic and protective effect.

Table No.1. Immune response at children with recurrent wheezing.

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Children with recurrent wheezing</th>
<th>Healthy children</th>
<th>P, U-rect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N)</td>
<td>Me [LQ;UQ]</td>
<td>(N)</td>
</tr>
<tr>
<td>T-lymphocytes (CD3(^+)), %</td>
<td>37</td>
<td>61.3 [38.6;76.3]</td>
<td>16</td>
</tr>
<tr>
<td>T-helpers (CD3(^+)CD4(^+)), %</td>
<td>37</td>
<td>35.1 [18.1;51.1]</td>
<td>16</td>
</tr>
<tr>
<td>Cytotoxic T-lymphocytes (CD3(^+)CD8(^+)), %</td>
<td>36</td>
<td>19.55 [10.9;34.3]</td>
<td>15</td>
</tr>
<tr>
<td>Immunoregulation index (Th/CTh)</td>
<td>36</td>
<td>1.6 [0.9;3.2]</td>
<td>15</td>
</tr>
<tr>
<td>B-lymphocytes (CD19(^+))</td>
<td>37</td>
<td>28.7 [8.9;49.5]</td>
<td>16</td>
</tr>
</tbody>
</table>

\(*p<0.05\)
BLOODSTREAM INFECTIONS IN CHILDREN WITH FEVER AND NEUTROPENIA: MICROBIOLOGICAL ASPECTS AND SUSCEPTIBILITY PATTERN IN A TERTIARY CARE CENTER IN BUENOS AIRES, ARGENTINA

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Background

Emergence of antimicrobial-resistance is most care aspects treating patients with fever-and-neutropenia, who have frequent and long-stay admissions. We decide to review agents causing-bacteremia and susceptibility pattern between 2000-2013 in our setting

Methods

Cross sectional study from Jan´2000-Dec´2013, at Hospital de Niños 'Ricardo Gutiérrez". Two periods were-considered: Period 1(P1) (1/2000-12/2006) and Period 2(P2) (1/2007-12/2013). Demographic, clinical and microbiological data reviewed

Results

Episodes of fever-and-neutropenia: 1521/838 patients. Bacteremia: 257(16.9%)episodes, P1: 135(52.5%) and P2: 122(47.5%). Age-of pts 94(6-224) vs 101(8-236) in P1 and P2. Associated-sources: unknown-source 80(31.1%), catheter-related-infection 66(25.8%), abdominal 42(16.3%), skin 25(9.7%), anal mucositis 20(7.8%), respiratory 19(7.4%), urinary 5(1.9%); no difference between periods. Most infections were community-acquired 148(57.6%). Gram-negative bacteria in 150(58.4%). Gram-positive in 93(36.2%) and fungus in 14(5.2%) cases; no difference by period

Incidence of b-lactamase producing-enterobacteria was similar 21(48%) and 23(60%) in P1 and P2, respectively. E.coli and Klebsiella spp were prevalent

Susceptibility-pattern of Pseudomonas spp to CAZ, was similar by period 9/15(60%)P1 vs10/13(77%)P2

Gram-positive organisms identified: coagulase negative Staphylococcus (CNS): 30(93%, 28/30 MRSA)in both periods. Resistance to OXA by S.aureus increased from 2/18(11%)-to-4/13(30%). Most Streptococci 11/12(91%) were PEN-susceptible. KPC caused only 1 invasive infection

Conclusions

- Incidence of bacteremia in febrile-neutropenic-pts has no changed during the last 13 yrs in our setting
- One third of pts with Bacteremia had no a known source
- Gram-negative organisms has been prevalent and no changes in susceptibility-pattern was observed by period
- MRSA increased 19%
IMPACT OF BACTEREMIA IN HIGH RISK NEUTROPENIC CHILDREN (HRNTP CH) – EXPERIENCE IN A TERTIARY CARE CENTER IN BUENOS AIRES, ARGENTINA

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Background

Bacteremia (B) is a serious condition specially in immunocompromised hosts. We decide to characterize clinical findings, complications and mortality of B in HRNTP CH

Methods

Cross sectional study from 01/2000-12/ 2011 at Hospital de Niños "Ricardo Gutiérrez" in Buenos Aires. B: positive blood culture. Hospital acquired B (HAB) if blood culture was withdraw ≥48 hs after admission.

Results

B: 218 episodes, Community acquired (CA) 141 (67.4%) and HAB 77 (35.3%). Age of pts: 100.15±64.17 ms, prevalent underlying disease: leukemia 70.1%; indwelling catheter (C): 54.13 %. Isolates in CAB were: E.coli (ECO) 20%, S.aureus (SAU) 14%; Staph. coagulase-negative (SCN) 13%; Klebsiella spp (K) 10.5% Ps.aeruginosa (PAE) 8%; Acinetobacter baumanii (ABA) 3%. In HAB: ECO 13/77 (17%), PAE 11/77 (14%), followed by K;SAU;SCN and ABA. No statistical difference of these isolates in CAB vs HAB, except SCN (10% vs 13%), p=0.04.

Taking into account the source: Abdominal focus significantly associated to ECO: 12/34 (35%), p=0.01; K 8/34 (23%), p=0.03; Skin to SAU 11/23 (48%), p<0.0001; Respiratory to PAE 6/19 (33%), p=0.044; Catheter-related Infection (CRI) to SCN 17/53 (32%), p<0.0001; Mucositis-to-PAE 18/22 (82%), p=0.01; B without source to ABA 6/9 (67%), p=0.06

Complications

Sepsis was associated to K 23/24 (96%), p<0.0001 and SAU 9/27 (33%), p=0.02. Death was statistically associated to ABA 4/9 (44%), p=0.04

Conclusions

- In HRNTPCH, CAB was more prevalent
- B by Gram negative organisms were more frequent than Gram positive organisms in our setting
- Gram negative organisms were statistically associated to abdominal, respiratory and mucositis as source of B
- Death was statistically related to ABA infection
POLYMORPHISM OF LISTERIA MONOCYTOGENES INFECTION
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Introduction

Listeria monocytogenes infection represents the third most frequent cause of meningitis in the newborn, but otherwise is a relatively rare etiology in general. It is more common in the immunodeficient and in pregnancy, when it can determine acute gastroenteritis or meningitis.

Objectives

We present two cases of Listeria monocytogenes cases, each very different from each other, both in onset and in clinical presentation. One constituted of acute meningitis and the second of acute angiocholitis complicated with gallbladder hydrops.

Material and method

The two patients, both male, one aged 7, the other 9, were admitted in the Pediatric Intensive Care Unit of The National Institute of Infectious Diseases „Prof. Dr. Matei Bals” with the suspicions of acute meningococcal meningitis respectively hepatitis A.

Results

The first patient, initially suspected of acute meningococcal meningitis, received antibiotic treatment for a week without improvement, before arriving in our hospital. This case was a challenge because the child presented a purpuric rash and had negative CSF cultures. After a thorough investigation, Listeria monocytogenes was isolated from both blood and CSF.

The second case was referred to our clinic with a suspicion of acute cholestatic hepatitis A with gallbladder hydrops. All viral hepatitis markers were negative and through further investigation, the diagnosis of acute Listeria monocytogenes infection was established with the aid of serologic testing.

Conclusions

Acute infection with Listeria can have a polymorphic presentation, which can imitate other illnesses. Both cases evolved favorably under adequate treatment.
INFLUENZA ASSOCIATED ACUTE TRANSVERSE MYELITIS IN CHILDREN – SERIES OF CASES.

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Background and aims: Involvement of the CNS in influenza virus infection are a relatively rare and serious complication, but since the 2009 H1N1 pandemic an increase in the neurologic complications associated with influenza virus infections has been described.

Methods: We report a series of case of H1N1-associated with acute transverse mielitis among the pediatric population of Romania.

Results: During the winter of 2014-2015, three cases of acute transverse myelitis were addressed to 'The National Institute for Infectious Diseases "Prof. Dr. Matei Bals" – Pediatric Department. Along with classic influenza symptoms, the patients also had walking disturbances and progressive neurologic alteration. The etiological diagnosis was made using the mariPOC test and then confirmed by RT-PCR. Two cases were associated with the A H1N1 infection and one with the influenza B virus. Immediate IRM studies were performed which ruled out compressive myelopathies and described diffuse, inflammatory lesions. After, lumbar punctions were performed the markers of inflammation were found to be positive in the cerebrospinal fluid. Antiviral, antibiotic and intravenous corticoid therapies were used, in association with kinetotherapies. Slow but sustained recovery was obtained in all three cases. None of the patients had neurological sequelae at the end of the treatment.

Conclusion: Influenza virus associated transverse myelitis is an extremely severe complication of the disease that highlights once again the importance of extensive vaccination programs, and must be rapidly considered in the differential diagnosis of patients with influenza-like illness and neurological impairment.
PICTORIAL REVIEW: THE MANY FACES OF PAEDIATRIC HYDATID DISEASE IN SUB-SAHARAN AFRICA

N. Mahomed

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Hydatid disease is a unique parasitic disease. The commonest species Echinococcus granulosus is endemic in areas in Africa, the Middle East, southern Europe, China, Australia and South America. Other species like echinococcus multilocularis is less common, more invasive and may mimic malignancy. There is limited literature on hydatid disease in children and no comments on childhood hydatid liver disease in the WHO-IWGE 2010 guideline. Hydatid disease most frequently involves the liver in 75% of cases, the lung in 15% and other locations in 10%. Hydatid disease can occur almost anywhere in the body and demonstrates a variety of imaging features that vary according to growth stage and associated complications. Radiologic findings range from purely cystic lesions to completely solid appearing lesions, while cysts may be solitary or multiple. Ultrasound is an excellent imaging modality to demonstrate floating membranes, daughter cysts and vesicles. Calcification is more common in the liver, spleen, and kidney. Familiarity with imaging findings is important as radiologic and serologic findings can help establish the diagnosis of hydatid disease in classic locations. However atypical locations of hydatid disease with atypical imaging findings may complicate the differential diagnosis. In this pictorial review we present a paediatric case series of both classic hydatid disease and a number of unusual presentations of hydatid disease in atypical locations including intra-cardiac and bone with unusual clinical and imaging findings. We aim to highlight the importance of hydatid disease as a differential in children in endemic areas, prompting serologic testing.
APPLICATION OF RECOMBINANT GRA7-BASE ELISA AND LAMP TECHNIQUE FOR THE DETECTION OF TOXOPLASmosis in CHILDREN WITH CANCER

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Background: Serological assays for the diagnosis of toxoplasmosis mostly rely on tachyzoites’ specific antigens of *Toxoplasma gondii*. The aim of this study was to clone and express of a recombinant GRA7 protein of *T. gondii* and evaluate its potential for developing a serodiagnostic tools for immunodiagnosis of toxoplasmosis in children and cancer.

Material and Methods: The GRA7 gene was cloned in pTZ57RT plasmid and then sub-cloned into a pGEX-6p-1 expression vector and expressed. The recombinant GRA7 was purified by affinity chromatography. The rGRA production was attested by SDS-PAGE, dot blot and western blot analyses before and after purification, and finally was recruited for developing an rGRA-based-ELISA. Furthermore, 72 serum samples patients infected with toxoplasmosis and 32 seronegative controls were used to evaluate the sensitivity and specificity of rGRA-based-ELISA. Finally, the accuracy and validity of results obtained by rGRA-based-ELISA assay will verify by using the LAMP technique.

Results: The rGRA7 protein was successfully purified, and showed higher and optimum immuno-reactivity with serum from Toxoplasma infected patients. Specificity of the test for serodiagnosis of patients with cancer were calculated as 93.75% and 94.64%, respectively. Results of the rGRA-based-ELISA had high conformance 95.83% with the results obtained by the LAMP technique.

Conclusions: Our results showed that rGRA7 exhibits higher immuno-reactivity with toxoplasma-antibody-positive sera from patients, and can be used as a potential antigen for developing immuno-diagnostic tools such as ELISA for immunodiagnosis of toxoplasmosis in patients including patients with cancer that toxoplasmosis is one of the most important opportunistic infections in such patients.
COMPARISON OF RAPID ANTIGEN DETECTION TEST AND IMMUNOFLUORESCENCE ASSAY FOR RSV DIAGNOSIS AS A DIAGNOSTIC TOOL FOR USE IN PEDIATRICS

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Respiratory syncytial virus (RSV) is known as a major infectious agent of respiratory tract infections in children worldwide. WHO estimates that RSV infects 60 million people and causes 160,000 deaths per year worldwide. In this study we evaluate sensitivity and specificity, of the QuickVue® RSV Test Kit (RADT) as a screening tool for RSV from nasopharyngeal aspirate (NPA) in children with acute respiratory disease. We retrospectively analyzed 486 NPA samples from children under 5 years of age, who presented with acute respiratory infection (ARI) at University Hospital, HU-USP between December 2013 and August 2014.

Samples were tested using the QuickVue® RSV test and results were compared to those obtained by the Light Diagnostics™ Respiratory Panel Viral Screening and Identification IFA Kit. Discordant samples were adjudicated by real-time PCR.

Out of 313 positive samples by IFA, 280 (89.5%) were also positive by the QuickVue test. All 100 specimens negative by IFA were also negative by RADT. Out of 73 additional negative samples for RSV but positive for other respiratory viruses by IFA, 71 (97.3%) were also negative by the RADT. There were 35 discordant samples between the two methods. Discordant analysis resolved 4 in favor of QuickVue® Test and 31 in favor of IFA resulting in an overall sensitivity and specificity of 90% and 100% respectively for the RADT.

Our study demonstrates that the QuickVue® RSV Test can be effective in early detection of RSV, even in frozen NPA specimens and is reliable for use as a diagnostic tool in pediatrics.
INTRODUCTION: Paracoccidioidomycosis is the main systemic mycosis in Brazil and the third leading cause of death from chronic infectious disease requiring prolonged treatment.

AIM: Describe the clinical course and response to treatment of seven cases of paracoccidioidomycosis in children hospitalized in the state of Rio de Janeiro.

METHODS: Revision of the clinical charts who were admitted in a general pediatric ward of a teaching public hospital, with confirmed histopathological diagnosis of Paracoccidioidomycosis.

RESULTS: Between 2006-2015, seven children (6-11 y), were admitted with (more than one month long of symptoms) generalized lymphadenopathy (mainly cervical), fever, weighting loss and anemia. Other causes of generalized lymphadenopathy were excluded. No one had lung or mucosal lesions. Abdominal ultrasonography showed multiples lymphadenopathies intra-abdominal and retroperitoneal in five children. Biopsy of cervical lymphnode showed Paracoccidioides brasiliensis in all patients. Regarding treatment, they were initially treated with Amphotericin B and then followed by oral Itraconazole (six patients) and ketoconazole (one patient) for one year. 85.7% had excellent response to treatment and are being followed at the outpatient clinic of infectious diseases since the time of their discharge from hospital and are doing well, without relapse. One of them, whose story revealed the non-adherence to home treatment prior to his hospitalization, did not respond well to standard treatment, it is currently in use of lipid complex Amphotericin B 200mg/day.

CONCLUSION: The adherence to treatment must be continued monitoring of the multidisciplinary health team, in order to gain better control of any chronic illness requiring prolonged treatment.
EPIDEMIOLOGICAL CHARACTERISTICS OF PEDIATRIC HOSPITALIZATIONS FOR DENGUE IN TEACHING HOSPITAL ALCIDES CARNEIRO IN THE 2009 TO 2014 PERIOD

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Introduction: Dengue - serious public health problem - wide clinical spectrum - increasing the number of cases

Objective: To describe the epidemiological characteristics of pediatric patients hospitalized for dengue in referenced teaching hospital for the mountain region of Rio de Janeiro State, from 2009 to 2014.

Methodology: Review of medical records and hospital discharge registry of the study site. Verification of complaints filed at the county SMS Epidemiology Sector. Variables analyzed: total cases reported in the city, number of pediatric cases requiring hospitalization, gender, age, length of stay and outcome.

Results: Of the 597 cases reported in the city of the study, we find the following distribution per year: 6 (2009); 16 (2010); 310 (2011); 19 (2012); 233 (2013) and 13 (2014). The prevalence of autochthonous cases was: 0 – 4 – 163 – 4 – 100 - 6 per year respectively. Of the total cases were identified 34 pediatric hospitalizations (5.69%). Of these, 52.94% were male. Mean age 9.22 years (± 3.72). The average hospitalization time was 6.11 days (± 2.55). No deaths occurred.

Conclusion: The increased number of cases in non-sequential years allows us to infer that the continuing medical education, effective communication with the population, the awareness of all and the best qualification of epidemiological surveillance and control system has contributed positively. It is still necessary to foster attitudes that may contemplate effective actions to control dengue.
CASE REPORT: PENICILLIUM PERITONITIS IN ADOLESCENT IN PERITONEAL DIALYSIS
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2Pediatric Nefrology Unit, Santa Casa de Misericòrdia de São Paulo, São Paulo, Brazil

Background and aims – infection is a major complication in peritoneal dialysis. Staphylococci are the most common agents, while fungal infection accounts for up to 14% of the cases. Candida are the most common species. We report a rare and successfully treated case of Penicillium peritonitis using antifungal monotherapy, despite late removal of Tenckoff catheter.

Case description – A 9 year-old male with chronic kidney disease secondary to nephrotic syndrome was admitted to ER with abdominal pain for 4 days, without fever. He had been through peritoneal dialysis for the last two years, without any previous complication. Initial peritoneal fluid cytology were normal. As pain increased and vomiting, fever and abdominal distension followed during the following days, ceftriaxone was empirically introduced. After seven days of fever despite initial treatment, control peritoneal fluid revealed abnormal cytology and Penicillium sp grown in culture. Conventional amphotericin B was introduced and further changed to micafungin after seven days due to persistent abdominal pain and fever. Despite the formal indication in fungal peritonitis, peritoneal catheter wasn’t removed due to persistently normal cytological analysis and vascular access difficulties. Tenckoff catheter was removed 11 days after first positive culture. Patient was hemodynamically stable through the hospitalization. After 38 days of monotherapy antifungal treatment and clinical improvement he was discharged with prophylactic fluconazole for kidney transplant program.

Conclusion – Early removal of the dialysis catheter is crucial for Penicillium peritonitis treatment and is predictor of better outcomes. Treatment is prolonged and may require association of antifungal medications.
ACTIVE SURVEILLANCE ON ANTIBIOTIC USE IN CHILDREN (0 - 2 YEARS).

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Background. Recent data about pharmaceutical prescriptions suggest an increasing consumption of antibiotics in pediatric patients especially between 0 and 2 years. The overprescription exposes children to an increase risk of ADRs and drug resistance. It well known that around 80% of respiratory tract infections have a viral etiology. The use of these drugs is not always based on scientific evidence, giving rise to significant problems in terms of therapy efficacy and safety. This is an observational, phase IV study aims to evaluate the prescription attitude of appropriate use in early childhood and to warn pediatricians about the possible iatrogenic illness caused by their improper use.

Methods. We assessed the antibiotic prescriptions in the pediatric patients (0-2 years) of the Molise region in 2013. We analyzed data of all pediatricians (37) of Molise using regional prescriptions database.

Results. The results obtained highlighted that 83% (3369 children) of the total pediatric population (Number of total children 0-2 years = 4060) received at least one prescription of antibiotic during 2013. In particular, a total of 7114 prescriptions were dispensed, with amoxicillin/clavulanic acid as the first choice treatment in 33% of patients. We are analyzing ADRs data too.

Conclusions. The study (is ongoing too) will have a lifespan of one year in order to assess whether 83% of prescriptions is appropriate in terms of either of correct diagnosis or therapy efficacy; furthermore this value will be compared with the prescription numbers after pediatricians training and educational courses and family information on the correct use of antibiotics.
BLOOD SAMPLING AND BACTEREMIA IN CHILDREN
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Background: Blood volume sampled is a critical determinant of the detection of bacteremia. Evaluation of children with bacteremia is often challenging due to limitation on volume of blood sampled for culture.

Methods: We analyzed aerobic blood culture results from 1,271 febrile children aged 0–5 years in Nigeria processed with Bactec™ automated culture system. Blood volume inoculated was estimated from the difference in pre and post inoculation weight of culture vials. We used logistic regression modeling to estimate the number of cases that may have been missed due to inadequate volume of blood inoculated.

Results: The prevalence of bacteremia was 208/1,271 (16.4%). The mean volume of blood cultured was 0.0726 ml greater in culture positive cases (p= 0.03). The mean volume in culture-positive cases varied by bacteria species and ranged from 0.52-0.79 ml (SD 0.48). Using logistic regression it is estimated that for every one milliliter increase of the blood volume, the odds of a positive result increases by 39.5\% (95\% CI, 2.6\%-89.6\%). Salmonella Typhi was significantly associated with increased blood volume (p= 0.016) with every one ml increase of sampled volume increasing the odds of a positive culture by 53.6\% (95\% CI, 8.4\%-118\%). To estimate the possible number of false negatives, classification using bias-adjusted predicted probabilities was performed. This analysis estimates that 16\% of cultures may have been incorrectly classified as culture-negative due to inadequate blood sampling.

Conclusion: Blood volume can be used to estimate false negative bacteremia rates due to inadequate sampling in population studies.
ETIOLOGY OF CHILDHOOD BACTEREMIA IN NORTH CENTRAL NIGERIA
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1Pediatrics, Aminu Kano Teaching Hospital, Kano, Nigeria
2Pediatrics, Murtala Muhammed Specialist Hospital, Kano, Nigeria
3Pediatrics, Hasiya Bayero Pediatric Hospital, Kano, Nigeria
4Pediatrics, University of Nebraska Medical Center, Omaha, USA

Background and aims: Reports on the etiology of childhood bacteremia in Nigeria remain sparse. A recent report from the Federal Capital Territory suggested that Salmonella enterica serovar Typhi caused significant morbidity while Streptococcus pneumoniae was the leading cause of death. We aim to characterize etiology of bacteremia at a different location.

Methods: Children aged less than 5 years with fever and suspected bacteremia were enrolled from one tertiary and two secondary health facilities in Kano, north central Nigeria, between September 2014 and May 2015. Blood was cultured using an automated Bactec™ incubator.

Results: Overall 2426 samples were obtained.

Table 1. Positive blood cultures and etiologic agents by age groups

<table>
<thead>
<tr>
<th>Age Groups</th>
<th>Less than 28 days N = 55</th>
<th>28 days-11 months N = 725</th>
<th>12-60 months N = 1996</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Blood Cultures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S. pneumoniae</td>
<td>16 (32.7%)</td>
<td>65 (8.4%)</td>
<td>120 (6.0%)</td>
</tr>
<tr>
<td>S. typhi</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K. pneumoniae</td>
<td>4 (25%)</td>
<td>18 (24.6%)</td>
<td>118 (67.3%)</td>
</tr>
<tr>
<td>S. pneumoniae</td>
<td>4 (25%)</td>
<td>11 (14.9%)</td>
<td>35 (20.9%)</td>
</tr>
<tr>
<td>S. aureus</td>
<td>3 (18.8%)</td>
<td>2 (5.4%)</td>
<td>24 (12.7%)</td>
</tr>
<tr>
<td>S. pyogenes</td>
<td>1 (6.3%)</td>
<td>9 (12.8%)</td>
<td>12 (6.9%)</td>
</tr>
</tbody>
</table>

Conclusions: There is a high prevalence of bacteremia in this population. Etiologic agents in this setting contrast with reports from most African countries where S.pneumoniae is the leading cause of bacteremia, prior to vaccine implementation. Implementing Salmonella typhi and Streptococcus pneumoniae nationwide vaccination will alleviate morbidity from bacteremia in children aged less than 5 years.
HEMOGLOBINOPATHIES AND CHILDHOOD BACTEREMIA IN NORTH CENTRAL NIGERIA


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Background and aim: Sickle cell disease is a recognized risk factor for invasive bacterial infections. However, lack of etiologic data from Africa has continued to promote complacency with implementing pathogen-specific preventive measures.

Methods: We screened children for hemoglobinopathies from on-going health facility-based surveillance for childhood bacteremia by High Performance Liquid Chromatography. The distribution of hemoglobin phenotype in the population of children aged less than 5 years was reviewed to determine the pattern of bacteremia in children with HbSS.

Results: We had culture and hemoglobin phenotype results from 937 children. Of these 12.8% (120/937) had a phenotype compatible with HbSS which is higher than the general population rate of 2-4%. 68% had HbAA and 19% had sickle trait or other phenotype variants about expected compared to the population average. Overall blood culture positivity rate in this cohort was 29.8% and there was no significant difference in rates across the different phenotypes.

<table>
<thead>
<tr>
<th>Hemoglobin Phenotype</th>
<th>AA N = 638</th>
<th>SS N = 120</th>
<th>AS and others variants N = 179</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall positive cultures</td>
<td>178 (27.9%)</td>
<td>41 (34.1%)</td>
<td>60 (33.5%)</td>
</tr>
<tr>
<td>Salmonella typhi</td>
<td>91 (14.3%)</td>
<td>16 (13.3%)</td>
<td>33 (18.4%)</td>
</tr>
<tr>
<td>Non-typhoid Salmonella</td>
<td>18 (2.8%)</td>
<td>8 (6.7%)</td>
<td>7 (3.9%)</td>
</tr>
<tr>
<td>Streptococcus pneumoniae</td>
<td>16 (2.5%)</td>
<td>9 (7.5%)</td>
<td>6 (3.4%)</td>
</tr>
<tr>
<td>Other bacteria</td>
<td>53 (8.3%)</td>
<td>8 (6.7%)</td>
<td>14 (7.8%)</td>
</tr>
</tbody>
</table>

Conclusion: *Salmonella typhi* is the predominant bacteria across hemoglobin phenotypes. Additionally, hemoglobin SS has higher rates of *Non-typhoid Salmonella* and *Streptococcus Pneumoniae* than other phenotypes.
Background and aim: Nigeria has one of the highest under-five mortality rates in the world (117/1000) with the majority of deaths attributed to malaria and infections. In this setting, limited diagnostics and easy access to non-prescription antimicrobials confounds diagnostic capabilities for bacterial infections.

Methods: Children 0-60 months who presented with clinically suspected bacteremia were enrolled at clinical facilities in Kano, Nigeria. After a clinical history and physical examination, a single aerobic blood culture sample was obtained. Blood culture was performed using an automated blood culture system (BACTEC™).

Results: 2,439 children were enrolled from August 2014 to May 2015. 264 (10.8%) had temperatures ≥40°C which was significantly associated with positive blood culture (p=0.018). The most commonly reported symptoms were cough 59.4% (n=1448), unable to feed 49.4% (n=1204), diarrhea 49.3% (n=1203) vomiting 42.9% (n=1046), and runny nose 39.4% (n=962). Of these, only the inability to feed was significantly associated with a positive blood culture (p=0.02); those reporting this symptom were 46.2% more likely to have a positive blood culture. 26.5% (n=647) reported using a combination of anti-malarials and antibiotics within the past 48 hours of which only 25.5% (n=164) reported receiving antibiotics at a referral institution. Those with fevers ≥40°C were 71.7% more likely to use the combination of medications (p=0.039) and the combination (p<0.001) was significantly associated with positive blood cultures.

Conclusions: Increasing access to diagnostic laboratory services in this setting will guide treatment and provide data for informing preventive strategies such as improving antibiotic stewardship.
NUTRITIONAL STATUS AND CHILDHOOD BACTEREMIA IN NORTH CENTRAL NIGERIA

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Background and aims: Malnutrition is a recognized risk of infection but its prevalence and association with proven bacteremia has not been well characterized in settings with poor microbiology diagnostic facilities.

Methods: Children aged less than 5 years with suspected bacteremia were screened by blood culture in Kano, Nigeria, using an automated blood culture system, Bactec™. Ascertainment of age was largely by recall, without documented evidence for the majority of subjects in this setting. Nude body weight and height or length was obtained using standard techniques. Nutritional status was determined by calculation of z-scores.

Results: In this population 29% (610/2106) are classified as wasting (z score < -2SD) and of these 49% (300/610) have severe wasting (z score < -3SD).

Table 1. Wasting rates and blood culture results across age groups

<table>
<thead>
<tr>
<th>Age Groups</th>
<th>Less than 28 days</th>
<th>28 days – 11 months</th>
<th>12 - 60 months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 55</td>
<td>N = 640</td>
<td>N = 1411</td>
</tr>
<tr>
<td>Wasting z score &lt; -2 SD</td>
<td>16 (29%)</td>
<td>172 (26.8%)</td>
<td>422 (29.9%)</td>
</tr>
<tr>
<td>Blood cultures</td>
<td>Positive</td>
<td>Negative</td>
<td>Positive</td>
</tr>
<tr>
<td></td>
<td>3(18.8%)</td>
<td>13(81.2%)</td>
<td>12(7%)</td>
</tr>
<tr>
<td></td>
<td>Positive</td>
<td>Negative</td>
<td>Positive</td>
</tr>
<tr>
<td></td>
<td>99(23.5%)</td>
<td>323(76.5%)</td>
<td></td>
</tr>
</tbody>
</table>

Overall, higher wasting rates were seen in bacteremia with Streptococcus pneumoniae 13/31 (41.9%), Staphylococcus aureus 8/21 (38.1%), Salmonella typhi 66/215 (30.7%) and non-typhi Salmonella 14/38 (36.8%).

Conclusions: There is a high prevalence of malnutrition in this population and prospective mortality surveillance is in progress. Implementation of programs for improving nutrition in addition to nationwide vaccination against Salmonella Typhi and Streptococcus pneumoniae would be beneficial.
Background and Aims:

Acute cerebellar ataxia (ACA) is a self-limiting neurological syndrome associated with ingestion of drugs or post-infectious in 30-50% of cases. Viral infections, like varicella zoster virus and enteroviruses may be associated with ACA. The present report showed the clinical presentation, etiology and evolution case of the acute cerebellar ataxia framework that occurred in one immunocompetent boy of one year in travelling associated with enteroviruses. The clinical signs were sudden onset, with irritability (intense crying with short periods of lull), low fever (37.5°C -38°C), gait disturbance and balance without prodrome. It was initially evaluated in an emergency service by a pediatrician and neurologist, and later sent to hospital, where it was performed laboratory screening tests (blood count, electrolyte levels), image (computed tomography of the brain) and lumbar puncture to evaluate the cerebrospinal fluid (CSF) by biochemistry, Gram stain, culture and virus research. The patient was recovery seven days after the first clinical signs without any neurological damage.

Results

All screening examinations tests unchanged and normal head CT was observed. Enterovirus was detected by semi-nested RT-PCR using viral RNA extracted from the CSF, with specific primers that amplify a segment of non coding region 5' (5'NCR) that reach all known members of the Enterovirus genus.

Conclusion

The authors consider that in the presence of an ACA suspect clinical case it is important to point out a rigorous clinical history, with a complete physical and neurological examination, promoting the choice of the ideal diagnostic method and the rational use of drugs.
AN IMPORTED CASE OF HUMAN RABIES ENCEPHALITIS IN A 5-YEAR-OLD CHILD

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²Hospital Infante D. Pedro, Universidade de Aveiro, Aveiro, Portugal

Background and aims - Most countries in the Western Hemisphere have succeeded in eliminating human rabies transmitted by dogs, including Brazil. However, close countries such as Bolivia and Haiti still represent the highest incidence rates in the Americas. We describe an imported case of human rabies from Bolivia, diagnosed in a quaternary care hospital in São Paulo.

Case description - A previously healthy 5-year-old child admitted to ER with fever, drowsiness and neurologic symptoms (ataxia, irritability, dysphagia, delirium, paresthesia, and modification of sleep-wake cycle) for 5 days. At admission Glasgow Coma Score was 13, there was serum leukocytosis with neutrophilia, head CT and CSF were normal. Intravenous ceftriaxone and acyclovir was initiated. After 48 h the patient developed altered consciousness level and acute respiratory distress, which required intensive care and mechanical ventilation. A scar in the face was noted and when asked the mother about its origin, she reported a previous bite of an unknown dog occurred 2 months before. Human rabies was assumed and nested RT-PCR in saliva, hair follicle and CSF, and serum neutralizing antibodies were collected for diagnosis. The Milwaukee-based Brazilian Human Rabies Treatment Protocol, which comprises intravenous amantadine, sapropterin, deep sedation with midazolam and ketamine was initiated 9 days after onset. After 36 days of treatment, persistent fever and coma the patient died.

Conclusion - Human rabies must be considered in all acute neurologic disease of unknown etiology, especially when in immigrants from countries where rabies is endemic.
A seven-year-old boy presented to our hospital because of proptosis, bulbar pain, diplopia in his left eye that started 15 days ago. Before he came to our hospital, he used some systemic and topical antibiotics for 10 days. At this time he had no fever or any other systemic findings. On the ophthalmological examination, there was a limitation of his left gaze. Blood test examinations, including CRP, sedimentation, ANA and thyroid function tests were prescribed and they were all in normal range. In orbital MR, an enlargement of the lateral rectus muscle was seen. The diagnosis of orbital myositis was made based on the patient’s clinical features and abnormal orbital MR findings. Treatment was initiated with IV methylprednisolone 1 gr/day for 5 days followed by oral prednisolone 2 mg/kg/day during two months. His ocular pain decreased with several days, and the diplopia and abnormal eye movements markedly improved during the course of the steroid therapy. Orbital myositis is a kind of orbital inflammatory disease characterized by primary involvement of the extra ocular muscle. The signs and symptoms of orbital myositis may also be seen in infection processes like orbital cellulites. It is difficult to diagnose orbital myositis because there are no specific signs, laboratory or radiologic findings. The absence of high temperature and no response to antibiotics excluded orbital cellulites. Orbital cellulites and orbital myositis both have similar clinical signs, because of this, before starting the treatment, the clinician has to be sure about the diagnosis.
A LYME PERICARDITIS PROGRESSING INTO MASSIVE PERICARDIAL EFFUSION

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Lyme disease is a tick-borne systemic infectious disease. Carditis due to B. burgdorferi typically develops weeks to months after infection and is usually manifested by arterioventricular block. This article is about a case report diagnosed with Lyme pericarditis, admitted to our clinic with acute pericarditis. A 14-years female presented with respiratory distress and chest pain. She had murmurs, and blood pressure was 80/60 mmHg and pulse was 153/min. Laboratory parameters; leukocyte: 21,800/mm³, Hb: 13.7 gr/dl, thrombocyte: 353,000/mm³, CRP: 146 mg/L, erythrocyte sedimentation rate: 84 mm/hr, Chest-ray was normal. Electrocardiography was normal but echocardiography showed 10 mm pericardial effusion. The sputum samples were negative for Acid-Fast Bacilli. The anti-EBV, CMV, parvovirus, Salmonella and Brucella serological tests, ANA and autoimmune screening tests were negative. Patient’s follow-up showed low blood pressure and progressively increasing respiratory distress. Repeated echocardiography revealed a massive pericardial effusion and was drained surgically. The AFB test was negative and ADA level was 55U/L. There was no microorganism isolation in culture. Pathology was in conformity with fibrinotic pericarditis. Since possible pericardial effusion causes for the patient were eliminated, a Borrelia burgdorferi serology was taken into consideration as the patient lived in a rural area. The patient’s anti-Borrelia burgdorferi IgM and IgG were positive. She received doxycycline therapy and her findings showed remission after a week of treatment. As a result, Lyme disease should always be kept in mind in the differential diagnosis of a child who lives in rural areas and in contact with animals.
A CASE OF LYME DISEASE WITH RECURRENT FACIAL PARALYSE

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Facial nerve paralysis is very common in childhood, mostly in idiopathic and lower motor neuron disease which is characterized by partial unilateral facial muscles’ (paresis) or by complete weakness (pleji). During the diagnosis or the period of the disease, it was reported that in 30% of cases of acute facial paralysis there was an etiological cause.

Especially in cases of recurrent facial paralysis, it is recommended to investigate the cause of Melkerson-Rosenthal syndrome, Lyme Disease, Ramsey Hunt Syndrome, Otitis Media, Sarcoidosis, Guillain Barre disease and tumors.

This poster presents a 14 years old patient with 3 times left peripheral facial paralysis and diagnosed with Lyme Disease by using ELISA.
INVASIVE FUNGAL DISEASE BY ARTHROGRAPHIS IN A 9 YEAR OLD BOY WITH ACUTE LYMPHOCYTIC LEUKEMIA

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²Internal Medicine, Federal University of São Paulo, São Paulo, Brazil

Invasive Fungal Diseases (IFD) are an important cause of morbidity and mortality in children with hematologic malignancies and those undergoing hematopoietic stem cell transplantation. Arthrographis are fungi commonly found in environmental samples, but currently, they have been reported as a human opportunistic pathogens. We describe a severe infection by Arthrographis in a child with Acute Lymphocytic Leukemia (ALL). A 9 year old boy with ALL and alpha-thalassemia was transferred to our hospital, after 16 days of chemotherapy, on treatment for methicillin-sensitive Staphylococcus aureus and esophageal candidiasis. At admission, patient was in mechanical ventilation, with antibiotics and Amphotericin B Deoxycholate. The patient had erythematosus skin nodules. Chest Computed Tomography showed a solid nodule on the lung and Magnetic Resonance presented a hyposignal of turbinates suggestive of fungal infection. Galactomannan test collected at 10th and 13th days were positive. Necrotic lesions in the right nasal wing, lips and tongue appeared on 13th day. Despite of treatment, patient died on the 14th day. Fungal culture of tracheal and nasal secretion on the day before death came positive for Arthrographis spp. Candida infections have been the most frequent agent of IFD in this setting, however, due to intense immunosuppression, infections by mold are becoming frequent and efforts to make the diagnosis is mandatory. Biomarkers do not replace the investigation and biopsy of suspicious lesions is a gold standard test to improve the outcome.
COMPARATIVE STUDY OF INTRA VENOUS CEFTRIAXONE AND INTRA VENOUS AZITHROMYCIN IN UNCOMPPLICATED ENTERIC FEVER IN PEDIATRIC PATIENTS

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With development of multi drug resistant strains of Salmonella typhi, recent availability of azalide class of antibiotics (azithromycin) has provided another potential option for the treatment of typhoid fever.

This study was conducted to compare intravenous ceftriaxone and intravenous azithromycin in uncomplicated enteric fever in pediatric patients and to observe side effects of either drug.

\textbf{METHOD:}\n
Children aged 1-12 years suspected to be suffering from typhoid fever based on clinical signs and symptoms with positive Widal test \( \geq 1:160 \) titers and/or positive blood culture were randomly allocated to two groups of 18 each. Group A received Azithromycin 10mg/kg/dose single dose and Group B Ceftriaxone 75-100 mg/kg/in 2 divided doses by intravenous infusion respectively.

\textbf{RESULTS:}\n
- \textbf{Fever clearance time} in azithromycin group (2.69 \( \pm \) 1.031 days) was much lower as compared to ceftriaxone group (3.8 \( \pm \) 0.919 days) and this was statistically significant (\( p=0.014 \)).

- \textbf{Clinical cure} occurred in 13 (72.2\%) of 18 patients treated with azithromycin compared to 10 (55.6\%) of 18 patients treated with ceftriaxone, this was statistically insignificant (\( p=0.298 \)).

- \textbf{Duration of hospital stay} was shorter in Azithromycin group (7.46 \( \pm \) 1.613 days) as compared to Ceftriaxone group (9.70 \( \pm \) 1.337 days) and this was statistically significant (\( p=0.002 \)). Azithromycin did not lead to any serious side effects as compared to Ceftriaxone.

\textbf{CONCLUSION:}\n
Intravenous Azithromycin is effective and safe in the treatment of uncomplicated enteric fever in children.
HHV6 ENKEPHALITIS IN PEDIATRIC ICU: BEYOND THE COMMON CLINICAL PATTERN

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⁶DEA intensive care, Bambino Gesù' Children Hospital IRCCS, Roma, Italy

Background and aims to report the clinical experience of HHV6-related enkephalitis at 2 pediatric ICUs in Rome, Italy. HHV-6 is a member of the herpes virus family that includes herpes simplex virus 1 and 2, varicella-zoster virus, cytomegalovirus (CMV) and Epstein-Barr virus. HHV-6 and HHV-7 are closely related to CMV. Although most cases occur among transplant patients, they also occur in cancer patients undergoing chemotherapy and HIV-infected patients. HHV6 may be a cause of pneumonia in patients with hematological malignancies, and occurs either late after stem cell transplantation or during protracted aplasia.

Methods Clinical charts review at 2 institutions over a 10-year period.

Results From 2005 to 2014, 8 pediatric patients were admitted (M/F 1,66; age range 1m-12yrs). The clinical presentation was extremely different, with the presence of high-severity cases. Seizures were present in 75%. Clinical and demographic data are showed in Table 1.

Conclusions HHV-6 may be responsible for infection in healthy children and for reactivation in immunocompromised patients and may result in different clinical syndromes. At present, gancyclovir is the most potent drug for HHV-6 infection, however it is weighed by several side effects. Mild and high-severity cases may coexist and patients should be given advanced neurointensive care and neurophysiological monitoring to achieve clinical recovery. Adjuvant therapies may be introduced (as IVIG, steroids and anti-cerebral oedema treatments), though their effects have not deeply assessed.

<table>
<thead>
<tr>
<th>Ph. no.</th>
<th>Age</th>
<th>Sex</th>
<th>Duration</th>
<th>Clinical presentation</th>
<th>Other findings</th>
<th>Laboratory/Imaging</th>
<th>Treatment</th>
<th>Clinical outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3m</td>
<td>M</td>
<td>3,7</td>
<td>MPRH, neck stiffness,</td>
<td>Headache</td>
<td>LCR positive</td>
<td>FR + AVM</td>
<td>Good recovery</td>
</tr>
<tr>
<td>2</td>
<td>5m</td>
<td>M</td>
<td>2,8</td>
<td>MPRH, neck stiffness,</td>
<td>Headache</td>
<td>LCR positive</td>
<td>FR + AVM</td>
<td>Good recovery</td>
</tr>
<tr>
<td>3</td>
<td>8m</td>
<td>M</td>
<td>4,4</td>
<td>Fever, neck stiffness,</td>
<td>Headache</td>
<td>LCR positive</td>
<td>FR + AVM</td>
<td>Good recovery</td>
</tr>
<tr>
<td>4</td>
<td>6m</td>
<td>M</td>
<td>10,8</td>
<td>Fever, seizures, head</td>
<td>LCR positive</td>
<td>LCR positive</td>
<td>FR + AVM</td>
<td>Good recovery</td>
</tr>
<tr>
<td>5</td>
<td>3m</td>
<td>M</td>
<td>1,1</td>
<td>Fever, seizures, rash</td>
<td>LCR positive</td>
<td>LCR positive</td>
<td>17</td>
<td>Good recovery</td>
</tr>
<tr>
<td>6</td>
<td>6m</td>
<td>M</td>
<td>7,8</td>
<td>Fever, seizures, rash</td>
<td>LCR positive</td>
<td>LCR positive</td>
<td>17</td>
<td>Good recovery</td>
</tr>
<tr>
<td>7</td>
<td>8m</td>
<td>F</td>
<td>5,5</td>
<td>Fever, seizures, rash</td>
<td>LCR positive</td>
<td>LCR positive</td>
<td>17</td>
<td>Good recovery</td>
</tr>
<tr>
<td>8</td>
<td>12m</td>
<td>F</td>
<td>5,5</td>
<td>Fever, seizures, rash</td>
<td>LCR positive</td>
<td>LCR positive</td>
<td>17</td>
<td>Good recovery</td>
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REPORT ON A RARE CASE OF SPOROTHRIX SCHENCKII INFECTION IN A CHILD
L.T. Pignati1, F.H. Varela1, L.S.K.S. Silva1, P.F. Puccini1, A.I.M.P. Monteiro1, M.A.G. Ferrarini1,
A.M.P.S. Silva1, A.M.H. Gonçalves1, B.B. Teixeira1
1Department of Pediatrics, Federal University of São Paulo, São Paulo, Brazil

Background and Aims: Sporotrichosis is an infection caused by a dimorphic fungus of the
Sporothrix schenckii complex. Although most common in rural areas, there have been recent
reports in urban areas associated with contact with domestic cats. The aim was to report the
delay until confirmed diagnosis of a rare case of sporotrichosis in a child.

Method: Clinical case report followed prospectively in a university hospital.

Results: We report on a previously healthy seven years-old-boy, born and living in São Paulo, all
recommended vaccinations up to date and he owns a domestic cat. History of erythematous
papular lesions in the right mandible angle for six months, slightly painful, no fever or other
symptoms. Three previous hospitalizations for new lesions, treated with antibiotic therapy with
partial improvement and was submitted to surgical drainage of an abscess. All laboratory tests
were normal. At initial evaluation in our service, he presented four erythematous papular lesions
in right hemiface and one on the upper right eyelid, with elevated borders and oozing yellowish
secretion. He was hospitalized for a diagnostic biopsy, with initial hypotheses of actinomycosis.
He was started on amoxicillin and had cultures for fungi, aerobic and anaerobic bacteria and
mycobacteria. On diagnosis of Sporothrix schenckii in biopsy culture, treatment was changed to
itraconazole, which was administered for four months until complete resolution.

Conclusion: Although sporotrichosis is being increasingly reported in urban areas, it is a rare
disease in children with low recognition by healthcare professionals, delaying the etiological
investigation and proper treatment.
Background and Aim: Due to non-specific clinical manifestations and limited diagnostic capacity, the etiologies of fever in Indonesia often remain undiagnosed. INA-RESPOND, an infectious disease research network, is conducting a study to document etiologies of acute fever among patients who require hospitalization.

Method: This observational study, conducted at 8 hospitals throughout Indonesia, enrolled subjects (1-18 years old) who were followed according to the existing standard of care with the addition of blood cultures... Demographic and clinical data were collected. Blood samples were obtained at enrollment, 14-28 days, and 3 months after enrollment.

Results: A total of 248 subjects (130 males, 118 females) were enrolled. Common clinical diagnoses were dengue (n=89), typhoid fever (n=47), nasopharyngitis (n=34) and bronchopneumonia (n=14). Etiological diagnoses were confirmed in 125 (50.4%) subjects. Blood culture contributed to 29 (11.7%) diagnoses (17 Salmonella typhi, 3 Salmonella paratyphi, 2 Staphylococcus aureus, 2 Streptococcus pneumonia, 2 Klebsiella pneumonia, 1 Escherichia coli, 1 Streptococcus viridans, 1 Pseudomonas aeruginosa) with pharyngeal swab (2 Streptococcus viridans, 1 Streptococcus pyogenes, 1 Staphylococcus aureus), urine (1 Streptococcus porcinus), sputum (1 Streptococcus viridans), pus (1 Candida spp), faeces (1 Klebsiella pneumoniae) and tissue (1 Escherichia coli) cultures yielding another 9 (3.6%) diagnoses. Other diagnoses were confirmed microscopically (1 intestinal amoeba), antigenically (8 dengue) or serologically (48 dengue, 28 salmonellosis, 1 hepatitis A, 1 cytomegalovirus). Mortality occurred in 3.2% subjects, mostly with pneumonia and meningitis as the underlying diseases.

Conclusions: Cultures improved diagnostics by 11.7%. However, etiologies remained unknown in 49.6% subjects.
ACREMONIUM SPECIES CAUSING CYSTIC BRAIN LESIONS IN AN IMMUNOCOMPETENT CHILD
S. Qureshi, A.F. Saleem, A. K. M. Zaidi
1Paediatric And Child Health, Aga Khan University Hospital, karachi, Pakistan

Background: Acremonium spp is known to cause morbidity among immunosuppressed. However, it has been rarely reported in immunocompetent children. We share our experience of a previously healthy girl with headache and altered consciousness. Brain histopathology and culture showed Acremonium spp.

Case: A 7-year-old female presented with headache, fever, and seizures (5 months). Prior workup showed normal CBC and electrolytes. No imaging and CSF analysis done due to family refusal. She already received short courses of empiric ceftriaxone. Her neurological exam was unremarkable. MRI brain showed multiple lesions in grey white matter interface at left frontal, parietal and right parieto-occipital region with edema. Further workup included TB and auto-immune screen (negative). Brain biopsy refused by parents. She started on broad spectrum antibiotics and fluconazole, along with valproate for seizure. Headache and fever persisted. Repeat MRI after 4 weeks showed increase in number and size of ring enhancing lesion in left frontal, right parietal lobe. Family counseled for a brain biopsy. Histopathology revealed acute, chronic inflammation with necrosis & numerous septate fungal hyphae. Tissue fungal culture showed Acremonium species resistant to fluconazole. Amphotericin B started and switched to oral itraconazole after 3 weeks of parenteral therapy (total 8 weeks). The child deteriorated to a vegetative state on anti-fungal therapy and expired at week 10 of appropriate treatment. Her third MRI brain showed multiple cysts (Figure).

Conclusion: Acremonium spp. can cause brain abscesses in immunocompetent patients. Definitive diagnosis of etiology should be pursued especially in face of failure of first line empiric antimicrobial regimens.

Figure
MRI Brain – post 6 weeks of systemic antifungal therapy, shows even worsening of disease with multiple cystic changes in the brain.
SEVERE ACUTE RESPIRATORY SYNDROME IN A REFERRAL HOSPITAL: CLINICAL, EPIDEMIOLOGICAL AND LABORATORY INVESTIGATION

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1Infectious Diseases Division, Universidade Federal do Paraná, Curitiba, Brazil
2Virology Laboratory, Universidade Federal do Paraná, Curitiba, Brazil
3Hospital Epidemiology Division, Universidade Federal do Paraná, Curitiba, Brazil

Introduction. Respiratory tract infections (RTI) are a leading cause of emergency medical attendance, and respiratory viruses (RV) are the most frequent pathogens. The identification of severe illness must be followed by its notification as Severe Acute Respiratory Infection (SARI) and etiological investigation.

Methods. Clinical, epidemiological and laboratory information were collected for patients hospitalized with RTI from 2012 to 2013. RV was investigated by multiplex RT-PCR.

Results. From 755 patients investigated, virus was detected in 59%, being the majority of patients < 5 years of age. The most detected viruses were human rhinovirus and respiratory syncytial virus. Viral codetection occurred in 29%, and SARI diagnose in 78% of the cases. Patients with a RV infection had lower frequency of severe disease. Influenza (FLU) viruses were detected in 10.4% of samples. While most of FLUA infections occurred in 2012 (62%), FLUB was more common in 2013 (78%). Influenza A positive patients were predominantly children with <2 years (38%), while FLUB occurred more in older children and adults. 44% of FLUB positive patients had taken the Influenza vaccine within less than one year, this occurred in 22% of the FLUA positive cases. The mortality rate found was 6%. Overall, viral prevalence was higher during autumn and winter with a negative correlation between viral infections frequency and monthly average temperature. No correlation was observed with rainfall.

Conclusion. There was lower frequency of severe disease when a RV was detected. There was a seasonal behavior of these viral infections with prevalence in lower temperatures periods.
SCREENING HIGH RISK PREGNANT WOMEN MAY BE AS USEFUL AS UNIVERSAL SCREENING FOR HEPATITIS C VIRUS (HCV) INFECTION

M. Rathore

1Center for HIV/AIDS Research Education and Cares, University of Florida College of Medicine, Jacksonville, USA

Background: HCV infection remains a major public health problem. In US most children acquire HCV infection perinatally. AAP and CDC recommend that all infants born to HCV+ mothers be tested for HCV. The CDC and ACOG recommend testing only high-risk pregnant women.

Objective: Investigate the optimum way to identify HCV exposed infants.

Methods: The project was conducted in several phases. Collected data for infant HCV testing in phases 1-2 and pregnant women in phases 3-5. Phase 1 (Jan-Dec 2012) was standard practice. Phase 2 (Jan-Dec 2013) Educational Intervention, HCV+ mothers provided education about HCV and testing of newborns. Phase 3 (Jan-July 2013) standard practice. Phase 4 (Jan-July 2014) High-Risk Screening Intervention, ACOG criteria based risk screening of pregnant women. Phase 5 (Aug-Oct 2014), Universal Screening as routine pre-natal maternal screening panel.

Results: Tables below show the data on HCV testing of pregnant women and infants in the five phases.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>INFANTS</th>
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<tbody>
<tr>
<td>Phase</td>
<td>Total</td>
</tr>
<tr>
<td>1 (Jan-Dec 12)</td>
<td>13</td>
</tr>
<tr>
<td>2 (Jan-Dec 13)</td>
<td>28</td>
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<tr>
<td>*p=.1035</td>
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<tr>
<th>Table 2</th>
<th>MOTHERS</th>
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</thead>
<tbody>
<tr>
<td>Phase</td>
<td>Total</td>
</tr>
<tr>
<td>3 (Jan-Jul 13)</td>
<td>2632</td>
</tr>
<tr>
<td>4 (Jan-Jul 14)</td>
<td>2240</td>
</tr>
<tr>
<td>5 (Aug-Oct 14)</td>
<td>315</td>
</tr>
<tr>
<td>*p=&lt;.0001</td>
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<td>p=.24</td>
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Conclusion: Despite identification of a HCV infected infant, there was no significant difference after educational intervention. High-risk screening and universal screening may be equally effective in identifying HCV infected pregnant women/exposed infants. Universal screening of pregnant women for HCV may not be necessary.
SCREENING HIGH RISK PREGNANT WOMEN MAY BE AS USEFUL AS UNIVERSAL SCREENING FOR HEPATITIS C VIRUS (HCV) INFECTION

M. Rathore

Center for HIV/AIDS Research Education and Cares, University of Florida College of Medicine, Jacksonville, USA

Background: HCV infection a major public health problem. In US most children acquire HCV infection perinatally. AAP and CDC recommend all infants born to HCV positive mothers be tested for HCV. The CDC and ACOG recommend testing only high-risk pregnant women.

Objective: Investigate the optimum way to identify HCV exposed infants.

Methods: The project conducted in several phases. Data collected for infant HCV testing in phases 1-2 and pregnant women in phases 3-5. Phase 1 (Jan-Dec 2012) was standard practice. Phase 2 (Jan-Dec 2013) Educational Intervention, HCV+ mothers provided education about HCV and testing of newborns. Phase 3 (Jan-Jul 2013) was standard practice. Phase 4 (Jan-Jul 2014) High-Risk Screening Intervention, ACOG criteria based screening of pregnant women. Phase 5 (Aug-Oct 2014), Universal Screening as part of routine pre-natal maternal screening panel.

Results: Tables below show the data on HCV testing of pregnant women and infants in the five phases. The duration of each phase was different.

<table>
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<tr>
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</tbody>
</table>

Conclusion: No significant difference after educational intervention. High-risk screening and universal screening may be equally effective in identifying HCV infected pregnant women/exposed infants. It appear that universal screening of pregnant women for HCV may not be necessary.
Poliomyelitis (polio) is a highly infectious viral disease, which mainly affects young children. The virus is transmitted by person-to-person spread mainly through the faecal-oral route or, less frequently, by a common vehicle (e.g. contaminated water or food) and multiplies in the intestine, from where it can invade the nervous system and can cause paralysis. Initial symptoms of polio include fever, fatigue, headache, vomiting, stiffness in the neck, and pain in the limbs. In a small proportion of cases, the disease causes paralysis, which is often permanent. There is no cure for polio, it can only be prevented by immunization. Of the 3 types of wild poliovirus (type 1, type 2 and type 3), type 2 wild poliovirus transmission has been successfully stopped (since 1999). Today, despite a concerted global eradication campaign, poliovirus continues to affect children and adults in Afghanistan, Pakistan and some African countries (Nigeria). In Iran, the last laboratory-confirmed indigenous polio case was reported in 1997. Until poliovirus transmission is interrupted in these countries, all countries remain at risk of importation of polio, especially in the 'poliovirus importation belt' of countries from west Africa to the Horn of Africa.
BACKGROUND AND AIMS: Invasive candida infection (ICI) is an important cause of morbidity and mortality among very low birth weight babies. Aim of the study was to describe the clinical and epidemiological characteristics in infants with ICIs admitted in neonatal intensive care unit (NICU).

METHODS: Medical records of neonates admitted in NICU, Department of Neonatology in Lady Hardinge Medical College, in the period between January 2011 and December 2014 were reviewed. ICI was defined as candida isolation in culture in otherwise sterile body fluids. Information pertaining to patient demographics, underlying diseases, medications, central catheters, ventilator use etc. was retrieved.

RESULTS: Thirty nine babies with ICI were identified (blood 21, urine 11, blood and urine both 7). The average yearly incidence was 1% of total admissions (5/100 admitted babies). Average gestation and birth weight was 32(±3.1) weeks’ 1526 (±590) grams respectively. Male to female ratio was 24:15 (61%:39%). Antenatal steroid coverage, vaginal birth, was seen in 17 (40%) babies each. Sixty percent babies had associated birth asphyxia and surgical intervention each. Necrotizing enterocolitis was seen in 9 (28%) of babies. Thirteen (33%) babies died during hospital stay.

CONCLUSION: ICI in neonates is an important cause of neonatal morbidity and mortality which needs prompt attention.
HUMAN METAPNEUMOVIRUS FREQUENCY IN CHILDREN WITH RESPIRATORY SYMPTOMS

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1HIV/AIDS Research Center, Shiraz University of Medical Sciences, Shiraz, Iran
2Pediatric Infectious Diseases Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran
3Professor Alborzi Clinical Microbiology Research Center, Shiraz University of Medical Sciences, Shiraz, Iran

Background and aims: Human metapneumovirus (hMPV) cause acute respiratory lower tract infections in children, which have symptomatic similarity with respiratory syncytial virus (RSV). In this study, we aimed to assess the prevalence of hMPV infection in Iranian children.

Methods: In a cross-sectional and prospective study, we assessed 200 children under 12 years of age from February 2013 to May 2013. The children had upper respiratory tract complaints, referred to Mofid children hospital, Tehran, Iran. The nasal Dacron swab specimens were collected and tested for hMPV by RT-PCR assay with a primer set specifically for the polymerase gene (L).

Results: totally, 5% of patients with one of the symptoms of acute upper respiratory tract infections were positive for hMPV and there weren’t any significant differences between age groups (P = 0.76). The prevalence of hMPV among male and female were 10.9% and 9.1%, respectively (P = 0.67). There was no significant difference in symptoms between patients with positive or negative results for hMPV, however, respiratory symptoms such as cough (85%, P=0.002), coryza (100%, P=0.0001) and fever (80%, P=0.007) were so much observed in hMPV PCR positive patients. The peak number of hMPV infections occurred in March, followed by February, and then April.

Conclusion: according to the results, hMPV may be an important etiologic agent of respiratory tract infection in children in Iran. Owing to assessment of the outpatient children only, supposed that the actual frequency of hMPV infections might be higher.
PREVALENCE OF HEPATITIS C VIRUS INFECTION AMONG ASYMPTOMATIC PAKISTANI CHILDREN

G. Sheikh\textsuperscript{1}, I. Afridi\textsuperscript{1}, R. Zia\textsuperscript{1}, S. Anam\textsuperscript{1}

\textsuperscript{1}Peads, Akhtar Saeed Medical & Dental College, LAHORE, Pakistan

ABSTRACT

BACKGROUND:

In the current era, viral hepatic infection HCV has become widespread and is the most important reason of liver disease, world wide. This study was conducted to determine the prevalence of hepatitis C virus (HCV) infection in patients admitted in children ward and attending children outdoor, at Akhtar Saeed hospital, Lahore, (a teaching trust hospital).

METHODOLOGY:

In this cross-sectional descriptive study, 1358 asymptomatic patients attending department of Pediatrics were selected randomly. This study was conducted from March 2014 to March 2015. Patients of either sex, were included. The ratio of male to female was 50:50. The age ranged from 6 months to two years. Screening for antibodies against HCV (anti-HCV) was performed through Kit method and positive cases were confirmed by ELISA. Informed verbal consent was taken. Data was analyzed by using SPSS 16.0.

RESULTS:

Out of 1358 registered patients, 4 patient were found reactive and confirmed on ELISA. The overall sero-prevalence of HCV infection within the study period was 0.33%.

CONCLUSION:

Data showed only 4 out of 1358 asymptomatic patients had Anti HCV positive. Undiagnosed, asymptomatic patients may be a basis of infectivity in many ways like by intimate individual contact with other family members. Evading unnecessary blood transfusion and injections and execution of strict infection control measures are highly recommended to trim down the frequency of HCV infection.

KEY WORDS: Hepatitis C, asymptomatic children
STAPHYLOCOCCUS AUREUS BLOODSTREAM INFECTIONS IN CHINESE CHILDREN: CLINICAL FEATURES AND MOLECULAR CHARACTERISTICS

X. Shen¹, X. Ning¹, Y.H. Qiao¹

¹ Infectious Disease, Beijing Children's Hospital Capital Medical University Beijing PR. China, Beijing, China

A prospective study was conducted to investigate the clinical and molecular characteristics of Staphylococcus aureus (SA) bloodstream infections (BSIs) in Chinese children. Medical records and risk factors were collected and analyzed. All pathogenic S. aureus isolates were cultured for molecular typing. Antibiotic susceptibility and virulence profiles were also detected. Among 106 cases collected, 86.8% were community-associated and 35.8% were infected by MRSA. 85.8% (91/106) cases had co-morbidities and pneumonia (51/91, 56%) was the most common. 50.9% (54/106) patients had risk factors and 87% (47/54) of them had previous usage of antibiotics. Median age of all was 28m. 18 kinds of sequence types (STs), ST59 (22.6%), ST88(16%) and ST188(10.4%) were top three STs. The carriage rate of pvl of SA was 30.2%, MRSA was more common to carry pvl gene than MSSA (42.1% vs 23.5%, p=0.046). 95.8% MRSA-ST59 cases were community-associated and 100% MRSA-ST239 cases were hospital-associated. ST188 and ST88 strains were common clones to cause bone/joint infection. Isolates from severe pneumonia and SSTI were more common to carry pvl (p<0.05). cna were more commonly carried by isolates of bone/joint infection and meningitis cases, accounted for 63.6% and 100%. This study suggested that S. aureus BSI cases were mainly community-associated. Use of antibiotic treatment was one of the most important risk factors. Clinical presentations might be related with STs and virulence carriage of the isolates.
STUDY OF CURRENT SPECTRUM OF INFECTIONS IN CHILDREN WITH HAEMATOLOGICAL MALIGNANCIES.

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1Pediatrics, Manipal Hospital, Bangalore, India
2Haematology, Manipal Hospital, Bangalore, India
3Paediatrics, Manipal Hospital, Bangalore, India

1) Background and aim: Children with malignancies are more susceptible to infections due to their immunocompromised state. There is a shift of the microbial spectrum of malignancy patients from Gram-negative to Gram-positive bacteria. This retrospective study was undertaken to assess current spectrum of infections in children with haematological malignancies.

2) Methods: Case records of children between 0-18 years of age with proven hematological malignancies were studied for infections from March 2011 to March 2015.

3) Results: 250 children with 136 episodes of infections were studied. 82.4% had ALL, 75.7% had neutropenia during the episodes of infection. Blood was most common site of infection (83.8%), followed by pulmonary (7.4%). Microbiologically, 83.8% had bacterial infection (78.1% gram negative). Among 41 children with Catheter related infections, 65.9% were due to gram negative organisms (Ralstonia sp & Pseudomonas). Fungal infections accounted 13.2% (Candida 38.9%, Aspergillus 33.3%). Viral infections (5.1%). 8 children died of infection, klebsiella sps being most common (50%).

4) Conclusions: There is diversity in the infective organisms in different regions and institutes in a given time period. Gram negative organisms were the most common infection in our study. As device related infections contributed to significant episodes, methods to reduce these infections should be evaluated. The current study stresses the importance of frequent reviewing of spectrum of infection to detect changing epidemiological patterns as these have a significant impact on antimicrobial prophylaxis and empirical antibiotic therapy. High index of suspicion, early diagnosis and aggressive management of infection would help to reduce infection related mortality in children with haematological malignancy.
CLINICAL SPECTRUM AND ANTIBIOTIC SUSCEPTIBILITY OF ACINETOBACTER INFECTIONS IN CHILDREN – STUDY FROM A TERTIARY CARE CENTRE, INDIA

B. Shenoy¹, R. Babu¹, S. Joshi², R. Adhikary²
¹Pediatrics, Manipal Hospital, Bangalore, India
²Microbiology, Manipal Hospital, Bangalore, India

BACKGROUND: Emerging Acinetobacter infections and spread of multidrug-resistant strains have become a therapeutic challenge in the management of critically ill and hospitalized children. These organisms are associated with greater risk of mortality and prolonged hospital stay.

AIMS: To study the epidemiology, clinical profile, antimicrobial sensitivity, and outcome of bacteremia caused by Acinetobacter species.

METHODS: It is a retrospective analysis of Acinetobacter isolates from clinical specimens in children between 0-18 yrs from January 2010 to May 2015 done at Manipal Hospital, Bangalore, India.

RESULTS: Of 275 Acinetobacter isolates, 178 (64.73%) were Acinetobacter baumannii. Common age group is 0-1 months (38.9%). 64.23% were male children. Tracheal aspirate (42.18%) and blood (33.45%) were the most common sites of isolation. 57.82% isolates were from ICU. 57.45% patients were ventilated. Fever (40.73%), breathlessness (17.45%) were common symptoms. 16% had pneumonia. Among Acinetobacter baumannii strains, resistance for cefepime and imipenem were seen in 54.78%, ciprofloxacin and ceftazidime (54.38%), meropenem (53.63%), piperacillin + tazobactem (52.19%). Of 173 isolates, 12 were resistant to tigecycline. No resistance found for polymyxin B & colistin.

In non Acinetobacter baumannii strains, resistance to gentamicin, ceftazidime was seen in 10%, no resistance to polymyxin B, colistin.

CONCLUSION: Infection with Acinetobacter baumannii have been encountered frequently among hospitalised patients. Tracheal aspirate remain common site of infection. Resistance to commonly used affordable oral antibiotics makes the treatment expensive in resource poor countries. Identifying Acinetobacter strains on culture, regular local antibiogram will help clinician to know the pattern of sensitivity for better treatment and outcome. Strict adherence to infection control may help to reduce the burden of infection.
Background

Acute lower respiratory infection (ALRI) remains a major cause of childhood hospitalization and mortality in young children and the causal attribution of respiratory viruses in the aetiology of ALRI is unclear. We aimed to quantify the absolute effects of these viral exposures.

Methods

We conducted a systematic literature review (across 7 databases) of case-control studies published from 1990 to 2014 which investigated the viral profile of 18592 children under 5 years with and without ALRI. We then computed a pooled odds ratio and virus-specific attributable fraction among the exposed of 8 common viruses – respiratory syncytial virus (RSV), influenza (IFV), parainfluenza (PIV), human metapneumovirus (MPV), adenovirus (AdV), rhinovirus (RV), bocavirus (BoV), and coronavirus (CoV).

Results

From the 23 studies included, there was strong evidence for causal attribution of RSV (OR 9.79; AFE 90%), IFV (OR 5.10; AFE 80%), PIV (OR 3.37; AFE 70%) and MPV (OR 3.76; AFE 73%), and less strong evidence for RV (OR 1.43; AFE 30%) in young children presenting with ALRI compared to those without respiratory symptoms (asymptomatic) or healthy children. However, there was no significant difference in the detection of AdV, BoV, or CoV in cases and controls.

Conclusions

This review supports RSV, IFV, PIV, MPV and RV as important causes of ALRI in young children, and provides quantitative estimates of the absolute proportion of virus-associated ALRI cases to which a viral cause can be attributed.
RISK FACTORS FOR RESPIRATORY SYNCYTIAL VIRUS ASSOCIATED WITH ACUTE LOWER RESPIRATORY INFECTION: A SYSTEMATIC REVIEW AND META-ANALYSIS

T. Shi¹, E.B. Hernández¹, H. Nair¹, H. Campbell¹
¹Centre for Global Health Research,
Usher Institute of Population Health Sciences and Informatics, Edinburgh, United Kingdom

Background

Respiratory syncytial virus (RSV) is the most common pathogen identified in young children with acute lower respiratory infection (ALRI) as well as an important cause of hospital admission. The high incidence of RSV infection and its potential severe outcome make it important to identify and prioritise high-risk children who would develop RSV associated ALRI. Our aim was to identify the risk factors for RSV associated ALRI in young children.

Methods

We carried out a systematic literature review across 4 databases (Medline, Embase, Global Health and LILACS). Quality of all eligible studies were assessed according to modified GRADE criteria. We conducted meta-analysis to estimate ORs with 95% CI for individual risk factors.

Results

We identified 19 studies that investigated 17 risk factors for RSV associated ALRI in children younger than five years old. Among them, 5 risk factors were significantly associated with RSV associated ALRI in most studies (>70%) and were categorised as definite risk factors. The meta-estimates of their odds ratios with corresponding 95% CIs are low birth weight 1.84 (1.63-2.09), being male 1.32 (1.27-1.39), having siblings 1.53 (1.20-1.95), maternal smoking 1.34 (1.26-1.42) and prematurity 2.17 (1.66-2.83).

Conclusions

This study presents a comprehensive report of the strength of association between various socio-demographic risk factors and RSV associated ALRI in young children. It could be used to model the global, regional and national estimates of RSV associated ALRI. Policy makers could develop targeted interventions to decrease the prevalence of these risk factors in order to reduce the disease burden.
CLOSTRIDIUM DIFFICILE INFECTION IN PEDIATRIC WARDS: A RETROSPECTIVE CASE-CONTROL STUDY.

G. Akkoç¹, A. Soysal¹, S. Atıcı¹, A. Karaaslan¹, N. Yakut¹, S. Öcal Demir¹, E. Kepenekli Kadayıfci¹, G. Alttıkanat², N. Ulger², G. Söyletir², M. Bakır³
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Clostridium difficile is a major cause of antibiotic-associated diarrhea and frequently results in healthcare-associated infections. The aim of this study was to determine the frequency and potential risk factors for C. difficile infection (CDI) in hospitalized children at a University Hospital over a 3-year period (years 2012 to 2015). CDI was diagnosed when a patient with diarrhea was found to have toxin A and/or toxin B-positive C. difficile with no other enteropathogenic microorganisms. A total 986 patients hospitalized during the study period, among them 100 (10.1%) children developed CID. The mean age of children with CID (2.6 ± 2.6 months) was lower than children without CID (57.5 ± 63.5 months) [p=0.001]. In univariate analysis patients age, presence of underlying chronic diseases, hospitalization in pediatric intensive care unit (PICU), hospitalization in hematology/oncology ward, and antibiotic usage were found to be risk factors. On the other hand, in multivariate analysis presence of underlying chronic diseases, [presence of malnutrition (OR:7, 95% CI:1.33-36.7, p=0.021), presence of solid organ tumors (OR:6, 95% CI:2.4-15.7, p<0.001), presence of congenital heart diseases (OR:4.6, 95% CI:1.13-18.7, p=0.03)], hospitalization in PICU (OR:15.6, 95% CI:3.2-75.8, p=0.001) and hospitalization in hematology and oncology (OR:7.8, 95% CI:2-29.9, p=0.002) ward were found to be independent risk factors. The older age (OR:0.72, 95% CI:0.6-0.79, p<0.001) was found to be protective for CID. Despite the total hospital cost of patients with CID were higher than those without CID difference was not significant. C. difficile is an important cause of healthcare-associated diarrhoea in this paediatric population.
URINARY TRACT INFECTION BY AEROCCUS VIRIDANS IN A CHILD

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**Case presentation:** 6 year old girl came into outpatient nephrology with dysuria without fever as chief complaint. Before this, the patient was under study, for two years, for recurrent urinary tract infections, proteinuria and grade IV vesicoureteral reflux diagnosed. In scintigraphy scar is seen in the lower pole of the left kidney with low uptake (49%). Surgery was schedule but not performed. She was a year with prophylactic nitrofurantoin and changed to low protein diet, but continued with pyuria, with high proteinuria and high microalbuminuria.

Urine culture was requested. The sample was obtained by midstream technique and processed by standard techniques, sediment and Gram staining was performed. Abundant leukocytes and pooled positive cocci were observed. After 48 hours of incubation count greater than 100,000 UFC/col/ml was obtained in blood agar. Bacterial identification and antimicrobial susceptibility testing were performed by Vitek 2C (Biomerieux, France) and confirmed with API 20 Strep (Biomerieux, France). The patient was treated with trimethoprim sulfamethoxazole. At 72 hs. control urine culture was negative and all crops to date remain negative.

**Discussion:** Aerococcus is generally considered saprophytic and often as a contaminant in clinical samples. But there are some publications that stated that this microorganism is producing infections in humans.

**Conclusions:** Although Aerococcus viridans is rarely associated with child infections, if it is isolated in culture, especially in children with obstructive urinary diseases, we must consider it a real pathogen and antimicrobial therapy should be administered promptly.
ROTAVIRUS IN ACUTE DIARRHEA

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Rotavirus diarrhea represent a public health problem so it was considered necessary to determine the prevalence of Rotavirus in children under 5 years treated at the Bacteriology Service. We studied seasonality, age and gender distribution, and assessed the presence of leukocytes.

During the years 2013 and 2014 the presence of Rotavirus in feces of 297 children (0-5 years) with acute diarrhea was determined. Immunochromatography techniques were used. The following age distribution groups was considered: under 1 year, 1, 2 and 3-5 years. The annual prevalence and distribution by gender was evaluated. The leukocytes were classified into abundant, regular amount and scarce.

Of the 297 patients studied, 31% (91) had Rotavirus, 28% (41) in 2013 and 33% (50) in 2014. The highest incidence occurred between May and July 2013 and between July and August in the 2014. Of the positive cases, 74% (67) were under one year. In 81% (74) of the samples few leukocytes were observed. There was no gender difference as 52% (47) were boys and 48% (44) girls.

Rotavirus is the leading cause of viral gastroenteritis, and mainly affects young ages of life, mainly children under one year, with a clear predominance in winter. Vaccination against rotavirus is a priority to reduce the high rate of morbidity and mortality caused by this disease. We consider important to continue this study to see what happens with the prevalence of Rotavirus after the vaccine inclusion in the calendar of compulsory vaccination since January 2015.
RAPID TEST FOR THE DETECTION OF STREPTOCOCCUS PYOGENES VERSUS CULTURE

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Common signs and symptoms of streptococcal pharyngitis include sore throat, temperature greater than 38°C, tonsillar exudates, and cervical adenopathy. Cough, coryza, and diarrhea are more common with viral pharyngitis. Available diagnostic tests include throat culture and rapid antigen detection testing. Throat culture is considered the diagnostic standard, although the sensitivity and specificity of rapid antigen detection testing have improved significantly.

Streptococcal pharyngitis is one of the most frequent reasons for consultations in children. The rapid antigen tests are an important advance, enabling the diagnosis of infection by Streptococcus pyogenes to be diagnosed in a few minutes.

The aim of this review is to assess the rapid antigen detection test in the diagnosis of Streptococcus pyogenes from throat samples.

Pharyngeal swabs were performed by both techniques to 138 children attended in emergency of Zona Norte Childrens Hospital.

Of the 138 samples analyzed 13 (9.4%) were positive by rapid test and 17 (12.3%) were positive by culture. Rapid test showed 4 (2.9%) false negative results. Rapid antigen detection test demonstrated a good diagnostic performance.

Rapid tests offer good accuracy for use as diagnostic method, however, these devices have to be complemented with the microbiological culture, because there are false negative results.
CEREBROSPINAL FLUID ANALYSIS IN CHILDREN WITH ENTEROVIRAL MENINGITIS DURING SEASONAL OUTBREAK

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Background and aims

Enteroviruses are responsible for overwhelming majority of meningitis cases during local outbreaks, but other infectious agents still should be taken into consideration. Proper differentiation based solely on pleocytosis and protein concentration in cerebrospinal fluid (CSF) can be challenging. The aim of this study was to evaluate use of those CSF parameters in differentiating enteroviral meningitis from other causes of meningitis in children.

Methods

Retrospective analysis of CSF test results of children diagnosed with Echo 30 enteroviral meningitis (confirmed by PCR RNA detection and enteroviral culture) admitted to The Medical University of Bialystok Children’s Clinical Hospital, Poland from January 2013 to December 2014.

Results

Apart from 292 cases of enteroviral meningitis we discovered 8 cases of Lyme neuroborreliosis and 3 cases of Tick borne encephalitis (TBE) in the study period. CFS analysis revealed polymorphonuclear cells predominance in 36% of children with enteroviral meningitis. Only one child had an absolute neutrophil count of >1000, a value required to receive 1 point in Bacterial Meningitis Score (BMS). Median pleocytosis was 85 in the whole study group and 233 in children with polymorphonuclear cells predominance in CSF.

Conclusions

1) During enteroviral season careful differential diagnosis in all aseptic meningitis cases is needed in order not to miss other causes of aseptic meningitis (ie. Lyme neuroborreliosis and TBE)

2) BMS can be used to differentiate cases of enteroviral meningitis with polymorphonuclear cells predominance from bacterial meningitis.

3) Enteroviral RNA detection by PCR is the best tool for rapid diagnosis and differentiation
EPIDEMIOLOGY OF RESPIRATORY VIRAL INFECTIONS IN PEDIATRIC SOLID ORGAN TRANSPLANT RECIPIENTS

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Background: Respiratory viral infections (RVIs) have the potential for significant morbidity and mortality in pediatric solid organ transplant (SOT) recipients. We describe the epidemiology of RVIs, excluding adenovirus, in this patient population.

Methods: Retrospective cohort study of patients 0-18 years of age who underwent SOT (heart, kidney, liver or lung) from 2010-2013. Multi-organ transplants, and patients with previous SOT or hematopoietic stem cell transplantation were excluded. Records were reviewed from date of transplantation until 365 days post-transplant, graft failure, patient death or loss to follow up.

Results: Two hundred eighty-four patients met study inclusion criteria (48 heart, 58 kidney, 131 liver, 47 lung). Median age was 5.9 years (range, 80 days-18 years). Eighty-three (29%) patients had a total of 106 RVI episodes (Table). Rhinovirus/picornavirus (36.8%) was the most frequently identified, followed by RSV (24.5%), parainfluenza (20.8%), human metapneumovirus (10.4%), and influenza (7.5%). Median time to RVI post-transplant was 89 days (range, 0-364 days); 38% of patients with RVI were hospitalized, 3 died. Lung transplant recipients had highest rate of RVIs (76.6% of lung transplant recipients developed RVI), followed by liver (27.5%), heart (14.9%), and kidney (6.9%) respectively.

Conclusions: RVI is a common occurrence in the first year post SOT. Further study is necessary to further delineate impact of RVIs on graft function and survival in this population.

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RISK FACTORS FOR INFLUENZA-ASSOCIATED HOSPITALIZATION AMONG CHILDREN AGED 0-5 YEARS


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Background and Aims: Data on risk factors for influenza-associated hospitalizations in low- and middle-income countries are limited. We aimed to assess the factors associated with influenza-associated hospitalization among South African children aged <5 years.

Methods: We conducted active syndromic surveillance for hospitalized severe acute respiratory illness (SARI) and outpatient influenza-like-illness (ILI) at two sentinel sites in different provinces of South Africa during 2012-2014. Patients were tested for influenza virus using reverse-transcriptase polymerase chain reaction. We compared characteristics of influenza-positive patients with SARI to influenza-positive patients with ILI to identify factors associated with severe disease requiring hospitalization, using unconditional logistic regression.

Results: Among children <5 years of age influenza virus was detected in 5.4% (73/1,358) and 14.6% (149/1,023) of SARI and ILI cases, respectively. On multivariable analysis factors associated with increased risk of influenza-associated SARI hospitalization were: (i) young age [<6 months (aOR: 5.8; 95% CI: 2.2-15.2), 6-11 months (aOR: 4.7; 95% CI: 1.9-11.8) or 12-23 months (aOR: 3.0; 95% CI: 1.3-6.9) compared to 24-59 months of age]; (ii) asthma (aOR: 22.7; 95% CI: 2.8-∞); (iii) malnutrition (aOR: 2.4; 95% CI: 1.1-5.6); (iv) prematurity (aOR: 5.4; 95% CI: 1.2-23.8); and (v) HIV infection (aOR: 4.4; 95% CI: 1.1-17.6).

Conclusions: Our methodological approach enables the assessment of risk factors associated with influenza-associated severe disease in settings where SARI and ILI surveillance are implemented. HIV infected, asthmatic, premature or malnourished South African children might benefit most from annual influenza vaccination. Young infants can be protected through the vaccination of their mothers during pregnancy.
Epidemiology of Paediatrics Bacterial Meningitis in Togo Prior to Pneumococcal Vaccine Introduction into EPI

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**Background and aims:** *Haemophilus influenzae* b (Hib), streptococcus and meningococcus are responsible for high mortality and morbidity in children. Prior to new vaccines introduction into EPI in Togo it was necessary to monitor meningitis diseases. Hib vaccine was introduced in 2008 and PCV13 vaccine in June 2014.

**Method:** Sentinel paediatric bacterial meningitis surveillance started in Togo in June 2005, implementing the generic protocol developed by World Health Organization. Sylvanus Olympio Teaching Hospital in Lome is the sentinel site for the surveillance. Bacterial meningitis was confirmed in CSF by culture, latex agglutination, immunochromatographic or PCR. We are receiving technical support from The Gambian regional reference laboratory for PCR processing since 2010.

**Results:** Lumbar puncture was performed on 4,944 children less than 5 years of age hospitalized from May 2005 to June 2014; (97% of suspected meningitis cases). Meningitis was confirmed in 185 cases. Prior to Hib vaccine introduction in EPI, the main pathogens identified were Hib (45%), streptococcus (36%) and meningococcus (7%). After Hib vaccine introduction streptococcus is the main pathogen (76%), followed by Hib (11%) and meningococcus (5%). Serotypes 1, 5 and 23F were the most common streptococcus serotypes identified. Probable meningitis cases fatality rate was 26%.

**Conclusions:** Surveillance for meningitis has highlighted the weight of pneumococcal meningitis in children less than 5 years of age prior to PCV vaccine introduction in routine immunization schedule in Togo. Continued the surveillance will help to show the positive impact of new vaccines and to evaluate their efficacy.
ACUTE ATAXIA AS A PRESENTING SYMPTOM OF HERPES SIMPLEX-1 (HSV-1) MENINGOENCEPHALITIS IN A CHILD
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Background and Aims: HSV-1 is a leading cause of viral meningoencephalitis in newborns and children, with seizures being one of the most common clinical manifestations raising the suspicion about its presence prior to laboratory confirmation. However, acute ataxia as a presenting symptom of HSV meningoencephalitis is extremely rare.

Case report: A previously healthy 19-month-old boy was admitted to the emergency room of our only national children’s hospital with a 24-hour history of irritability, difficulties in maintaining an upright posture, complete refusal to walk and 5 days of fever and oral lesions for which he received oral cephalexin but had no improvement. At admission, he looked acutely ill, was febrile, tachycardic and irritable. He had an ataxic gait, couldn’t stand sitting, had normal osteotendinous reflexes, and no meningeal signs. He had no herpetic whitlow or oral/mucocutaneous lesions. On admission, CSF analysis revealed 110 leukocytes/mm³ (100% lymphocytes), proteins 45 mg/dL, glucose 73 mg/dL, and negative Gram stain and bacterial culture. A CSF real-time PCR for HSV-1 was positive and negative for enterovirus. Intravenous acyclovir (45 mg/kg/day) was given and completed for 14 days. Fever disappeared at 48 hours of treatment, and his ataxia improved progressively over the first week. A head CT-scan was normal. A repeat CSF analysis on day 10 of acyclovir revealed 0 leukocytes/mm³, and a negative HSV-1 PCR. He went home with no sequelae.

Conclusions: Although extremely rare, acute ataxia should be included among the clinical manifestations of CNS infection due to HSV-1, even in the absence of seizures.
PERIPHERAL LYMPHADENOPATHIES OF HEAD AND NECK REGION IN CHILDREN: A PROSPECTIVE COHORT STUDY
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Aim: Lymphadenopathy (LAP) of head and neck region is a common sign may raise some serious illnesses. The aim of study was to describe clinical features of patients with lymphadenopathies in head and neck region and to evaluate the follow-up results of potential causes and risk factors for malignancies.

Material and Methods: Two-hundred and eighteen patients aging between 79.4 ±46.7 months old with LAP were taken in this prospective cohort study. The patients were examined in terms of demographics, clinical, radiological and serological aspects like Epstein-Barr virus (EBV), cytomegalovirus (CMV), parvovirus B19. Lymph node biopsy was done with selected patients. The patients were followed for eight weeks and risk factors for malignancy were evaluated.

Results: Seventy patients (41.3 %) had specific etiology and 6 cases (2.7 %) had malignancy. The diseases were as follows: 27 % (n=59) infections; 2.7% (n=6) malignancies; 11.6 % (n=25) other causes. EBV was responsible for 27 % of infectious causes. Four of six malignancies were lymphomas. Predictive factors for malignancy were having LAP bigger than 30 mm, rubbery lymph node, showing hepatosplenomegaly, B symptoms of lymphomas, high CRP and LDH values, no hilum in ultrasonography of LAP, and enlargement of lymph node on follow-up. High uric acid levels and leucopenia were also common in the malignancy group.

Discussion: Etiology of LAP in head and neck region was confirmed in 41.3 % cases. Infectious causes were most common cause with 27 %. Percentage of malignancy was shown as 2.7%.
CALCANEUS OSTEOMYELITIS AFTER METABOLIC SCREENING TEST
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BACKGROUND AND AIMS

Neonatal osteomyelitis (NO) is rare. Clinical presentation is unspecific, although predisposing factors are frequent presented. It may have serious long-term consequences; therefore we must have a high degree of suspicion to make an early diagnosis.

NO differs from osteomyelitis in older children in presentation, severity of symptoms and location. It’s more frequent in preterm infant. NO due to bacteremia is more common than contiguous infection. S.aureus is the most common agent, however MRSA incidence has increased.

METHODS
Report a case of calcaneus osteomyelitis (CA) after metabolic screening test

RESULTS

15-day old term neonate with CA at the site of metabolic screening tests puncture. 7 days after the puncture she presented with progressively worsened heel swelling, with loss of mobility of ipsilateral limb. She remained afebrile, without irritability and continued to gain weight.

At admission, 3 days after, she had subcutaneous calcaneus abscess, surgical drainage was performed, started flucloxacillin and gentamycin empirically, while waiting for results. Culture showed MRSA in blood and exsudate. Antibiotherapy was changed to vancomycin and gentamycin, which were given for 15-days, followed by 4-weeks of vancomycin and co-trimoxazol, due to the risk of adverse effects of gentamycin, with diminished swelling and drainage, inflammatory markers normalization and imagiological improvement.

CONCLUSIONS

CA is uncommon and usually iatrogenic. Heel punctures are safe, although traumatized area infections can occur. Hand washing and puncture site sterilization are essential to reduce infection risk. The treatment of invasive MRSA infection is guided by antimicrobial susceptibility and 6-weeks of is recommended.
OSTEOARTICULAR INFECTIONS IN PEDIATRIC PRACTICE, 2004-2014

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Background and aims:

Osteoarticular infections remain a significant cause of morbidity worldwide in children. The aim of this study was to review the diagnostic experience with these infections at our institution.

Methods:

Cases of osteo-articular infections (osteomyelitis (OM), septic arthritis (SA) or spondylodiscitis) hospitalized in our pediatric department between 2004 and 2014 were retrospectively reviewed, focusing on clinical, microbiological and radiological data.

Results:

In our review, we identified 45 cases (65% monoarticular SA, 29% single-site OM, 4% multisite infections and 2% OM with adjacent spondylodiscitis), 62% male, with median age of 6.6 years.

In the SA group (n=29), 37% had leukocyte counts greater than 15.0×10⁹/L, 70% had C-reactive protein (CRP) greater than 4mg/dL and 76% had erythrocyte sedimentation rate (ESR) greater than 20mm/h. In the OM group, 18% had leukocyte counts greater than 15.0×10⁹/L, 59% had CRP greater than 4mg/dL and 38% had ESR greater than 20mm/h.

Blood cultures and/or tissue cultures were performed in 100% patients. Bacteraemia was detected in 28% of children with SA and 47% with OM. The most frequently cultured organism in both conditions was Staphylococcus aureus. Articular fluid was culture-positive in 50% of cases. One isolate was methicillin-resistant (MRSA).

Radiologic diagnostic findings were observed in 22% of plain radiographs, 62% of sonograms, 100% of ⁹⁹mTc-labeled bone scans and 100% of MRI.

Conclusions:

Our data indicate most patients had normal leucocyte count but elevated CRP and/or ESR. Staphylococcus aureus was the most commonly cultured pathogen, but unlike in other studies MRSA was not a major problem.
EPIDEMIOLOGY OF SEROTYPE 1 INVASIVE PNEUMOCOCCAL DISEASE IN CHILDREN

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Introduction: Serotype 1 pneumococcal disease is associated with outbreaks. We aimed to describe serotype 1 epidemiology in South Africa, where PCV7 (7-valent pneumococcal conjugate vaccine) was introduced in 2009 and PCV13 (serotype 1-containing) in 2011.

Methods: We included national, laboratory-based surveillance data for children <5 years with invasive pneumococcal disease (IPD) 2003-2013, calculating annual incidences. Multivariable logistic regression models were used to identify factors associated with serotype 1 disease and in-hospital mortality.

Results: We identified 12,648 IPD cases; 554 (4%) due to serotype 1. Compared with 2005 (n=88), incidence rates for serotype 1 disease fluctuated with significant reductions in 2006 (n=58, p=0.02), 2007 (n=61, p=0.03), 2010 (n=56, p=0.01), 2012 (n=48, p=0.001) and 2013 (n=15, p<0.001). Compared to all other serotype cases, controlling for year and syndrome, serotype 1 cases were older, with hospital stays ≤3 days (4-14 days odds ratio [OR]=0.58, 95% confidence interval [CI] 0.33-0.85), ≥15 days OR 0.44, 95%CI 0.23-0.85), less penicillin non-susceptible disease (OR 0.02, 95%CI 0.01-0.05), lower HIV-infection prevalence (OR 0.19, 95%CI 0.12-0.31) and lower in-hospital mortality (OR 0.38, 95%CI 0.19-0.76). In-hospital deaths due to serotype 1 were more likely in infants (<1 year [29%] OR=12.06 [95%CI 1.45-100.26]), children with underlying medical conditions (OR 3.21 [95%CI 1.49-6.91]), HIV-infected children (OR 2.82 [95%CI 1.36-5.84]) and those with meningitis compared with pneumonia (OR 0.25 [95%CI 0.11-0.54]) or bacteraemia (OR 0.11 [95%CI 0.03-0.42]).

Discussion: Serotype 1 IPD had distinctive clinical features in young children in our setting. Although annual serotype 1 incidences fluctuated, significant decreases were noted post-PCV13 introduction.
BACKGROUND: Cutaneous leishmaniasis is a widespread anthropozoonosis which represent a major public health problem in Tunisia. Three main epidemic clinical forms of cutaneous leishmaniasis are identified in Tunisia and are associated with three different species of leishmania.

AIMS: The aim of our study was to describe the epidemioclinical profile and the therapeutic characteristics of childhood cutaneous leishmaniasis in Tunisia.

METHODS: A retrospective study was conducted in the department of dermatology of Habib Thameur teaching Hospital over 30 years (1986-2015). All medical reports of cutaneous leishmaniasis were reviewed and patients included were younger than 16 years old.

RESULTS: A total of 87 children were included with 106 lesions. The mean age was 7.4 years (18 months-15 years). There were a female predominance. All our patients lived or had stayed in an endemic area. The most frequent clinical presentation was ulcerated crusty nodules (60%) and were mainly localized on the face. Clinical diagnosis was confirmed by the parasitologic smear in 89%, by the histopathologic examination in 8% and by PCR in 3% of the cases. Mucosal leishmaniasis was present in 5 patients. Seventy seven patients were treated with intrallesional meglumine antimoniate, twenty lesions were treated with cryotherapy and five patients were treated with intramuscular meglumine antimoniate with a satisfactory cosmetic result.

CONCLUSIONS: Childhood cutaneous leishmaniasis is common in Tunisia. It has the characteristics of sporadic leishmaniasis. It is frequently located on the face in its ulcerated form and under treatment it has generally a favorable outcome.
Introduction: Despite effective chemotherapy and strategic health programs, tuberculosis is still common in our country. Here we report twin infant tuberculosis meningitis and pulmonary tuberculosis.

Case 1: A 5-month-old girl admitted to hospital with fever and prolonged cough. In her medical history revealed that she was born preterm birth and suffered bronchopulmonary dysplasia. In her physical examination rhonchus and rales were heard on auscultation of the chest. Intravenous vancomycin and ceftriaxone were started empirically for bacterial pneumonia. On the 7th day of hospitalization noticed that she had opisthotonus. Lumbar puncture was performed and cerebrospinal fluid (CSF) polymerase chain reaction (PCR) analysis for M. tuberculosis was positive. Cranial computerized tomography (CT) showed hydrocephalous. She referred our hospital. Anti-tuberculosis treatment and corticosteroid started immediately. Thorax CT was consistent with pulmonary tuberculosis. IGRA (Interferon-gamma release assays) test was positive. She has been asymptomatic during the 5-month follow-up.

Case 2: A 5-month-old girl admitted to hospital with prolonged cough. Her twin sister was diagnosed as tuberculosis meningitis and pulmonary tuberculosis. Thorax CT was consistent with cavitary in left upper lobe. IGRA (Interferon-gamma release assays) test and PCR analysis for M. Tuberculosis in bronchopulmonary lavage sample (BAL) were positive. BAL culture yielded M. tuberculosis. Anti-tuberculosis treatment started and she has been asymptomatic during the 5-month follow-up.

As a conclusion Tuberculosis is still a condition that carries significant morbidity and mortality. Early diagnosis and prompt initiation of treatment are essential to improve the poor outcome.
Introduction: Miliary tuberculosis (MT) is one of the leading infectious cause of death worldwide. A high index of clinical suspicion for early diagnosis and timely treatment institution can be lifesaving.

Case report: A thirty-five-day-old infant presented with fever and cough. Vancomycin, cefotaxime and gentamicin was initiated without clinical improvement. The chest radiography revealed a reticulonodular infiltrate. BCG immunization was performed at birth. Tuberculin skin test was anergic but IGRA (TSpot) was positive and the acid-fast smear and culture of bronchoalveolar lavage and gastric aspirate identified Mycobacterium tuberculosis. Additional investigation also showed choroidal tubercles, mediastinal lymph nodes enlargement, pleural and pericardial effusion and hepatosplenomegaly. HIV serology was negative. Isoniazid, rifampin, ethambutol, pyrazinamide and prednisolone was instituted. A progressive respiratory distress and hypoxemia was noted and computed tomography scan revealed a macropseudocyst formation in right upper lobe, with compression of trachea and principal bronchi. A percutaneous drainage of the cavity followed by a superior right lobectomy was necessary. Hemophagocytic syndrome was diagnosed later, but given the clinical stability of the patient, no specific chemotherapy was initiated. No alteration was identified on primary immunodeficiency screening. Screening of contacts revealed pulmonary tuberculosis of father, tuberculosis infection of mother (without genital tuberculosis) and seven additional cases at the father’s work place.

Conclusion: In Portugal, tuberculosis remains an important public health issue, despite routine BCG immunization at birth. The diagnosis of miliary tuberculosis can be a challenge. The absence of clinical improvement with a specific therapy should prompt a search for an eventual complication.
PROFILE OF CHILDHOOD TUBERCULOSIS (TB) IN A PAEDIATRIC TERTIARY CARE CENTRE IN INDIA

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AIM:

India has the highest tuberculosis burden but has very few studies on TB in children. This study aims at description of childhood TB with respect to types, clinical presentation, investigations and culture positivity in an Indian paediatric setting.

METHODS:

Clinical and laboratory data of 46 children in the age group of 0 – 18 yrs diagnosed to have TB according to WHO guidelines were prospectively included during the study period October 2012 to November 2013. Main diagnostic tools included tuberculin skin test, chest X-ray, sputum/gastric aspirate culture with sensitivity testing, and direct microscopy for acid-fast bacilli on available samples. Clinical characteristics and outcomes of the patients were examined.

RESULTS:

Out of 40 children, 16 (34.8%) were diagnosed with pulmonary TB and 30 (65.2%) with extrapulmonary TB. Neurological TB constituted 15/30 (50%) of the extrapulmonary TB. 26 children had a positive BCG vaccine scar (65.2%) and 22/46 (47.8%) had a positive tuberculin skin test. An adult TB contact was identified in 10 (21.7%) cases. On direct microscopy, acid-fast bacilli were found in 11 (23.9%) patients. Specimens – gastric juice (3), bronchoalveolar lavage fluid (6), lymph node (1), pus (1). Positive culture for Mycobacterium tuberculosis was found in 7 (15.2%). CXR was abnormal in 93.7% (15/16) children with pulmonary TB but only 13.3% (4/30) in extrapulmonary TB. One patient with disseminated TB with underlying immunodeficiency died during follow-up.

CONCLUSIONS:

Extrapulmonary TB was the commonest form at our centre with neurological TB constituting the majority. Bronchoalveolar lavage contributed to increasing the smear positivity rates in our study.
DIAGNOSIS OF ACTIVE TUBERCULOSIS IN CHILDREN: VALUE OF QUANTIFERON-TB GOLD IN-TUBE ASSAY

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Background: Accurate diagnosis of childhood tuberculosis (TB) is a major challenge. Culture confirmation of TB infection in childhood is limited due to the paucibacillary nature of the disease and difficulties obtaining sputum samples from this age group. A tuberculin skin test (TST) is usually included in diagnostic algorithms of childhood TB. A QuantiFERON-TB Gold In-Tube assay (QFT-GIT) is a useful alternative to a TST. The aim of this study is to determine the sensitivity of QFT-GIT in active childhood TB and its performance in young children.

Patients and Methods: A group of 124 definitely confirmed TB cases were included in the study retrospectively. Age stratification was applied and QFT-GIT performance was compared between age groups.

Results: Of the 124 children, 68 were male and 56 were female. Their age range was between 2 to 201 months, and the median age was 132 months. QFT-GIT and TST sensitivities were 65% and 66% respectively. The combined sensitivity of both tests reached 85%, which is statistically significant (p<0.0001). Performance of QFT-GIT did not differ in patient groups younger than or older than five-years-age.

Conclusion: Our results showed that QFT-GIT performance did not change significantly with age. Although sensitivities of TST and QFT-GIT are very low in order to exclude active TB, their positivity supports a diagnosis of active tuberculosis disease in children with signs and symptoms. QFT-GIT and TST should be used together in order to enhance their diagnostic sensitivity.
RISK OF CHILDHOOD TUBERCULOSIS FROM ADULT HOUSEHOLD CONTACTS - A CROSS-SECTIONAL STUDY FROM KUMASI, GHANA

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Background

Recent national prevalent surveillance study in Ghana put current TB prevalence at 286/100,000 population. This is about four times more than World Health Organization (WHO) estimate of 72/100,000 population. This means more children are at risk of TB exposure, infection and disease. Isoniazid prophylaxis is known to prevent TB disease in children exposed to TB up to 75%. This study was to find out if children within families with TB are aware children would have to be screened and offered the necessary prophylaxis.

Methods

This was a cross section study of adults with Tuberculosis attending care at Komfo Anokye Teaching Hospital in the last quarter of 2014. The selection was by simple random sampling, were every third client was interviewed after seeking consent.

Results

A total of 30 patients were sampled with mean (sd) age of 45 (15) years. Women formed 36.7%. Forty percent were sputum positive, 57% sputum negative, and 3.3% did not know their status. Fifty percent were HIV positive, 36.7% negative and 13.3% did not know their status. Ten, 13.3, 23 percent had 3, 2, 1 child less than 5 years at home respectively. Only 12.5% had sent their children for screening but none had been put on prophylaxis.

Conclusion

More children remain at risk for both TB and HIV from adults. There is the need for more education on TB and HIV screening in children among families with TB and HIV. Preventive prophylaxis can then be offered.
SEVERE GRANULOMATOUS CO-INFECTION WITH M. TUBERCULOSIS AND COCCIDIOIDES IMMITIS IN A CHILD

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BACKGROUND: We present the case of a 3 year-old African American male, presenting with one month of constitutional complaints.

Co-infection with M. tuberculosis (M.tb) and disseminated CI was established, and antimycobacterials and fluconazole treatment were instituted.

RESULTS: Following initial improvement, recrudescence of constitutional symptoms necessitated rehospitalization. A marked rise in CI serum titers was observed (CF titre 1:≥16384); follow-up mycobacterial cultures were negative. Further workup revealed extensive extrapulmonary involvement including the lymphoid system, sphenoid and skull base bone structures, cervical soft tissue and presence of a large presacral and sacral paraspinal soft tissue mass extending into the spinal canal and abutting intestinal structures; biopsy demonstrated the presence of spherules and culture yielded CI.

Both M. tb and CI isolates were submitted for susceptibility testing. The patient remained on antimycobacterial therapy and liposomal Amphotericin B (LFAB) was instituted for clinical failure on fluconazole and pharmacodynamic challenges of azole treatment. The patient, who weighed 20kg, received 17.1 grams of LFAB.

This treatment led to slow but demonstrable improvement of clinical, laboratory and radiological findings. A comprehensive immunological work up was performed but did not reveal any abnormality.

CONCLUSION: This case emphasizes the potential for coinfection of tuberculosis and Coccidioides. The patient demonstrated sustained improvement with aggressive medical therapy. Further, this experience demonstrates that polyene therapy remains a viable therapeutic option for disseminated Coccidioides in select circumstances. In this unusual clinical setting it is imperative to pursue a diagnostic approach that includes a careful assessment of immunological function.
Background and aims: Tuberculosis is a major health problem worldwide. Patients with immunodeficiency have an increased incidence of mycobacteriosis. This study aims to evaluate immunocompromised patients with mycobacteriosis, analyzing diagnosis, course and treatment.

Methods: Retrospective study of mycobacterial disease in immunocompromised patients in a tertiary hospital in São Paulo from January 2009 to December 2014. Patients with HIV were excluded.

Results: We found 21 cases of mycobacterial disease in immunocompromised patients. The median age was 5 years. Comorbidities were: 9 primary immunodeficiency, 5 in use of immunosuppressive drugs, 4 onco-hematological diseases, 2 solid organ transplantation and 1 stem cell transplantation. Fourteen patients had lung disease; 2 pleural tuberculosis; 2 BCG-induced disseminated disease, 1 M.bovis in skin and other in psoas abscess; 1 M.tuberculosis in BAL and ascites; 1 renal tuberculosis; 1 M.intracellulare and M.chimaera in BAL.

Mycobacteriosis were identified: culture (n=5); PCR (n=1); acid-fast bacilli (n=11). The tuberculin skin test was >5mm in 3 of 10 patients.

We found 6 different treatment schemes, the majority (15 patients) conventional (rifampicin+isoniazid+pyrazinamide and ethambutol in >10 years). Duration of treatment: 6 months (n=10), 9 months (n=4), 7 and 11 months (n=2), in treatment (n=3), interrupted (n=2). Adverse reactions: hepatitis (n=2), arthralgia (n=1). Outcome: cure (n=15), failure/death (n=3), in treatment (n=3).

Conclusion: Immunocompromised children with mycobacterial disease have higher rates of alternative treatments, with lower cure rates than the general population (71% versus 85%) and higher mortality (4.8% versus 2.3%).
Introduction: Teenagers is a vulnerable group that should be protected against tuberculosis (TB). TB incidence and resistant forms remain high despite government efforts in Peru. The objective of this study was to determine the level of knowledge and attitudes about tuberculosis that high school students have in a district of Peru Northwest coast (Chiclayo).

Methods: A cross-sectional-descriptive survey (self-administered) was performed. A knowledge score in the survey above or equal to 11 was considered adequate.

Results: The sample included 319 students selected by simple random sampling. The average knowledge score was 8.39 out of 20 possible points as maximum. 18.8% of the students had adequate level of knowledge about TB. 51.41% showed positive attitudes towards patients with TB. Only 43.26% showed adequate knowledge in prevention. Lower values were obtained in treatment (19.12%). There was association between adequate knowledge and having more schooling years, urban origin, and positive attitudes towards tuberculosis (p<0.05). Women displayed more positive attitudes as well as students from urban areas.

Conclusions: The level of knowledge about tuberculosis in the high school children is not adequate. Some factors related to better knowledge could be studied more and enhanced.

Keywords: Pulmonary Tuberculosis; adolescent; Health Knowledge, Attitudes, Practice; Respiratory signs and Symptoms (Source: MeSH NLM)
ADULT OPEN TUBERCULOSIS, CHILDHOOD CONTACTS AND IMPLEMENTING ISONIAZIDE PREVENTIVE THERAPY: 4 YEAR EXPERIENCE IN THE POOREST REGION OF NIGERIA.

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BACKGROUND/AIMS

Nigeria ranks 2nd amongst countries with the highest global tuberculosis burden. Open tuberculosis remains the major source of childhood infection. Contact tracing is a potent tool for identifying latent tuberculosis. This study describes the implementation of isoniazid preventive therapy.

METHODS

Records of adults with tuberculosis and their childhood contacts in the tuberculosis/leprosy unit of the hospital from January 2008-December 2011 were analyzed.

RESULTS

There were 1,237 tuberculosis cases; 87% (1078/1237) were pulmonary. 21.5% (232/1078) were sputum smear positive. Males constituted 58.9% (136/232) and females 41.1% (95/232). 47 (20.3%) were 19-25years; 115 (49.6%) 26-40years. 35.7% (82/232) were diagnosed in 2010. 34.6% (80/232) were HIV infected, 52.4% (121/232) were HIV negative.

Sputum AFB was scanty in 9.9% (23/232); 1+ in 23.7% (53/232); 2+ in 40.1% (93/232) and 3+ in 23% (61/232). 43% (35/80) of HIV positive patients had scanty or 1+ AFB and 76% (92/121) of HIV negative patients had 2+ or 3+ AFB. 75% of HIV positive cases were in the 26-55year age group.

Childhood contacts <6years were 102; 44.9% (48/102) were males and 55.1% (54/102) female. 21% (22/102) were 4-5years; 17.6% (18/102) 5-6years, 1-2years and 2-3years each. 13% (14/102) were 3-4years and infants constituted 11.8% (12/102). 58.8% (60/102) were above 80% expected for age, 33.3% (34/102) 60-80%, and 7.2% (8/102) had protein energy malnutrition. Eligible childhood contacts received isoniazid preventive therapy. Challenges included high cost of Mantoux test (2.5$) and chest radiographs (4$), weak referral/linkages, inadequate funding, and logistic weaknesses.

CONCLUSION

Contact tracing requires urgent strengthening in Nigeria.
CASE FATALITY RATES IN CHILDREN DIAGNOSED WITH TUBERCULOSIS

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Background and aims: Every year an estimated 1 million children become sick with tuberculosis (TB). Only around one third are diagnosed and even fewer treated. We have a poor understanding of mortality rates among children with TB. Here, we aim to estimate case fatality rates in children with TB.

Methods: We conducted a systematic review of published literature identifying reports containing population-representative data on children diagnosed with TB and the number of those dying within a year of diagnosis. We used random-effects meta-analysis to obtain a pooled estimate of the percentage of children dying with TB in those reports.

Results: We reviewed 942 abstracts; 223 merited full-text review. Of these, we included 18 reports in our study, representing 16,060 children in 13 countries. The majority of these children received TB treatment and were HIV-uninfected. Six studies focused on pulmonary TB cases; two on culture-confirmed cases only. The pooled estimate of pediatric TB cases dying within one year of diagnosis was 2.0% (95% confidence interval (CI): 1.0%-3.9%). Among 8 studies that disaggregated into <5 and 5-14 year age groups, 4.2% (95% CI: 1.9%-9.1%) and 2.3% (95% CI: 0.1%-5.3%) died respectively.

Conclusions: That 2% of children die with TB despite receiving treatment is concerning and further efforts are required to ensure children are diagnosed early and receive appropriate treatment. As case fatality rates are undoubtedly higher among HIV-positive and untreated cases, which were mostly absent from the studied reports, finding and treating children with TB is critical to prevent avoidable deaths.
OUTCOMES OF CHILD CONTACT INVESTIGATIONS OF ACTIVE PULMONARY TUBERCULOSIS PATIENTS: A SINGLE CENTER EXPERIENCE FROM 2012 TO 2014

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Purpose: The study aimed to determine data collected during tuberculosis (TB) contact investigations and to evaluate the outcomes of these investigations.

Methods: We reviewed medical records for child contacts of patients with culture-positive pulmonary TB aged 19 years or older between August 2012 and July 2014.

Results: A total of 116 child contacts were identified for 79 patients with culture-positive pulmonary TB. Of 90 contacts who completed screening, 42% had negative tuberculin skin test (TST) results, 58% had positive results, and 1% had active pulmonary TB at the time of investigation. Of 50 contacts with TB patients with a negative smear, 50% had positive TST results. Age >4 years (OR 8.3; 95% CI 2.3-30) and male gender (OR 3.9; 95% CI 1.5-9.9) were significantly associated with being incompletely screened.

Conclusions: Improvement is needed in the process of contact investigations to ensure that contacts of patients with active pulmonary TB are identified and appropriately screened.
TUBERCULOUS CHOROIDAL GRANULOMA AND MILIARY TUBERCULOSIS IN AN HIV-POSITIVE CHILD

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Introduction

Mycobacterium tuberculosis (MTB) is a common pathogen in HIV infected patients. Ocular involvement of patients diagnosed with TB is a rare phenomenon with a prevalence of about 1%. A case of tuberculous choroidal granuloma in an HIV-positive child is described here.

Case

A six-year-old Turkish boy presented with weakness, fever, cough and abdominal distention for the last few months. On physical examination, multiple lymphadenopathy especially on cervical region and hepatosplenomegaly were observed. Findings from computerized tomography (CT) of his chest and abdomen were consistent with miliaryTB involving both two lungs, liver, para-aortic and mesenteric lymph nodes. Fundoscopy showed a choroidal granuloma affecting the peripheral macula. On examination, corrected visual acuity for distance and near was normal. His interferon gamma releasing test (IP-10) and tuberculin skin test were positive while PCR and culture for MTB from stomach fluid were negative. Considering the clinical and CT findings, standard four-drug anti tubercular treatment (rifampicin, isoniazid, pyrazinamide and ethambutol) was started with the diagnosis of tuberculosis. It was later learned that the patient's mother had been HIV positive. Therefore, anti HIV-1 test was performed and found to be positive. Baseline CD4 lymphocyte count was 690 cells/mL and HIV-1 viral load was 443000 copies/mL. The patient was diagnosed as advanced stage HIV infection and was started on HAART (lamivudin, zidovudin, lopionavir-ritonavir) immediately together with prophylactic fluconazole and Cotrimoxazole.

Conclusion

Although HIV and Mycobacterium tuberculosis (MTB) co-infection is common, ocular tuberculosis (TB) with the characteristic choroidal granuloma lesion remains a relatively rare manifestation.
PREVENTING TUBERCULOSIS IN THE PAEDIATRIC HIV POPULATION: UGANDA’S STRATEGY FOR PUBLIC SECTOR ISONIAZID PREVENTIVE THERAPY IMPLEMENTATION

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Background

The June 2013 World Health Organization (WHO) consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection recommend Isoniazid Preventive Therapy (IPT) for children. Implementation of IPT in resource limited settings is vastly limited by costs. Uganda, like many other developing countries, has not been an implementer. Uganda in 2013 revised its TB/HIV policy guidelines and developed a health worker guide on the implementation IPT in PLHIV. Current implementation of IPT in Uganda is very limited mainly in private sector facilities.

Methodology

To implement IPT, the National Tuberculosis/Leprosy program with support from partners developed a concept for public sector IPT in September 2014. Key to the concept were the availability of IPT guidelines for health workers, forecasted procurement of INH and stakeholder buy-in of the national HIV and TB programs in the adoption of the strategy for the roll out of the guidelines.

Results

Following review by WHO & PEPFAR, the concept was adopted into the National IPT Implementation Plan owned by the STI/AIDS Control Program in partnership with the NTLP to see public sector provision of IPT to 100% of newly enrolled HIV patients under the age of 15 as treatment for latent TB in all 1600 ART clinics. Performance results will be available by June 2016.

Conclusion

Despite resource constraints, Uganda will have lessons in adopting the 2013 WHO guidelines for IPT in children and is poised to be a model for other developing countries in the implementation of IPT in children.
LARYNGEAL TUBERCULOSIS: A RARE PRESENTATION IN A NIGERIAN CHILD WITH DISSEMINATED TUBERCULOSIS

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Background
Tuberculosis remains a ravaging disease particularly in the low income part of the globe. Even more worrisome is its proclivity for the extremes of ages with particular reference to the younger arm of this group where its protean and often non-specific manifestation makes its diagnosis elusive. A high index of suspicion is thus key in clinching the diagnosis of this enigmatic disease particularly when presenting in a rare form such as is found in laryngeal tuberculosis. Though, in the setting of other typical clinical presentation associated with tuberculosis, we present a case of laryngeal tuberculosis.

Case Summary
A 10-year old girl presented with a 4-month history of cough and weight loss; 2-month history of hoarseness and right ear discharge; and a month history of fever. Physical examination revealed an acute on chronically ill-looking child, in respiratory distress, febrile with generalized lymphadenopathy. Her weight was 50% of expected. Her Mantoux test was reactive, her ESR was 73mm/hr and all three sputum samples were positive for AAFB. Her chest radiograph showed cavitatory lesions, hilar adenopathy and patchy opacities in both lung fields with mottling. Laryngoscopy revealed hyperaemic and oedematous laryngeal mucosa with bulbous appearance and thickening of the arytenoids. She was treated with antituberculous medications and had a remarkable resolution of all symptoms.

Conclusion
Laryngeal tuberculosis though rare, should be considered in diagnosing a child presenting with hoarseness in the setting of other constitutional symptoms suggestive of tuberculosis.
TUBERCULIN SKIN TEST POSITIVITY AND INTERPRETATION OF 341 CHILDREN
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Introduction: Worldwide tuberculosis remains a leading cause of morbidity and mortality, especially in developing countries. Turkey has a lower disease endemicity with 30/100000 cases per year incidence, a rate close to America (32/100000) and Europe (49/100000).

Aim: Interpretation of tuberculin skin test (TST) is a challenging subject especially in regions where Mycobacterium bovis bacille Calmette Guerin (BCG) vaccine is applied. In this study it is aimed to evaluate 341 children by means of TST results and their outcomes.

Methods: Patients who were admitted to a tertiary referral hospital in the central region of Turkey and to whom TST was applied and also measured as positive between January 2010 and January 2013 were included in the study.

Results: In a total of 341 children TST was applied due to unresolving cough (44%), in 8.2% due to contact with an active tuberculosis patient, due to family screening (8.5%). At the end of diagnostic procedures in 13 cases (3.8%) antituberculosis therapy was initiated. Prophylactic therapy was started in 328 cases (96.2%). Not statistically significant but in the group which TST was measured between 10-15 mm antituberculosis therapy was initiated more frequently compared to patients having TST higher than 15 mm.

Conclusion: As ‘‘gold standard’’ reference test for latent tuberculosis is lacking, in countries which BCG is applied in national vaccination schedule, antituberculosis prophylaxis is initiated due to positive TST results which causes unnecessary use of isoniazid in most cases.
EVALUATION OF PATIENT SATISFACTION WITH TB SERVICES IN SOUTHERN NIGERIA


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Background: Knowing TB patients’ satisfaction enables programmers to understand the gaps in services delivery and institute measures to address them.

Aim: This study is aimed at evaluating patients’ satisfaction with TB services in southern Nigeria.

Method: A total of 383 patients accessing TB care were studied using a validated Patient Satisfaction (PS-38) questionnaire on various aspects of TB services. Factor analysis was used to identify eight factors related to TB patient satisfaction. Test of association between patient satisfaction scores and patient and health facility characteristics, while multilinear regression analysis was used to identify predictors of patient satisfaction.

Result: Highest satisfaction was reported for adherence counselling and access to care. Patient characteristics were associated with overall satisfaction, registration, adherence counselling, access to care, amenities and staff attitude; while health system factors were associated with staff attitude, amenities and health education. Predictors of satisfaction with TB services included gender, educational status, being tested for HIV, distance, payment for TB services, level and type of health care facility.

Conclusion: Patient and health system-related factors were found to influence patient satisfaction, hence should be taken into consideration in TB service programming.
PEDIATRIC TUBERCULOSIS AT TIRANA UNIVERSITY HOSPITAL CENTER
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Introduction The childhood TB diagnosis is difficult remaining our everyday challenge. The aim of this study is to describe pediatric cases with pulmonary tuberculosis (PTB) and extra-pulmonary tuberculosis (EPTB) in the University Hospital Center (UHC).

Materials and Methods: This is a retrospective study including all hospitalised children diagnosed with TB during the period 2006-2014 in Pediatric Pulmonology at UHC. During the study period clinical, epidemiological, lab findings, treatment and patient outcome were recorded.

Results 140 cases of active TB aged 7 mo to 14 years were identified. 111 cases had PTB and 29 cases had EPTB and the disease has affected several organs in 2 cases. One child HIV infected and five children with severe malnutrition were diagnosed. EPTB were lymphnodes (17 cases), pleural (3 cases), meningeal (6 cases) and osteoarticular (3 cases). TB contact was positive in 30 cases. Eight patients resulted nonvaccinated. On direct microscopy, acid-fast bacilli were found in 8 patients and positive culture for Mycobacterium tuberculosis was found in 5. Drug resistance was not detected. 135 children were cured without sequelae and 2 with sequelae. Three children died during the treatment.

Conclusion: Pediatric PTB, EPTB are a common occurrence in our setting. EPTB diagnosis was more difficult than PTB due to the absence of pulmonary involvement and negative exposure history compared to PTB.
Background: Tuberculous Meningitis (TBM) is common in TB endemic regions and the most devastating slow growing infectious disease associated with asymptomatic to debilitating disorder among children worldwide.

Case: 4.5 yrs/F with fever, vomiting and headache (15 days). Had poor appetite and undocumented weight loss. Unvaccinated, had TB contact. Clinically underweight, febrile and pale. BCG scar absent, no lymphadenopathy and hepatosplenomegaly. Neurological examination unremarkable. Investigations revealed hemoglobin of 9.2%, TLC of 10.2 x 10^9/L, Neutrophils 46%, lymphocytes 61% and ESR :24. CSF (per-operative) showed TLC 45, neutrophils 10%, lymphocytes 90%, glucose 35 mg/dl, protein 150 mg/dl; culture negative. Chest X-ray and electrolytes unremarkable. Radioimaging revealed a large round well-defined mass in right cerebellar hemisphere measuring 4.0 x 3.4 x3.3 cm, causing mass effect, hydrocephalus with multifocal infarcts (figure 1A and B). Underwent craniotomy, mass resection and VP shunt insertion. Direct visualization showed hard, avascular mass with cheesy and necrotic tissue. Histopathology revealed chronic granulomatous inflammation with necrosis and no neoplastic cells (Figure 2). Culture showed no growth and tissue Xpert MTB/RIF was negative. However gastric aspirate Xpert MTB/RIF was positive. She immediately started on ATT (isoniazid, rifampicin, ethambutol and pyrazinamide) with steroids. Ophthalmology examination showed right sided grade1 papilledema that was followed up. Due to persistence of low consciousness, had tracheostomy. She tolerated the treatment well and showed gradual recovery on clinic followup.

Conclusion: TBM is the most deadly form of TB and rarely present as giant tuberculoma. Early recognition and prompt treatment can dramatically reduce the high mortality associated with TB.
A RARE PRESENTATION OF TUBERCULOUS MENINGITIS
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Background: Tuberculous Meningitis (TBM) is common in TB endemic regions and the most devastating slow growing infectious disease associated with asymptomatic to debilitating disorder among children worldwide.

Case: 4.5 yrs/F with fever, vomiting and headache (15 days). Had poor appetite and undocumented weight loss. Unvaccinated, had TB contact. Clinically underweight, febrile and pale. BCG scar absent, no lymphadenopathy and hepatosplenomegaly. Neurological examination unremarkable. Investigations revealed hemoglobin of 9.2 %, TLC of 10.2 x 10^9/L, Neutrophils 46%, lymphocytes 61% and ESR :24. CSF (per-operative ) showed TLC 45, neutrophils 10%, lymphocytes 90%, glucose 35 mg/dl, protein 150 mg/dl; culture negative .Chest X-ray and electrolytes unremarkable. Radioimaging revealed a large round well-defined mass in right cerebellar hemisphere measuring 4.0 x 3.4 x 3.3 cm, causing mass effect, hydrocephalus with multifocal infarcts (figure 1A and B). Underwent craniotomy, mass resection and VP shunt insertion. Direct visualization showed hard, avascular mass with cheesy and necrotic tissue. Histopathology revealed chronic granulomatous inflammation with necrosis and no neoplastic cells (Figure 2). Culture showed no growth and tissue Xpert MTB/RIF was negative. However gastric aspirate Xpert MTB/RIF was positive. She immediately started on ATT (isoniazid, rifampicin, ethambutol and pyrazinamide) with steroids. Ophthalmology examination showed right sided grade1 papilledema that was followed up. Due to persistence of low consciousness, had tracheostomy. She tolerated the treatment well and showed gradual recovery on clinic followup.

Conclusion: TBM is the most deadly form of TB and rarely present as giant tuberculoma . Early recognition and prompt treatment can dramatically reduce the high mortality associated with TB.
STUDY AND COMPARISON THE KNOWLEDGE OF MEDICAL AND PUBLIC HEALTH STUDENTS ABOUT CONTROL AND TREATMENT OF TB WITH DOTS STRATEGY

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Introduction: training medical students and prepare them for diagnosis, treatment and care of diseases, is the main goal of medical education. According to importance of adapting educational content to the needs of society and the high incidence of infectious diseases in the country, decided to study the knowledge of medical students and public health students about Tuberculosis (TB) and Directly Observed Treatment, Short-course (DOTS), because they are the main stakeholders in the field at feature.

Methods: In a cross-sectional study using a questionnaire consisting of 40 questions related to the knowledge necessary measures in prevention, diagnosis and treatment of tuberculosis (DOTS), 90 students of public health and medical students who were taken by the stratified random sampling with Using a reliable and valid questionnaire. The results of the tests were analyzed by descriptive and analytical tests in SPSS11.5 software.

Results: Average knowledge of public health students about TB was 9.24+9.091 of total 20 and knowledge of medical students was 8.67+1.954. The mean of knowledge, diagnosis and treatment of Public health students was 16.91+3.168 of total 40 and of medical students was 16.42+3.720. There was a significant linear correlation between general and technical students information about TB (r=0.681, p=0.000). T test showed there is not significant relationship between gender and field of study and students knowledge about TB.

Conclusion: Knowledge of medical and health students about TB and DOTS is not in acceptable level and it is necessary to revise the education of tuberculosis in medical and health school.
MEDIASTINAL TUBERCULAR LYMPH NODES COMPLETELY ENCASING AORTA IN A CHILD- A RARE COMPLICATION

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Mediastinal lymphadenitis may compress one of the bronchus leading to atelectasis, lung infection and bronchiectasis or thoracic duct leading to chylous effusion. Other intrathoracic complications include dysphagia, oesophago-mediastinal fistula. Encasement of aorta is an extremely rare complication.

An 8 years old girl presented in December 2012 with non-healing right axillary abscess since July 2012. She was on anti-tuberculous therapy (ATT) since February 2012 for primary complex. In July 2012, she developed right axillary cold abscess. FNAC showed presence of AFB. In October 2012, echocardiography was normal. On presentation to us in Dec 2012, she had a systolic murmur at the apex. A repeat echocardiography showed solidified collection in the superior mediastinum completely encasing aorta and main pulmonary artery causing constriction with a peak gradient of 23 mm of Hg across it. CT chest showed patchy areas of consolidation in apical segment of right upper lobe and lower lobe with localized pleural effusion, pleural thickening on right side and calcified mediastinal and abdominal lymphnodes. In view of clinical suspicion of drug resistant TB, she was shifted to 2nd line ATT consisting of Amikacin, moxifloxacin, ethionamide, PAS, cycloserine along with prednisolone. Parents were asked to send the pus from the axilla for TB culture, but did not send the same. Child was given total 18 months of this ATT regime (amikacin was given for 6 months). Her lymphnodes completely regressed in 1 year and echocardiography was normal in December 2013. CT chest showing complete resolution of the glands in June 2014.
PONCET’S DISEASE IN A PATIENT WITH ACTIVE TB
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Poncet’s disease is a reactive arthritis of active tuberculosis (TB). Being non destructive, it responds well to antituberculous treatment. It is an immunologically mediated reaction involving large joints.

A 13 years old girl suffering from abdominal TB was referred in May 2013 for bilateral knee pains. She had been diagnosed to have abdominal TB in November 2012 in view of fever, weight loss, CT abdomen showing portocaval and mesenteric adenopathy and peritoneal biopsy suggestive of tuberculosis on histopathology. She was started on ATT consisting of isoniazid (H), rifampicin (R), ethambutol (E), pyrazinamide (Z) and levofloxacin. In January 2013, she had developed subacute intestinal obstruction for which she underwent resection anastomosis. Her ATT was shifted to HR and Levofloxacin in Feb 2013. On presentation in May 2013 she had bilateral patellar tap. We advised her to stop levofloxacin. Her uric acid was 3mg/dl. ANA, ds DNA, RA factor were negative. X-ray knee showed pencil thin cortex. Ultrasound abdomen was normal. She was given vitamin C supplements with NSAIDs. However her symptoms persisted. In June 2013, MRI knee was done that revealed synovitis with moderate effusion with suprasellar bursitis. Synovial biopsy was done which revealed chronic non-granulomatous synovitis and culture did not grow any organism even after 6 weeks. She was treated with naproxen and ATT consisting of HR was continued. Gradually her symptoms resolved by July 2013 and her ATT was stopped in August 2013. Even on her last follow up in December 2014, she continues to remain asymptomatic.
Background and Aims: Tuberculosis is a serious public health problem not only due to its magnitude of spread but also development of resistance to existing drugs and spectrum of age groups it affects. The pediatric tuberculosis is a special component in TB, as the diagnosis is difficult in these cases. This study focuses on the status of the pediatric tuberculosis in the Sonepat district of Haryana state of India.

Methods: The data of NIKSHAY project (real-time TB surveillance through Case-Based-Web-Based electronic recording and reporting) was analysed from 2012 to 2014. Data entered in Microsoft excel and analyzed by using SPSS version 20.

Results: A total 505 cases of pediatric TB was registered (2012-142 (28.1%), 2013-167 (33.1%), and 2014-196 (38.8%)). Among them 305 (60.8%) were female. Mean age of cases was 11.1±3.6 years (Male-11.4±3.4 years, Female-10.5±3.9 years, P=0.008). 53% were classified as pulmonary cases (P=0.026) and among the eligible 63% reported sputum positive. Around 94% of the cases were diagnosed as new cases, 2.2% relapse, 2.4% retreatment, 0.6% failure, 0.8% treatment after default. From all the cases only 11.7% had the HIV report.

Conclusion: Although there is increased programmatic response to pediatric tuberculosis, however, the cases of pediatric TB are on rise. The TB HIV collaboration needs to be enhanced.
Background: In a prospective study from April to June 2015 in Zrenjanin, Serbia, two cases of tuberculosis (TB) were confirmed after using medical history, clinical data, positive sputum collected for TB culture, PPD3 testing and chest X-ray; the third case is suspected and waiting for TB culture results.

Aim: To diagnose active TB with appropriate treatment, to explore high priority contacts and prevent spreading through chemoprophylaxis and regular monitoring.

Methods and results: First case of TB was diagnosed in seventeen-year-old girl who attended secondary medical school and lived in a temporary accommodation in a six-bed room. After diagnosis was established, PPD3 test was performed in 50 children signed as high priority contacts; the size of induration 15 or more millimetres was present in 54%. X-ray was suspected in two cases, one of them had positive TB culture, another culture is in progress. Both cases have therapy against TB similar as in the first case. Chemotherapy received 3 cases with positive PPD3 and confirmed immunodeficiency.

Conclusion: TB is still present not only as a sporadic disease but even in an epidemic form, particularly in the conditions of low standard or/and shared, overcrowded accommodation. Diagnosing a disease on time, choosing an appropriate treatment and stopping its spreading remains a challenge as many years ago.
DRUG RESISTANT TUBERCULOSIS IN CHILDREN, LIMA-PERU (2000-2010)
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Peru is the fourth American country with high incidence of TB (102-100,000 inhabitants). And the capital of the country, Lima has 82% of the MDR cases of all the country. Near of 8% of all TB cases in Peru belong to children, and there is no exist an epidemiology investigations in this age group. We study the prevalence, risk of transmission and drug resistant index in all children TB patients of the Hospital Guillermo Almenara of Lima-Peru between the years 2000-2010.

We studied 96 cases of TB in children in that we use the proportion method of Canetti to the samples to study the drug resistant profile to INH, SM, EMB and RIF. 14.6% were MDR cases. Of all patients 29.2% were under 8 years, 11.5% were extrapulmonary cases and we reported 5 CSF with culture positive to TB. The most important risk factor of infection were in the children under 8 year (p=0.05, OD=1.9, CI=1.0-6.3). In the children under 1 year all were pulmonary cases with 1 resistant case to INH and SM, the patients with 10 years to more have the mayor number of resistant an MDR cases.

The MDR cases are concentrated in the center of Lima and the districts in Callao that are next to Lima-Cercado. Children have a similar geographic distribution to adult patients and this date confirmed that the transmissions were to adult family infected to children, especially in patients under 8 years.
COMPARISON OF THE TUBERCULIN SKIN TEST AND QUANTIFERON IN BCG VACCINATED AND NONVACCINATED CHILDREN AND ADOLESCENTS

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Background and Aims. Until recently the tuberculin skin test (TST) has been used to diagnose latent tuberculosis (TB). TST is not an ideal method: It requires 2 visits, has no positive or negative controls and there is no agreement on positivity. Often a diameter of ≥10 mm is used as positive. Interferon-gamma release assays (IGRA) overcome many of these problems. The aim of the present study was to compare TST and IGRA (Quantiferon) in immigrant children who underwent health examination upon arrival.

Methods. All children whose parents or guardians accepted health examination of their child/adolescent (0-17 years) were tested with TST and if the diameter was ≥10 mm the patient was referred to a department of pediatrics for Quantiferon). Since only a few patients had documented vaccinations, a typical scar was used as surrogate marker of vaccination. Children with active TB were not included.

Results. 591 children from 56 countries were included. 127 of 397 children (32%) with scar and 164 of 194 children without scar (84.5%) had positive Quantiferon (p<0.0001, Fisher’s exact test). Median TST was 12 mm (10-27 mm) in Quantiferon negative children and 18 mm (10-40 mm) in Quantiferon positive children (p<0.0001, Mann-Whitney U test).

Conclusions. BCG can significantly affect the results of TST but still a large number of children with a BCG scar have latent TB. The size of TST, when ≥10 mm, is related to the Quantiferon results but cannot be used to predict TB in the individual case.
DENGUE VIRUS NS1 ANTIGEN DETECTION IS ASSOCIATED WITH LEUKOPENIA AND THROMBOCYTOPENIA IN CHILDREN BUT NOT WITH ADULT PATIENTS IN A HYPERENDEMIC MUNICIPALITY IN COLOMBIA.

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Background: Early detection of dengue severe manifestations significantly reduces dengue associated morbidity and mortality. We explore the relationship between disease severity signs and virus antigen detection as a tool to improve diagnosis that could be used to predict severe disease.

Methods: A 405 febrile patients cohort from Girardot municipality in Colombia (254 under 14 years-old) with confirmed dengue were enrolled during day 1–8 of illness. Dengue specific antibodies, viral antigen or viral RNA detection were used for confirming cases. Dengue clinical and laboratory parameters were recorded and compared during the course of the illness and NS1 antigen was evaluated by ELISA.

Results: Despite in all patients, dengue confirmed cases were classified as Dengue (31.2%) Dengue with Warning Signs (55.5%) and Severe Dengue (13.3%), this last one, were significantly higher in patients under 14 years-old (15.8% vs. 9.3%). Likelihood of NS1 detection in children or adult patients were the same, but positive NS1 antigen detection had a significant relationship with leukopenia (< 4000 cel/mm3) and thrombocytopenia (< 100.000 platelets/mm3). There was not association with other signs or symptoms like abdominal pain, hepatomegaly, ascites or splenomegaly. The best rates of detection occurs until 5 days of illness.

Conclusion: Dengue NS1 antigen positivity is associated with white cell count or platelet reduction in children under 14 years old, pointing out the antigen detection as a useful tool to evaluate developing severe dengue.

Funding: Colciencias – COLOMBIA and Universidad El Bosque.
Background and Aims - Dengue fever is caused by an Arbovirus, transmitted by the Aedes genre mosquito. It is mostly seen in warm climates, being a public health major concern during summer months. Dengue infection causes major changes in bone marrow, mostly hypocellular. Peripheral blood smear findings such as thrombocytopenia and lymphocytosis with neutropenia are frequent. However, those are usually self-limited changes, not warranting further investigations such as marrow biopsies or aspirates. The occurrence of persistent hemophagocytosis is uncommon and usually leads to serious adverse outcomes. Our aim is to describe a case on which Dengue has lead to a Hemophagocytic syndrome.

Case Report - An 8-year-old female had high fever, malaise and headache for 8 days, being treated for streptococcal pharyngitis with penicillin with no improvement. On the 9th day, when she came to our Emergency Room, she was still febrile, ill-looking with sustained malaise. The physical examination revealed hepatosplenomegaly associated with jaundice, anemia, leukopenia, increased liver enzymes and hypoalbuminemia. Further investigation was performed and a bone marrow study confirmed the hemophagocytosis. By the time the diagnosis was made the patient had already improved and had no more fever, so she was discharged and followed in our out-patient clinic.

Conclusions - Though Dengue is self-limited, many complications not only concerning hemodynamics have been described. It is known Macrophage Activation Syndrome (MAS) associated with dengue fever is uncommon, but attention to atypical dengue complications has to be paid, as MAS has mostly catastrophic outcomes.
CARDIOPATHY AND HEPATITIS AS SIMULTANEOUS AND "ATYPICAL" MANIFESTATIONS ON A SEVERE DENGUE PEDIATRIC PATIENT.

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BACKGROUND

Dengue is one of the most important emerging infectious diseases in the world. There are rare clinical forms of severe dengue called "atypical" resulting in intense commitment at organ-systems. The involvement of several tissues exacerbates the manifestations, severity, complications, and mortality.

METHODS

Caucasian male teenager showing general malaise, four days of fever, hemorrhage of gingival tissue, abdominal pain, vomiting, patient hydrated, no pulmonary, cardiovascular, hemodynamic, neurological involvement, and finally mild abdominal pain.
Paraclinical: thrombocytopenia, leucopenia, transaminases> 1000 IU / L, antibodies dengue: positive.
Evolution at two days later shows chest pain, non heart failure, variable R-R electrocardiogram, bradycardia, peaked T DII and DIII, elevated Creatine-phosphokinase and negative Troponin.
Echocardiogram signs: myocardial dysfunction (ejection fraction 48%, shortening fraction: 24%).

RESULTS

Teenager patient with clinical, epidemiological, and serological diagnosis of Dengue by serious cardiac and liver involvement; Grade D classification as De Souza et al; Classification category A modified Child-Pugh score of severity of liver disease.
The patient had transient impairment of myocardial function and electrocardiographic changes without progression to dilated cardiomyopathy, heart failure or death attributed.

CONCLUSIONS

Dengue in Colombia represents a public health problem due to the reemergence and intense transmission. In children, unlike adults, it is less frequent organ involvement, of which the most common are liver and neurologic tissue; and to a lesser extent: kidney, heart, lung, hemophagocytic syndrome, pancreatitis and acute abdomen. Early recognition of the role of cardiac dysfunction, possible comorbidities, and target organs affected has implications for treatment, prognosis and morbidity and mortality.
CLINICAL CHARACTERIZATION ON APEDIATRIC PATIENT WITH "ATYPICAL" EXPRESSION OF DENGUE VIRUS: LIVER FAILURE NOT ENCEPHALOPATHIC ASSOCIATED WITH SALMONELLA TYPHI COINFECTION.
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BACKGROUND
Salmonellosis and dengue fever are infectious diseases with high prevalence especially in tropical and subtropical regions. There have been reports on coinfections of dengue virus, particularly with malaria, hepatitis, and leptospirosis. Coinfection of dengue virus with Salmonella is extremely rare with few reports in literature and early diagnosis and treatment could reduce morbidity and mortality.

METHODS
Female, hispanic patient with 8 years, 8 days hyporexia, myalgia, arthralgia, fever, diarrhea without mucus or blood, abdominal pain, nausea, vomiting, rash, icteric sclera, hepatalgia. No recent travel report, no family history of hepatitis, non prescription, and non toxic foods. Patient hydrated, no fever, icteric sclera, liver 4.0 cm without neurological imparenment; mild thrombocytopenia normal leukocytes, hiperbilibinemia, aminotransferases> 1000 IU / L, hypoalbuminemia, prolonged clotting times, positive IgM dengue, sero-agglutination Tifo O: (1/320) Stool salmonella typhi. Abdominal ultrasound: hepatomegaly, perivescicular liquid, accentuation portal triad liver.

RESULTS
Patient with clinical, epidemiological and serological diagnosis of severe Dengue, de Souza et al classification, grade D (acute hepatitis); American Association for the Study of Liver Diseases (AASLD) high risk of developing encephalopathy. Category B, in the modified Child-Pugh. Stationary evolution and slow improvement without encephalopathic deterioration.

CONCLUSIONS
Salmonellosis and dengue are two major public health problems associated with high rates of morbidity and mortality. His association is extremely rare and only isolated cases have been reported without an exact incidence. Overlapping clinical diagnosis difficult dual infection or coinfection. Early clinical suspicion and timely treatment reduces severity, complications and morbidity and mortality.
Background and aims:

Children are at risk for severe dengue with high rates of hospitalizations. Literature provides little information about the dengue virus effects in those with comorbidities. This study aims to assess the clinical and laboratory aspects of dengue in children with pre-existing disease admitted in the emergency department of a tertiary pediatric hospital.

Methods:

Retrospective study carried out in São Paulo, Brazil. Data was collected from medical records between January 2005 and April 2015. All children admitted in the emergency department with suspected dengue fever were included, emphasizing those with comorbidities.

Results:

We identified 97 cases with suspected dengue fever and selected for analysis 30 that were confirmed by laboratory tests. From those, 17 (56.7%) had underlying diseases. The mean age was 11 years. Hospital admission rate was 66% in general, of which 76% were previously healthy children and 58% with comorbidities (p=0.44). Bleeding was found in 73% and Dengue Haemorrhagic Fever diagnosed in 36% of all confirmed cases. There was no statistical difference between data from healthy children and children with underlying diseases in relation to clinical course, laboratory and outcomes. There was one death, a 10 year- old boy with Fanconi Anemia who developed shock, need for ICU, blood products, vasoactive drugs and mechanical ventilation. Laboratory confirmation was made in 83% by serology and 17% by antigen detection (NS1).

Conclusions:

In this study, there was a tendency of more severe dengue fever in patients with comorbidities. More studies are needed in high risk children.
CARDIAC ARRHYTHMIA IN A CHILD PATIENT WITH DENGUE FEVER

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Introduction:
Cardiac arrhythmia are uncommon in Dengue Fever. The cause for these rhythm disorders are thought to be myocarditis. The exact pathogenesis of myocarditis in dengue is unknown. One discusses that can be the result of the virus direct action or an immune response by complement activation.

We report a case of supra-ventricular tachycardia in a child with Dengue Fever.

Female child, 8 yo, was sough at a Ped ER with abdominal pain and vomiting in 16/03/2015. She had presented the same symptoms one week before. She was then referred to our Hospital in 17/03/2015 with supra-ventricular tachycardia, hemodynamically stable. The pulse rate was 190bpm and blood pressure was 80/50mmHg. Valsalva maneuver was tried to control the arrhythmia without success. Adenosine was used and amiodarone after that. She evolves with hypotension, hemodynamic shock and death. Chest X ray showed an enlarged cardiac area. ECG - showed no wave P; Echo-cardiogram – showed dilation of all chambers and ejection fraction of 29.7%. She had a Positive Dengue Rapid test performed in her city positive and IgM for dengue collected in 17/03/2015 was reagent. Dengue Virus isolation and PCR collected in 17/03/2015 were negatives.

Conclusion:
We want to highlight the importance of active search of Dengue Fever cases in secondary hospitals as they can be presented in form of myocarditis, encephalitis or hepatitis. We also found important the implementation of protocols for treatment of severe forms of Dengue Fever in an attempt to help to reduce mortality from this disease.
In early 2015, the number of dengue cases was threatening in Brazil. The Southeast region, which comprises Sao Paulo, accounted for 66.2% of all cases, including 81.2% of deaths that occurred nationwide, according to data from the Brazilian Ministry of Health. It is recommended that NS1 antigen be collected until the third day of disease or serology after the sixth for diagnosis. The NS1 test has a high specificity, bringing results after a few hours. Moreover, serology takes more time to complete.

This study aims to show that request NS1 is worthwhile regardless of the time of disease. The Emilio Ribas Institute of Infectious Diseases is a reference center in Sao Paulo, Brazil. From January to mid-June 2015, 19 patients with suspected dengue were admitted to its pediatric ward; 18 were confirmed. NS1 antigen was tested on 17 patients: average time of disease on day of collection was six days, 15/17 resulted reactive, 14/17 were collected after the third day of symptoms, and 12/14 (86%) resulted reactive. Two of them were non-reactive: one collected on the 7th day of disease with positive IgM, other collect on the 10th day with negative IgM for dengue, but positive IgM for leptospirosis.

NS1 antigen test was reactive in 86% of cases collected after the 4th day of disease. We believe NS1 is an indispensable test for a quick differential diagnosis even after the third day of onset symptoms.
Background and aims

Patients are revaccinated after hematopoietic stem cell transplantation (HSCT) to compensate for the loss of immunological memory due to HSCT preparative regimens. The aims of this study were to evaluate the adherence to revaccination schedule and immune response to vaccine antigens in HSCT pediatric patients.

Methods

HSCT patients with more than 3 years after transplantation were recruited at the Pediatric Oncology Institute from the Federal University of São Paulo, in Brazil. After Ethics Committee approval and written informed consent, a questionnaire was filled in, vaccination card was analyzed and a blood sample was collected. Sera were tested by ELISA for vaccine antibodies.

Results

Sixty-five patients (median age at HSCT, 10.3y) were evaluated. Forty-three (66.2%) were male; 36 (55.4%) had an allogeneic HSCT and 29 (44.6%), autologous. Median time interval between HSCT and sample collection was 4.0 years. Table shows revaccination data.

<table>
<thead>
<tr>
<th>Vaccine antigen (doses required for complete vaccination schedule)</th>
<th>Protective antibody levels</th>
<th>Number with complete vaccination schedule (%)</th>
<th>Seroprotection rate among those with complete schedule (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetanus (3)</td>
<td>≥0.1IU/mL</td>
<td>50/65 (76.9)</td>
<td>50/50 (100)</td>
</tr>
<tr>
<td>Diphtheria (3)</td>
<td>≥0.1IU/mL</td>
<td>50/65 (76.9)</td>
<td>49/50 (98.0)</td>
</tr>
<tr>
<td>Hepatitis A (2)</td>
<td>≥20 IU/mL</td>
<td>40/65 (61.5)</td>
<td>37/40 (92.5)</td>
</tr>
<tr>
<td>Hepatitis B (3)</td>
<td>≥10 mIU/mL</td>
<td>54/65 (81.5)</td>
<td>43/54 (79.6)</td>
</tr>
<tr>
<td>Hib (3)</td>
<td>&gt;1.0 μg/mL</td>
<td>43/65 (66.2)</td>
<td>41/43 (95.3)</td>
</tr>
<tr>
<td>Measles (2)</td>
<td>&gt;0.120 IU/mL</td>
<td>11/65 (16.9)</td>
<td>11/11 (100)</td>
</tr>
<tr>
<td>Rubella (2)</td>
<td>≥10 IU/mL</td>
<td>11/65 (16.9)</td>
<td>10/11 (90.9)</td>
</tr>
<tr>
<td>Varicella (1)</td>
<td>&gt;0.100 IU/mL</td>
<td>17/65 (26.2)</td>
<td>17/17 (100)</td>
</tr>
</tbody>
</table>

Conclusions

For all antigens analyzed, patients showed a good seroconversion rate after a complete vaccination scheme. However, a low coverage rate was observed, especially for live attenuated antigens. Revaccination after HSCT is immunogenic but further efforts should be put to increase adherence to propose schedules.
AGE OF ANTIRETROVIRAL INITIATION IS ASSOCIATED WITH SEROCONVERSION OF ONE-DOSE N.MENINGITIDIS-C VACCINE BETWEEN HIV-VERTICALLY-INFECTED CHILDREN WHO STARTED ANTIRETROVIRAL THERAPY AFTER ONE YEAR OF AGE

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WHO stated that all children younger than 5 years must start antiretroviral therapy (ARV). One argument for early ARV initiation is the response to immunizations. In Brazil, all HIV-infected children have been recommended to be immunized with Neisseria meningitidis C-conjugated vaccine (MenC). The aim of this study was to evaluate the immunogenicity of MenC among children who started ARV after one year of age.

HIV-infected patients aged 2-18 years old, who started ARV at more than one year of life, with CD4+ cell percentage or count of >15% or 350 cell/mm³, without active infection or opportunistic disease, and without antibiotic use. Seroconversion was defined as a 4-fold increase in 1-2 months post-immunization antibody titer using serum bactericidal assay/human complement. Bivariate analyses were performed and variables with p-value<0.15 were assessed using logistic regression.

118 children were enrolled. Median age was 12 years at immunization. 57 (53%) were female. The proportion of children with seroconversion was 35%; 43% and 29% among those who started ARV at <5 years old and those who started at an older age, respectively (p = 0.11). Variables associated with seroconversion were: ARV initiation before 5 years (OR= 4.16, 95%CI= 1.38-12.49); did not have a CDC category C event (OR=3.18, 95%CI= 1.34-7.52); value of the zenith viral load (log10) (OR=0.60, 95%CI= 0.32-1.14); percentual CD4 cells before ARV initiation (OR=0.99, 95%CI= 0.96-1.04).

The immune response to MenC was low among HIV infected children. Starting ARV before 5 years of age has the potential to improve immune response to vaccines.
THE REDUCTION OF GENITAL WARTS IN A STD/AIDS SERVICE AFTER INTRODUCTION OF THE QUADRIVALENT HPV VACCINATION IN THE MUNICIPALITY OF CAMPOS DOS GOYTACAZES-RJ SINCE 2011


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Introduction: There are over 200 different types of human papillomavirus (HPV). Of these, 30 affect the genital tract. The HPV types 6 and 11 are classified as low risk and cause approximately 90% of genital warts. High risk HPVs are virus types 16 and 18, which are more likely to cause precancerous lesions and genital tumors. Pap test associated with the use of condoms and HPV vaccine are strategies for early identification and prevention of this condition. The municipality of Campos dos Goytacazes-RJ implemented in September 2010, the quadrivalent HPV vaccine to residents girls between 11 and 15 years and in 2011 it was extended for women HIV positive 9-26 years

Methods: This cohort study is retrospective, and analyzed the medical records of women treated at Municipal Program STD / AIDS, in a period of three years before and after the start of vaccination in Campos, in order to calculate the prevalence of genital warts in all patients treated each year for each age group (11-15; 16-20; 21-25; 26-30; 31-35; 35-40; >40 years old).

Results: From 2007 to 2009, 793 medical records were analysed, with 247 cases of genital warts (31.15% of total). From 2011 to 2014 there were 817 medical records analysed, with 244 cases (29.86%). The most significant reductions in the prevalence of warts occurred in the age groups 11-15, 16-20 and 26-30.

Conclusions: Although the population treated at a specific program of STD have bias selection, nevertheless there was a reduction in the prevalence of genital warts, especially in populations vaccinated younger.
MOLECULAR EPIDEMIOLOGY OF HPV IN HIV TEENS AND WOMEN 4 YEARS AFTER INTRODUCTION OF QUADRIVALENT HPV VACCINE IN THE MUNICIPALITY OF CAMPOS DOS GOYTACAZES, BRAZIL


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Introduction: Human Papillomavirus (HPV) is a sexually transmitted virus with a high outcome of morbidity and mortality of cervical cancer. In Brazil, a high percentage of the population is infected with HPV, with an estimate of about 9–10 million of individuals infected. HPV is expressed more frequently in HIV positive individuals, due to immunosuppression caused by the presence of virus. The municipality of Campos dos Goytacazes was the first municipality in Brazil to introduce quadrivalent HPV vaccine to HIV women 9-45 years old since 2011.

Methods: This is a prospective cohort study that analysed HIV adolescents and HIV-positive women attending the Municipal STD/AIDS by comparing vaccinated (test group) and unvaccinated individuals (control group). After informed consent, teens parents and women had a cervical swab obtained. Nested Polimerase Chain reaction (PCR) was performed to identify the HPV types by using specific primers of E6 segment. Restriction fragment length polymorphism technique (RFLP) and a microarray HPV kit were used to identify the HPV types.

Results: Preliminary results in 42 and 15 individuals of control and test group respectively showed a prevalence of 35.7% of HPV in control group and 0% in test group. HPV 6, 11, 16 and 18 were found, but other types also, such as 31, 42, 44, 45, 52, 53, 54, 58, 61, 70, 81, 90, 91 and 106.

Conclusions: The burden of HPV is striking in HIV teens and women, and it can be inferred that the HPV vaccine has a protective effect on this group of individuals, and should always be indicated.
IMMUNOGENICITY OF DOUBLE-DOSE HEPATITIS B VACCINATION IN HIV-INFECTED CHILDREN AND ADOLESCENTS WHO DID NOT RESPONSE TO STANDARD DOSE OF HEPATITIS B VACCINE

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Background and aims: HIV-infected children had a low immunological response (17-24%) to standard dose hepatitis B vaccination. The aim of this study was to determine immunological response to double-dose hepatitis B revaccination in HIV-infected children and adolescents, who did not respond to standard dose Hepatitis B vaccine.

Methods: We prospectively enrolled children and adolescents aged > 12 to 18 years old who had negative hepatitis B surface antigen, hepatitis B surface antibody (anti-HBs), and hepatitis core antibody and had no anti-HBs antibody after 3 standard doses hepatitis B revaccination. Double-dose hepatitis B vaccine (<16 year: 20 ug, >16 year: 40 ug) was given at month 0, 3 and 6. Anti-HBs antibody was tested at month 3 along with the second double-dose. Patients who had negative antibody was given the 3rd dose and anti-HBs antibody was tested 3 months after the last dose of vaccine.

Results: Twenty-three patients were enrolled; 10 (43.5%) were male, 15 were 12-15 years old and 8 were 16-18 years old. Their median CD4% at enrollment was 26.4 (IQR 20.0-30.7). The anti-HBs antibody was positive (≥ 10 IU/L) in 20 (87%) after the first dose. These 20 patients received highly active antiretroviral therapy (HAART) and 17 (85.0%) had viral suppression. Among 3 non-responders, 2 were not on HAART and 1 had been on HAART for 6 months with viral suppression.

Conclusions: This study demonstrated that increasing antigen of hepatitis B vaccine resulted in improve immunological response in non-responsive HIV-infected children and adolescents.

Acknowledgement: TREAT ASIA
RECRUITING CHILDREN WITH SUPPURATIVE LUNG DISEASES TO CLINICAL TRIALS: EXPERIENCE FROM AN AUSTRALIAN MULTI-CENTRE VACCINE TRIAL

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4Vaccine & Immunisation Research Group, University of Melbourne, Carlton, Australia
5Queensland Children’s Medical Research Institute, Queensland University of Technology, South Brisbane, Australia

BACKGROUND & AIMS

There is increasing attention on the potential for vaccines to reduce acute exacerbations of chronic lung diseases in children however clinical trials are scarce. We describe the challenges of recruiting children to such a trial and the lessons learned for future research.

METHODS

An Australian multi-centre, double-blind randomized controlled trial evaluating the efficacy of a 10v pneumococcal-Protein D conjugate vaccine in preventing acute exacerbations in children with suppurative lung diseases. The required sample size was 262 children and participation involved 5 clinical visits and fortnightly contacts over 14 months. Research nurses recruited through clinics in tertiary pediatric hospitals in liaison with attending physicians and clinic staff.

RESULTS

Over a 2.5-year period, 956 children were screened and 72 enrolled resulting in a major amendment to the protocol’s primary endpoints. Of those not enrolled, 61% were ineligible, 29% refused and 10% were not enrolled for other reasons. The major reasons for ineligibility were being clinically ineligible (57%) and current/planned involvement in another clinical trial (16%). Five children have not completed the study due to withdrawal of parent consent.

DISCUSSION

Vaccines trials in children are complex given lengthy eligibility criteria, the duration of study participation and demanding requirements of participants and their families. In children with complex medical histories and frequent need for tertiary health care, these issues will influence the available pool of potential participants for vaccine trials. Future studies will require large numbers of sites and detailed consideration of eligibility requirements in order to meet primary objectives.
PNEUMOCOCCAL PNEUMONIA REQUIRING HOSPITALIZATION IN US CHILDREN IN THE 13-VALENT PNEUMOCOCCAL CONJUGATE VACCINE ERA


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Background: The incidence of complicated pediatric pneumococcal pneumonia (PP) increased in the late 2000s. We compared the serotype distribution, antibiotic susceptibility and outcomes of children with PP before and after the introduction of PCV13.

Methods: We identified patients ≤18 years with PP at 8 children's hospitals in the US (2006-2014). Pneumococcal isolates were collected prospectively. Serotyping and antibiotic susceptibility were performed in a central laboratory. Dichotomous variables were analyzed by Χ² test and continuous variables with non-parametric tests.

Results: 391 of 1533 (25.5%) children with invasive pneumococcal disease (IPD) had PP. PP/IPD proportion decreased 28.6% (233/826 vs 109/537, p = 0.001). The number of PP cases decreased 46.8% from 2006-2009 to 2011-2014. The most common non-PCV13 serotypes during 2011-2014 were 33F, 35B and 22F. In 2014, the most common serotypes were 3 (n=6), 19A (n=4) and 35B (n=3). In 2011-2014, 65% of patients with PP had not received a dose of PCV13. Clinical data was available from 297 patients; bacteremic PP (96/160 vs 47/82), empyemas (101/173 vs 44/88), necrotizing PP (59/173 vs 25/88) and hemolytic-uremic syndrome (12/173 vs 2/88) remained unchanged after PCV13 introduction. Need for mechanical ventilation remained unchanged.

<table>
<thead>
<tr>
<th></th>
<th>2006-2009 n=233 (%)</th>
<th>2011-2014 n=109 (%)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, months [IQR]</td>
<td>40.9 [24.1-67.1]</td>
<td>48.0 [22.0-79.0]</td>
<td>0.4</td>
</tr>
<tr>
<td>Comorbidity</td>
<td>58(24.9)</td>
<td>40(36.7)</td>
<td>0.02</td>
</tr>
<tr>
<td>PCV13 serotypes</td>
<td>201(90.1)</td>
<td>70(66.7)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Serotype 19A</td>
<td>111(49.8)</td>
<td>33(31.4)</td>
<td>0.002</td>
</tr>
<tr>
<td>Penicillin MIC≥4μg/ml</td>
<td>20(9)</td>
<td>3(2.9)</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Conclusion: Number of PP cases decreased 46.8% in children after PCV13 introduction. PCV13 STs 19A and 3 were responsible for half of the cases in 2011-2014.
STATUS OF HEPATITIS B IMMUNIZATION IN MEDICAL STUFFS AT CHILDREN MEDICAL CENTER HOSPITAL-TEHRAN

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Introduction:
Hepatitis B is a disease caused by the hepatitis B virus (HBV), which is transmitted through percutaneous (i.e., puncture through the skin) or mucosal (i.e., direct contact with mucous membranes) exposure to infectious blood or body fluids. HBV can cause chronic infection, resulting in cirrhosis of the liver, liver cancer, liver failure, and death. Persons with chronic infection also serve as the main reservoir for continued HBV transmission.

Material and Methods:
This is a prospective cross sectional study was performed in ChildrenMedicalCenterHospital on 396 medical personals (including 172 students,92 interns,56 residents and 56 fellowships) during Sep 2012 to Oct 2013.

Results:
All of medical staff had done HB vaccination. In 93% of them the vaccination was complete. The others, 16% had only one, and 84% had two dose injections. 73% didn’t check HBsAb after vaccination. Results showed in 21.4% of fellowships, 42.8% of residents, non of interns and 35% of students, had checked HBsAb.

Conclusion:
Hepatitis B is a vaccine-preventable disease. HB is a serious world wide infection and medical staff are one of the most high risk groups. So Vaccinate their and HBS Antibody titer determination after complete vaccination is mandatory.
EFFECT OF THE INTESTINAL BIFIDOBACTERIA ON THE DEVELOPMENT OF TH1/TH2 BALANCE IN INFANTS

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Background and aims Probiotics play important role in the development of immune system in human early life and associated with some subsequent immune-related diseases, such as allergy or infections. In this study, we investigated the effect of Bifidobacteria, a major intestinal probiotics, on the development of T helper type 1 immune response and Th1/Th2 balance in infants.

Methods Ninety-nine healthy infants were recruited, their stool samples were collected at 2, 4 and 11 months of age. The intestinal Bifidobacteria was quantitative detection by bacterial culture and PCR. The representative cytokine for Th1 (IFN-gama) and Th2 (IL-4) secretion cells in finger blood samples were measured using ELISPOT at 4 and 7 months of age to evaluate the Th1/Th2 balance.

Results The amount of Bifidobacteria was increased as grow up of month age, from 6.1±3.26 log cfu/g wet feces at 2 months of age increased to 6.86±3.03 log cfu/g wet feces at 4 months of age and 7.41±2.23 log cfu/g wet feces at 11 months of age, p<0.05. The number of IFN-g secretion cells and the ratio of IFN-gama/IL-4 secretion cells were significantly increased at 7 months (2.08±1.09) compared with that at 4 months (1.55±1.11), p<0.001. In addition, the higher ratio IFN-gama/IL-4 secretion cells were related with more abundant intestinal Bifidobacteria (≥8.5 log cfu/g wet feces) in infants.

Conclusions The intestinal Bifidobacteria can accelerate the development of Th1 immune response, and modulate Th1/Th2 balance.
EFFECTS OF BIFIDOBACTERIUM ON DIFFERENTIATION AND MATURATION OF DENDRITIC CELLS DERIVED FROM CORD BLOOD MONOCYTES

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Background and aims Probiotics play important roles in the regulation of the immune functions. To explore the mechanism of probiotics affect on the immune response in infants, Bifdobacterium longum BB536 (BB536) was used in vitro study to investigate the effects of probiotics on differentiation and maturation of human cord blood derived dendritic cells (DCs), and the production of Th1/Th2 cytokines.

Methods Monocytes were separated from 10 cord blood samples and DCs were induced from monocytes by cultured in vitro. The heat killed Bifdobacterium BB536 (probiotics group) or lipopolysaccharide (LPS group) was added into the cell culture. Expressions of surface markers CD1a, HLA-DR, CD80 and CD83 of induced DCs were measured by a flow cytometer. IL-12, IFN-gamma and IL-4 were measured in protein level by ELISA and in mRNA levels by RT-quantity PCR.

Results The percentage of matured DCs (CD80+CD83+) were significantly increased in both of the probiotics group and the LPS group as compared with control group at day 9 of cell cultured, P<0.01. After simulated by BB536, the mRNA expressions for IFN-gamma, IL-12p35, IL-12p40 were markedly up-regulated and the ratio of IFN-gamma/IL-4 was higher in the probiotics group compared with that in the control group, P<0.05. Moreover, ELISA assay further confirmed IFN-gamma is increased in the culture supernatants in both of the probiotics group and the LPS group compared to that in the control group.

Conclusions Bifdobacterium BB536 has a positive effect on the maturation of DCs and the production of Th1 type cytokines in infants.
ANTIMICROBIAL RESISTANCE PATTERNS OF ESCHERICHIA COLI IN CHILDREN WITH URINARY RACT INFECTION IN PRIMARY CARE CLINIC AND EMERGENCY EPARTMENT

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Objective: To evaluate antibiotic susceptibility patterns in urinary isolates of Escherichia Coli (E. coli) from children in emergency department and primary care clinics and to identify risk factors associated with resistance strain E. coli.

Method This is a cross-sectional study of children 0 to 18 years of age reported to have E. coli positive UTIs who’s medical and laboratory records were systematically reviewed.

Results: A total of 1,159 urinary isolates of E. coli from 886 different subjects were examined. Overall, 43.9% E. coli isolates were resistant to ampicillin, 20.5% to trimethoprim/sulfamethoxazole (TMP/SMX), and 18% to both ampicillin and TMP/SMX. About 8.9% were resistant to three or more antibiotics. Compared to girls, boys were 2.29 times (CI 1.30-4.02) more likely have E. coli isolates resistant to ampicillin, and 2 times more likely (CI 1.13-3.62) to TMP/SMX. Children < 4 years of age were more likely to have ampicillin resistant E. coli isolates compared to children older than 4 years of age (OR 1.61, CI 1.12-2.33). Patients with genitourinary abnormality were 1.57 times more likely to be resistant to ampicillin (CI 1.03-2.41) and 1.86 times to TMP/SMX (CI 1.18-2.94).

Conclusions: Higher rates of ampicillin and TMP/SMX resistant urinary E. coli isolates were observed among boys and children with history of genitourinary abnormality. Patient age and recent antibiotic prescription are also potential risk factors for antibiotic resistant. Knowledge on patient demographics, spectrum of pathogens, and their patterns of resistance in local communities are warranted to empirically select an effective antimicrobial agent.
IS POSSIBLE TO COMPARE NOSOCOMIAL INFECTION RATES FROM DIFFERENT PEDIATRIC HOSPITALS?

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Introduction: Surveillance systems compile rates of nosocomial infection (NI) from different hospitals. Usually these rates are used to compare rates of NI in hospitals with same profile.

Objective: To describe rates of NI from two PICUs of Rio de Janeiro city and compare profile of patients and structure of the hospitals.

Methods: Retrospective study of rates of NI from two PICU of Rio de Janeiro from 2012 to 2014. We measured global rates and related to invasive devices by density of incidence (per 1000 patient or devices-days)

Results: The first hospital is located at North Zone of town, and the second one in the South Zone. Both institutions are private, have ten beds of PICU, have their own central material supply, adequate relation nurse/patients and doctors/patients. Respiratory diseases are the main cause of admission in both PICUs. Rates of global NI in 2012, 2013 and 2014 were 9.4, 15.2 and 15.0 in PICU 1 and 10.5, 8.4, and 13.5 in PICU 2, respectively. CVC rates were 2.1, 2.7 and 3.7 in PICU 1 and 2.8, 1.5 and 3.4 in PICU 2; PAV rates were 1.0, 5.2 and 7.0 in PICU 1 and 6.7, 2.1, 3.1 in PICU 2; Urinary tract infection were 4.4, 2.6 and 8.3 in PICU 1 and 3.4, 0.3, 3.5 in PICU 2, respectively

Conclusion: We find different rates of NI in two similar PICUs in Rio de Janeiro city. It’s necessary that each institution has their own benchmarking and works to implement strategies to reduce number of nosocomial infections.
Background and aims: Enterobacter cloacae infection can cause significant morbidity and mortality in neonates. We presented a multidrug-resistant E. cloacae outbreak occurred in neonatal intensive care unit (NICU) of our hospital after admission of a baby transferred from another hospital.

Methods: An outbreak of E. cloacae infection occurred in the NICU during July - October 2014. An epidemiological investigation was made, clinical and environmental culture samples were taken to explore mechanism of the outbreak.

Results: The index case was transferred from another NICU, who had a positive blood culture on admission. In 11 patients, the organism was isolated from cultures of blood (9), tracheal aspirate (2), blood and tracheal aspirate (2), blood and cerebrospinal fluid (2), and blood and urine (1). Four patients died; the mortality rate was 36%. A rectal swab culture survey resulted growth of the same organism (colistin and ciprofloxacin sensitive) in another 6 patients. These patients were considered to be colonized, because of the lack of clinical signs of infection. No organism was isolated from environmental culture samples. Patients and colonized babies were followed in separate cohorts by different medical teams. The NICU was closed to admittance of new patients until the discharge of the last colonized baby. After terminal disinfection and other measures taken, NICU opened to admit new patients again.

Conclusions: A new patient, who is transferred from another hospital, can be the leading source of an outbreak in hospitals, as shown in our setting. Effective infection control requires a multidisciplinary approach and strict prevention strategies.
CARBAPENEM-RESISTANT ENTEROBACTERIACEAE: FIVE YEARS SURVEY
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Aims: Evaluate the epidemiological characteristics and evolution of pediatric patients with carbapenem-resistant Enterobacteriaceae (CRE).

Methods: Retrospective study, data analysis of pediatric patients who acquired CRE at University Hospital, since the isolation of the first case of CRE, from February 2010 to April 2015.

Results: We evaluated 58 patients with CRE, between 18 days and 13 years of age, 53.4% were less than 12 months. The CRE were: Klebsiella spp. (59.3%), Enterobacter spp. (30.50%), Escherichia coli (3.4%), Serratia spp. (1.7%), Morganella spp. (1.7%) and Citrobacter spp. (1.7%). Patients acquired CRE in pediatric ward (32.8%), pediatric ICU (25.9%), emergency room inpatient units (24.1%), and neonatal units (17.2%). Most of them had only positive swab for CRE (79.3%). Infected patients were treated with amikacin, polymyxin and/or tigecycline. Regarding the length of stay before the isolation of the CRE, it was higher than 90 days for 13.7% of patients. There was an association between the hospital stay greater than 90 days and death (p = 0.0303). There was also an association between the presence of CRE in tracheal aspirates and death (p = 0.0010). The cumulative lethality was 17.2%, and was higher in 2010 (33.3%).

Conclusion: CRE has become endemic and most of children were found to be only colonized by CRE. The progression to death was higher among children with pneumonia by CRE. There was a reduction in lethality by CRE after 2010, but it is still high, and stricter measures of infection control are needed to reduce its spread.
PREVALENCE STUDY OF NOSOCOMIAL INFECTIONS IN UNIVERSITY HOSPITALS IN THE CZECH REPUBLIC - PEDIATRIC SUB-STUDY
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Objective: In 2005–2010, a nosocomial infection (NI) prevalence study was conducted in 12 university hospitals. The primary objective was to evaluate the overall epidemiological situation of NI at the highest risk departments.

Methods: To collect data, a questionnaire survey (according the working group HELICS - Hospital in Europe Link for Infection Control through Surveillance method) was used. The patient data, hospitalization data, potential risk factors, and occurrence of hospital infection, if any, were derived from the medical records and entered in the questionnaire.

Results: Overall, data on 1889 hospitalized patients were analyzed. The prevalence rate of NI in this study was 4.3%. The most common causative agents were Pseudomonas spp. (16%), Staphylococcus aureus (15%), Escherichia coli (12%), Proteus spp. (10%), and Klebsiella spp. (4%). NI prevalence rate for the pediatric and adolescent category (11 - 20 years) was 8.3 %, what represents the highest prevalence rate, followed by 6.7 % for children age group (0 - 10 years) and 6.4 % for the elderly population (71 - 80 years). Prevalence in sub-set age group 0 - 2 years was 25 % and 2.63 % in age group 3-11 years. The most common causative agents in these categories were Pseudomonas spp. and Staphylococcus aureus, most often affected sites were urinary tract and surgical site infections.

Conclusion: We would definitely recommend to continue in performing the prevalence studies on nosocomial infections focused on newborns and children population, which should be followed by specific individual interventions, tailored-made to the given hospital settings.
CHARACTERIZATION OF EXTENDED SPECTRUM BETA LACTAMASE (ESBL) IN PEDIATRIC URINARY TRACT INFECTIONS IN AN UNIVERSITARY HOSPITAL, SANTIAGO CHILE

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Background and aims. Urinary tract infections (UTI) are a major problem in pediatric population worldwide. Betalactamic resistance has increased during the last decade. In Chile, there is no information regarding the prevalence of extended spectrum beta lactamase (ESBL) in pediatric UTI neither genetic characterization of this resistance. Objective: To study the prevalence of ESBL in pediatric urinary cultures (PUC), to compare prevalence between in and out patients and to determine resistance associated genes.

Methods. Observational study with two enrolment pathways: A retrospective cohort, inpatient and out patients positives PUC with ESBL from March 2009 to March 2014 at the Microbiology Laboratory, Red de Salud UC-Christus. A prospective cohort, inpatient and out patients positives PUC with ESBL from March 2014 to March 2015. The stored strains were re-cultivated and a genetic study for resistance genes was done by PCR (CTX-M and SHV). Prevalence of ESBL was calculated just from the prospective cohort.

Results. We identified 137 pediatric urinary samples with ESBL resistance, in 100 of them, the genetic study was done. 92 were out patients and 8 in-patients. The global prevalence of ESBL was 2.1% (32/1492) in inpatient was 9.5% (8/84) and in out-patients was 1.7% (24/1408), p<0.005. The identified genes associated to resistance were, in E. coli CTX-M 69/85, SHV 5/85, both 3/85; in K. pneumoniae: CTX-M 3/15, SHV 1/15 and both 10/15.

Conclusions. The prevalence of ESBL in pediatric UTI was significantly higher in inpatients.CTX-M is the major resistance gen found in this population.
Background and aims

Uropathogenic E. coli (UPEC) are frequently associated with Urinary Tract Infections (UTIs). Significant changes regarding empirical antibiotic treatments have been reported recently. Likewise, use of trimethoprim-sulfamethoxazole (TMP-SMX) has become limited because of selection of concomitant resistance to other antibiotics and limited use of TMP-SMX may also sustain its effectiveness. Reported is scrutiny of multi-drug-resistant uropathogenic E. coli strains (MDR) particularly of fluoroquinolone resistant.

Methods

Bacterial samples (n = 150) were collected from out-patients from August 2012 to August 2014 in Islamabad. Antibiotic susceptibility profiling and determination of MICs and MBCs were performed according to the CLSI guidelines 2012. Genes, qnrA, qnrB and qnrS were identified by DNA sequencing.

Results

Overall, highest percentage of the isolates were resistant to co-trimoxazole (82%) which was followed by cephalothin (80%) and 2nd Gen, 3rd Gen and 4th Gen cephlosporins. Resistance against gentamicin, amikacin remained 29% and 4% respectively. Resistance against nitrofurantoin, tetracycline, carbapenem and beta-lactam inhibitors remained below 10%, while 59% of the isolates were resistant to at least three antibiotics including fluoroquinolone. Overall, MIC value for ciprofloxacin remained (MIC≥ 256 µg/ml) and for levofloxacin (MIC≥ 16 µg/ml and 32µg/ml). No significant difference was observed regarding MIC values between ESBL and non ESBL producers. MICs for qnrS and qnrB positive isolates remain above 32µg/ml. Prevalence of UPEC was significantly higher among females and 40% of the isolates were ESBL producers.

Conclusions

Higher percentage of ESBL producing UPECs is associated with UTIs. Moreover, majority are MDR and fluoroquinolone-resistant strains.
Background and aims: *Enterobacteriaceae* are important pathogens of Nosocomial Infections (NI). Critically ill patients in ICUs have an increased susceptibility to NI. Colonization by resistant bacteria is more prevalent in units with immunosuppressed patients, mainly by Carbapenem-resistant *Klebsiella pneumoniae* and Vancomycin-resistant *Entecococcus* (VRE). Colonization by these pathogens is correlated to higher rates of infection by other pathogens also multidrug-resistant.

Simulations of the annual incidence of VRE colonization showed that active surveillance in ICU would reduce rates to 39% and the associated isolation of these patients would reduce to 65%. This study aims to analyze surveillance cultures (SC) in a pediatric ICU.

Methods: Retrospective study of surveillance cultures (SC) in pediatric ICU that attends to onco-hematological patients in Sao Paulo, from July 2014 to May 2015. All patients admitted in the UCI had their VRE and Carbapenem-Resistant *Enterobacteriaceae* rectal swab collected.

Results: The UCI had 101 admissions with 25 recurrent hospitalizations. During the period, 26 patients had positive SC, according to the table 1. No outbreak occurred. All patients had only a single agent, 15 of these patients had recurrent positives cultures, 73% of VRE.

Table 1.

<table>
<thead>
<tr>
<th>Positive culture:</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Vancomycin Entecococcus resistant (VRE)</td>
<td>73%</td>
</tr>
<tr>
<td>Carbapenem-resistant <em>Klebsiella pneumonia</em></td>
<td>19%</td>
</tr>
<tr>
<td>Carbapenem-resistant <em>Acinetobacter baumannii</em></td>
<td>4%</td>
</tr>
<tr>
<td>Carbapenem-resistant <em>Enterobacter</em></td>
<td>4%</td>
</tr>
</tbody>
</table>

Conclusion: Conducting surveillance cultures in all patients admitted in the ICUs may have a role in preventing the spread of multi-resistant germs the mainly VRE and Carbapenem-Resistant *Enterobacteriaceae*. 
MICROBIOLOGICAL RETRIEVAL OF CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTION (CLABSI) IN ONCOLOGIC PEDIATRIC PATIENTS WITH VENOUS ACCESS SUBCUTANEOUS PORT (VASP)

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Background: Central venous catheter (CVC) became an essential part of oncology clinical practice. These devices put patients at risk for BSI. Recommended diagnosis of VASP infection requires removal of the catheter culture of the tip and the material inside the reservoir. However, even after catheter removal, the microbiological culture does not always recover the microorganism involved.

Aim: To analyze the methods used at Pediatric Oncology Institute (IOP-GRAACC/UNIFESP-Brazil) for retrieval of the microbiological agent of each VASP removed due to infection.

Methods: Retrospective cross-sectional study conducted at IOP (2012-2014). Oncologic patients under 18 years who had their VASP removed due to CLABSI with BC collected through VASP. All VASP removed had the following samples send to culture: 3 mL of saline solution 0.9% flushed through the port; swab of the reservoir and 5-cm of the tip. This study was approved by the Ethics Committee of UNIFESP.

Results: We included 25 CLABSI (25 patients), 52% male, median age of 3.4 years, 92% solid tumor. CLABSI agents were 31% gram-positive, 15% gram-negative and 54% fungi. We found 61.5% of microbiological retrieval in at least one type of sample collection, only 20% were recovered in all methods. Microbiologic retrieval of each sample was 48% swab, 40% tip and 36% flushed saline solution.

Conclusions: Our study suggests that only one sample is not enough to confirm a VASP infection, reservoir swab was the best method.
ANTIBIOTIC SUSCEPTIBILITY AND RESISTANCE PATTERNS OF STAPHYLOCOCCUS AUREUS ISOLATES FROM MALNOURISHED NIGERIAN CHILDREN

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Background and aim: Staphylococcus aureus is an important cause of serious illness in children. Antibiotic resistance is an international problem and affects initial antibiotic choice. We aimed to describe susceptibility patterns of S. aureus isolates from Australian children to inform optimal empiric treatment of staphylococcal infections in this population.

Methods: We analysed susceptibility data for all S. aureus isolated from the blood culture of malnourished children in Aminu Kano Teaching Hospital Kano Nigeria from May to October 2013.

Results: There were 19 Staphylococcus aureus isolated from the 41 bacteraemic malnourished children. Most of the isolates were susceptible to Ofloxacin (77%) and all isolates were reported as susceptible to ciprofloxacin and Ceftriaxone. Only 23%, 17%, 17% and 35% were sensitive to Gentamicin, Co-Trimoxazole, Amoxicillin and Augmentin respectively.

Conclusion: These data showed very low sensitivity of the isolates to the antimicrobial recommended by the world health organization in the treatment of malnourished children with suspected bacterial infection, hence calls for its revision.

Acknowledgement: We acknowledge the support and contribution of CAPBID team and all the Paediatrics residents.
IMPACT OF A PEDIATRIC ANTIMICROBIAL STEWARDSHIP PROGRAM ON ANTIMICROBIAL PRESCRIBING IN A MULTI-ETHNIC TERTIARY CENTER IN SINGAPORE

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Background and Aims:

Antimicrobial Stewardship Programs (ASP) have been shown to improve antimicrobial prescribing and decrease use of broad-spectrum antibiotics. Pediatric ASP was implemented at our institution in August 2013 and we aim to study its impact using validated point prevalence data on the appropriateness and rates of prescribing of five commonly used antimicrobials at our institution.

Methods:

A prospective point prevalence study was carried out at eight time points over four months before and one year after implementation of ASP on the five most commonly prescribed empiric antimicrobials: amoxicillin-clavulanic acid, ceftriaxone, meropenem, piperacillin-tazobactam, and vancomycin. To validate the data, actual electronic prescription data for the same time points were analyzed.

Results

Seventy-three orders pre-ASP and 50 orders post-ASP were captured. Appropriate prescribing rates improved from 19.18% pre-ASP to 54% post-ASP. Overall use of antimicrobials decreased with the exception of piperacillin-tazobactam. Rates of prescribing for amoxicillin-clavulanic acid, ceftriaxone, meropenem, piperacillin-tazobactam, and vancomycin pre- and post-ASP were 8.2% vs 8%, 32.9% vs 26%, 28.8% vs 14%, 19.2% vs 44% and 11% vs 8% respectively. Despite the increase in piperacillin-tazobactam use; more than 50% was used appropriately.

Conclusion

Our data shows that a pediatric ASP program is effective in decreasing overall antimicrobial prescribing and has an impact on appropriate prescribing patterns. The decrease in meropenem use was associated with an increase in piperacillin-tazobactam prescriptions; reflecting a shift away from empiric carbapenem use.
EVALUATION OF INFECTION RISK OF CANDIDA ALBICANS POPULATIONS AND STRAINS IN BIOTOPE BACTERIA-FUNGI CULTURES

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Background and aim Candida albicans and \textit{C. tropicalis} form main group (I:Ia+Ib) of fungal infections. The system “Candida(I)+Lactobacillus(II)” (SCL) of urogenital biotope (UB) is highly sensitive in reaction of biofilm forming (BF). The aim was to evaluate Candida populations and strains of infection risk.

Methods Clinical strains of \textit{L. acidophilus} (106, 124 [probiotic-like], 183a), \textit{L. brevis} (104, 109, 143), \textit{L. casei} (124b [probiotic-like], 183), Ia (3, 23, 26, 45, 116, 147, 161, 320) and Ib (97, 112, 144, 162, 417, 433, 438, 897) were isolated from UB of patients. Mono- and mixed cultures in MRS were grown in micropanels (48 h, 37°C). After staining, BF violet stain was extracted and measured. The influence of \textit{Lactobacillus} pool on each Candida strain in BF reaction was ranged. Species and subspecies blocks in rows were compared. BF and colony morphologies were registered.


Conclusions Results indicate the presence of UB Candida populations and strains of infection risk. Results support prophylactic and therapeutic potential of \textit{Lactobacillus} populations possessing low BF.
HIGH PREVALENCE OF HAI CAUSED BY GRAM NEGATIVE CARBAPENEM RESISTANT STRAINS IN VIETNAMESE PAEDIATRIC ICUS


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Background:

It is necessary to understand on the prevalence of hospital acquired infections and gram negative carbapenem in children's hospital in resource constrained settings.

Methods:

This is a monthly point prevalence surveys (PPS) over a year (2012-2013) using the protocol of ECDC in 2 major Vietnamese children’s hospitals and 3 referral hospitals with PICU.

Results:

1363 cases were included in the PPS. Average age was 11 months (median 3 month). Major reasons for admission was infection 66%. Admission source was other hospital 49.3%, current hospital 36.5%. Intubation 47.8%, CVC 29.4%, PVC 86.2%. HAI prevalence was 33.1%, of these 2 HAI in 9.9% and 3 HAI in 1.3%. Intubation had a significant (p<0.001) correlation with HAI. The most common diagnosis was pneumonia 52.2%, sepsis 26.4%, the SSI and NE 9 cases (2%) each. Positive laboratory findings were 212 (43%). Carbapenem resistance were 40%; 46% of K. pneumonia were carbapenem-resistant and 76% cephalosporin-resistant. 56% of P aeruginosa and 64% of A. baumannii were carbapenem-resistant; 78% of S. aureus were MRSA. Antibiotics were given to 1307 (88.6%), one antibiotic 39.9%, 2 antibiotics 44.7%, 3 antibiotics 10,6% and 4 antibiotics 0.8%, average 1.7 antibiotics per case. Colistin was given to 97 cases, of these 49% had reported carbapenem-resistant strains; 49% carbapenem-resistant cases were treated with colistin.

Conclusion:

There is a high prevalence of HAI in Vietnamese paediatric ICUs, usually caused by Gram (-) bacteria with high antibiotic resistant rates. Colistin is commonly used in combination with other antibiotics to treat these resistant infections.
Background and Aims

During 2013, the haematology/oncology unit at Red Cross War Memorial Children’s Hospital (RCWMCH), a tertiary level paediatric hospital in Cape Town, South Africa, experienced two outbreaks with vancomycin resistant Enterococcus (VRE). This was the first time infection with this organism was identified in a paediatric unit in SA. The aim of the study was to describe the emergence of VRE at the hospital.

Methods

VRE isolates were identified from blood culture specimens processed at the National Health Laboratory Service and screened for the presence of the vancomycin resistance genes vanA, B and C1, 2, 3. Pulse-field gel electrophoresis (PGFE) was carried out on identified isolates. Clinical records were reviewed to identify risk factors and surveillance rectal swabs were performed to identify colonised patients. Ethics approval was obtained.

Results

Four patients with haematological malignancies were identified with VRE bloodstream infection (BSI) during the year. All patients were immunocompromised at the time of the BSI and received treatment with vancomycin prior to VRE BSI. Patients were treated with linezolid for a minimum of 10 days. 2 patients demised from septic complications. Eight of 55 patients screened for VRE, were colonised. Infected and colonised patients were isolated in the unit throughout their admission. Strict contact precaution infection control practices were instituted. The VanA genotype was identified in all isolates from blood and rectal swabs, with PGFE results indicating that most of the isolates were related.

Conclusions

Strict infection control practices are necessary to prevent infection and transmission of resistant organisms.
MULTIFACETED QUALITY IMPROVEMENT INTERVENTION ASSOCIATED WITH REDUCED DEVICE RELATED INFECTIONS AND MORTALITY IN PEDIATRIC INTENSIVE CARE UNIT IN INDIA — A SINGLE CENTRE EXPERIENCE

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Background

Health care associated infections (HAI) are a significant problem in pediatric intensive care unit (PICU). Surveillance and prevention of HAI by multifaceted quality improvement intervention need to be studied in resource limited setting.

Materials and methods

Study was conducted in 19 bedded-PICU of a tertiary care referral academic institute. Data of ventilator associated pneumonia (VAP) and central line associated blood stream infection (CLABSI) using CDC definition was collected prospectively from June 2013 to May 2015. Multifaceted quality improvement intervention consists of infection control nurse & physician and hand hygiene education module including closed-circuit television monitoring and wearing a gown & mask was introduced from June 2014. Incidence of VAP and CLABSI was compared before (June 2013 to May 2014) and after (June 2014 to May 2015) introduction of intervention.

Results

Before period, incidence of VAP was 28.5 per 1000 ventilation days and CLABSI was 13.7 per 1000 catheter days. After intervention period VAP was 5.1 per 1000 ventilation days and CLABSI was 2.1 per 1000 catheter days. The proportion of patients who had VAP was significantly less after intervention as compared to before intervention period [4.1%, n=17/413 vs 8.1%, n=29/89; p = 0.042, OR, 95%CI 0.55, 0.31 – 0.98]. Both the groups were similar with respect to age, sex ratio, severity (PRISM-III), device utilization rate and grade of infection. Significant difference in overall PICU mortality after vs before intervention (20% vs 25.4%, p=0.018, OR, 95%CI 0.65-0.96).

Conclusion

Multifaceted quality intervention including closed-circuit television monitoring associated with significant reduction in HAI and mortality.
FREQUENT MRSA INTESTINAL COLONIZATION IN FEBRILE NEUTROPENIC CHILDREN

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Purpose: Febrile neutropenia, serious complication associated with the treatment of cancer, contribute to higher morbidity and mortality. Neutropenic patients, susceptible to long hospital stays and use of broad-spectrum antibiotics, are subject to colonization by multi-resistant agents, increasing the risk of serious infections. In this study, the colonization and resistance profile of S. aureus was analysed in febrile neutropenic children after chemotherapy.

Methods: Specimens collected by nasal, oral and rectal swabs, seeded on selective media, from febrile neutropenic children on admission to the Pediatrics Service of the Santa Casa de São Paulo Hospital between March 2014 and 2015 were analyzed.

Results: Thirty-five episodes of febrile neutropenia were assessed based on 121 swabs. Positivity for S. aureus was detected in 22% of the patients (14% of episodes). Rectal swabs accounted for 40% of positive samples. None of the strains were vancomycin-resistant while 80% were oxacillin-resistant, with 9% of patients colonized with CA-MRSA. All except one of the colonized patients had previous admission in the same month or month prior to the neutropenia episode. None of the patients had apparent infections on admission. One patient had a long-term catheter while none of the children had clinically unfavorable outcomes.

Conclusions: Data in the literature show a high rate of MRSA colonization in cancer patients. The present study, which included rectal swabs, found a 22% prevalence of febrile neutropenia. This rate is higher than the figure reported in the few studies available based on nasal swabs only. The detection of CA-MRSA in a hospital setting was also noteworthy.
ENTEROCOCCUS OROPHARYNGEAL COLONIZATION IN FEBRILE NEUTROPENIC CHILDREN
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Purpose: Febrile neutropenia is a serious complication associated with the treatment of cancer. Neutropenic patients, susceptible to rapidly progressive infections, long hospital stays and use of broad-spectrum antibiotics, are subject to colonization by multi-resistant agents, increasing the risk of serious infections. We analyzed the colonization and resistance profile of Enterococcus sp in febrile neutropenic children.

Methods: Specimens collected by nasal, oral and anal swabs, seeded on selective media, from patients at admission to Pediatrics Service of Santa Casa de São Paulo, Brazil, between March 2014 and 2015 were analyzed.

Results: Thirty-five episodes of febrile neutropenia, with 121 swabs collected. Positivity for Enterococcus sp was detected in 27% of the patients, 17% of episodes. By the swabs, 15% of anal, 9.7% of nasal and 20% of the oral were positive to Enterococcus sp. Sensibility to ampicillin and vancomycin were detected in 75% of the samples (22.7% of the patients). All the VRE strains were founded in oral and nasal swabs. Half of the colonized patients had previous admission in the same month or month prior to the neutropenia episode, and only one had apparent infections on admission and long-term catheter. None of the children had clinically unfavorable outcomes.

Conclusion: Differing from literature, we also analyzed oral swabs for Enterococcus sp colonization, corresponding to 44% of the positive samples. Despite risk-factors, and the previews dates, we had prevalence of sensible strains, with de VRE strains detected only in 25% of the samples and in nasal and oral swabs only.
MOLECULAR EPIDEMIOLOGY OF MRSA IN RUSSIAN PEDIATRIC HOSPITALS

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Background: In the past decades, infections caused by methicillin-resistant Staphylococcus aureus (MRSA) have become a global problem. The research on MRSA epidemiology is essential for controlling its spread and for developing therapeutic strategies.

Aims: To determine clonality of MRSA strains causing nosocomial infections in children in different regions of Russia.

Methods: Of 656 strains, 102 MRSA isolates selected with unique resistance pattern within one ward in a given hospital were included in the study. Strains were collected during 1997-2012 from 23 hospitals (20 Russian cities). Isolate typing was carried out on 6 VNTR loci described by Ikawaty e.a. 2008; MLST – as described Enright e.a. 2000; spa – in accordance to Harmsen e.a. 2003; SCCmec – in accordance with the scheme proposed by P.-L. Lu e.a. 2008; PVL – using PCR based on Lina e.a. 1999. Cluster analysis of composite (MLVA+SCCmec) profiles was performed using BioNumerics software, version 7 (Applied Maths, Belgium).

Results: Based on MLVA and SCCmec results, isolates tested were divided into 20 types. Most of MRSA isolates belonged to two genetic groups. All strains were PVL-negative. SCCmec type III and IV cassettes were identified in 42.4% and 57.6% of isolates, respectively. Spa typing and MLST distinguished 17 and 6 types respectively. Most common MRSA clones were ST8-SCCmecIV-t008 and ST239-SCCmecIII-t030-t037 and have been found in geographically distant regions of Russia.

Conclusions: The population structure of nosocomial MRSA strains in Russia is clonal and is punctuated by expansion of international clones, mainly, ST8-spa type t008-SCCmecIV and ST239-spa type t037-SCCmecIII.
EVALUATION OF BLOODSTREAM INFECTION (BSI) TO HEMODIALYSIS IN A PEDIATRIC SERVICE.
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Background and aims: Patients on dialysis have a high risk of infection because of the immunosuppressive effects caused by Chronic Kidney Disease and its treatment. These patients maintain dialysis catheter for long periods, which is considered a major risk factor for infection. The study aims to correlate interventions on daily care of a pediatric dialytic population with the reduction of BSI and bacteremia rates.

Method: prospective cohort study from October 2013 to April 2015 in a children hospital in Sao Paulo. Chlorhexidine bath in warm months and device disinfection protocols were instituted in October 2014. Rates of infection were compared with data before and after these procedures.

Results: rates of BSI from October 2013 to October 2014 ranged from 2.78 to 4.55/1000catheter/day and bacteremia ranged from 1.28 to 3.33 patients/day. The microorganisms in the period were: 46% of methicillin-resistant coagulase-negative Staphylococcus (CNS). 24% of methicillin sensitive CNS, 8% MRSA, 8% of MSSA and 14% of others. After interventions from October 2014 to April 2015, BSI rates ranged from 0 to 2.22 per catheters/day and none bacteremia was noted.

Conclusion: Daily bathing with chlorhexidine reduced the incidence of bloodstream infections associated with catheter use. Association of chlorhexidine bath, family education and disinfection protocols seems to be effective and promising to reduce BSI.
MORTALITY RISK ASSOCIATED WITH INVASIVE COMMUNITY-ADQUIRED STAPHYLOCOCCUS AUREUS INFECTION IN CHILDREN

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Background: Community-acquired S. aureus (CASA) bacteremia and sepsis is a leading cause of morbidity and mortality in children.

Objective: The objective of the present study was to identify predictors of mortality of invasive community-acquired S. aureus (CASA) infections in hospitalized children.

Method: Observational study, which included patients (pts) <16 years hospitalized between 2010-2015 with invasive CASA infections. Demographic variables, clinical features, laboratory/microbiological data, and outcome were compared with clinical and microbiological features of the pts. Relative risk (RR) calculated with a confidence interval of 95%.

Results: 418 pts were hospitalized with CASA infection, of which 107 pts (26%) had severe invasive infections, 50 pts (47%) had bacteremia, 50 (47%) pneumonia and 21 pts (19%) had sepsis multiple foci. The mean age of the pts was 75±56 months. Forty-four pts (41%) required admission in ICU. The overall mortality of the series was 15% (16 pts). Risk factors associated with mortality were the presence of hypotension (RR 8.89, p<0.001), leucopenia GB <5000 (RR 6.49, p<0.0001), severe anemia (Hb <7g/dl) (RR 6.65, p<0.001), metabolic acidosis (RR 6.64, p<0.0001), bacteremia (RR 4.94, p<0.002), presence of multiple septic foci (RR 7.58, CI 3.8-15, p=0.0001), presence of pneumonia (RR 6.17, CI p=0.0001), ARM requirement (p<0.0001) and resistance to clindamycin (RR 5.69, CI 0.9-37.5, p<0.05). Conclusion. Mortality in invasive S. aureus infections logistic regression was used to evaluate the association between mortality. Identification of predictors of mortality may guide an intensive therapy and provide invasive CASA infections
HEALTHCARE WORKERS (HCW) COMPLIANCE WITH HAND HYGIENE (HH) IN PEDIATRIC INTENSIVE CARE UNIT (PICU), CIPTO MANGUNKUSUMO HOSPITA (CMH), INDONESIA

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Objective. Determine the proportion of compliance with HH guidelines among HCW.

Methods. Observasional study was done in PICU CMH. All doctors, nurses, paramedical and nonmedical staff recruited.

Results. 3226 observed probabilities for HH. Overall, the compliance was 51.7% in which 57.4% of it was performed properly. In multivariate analysis, doctors noncompliance increased for procedures at high-risk contamination (aOR 1.48; 95% CI 1.01 - 2.18; P= 0.047) and those at low risk for contamination (aOR 5.61; 95% CI 3.69 - 8.50; P= 0.000). Gloves use affected doctors’ noncompliance with HH guidelines (aOR 3.08; 95%CI 1.55-6.15; P = 0.001). Nurses noncompliance increased for procedures at high-risk contamination (aOR 2.62; 95% CI 2.09 - 3.27) and for those at low-risk for contamination (aOR 3.74; 95% CI 2.98 - 4.69); P= 0.000). Low index of patient care activity increased nurses’ incompliance (OR 1.30; 95% CI 1.05 - 1.61; P= 0.015). Nurses’ noncompliance was also higher on weekdays (aOR 1.4; 95% CI 1.16 - 1.70; P= 0.001), on morning shift (aOR 1.75; 95% CI 1.42 - 2.17;P=0.000), when they used gloves for patient care (aOR 2.81; 95% CI 2.05 - 3.87; P= 0.000). The noncompliance of paramedical staff was higher on weekdays (aOR 3.11; 95% CI 1.17 - 5.67; P= 0.000), night shift (aOR 2.15; 95% CI 1.003 - 4.61; P= 0.049), and when using gloves (aOR 8.83; 95% CI 2.91 - 26.80; P= 0.000).

Conclusions. Hand hygiene compliance has not been optimized. Further investigations are necessary, particularly when the intervention enable the institutions to manage target resources to their own particular problems.
CASES OF CLOSTRIDIUM DIFFICILE–ASSOCIATED DIARRHEA IN CHILDREN’S HOSPITAL ICU IN TBILISI


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Background: Recent data suggest that the incidence of Clostridium difficile–associated diarrhea (CDAD) in children is rising in developing countries, but little information about CDAD in Georgia.

Objectives: To investigate cases of CDAD in Children’s Hospital ICU in Tbilisi.

Methods: For all hospitalized children (from 1 to 10 years) with suspected CDAD, clinical data, risk factor information and laboratory testing was performed. Isolation of C. difficile strains was performed using chromID C. difficile agar. Antibiotic susceptibility was measured by Etest. In-vitro productions of toxins A+B were measured by ELISA. For detection of gluD gene were used primers: GluD-s and GluD-as, for detection of toxin A, region tcdA - Tox-A-s and Tox-A-ss, for detection of toxin B, region tcdB - NK104 and NK105.

Results: 27 clinical samples were investigated for C. difficile from January, 2014, till March 2015. CDAD was laboratory confirmed in four children /4/27, 14.8%/ C. difficile toxins A and B were identified by PCR in three clinical samples, C. difficile toxin B was identified by PCR in one clinical sample.

All CDAD hospitalized children had high fever (>38°C), diarrhea and abdominal pain. Three patients had mild diarrhea (5-10 watery stools a day), and one patient had severe diarrhea (more than 10 watery stools a day). All patients had serious underlying disease, prolonged hospital stay (>7 days), antimicrobial therapy and prolonged nasogastric tube insertion.

Conclusion: This is the first laboratory-confirmed cases of CDAD about children in Georgia.

Mentioned research was conducted in the frame of project ISTC/BTEP G#1759p.
Staphylococcus aureus is one of the leading causes of nosocomial infections and is known for its ability to develop resistance to antibiotics. Clinical treatment failures with vancomycin have been linked to strains whose susceptibility falls within the intermediate MIC range.

We determine and compare the vancomycin susceptibility in nosocomial methicillin-sensitive Staphylococcus aureus (MSSA) and methicillin-resistant Staphylococcus aureus (MRSA).

Staphylococcus aureus clinical isolates were screened for methicillin and vancomycin using Vitek 2C (Biomerieux, France) that uses CLSI guidelines for interpretation. Vancomycin MICs were grouped into three categories: < 0.5; 1 and 2 μg/ml.

Out of the 183 strains studied, 105 (57.4%) were MRSA and 78 (42.6%) were MSSA. The rate of isolates with MIC of 2 μg/ml was 43 (23.5%). The percentage isolates with a vancomycin MIC of 2 μg/ml was similar for MRSA and MSSA.

The percentage of strains with MICs of 2 μg/ml corresponds to the literature. One in 4 isolates has a MIC of 2 μg/ml which suggests a qualitative change in the management of these infections and patients, at least from an empirical point of view.

All isolates in our hospital were susceptible to vancomycin. The percentage of strains of Staphylococcus aureus with vancomycin MIC equal to 2 μg/ml is considerable. Staphylococcus aureus serious infections should not be treated with vancomycin empirically without knowing the MIC of it. We must have a proactive approach to antibiotic de-escalation to avoid the emergence of resistance and simultaneously reduce costs.
EXTENDED SPECTRUM BETALACTAMASE IN COMMUNITY URINARY TRACT INFECTIONS

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The occurrence of urinary tract infections in the community due to enterobacteria producing extended-spectrum beta-lactamase (ESBL) has been recognized as an important clinical problem in different regions of the world. Pose significant therapeutic challenges in multi-drug resistant strains.

The objective was to determine the prevalence of ESBL in Escherichia coli strains isolated from urine culture in the community in the Zona Norte Children’s Hospital of the city of Rosario.

458 Escherichia coli strains isolated from urine cultures of 2175 patients from the community were studied. Both bacterial identification and determination of sensitivity to antibiotics were performed by automated method 2C Vitek (Biomerieux, France) according to CLSI standards. The presence of ESBL was confirmed by the method of double disk diffusion and by the diameter difference between third-generation cephalosporins and the same with the addition of clavulanic acid. Of all strains tested 17 (3.6%) had ESBL.

3.6% of the strains of Escherichia coli from urine cultures of the community attended in our hospital were ESBL producers. It is now being detected worldwide, with increasing frequency, community infections caused by ESBL-producing Escherichia coli and also resistant to other antimicrobial which poses a clinical and epidemiological challenge. Studies in European countries show values of 0.3% to 3.5% in outpatients. This work shows a similar percentage to that found in the literature.
SHIGELLOSIS: ANALYSIS OF 15 YEARS
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The objective of this study was to analyze the prevalence of Shigella spp. in stool cultures from patients treated at Zona Norte Children's Hospital. Analyze annual, age and seasonal distribution. Semiquantify the presence of leukocytes and evaluate antimicrobial susceptibility to ampicillin, trimethoprim + sulfamethoxazole, ceftriaxone and furazolidone.

Coprocultures of 10949 patients between 0 and 13 years were analyzed from 2000 to 2014 inclusive. The age distribution was considered 0-2, 2-4, 4-13 years old. The prevalence was evaluated during the four seasons. The leukocytes were classified into abundant, regular amount and scarce. The number of isolates of Shigella flexneri and Shigella sonnei year were analyzed. Antimicrobial susceptibility was studied.

Of the total coprocultures processed 9.0% (n = 985) were positive. In 4.0% (n = 437) of the positive coprocultures Shigella flexneri was isolated and in 1.1% (n = 120) Shigella sonnei.

Shigella flexneri was predominant in children under two years and Shigella sonnei in children between 2 to 4 years. In all cases fecal leukocytes were abundant. The majority of isolates was obtained in summer months. No strains resistant to ceftriaxone or furazolidone was obtained. A gradual increase in ampicillin and trimethoprim + sulfamethoxazole resistance was observed in the 15 years studied reaching 60% and 32% respectively in 2014.

The obtained data agree with literature. Often the antibiotics are used to shorten the duration of the disease and avoid infecting others. We need to decrease our average transmission rate of these enteric pathogens with greater control of hygiene standards.
The etiologic profile of acute diarrhea was determined, and the patterns of seasonality and antimicrobial resistance identified.

A prospective descriptive study was done. 486 stool samples in the period April 2013 until March 2014 were analyzed. It was performed by standard coproculture techniques, fresh parasitological examination and determination of Rotavirus and Adenovirus by immunochromatography. Seasonality was analyzed. Bacterial identification and antimicrobial resistance study were performed with 2C Vitek (Biomerieux, France).

It was observed that 46% (223) of diarrhea were caused by infection, 23% (112) of parasitic finding, 15% (73) of bacterial origin, 9% (45) of viral origin and 1% (7) were coinfections.

The most frequently isolated bacteria were: *Giardia lamblia* 16% (78), *Shigella spp* 9% (43) and *Rotavirus* 8.5% (41). 26% (19) of the bacteria isolated were resistant to ampicillin and cotrimoxazole. No resistance of *Campylobacter spp*. to erythromycin was observed. Increased presence of bacteria and parasites was observed in the warmer months and higher prevalence of Rotavirus in winter months.

The microbiological profile of diarrhea is represented mainly by *Giardia lamblia*, *Shigella spp.* and *Rotavirus*. There are seasonal patterns in relation to the incidence of diarrhea. The level of ampicillin resistance and cotrimoxazole is high.

These data are important for making appropriate therapeutic decisions necessary empirical. It is necessary to establish a microbial monitoring system of microbiological of acute diarrhea and resistance that allows early identification of pathogens, prevent epidemics and limit the spread of resistant strains.
BACKGROUND AND AIMS: Carbapenemase-resistant Enterobacteriaceae (CRE) are a growing problem worldwide. There are few reports of outbreaks in neonatal intensive care units (NICU). We report an outbreak of colonization and infection by CRE in a NICU in Colombia and the measures for its successful control.

METHODS: The NICU of the Clínica Universitaria Bolivariana is a 39-bed high level unit in Medellín, Colombia. Since January 2014, a surveillance protocol for detection of resistant Enterobacteriaceae is in place which includes inguinal, oropharyngeal and perianal swabs.

RESULTS: Between March 7th and December 30th, 2014, CRE colonization was detected in 8 patients. Hodge test was positive in 98.7% of isolates and blaKPC was detected in 100% of 60 isolates with DNA available. Seven patients had a CRE infection, one attributable death. The last case appeared on December 30th, 2014, there were no further cases of CRE since then.

CONCLUSIONS: There is no consensus about effectiveness of measures to control CRE outbreaks in NICU. In our experience cohort nursery, surveillance cultures and direct supervision by infection control unit of key actions, besides usual interventions, were fundamental to control the outbreak.
BLOOD CULTURE YIELD OF 1ML VERSUS 2 ML SAMPLE IN PREVIOUSLY ANTIBIOTIC TREATED NEONATES FOR DIAGNOSIS OF NEONATAL SEPSIS.

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**Background:** Blood culture to isolate the offending pathogen remains the gold standard for definitive diagnosis of Neonatal sepsis. Previously antibiotic treated neonates may have low colony counts and so may have spuriously negative blood culture.

**Aims and Objectives:** To compare blood culture yield of 1ml versus 2 ml sample for previously antibiotic treated neonates.

**Methods:** This observational analytical study was conducted at Sir Ganga Ram Hospital, New Delhi, India between May 2010 to July 2012. All extramural neonates of more than 30 weeks gestation admitted in NICU having clinical features and signs of neonatal sepsis and with prior exposure to antibiotics were enrolled. With all sterile precautions, paired blood culture samples of 2 ml and 1 ml were taken and cultured in automated BacT/Alert bottles.

**Results**

A total of 140 neonates who previously received antibiotics were enrolled. Blood culture positivity was 35.7% (50/140). Forty blood cultures were positive in either 1ml or 2 ml blood sample. 30 blood cultures were common in both 2 ml and 1 ml blood samples while 10 were positive in 1 ml blood samples and another 10 in 2 ml blood samples (kappa level of agreement=0.65). Mean time to culture positivity in 1 ml vs 2 ml blood culture samples was 0.24 days (95% CI : 0.15- 0.33 days) vs 0.39 days (95% CI :0.24-0.54 days) ,(p= 0.038).

**Conclusion:** In previously antibiotic treated neonates, increasing volume of blood in BacT/ALERT system neither led to increase in yield of organisms nor there was any decrease in the isolation time.
QUALITY INITIATIVE TO DECREASE HOSPITAL ACQUIRED INFECTION IN A TERTIARY CARE UNIT: A NEONATAL COLLABORATIVE

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Background: Bloodstream infections (BSI) are an important cause of neonatal mortality worldwide and are an important contributor to healthcare infections. There is urgent need for simple and cost effective interventions to reduce hospital acquired infection especially in resource limited setting.

Aims and objectives: To know the burden of hospital acquired infection and the impact of quality initiative processes.

Methods: This multi-centric study was conducted across six centers in India as part of quality initiative in collaboration with ACCESS health international (Indian School of Business) which is supported by Institute of healthcare Improvement (Massachusetts) between January 2013 to June 2014. Denominator data like patient days, catheter days, and ventilation days were also recorded. Process measures audit was done as compliance for hand hygiene, gloves use, percentage compliance for central line insertion and maintenance bundle and antibiotic stewardship compliance.

Results: Out of 1549 admission over 1.5 years, 220 babies were screened for suspected 406 episodes. There were 107/406 (26.36%) microbiological BSI, 112/406 (27.58) clinical sepsis and 187/406 (46.06) no sepsis. There was consistent decline observed in BSI rates over 18 months (14.3-3.5/1000 BSI days) and CLABSI (40.8-19.1/1000 catheter days) rates. Audit of processes measures revealed compliance for hand hygiene/glove use (66.82%), aseptic non touch technique (65.65%) and central line insertion bundle (85.41%) along with availability of hand rub at 95% of time.

Conclusion: Quality initiative and continued surveillance of processes for infection control resulted in consistent decline in BSI and CLABSI rates in our unit.
COMPARISON OF ROTAVIRUS NOSOCOMIAL INFECTIONS IN CHILDREN STAYING IN SINGLE ROOMS VERSUS MULTIPLE-BED ROOMS
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Introduction

Nosocomial Rotavirus infections are a major cause of hospital-acquired infections in children and responsible for significant morbidity and increased medical costs. We sought to compare Rotavirus Nosocomial Infection (RVNI) rates in paediatric patients who stayed in single rooms versus patients who stayed in multiple-bed rooms with shared toilets.

Methods

All children admitted to paediatric wards in KK Women’s and Children’s Hospital from 1st January 2011 to 31st December 2012, who tested positive for Rotavirus antigen ≥ 5 days from admission date were included in this study. We excluded patients who had gastroenteritis symptoms during the first 2 days of admission. Demographics, clinical data and outcomes were collected. Rotavirus NI rates were calculated for patients in different room and ward settings, and rates were compared using incidence rate ratios (IRR).

Results

Ninety RVNI cases were identified, median age 2.71 years. Overall, rotavirus NI rate was significantly lower in patients staying in single rooms (4.63 RVNI per 10000 discharges) compared with patients staying in multiple-bed rooms (27.45 NI per 10000 discharges) (IRR 0.17, 95% confidence interval (CI) 0.067-0.364, p<0.0001).

In medical wards, RVNI rate for patients staying in single rooms (4.8 NI per 10000 discharges) was significantly lower than those staying in multiple-bed rooms (17.87 NI per 10000 discharges) (IRR 0.27, CI 0.083-0.672, p=0.002). There were no significant differences between patients staying in single or multiple-bed rooms in surgical wards.

Conclusion

Further studies are necessary to elucidate additional risk factors for RVNI, and evaluate strategies to reduce RVNI in hospitalized children.
Malaria, caused by the apicomplexan parasite *Plasmodium*, is a major cause of morbidity and mortality throughout the world particularly in developing countries. The current study aimed to investigate the mice intestinal oxidative damage and mucin regulated gene response to *Plasmodium chabaudi* infection. The infection of female C57BL/6 mice with $10^6$ *P. chabaudi* parasitized erythrocytes induced a maximum parasitemia (about 47%) on day 8 p.i.. Light microscopical inspection of hematoxylin and eosin-stained sections revealed that, the epithelial cells of the jejunum of mice infected with *P. chabaudi* were injured and contained marked inflammatory cells. In addition, examination of Alcian blue stained sections showed a significant increase in the number of goblet cells of the jejunal villi. Moreover, the infection induced a significant increase in the level of NO and MDA while the level of GSH was significantly decreased by the infection. Upon infection with *P. chabaudi*, there was a significant increase in the mRNA expression of MUC2 and MUC4. Based on our results, we can conclude that, the intestinal response to *P. chabaudi* infection could help in understanding the process of intestinal oxidative damage as well as the role of mucin related genes during infection. Further studies are required to know the mechanism and the pathway by which the parasite induce these intestinal alterations.

**Key words:** Intestine, mice, *Plasmodium chabaudi*, oxidative stress, goblet cells.
Malnutrition is known to increase susceptible of the host to bacterial infection but little is known of its effect on parasitic infections like malaria. Malaria and malnutrition are endemic in the developing countries like Nigeria accounting for a significant mortality among children less than five years of age.

Aim; To determine the prevalence of malaria parasitaemia among febrile children with severe PEM and to compare it with that of febrile well nourished children.

Methods; This was a cross-sectional study involving 90 febrile children with severe PEM aged 6-59 months (44 males and 46 females) were enrolled as subjects and; 90 febrile well nourished children age and sex matched children as controls. Both subjects and controls were enrolled consecutively in the Emergency Paediatrics Unit of AKTH from May to October 2013. The diagnosis of malaria parasitaemia was based on identification of asexual parasites on microscopy after Giemsa staining.

RESULTS; Seventy five (83.3%) of the subjects enrolled were aged 6-24 months old and 67.8% of the subjects had marasmus. The prevalence of malaria parasitaemia was 72.2% in the subjects, this was significantly higher than 37.8% in the controls (OR= 4.28, CI= 2.29-8.02). Mean malaria parasite density was higher among the subjects Mean malaria parasite density was 222112 ± 10300/µL in the subjects, which was higher (19667 ± 1041/µL) among the controls.

CONCLUSION; Malnourished children are at increased risk of malaria compared to well nourish children. Preventive measures should be taken to prevent malaria in this group of children.
Background and aims: Due to climatic conditions and high altitude, Nairobi was one of the areas with a low prevalence of malaria; however, there is increasing evidence that climate changes are having a significant influence on malaria transmission within Nairobi. Our aim was to evaluate the prevalence of malaria in children under 5 years old attending the St. Raphael Clinic in Nairobi, from June 2014 to May 2015.

Methods: Personal data was collected, on symptoms and history of travelling to endemic areas in the past 2 months. Laboratory diagnosis of malaria was made using the method of thick smear. The thick smears were prepared and read by two trained microscopists.

Results: Out of 5256 children under 5 years old attending the Clinic, from June 2014 till May 2015, a total of 1091 children were diagnosed with malaria. In the cohort of 1091 (100%) children, 1038 (95.14%) children without a history of travelling to endemic areas (locally acquired) and 53 (4.86%) children with a history of travelling to endemic areas were diagnosed with malaria (p<0.01).

Conclusion: Our data suggest a high prevalence of locally acquired malaria in children under 5 years old. As the climate continues to change, we can expect a further significant increase in the risk of malaria transmission in Nairobi. Therefore, there is a great need for the implementation of preventive measures.

<table>
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<th>Number of patients (%)</th>
<th>Diagnosed with malaria</th>
<th>Locally acquired</th>
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<td>1091 (100%)</td>
<td>1038 (95.14%)</td>
<td>53 (4.86%)</td>
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Background and aims
Neonatal bacterial meningitis remains an important cause of mortality and morbidity. Unspecific clinical findings make the diagnosis more difficult in neonates. Imaging of meningitis is not routine, although early MRI may influence clinical management.

Methods
Retrospective study including all neonates (≤ 28 days) hospitalized at a secondary hospital with culture-confirmed bacterial meningitis (January/2001 to March/2015). Newborns not imaged with MRI in the first 6 months of life were excluded. Demographic, clinical, laboratory and neuroimaging data were reviewed.

Results
Ten neonates with median age of 18 days at presentation, 60% were male and 40% were preterm. Clinical features included seizures (90%), lethargy (70%) and poor feeding (50%). 70% had Streptococcal species isolated from cerebrospinal fluid (Streptococcus pneumonia in 2 and Group B Streptococcus in 5 cases), while the remaining cases had Escherichia coli. Mean age at initial MRI was 55 days. Abnormalities included: ventricular dilation (50%), subdural empyema (40%), hemorrhage (30%) and white matter signal change (WMSC, 20%). E. coli presented more frequently with hydrocephalus and WMSC, while basal ganglia involvement was exclusive of Streptococcal species. 90% had significant sequelae on follow-up.

Conclusions
Despite small sample size, there were distinguishable patterns of complications on MRI according to the microorganism involved. Recognizing these patterns may prove useful in clinical diagnosis, particularly when bacteriological examinations are negative or inconclusive. Inversely, when the microorganism is identified, we may expect a characteristic spectrum of complications. Although intensive modern neonatal care improved survival, the morbidity of neonatal meningitis remains a serious problem.
ENDOLUMINAL FILING: A NOVEL VASCULAR CATHETER CULTURE TECHNIQUE FOR THE DIAGNOSIS OF CATHETER-RELATED BLOODSTREAM INFECTION IN NEONATES
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Background and aims. Catheter-related bloodstream infection (CRBSI), is a common complication related to vascular catheter use. We aimed to compare the endoluminal filing technique, as a novel vascular catheter culture method, with Maki roll and Cleri flush techniques, for the diagnosis of CRBSIs in neonates.

Methods. One hundred and twelve umbilical and central vascular catheters of 91 neonates (75 preterm and 16 term) in our hospital were removed and their culture results were compared by performing the endoluminal filing, Maki roll and Cleri flush techniques. The babies were evaluated for CRBSIs with the simultaneously performed peripheral blood culture results.

Results. Of total 112 catheter cultures, microorganisms were isolated with endoluminal filing and Maki roll techniques in 50, and with Cleri flush technique in 49. Peripheral blood cultures were simultaneously positive in 9 of these catheters (9 with endoluminal filing and Cleri flush techniques, and 8 with Maki roll technique); 4 babies were diagnosed with catheter-related bacteremia (CRB), and 5 babies were diagnosed with CRBSI; the Maki roll technique failed to diagnose one CRBSI case. For CRBSI, the sensitivity of endoluminal filing, Cleri flush and Maki roll techniques were 100%, 100% and 80%, and the specificity was 66.3%, 67.2% and 64.4%, respectively; there was no significant difference between the techniques.

Conclusions. The endoluminal filing technique for the diagnosis of CRBSI in neonates did not show a statistically significant difference in results, compared with the other techniques, however, it was found to be more sensitive and specific than the Maki roll technique.
EMPIRIC ANTIBIOTIC REGIMENS FOR COMMON NEONATAL INFECTIONS IN AUSTRALIA AND NEW ZEALAND

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Background

There is no consensus regarding empiric antimicrobial regimens for neonatal infections, particularly for late-onset neonatal sepsis (LOS). We characterised the current empiric antimicrobial regimens in all Neonatal Intensive Care Units (NICUs) in Australia and New Zealand.

Methods

A web-based REDCAP survey regarding empiric antibiotic regimens for common neonatal infections was sent to all level III NICUs.

Results:

All 28 units responded. Empiric regimens were as follows: Early onset Sepsis: all units used a combination of gentamicin and penicillin or ampicillin. LOS without meningitis: 8 different regimens were used. The frequency of units using empiric vancomycin (43%) versus flucloxacillin (46%) were similar. 86% units included an aminoglycoside. For LOS with meningitis, there was marked heterogeneity. 21% used cefotaxime monotherapy and 68% combined cefotaxime with a second and/or third agent. Of the units who used empiric flucloxacillin, 28% would switch to vancomycin in the presence of a central venous catheter. For suspected NEC, 86% of units used an aminoglycoside, metronidazole and a penicillin. Historical outbreaks of multi-resistant organisms exerted long-term influence over regimen choice.

Discussion

There is considerable variance in the antimicrobial regimens used for common neonatal infections, particularly LOS. The use of broad-spectrum agents was limited. The use of vancomycin to empirically cover coagulase negative staphylococci (CoNS) remains controversial, as CoNS sepsis is rarely fulminant. Implementation of local antimicrobial policies is crucial to minimise antimicrobial exposure and the development of resistance.
Aim: Evaluate the association of candidal colonization and systemic candidiasis in extremely preterm infant. Analyse if fluconazole can prevent systemic candidiasis in previously colonized infants.

Methods: Prospective cohort study of all newborn infants less than 1000 grams, in a Brazilian neonatal intensive care unit (NICU), at University Hospital, between April, 2012 to April, 2014. Oropharyngeal and rectal swab, and tracheal secretions (in intubated) were collected for fungal culture on 3rd, 10th, 17th, 24th, and 30th days of life. Infants with positive culture for Candida spp. received fluconazole. It was considered systemic candidiasis those who presented: sepsis with positive blood culture, pneumonia with positive tracheal secretion and changed chest X-ray, and urinary tract infection with positive urine culture.

Results: 56 infants were evaluated, median weight of 816 grams (435-980), median gestational age of 27 weeks (23.1-34.1), 23 (43.1%) infants were colonized with Candida spp. The isolated strains were: C. albicans (11), C. parapsilosis (5), C. tropicalis (5), Candida spp. (3), C. kruzei (2), C. famata (2), C. glabrata (1). Among 11 infants with systemic candidiasis, 8 (72.6%) were colonized with Candida. Eight infants (34.8%) received fluconazole and from these, two developed systemic candidiasis (p=0.4968). The mortality rate was 33.9% and there was association between systemic candidiasis and death (p=0.0501).

Conclusion: Most infants with systemic candidiasis were previously colonized with Candida. Fluconazole have prevented systemic candidiasis in the majority of colonized infants.
TITLE: BENEFITS OF NEWBORN SCREENING OF CONGENITAL CMV INFECTION: EARLY IDENTIFICATION OF ASYMPTOMATIC INFANTS WITH LABORATORY AND NEUROIMAGING FINDINGS
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Background: Many infants born with congenital CMV (cCMV) infection have no clinical findings at birth and usually are not diagnosed and do not undergo laboratory or neuroimaging evaluation. Although the frequency of laboratory and neuroimaging abnormalities in symptomatic cCMV is well known, data for asymptomatic infants are still lacking.

Objective: To determine the frequency of laboratory and neuroimaging abnormalities in asymptomatic infants with cCMV infection.

Methods: By means of a CMV neonatal screening, 39 of 5690 infants were identified as congenitally infected. Infants with and without clinical abnormalities detectable at birth underwent physical examination, neuroimaging (brain transfontanellar US), complete blood cells and platelets counts, measurement of aminotransferase (ALT) and gama glutamiltransferase (GGT) levels, ocular fundoscopy, and hearing evaluation using automated transient evoked otoacoustic emissions and auditory brainstem response.

Results: Of the 39 infants, 5 (12.8 %) were symptomatic at birth. Among 34 asymptomatic infants, 27 underwent complete evaluation. Neuroimaging abnormalities were observed in 6 (22%) of them. High GGT levels (>100 U/L) was found in 7/27(25.9%). Unilateral profound hearing loss was found in 2 (7.4%) infants. Unilateral chorioretinitis was observed in one infant (3.7%). Low platelet counts (< 100.000/mm³) and high ALT levels (>80 U/L) were not observed in asymptomatic infants.

Conclusions: Considering that the majority of infants with cCMV infection are asymptomatic, a significant proportion of infected infants with abnormal findings could be identified by means of neonatal screening. Neuroimaging and laboratory findings at birth are potential prognostic markers of CMV related sequelae in asymptomatic infants.
THE DEARTH OF NEONATAL INFECTIOUS DISEASE RESEARCH - RESULTS FROM A UK SYSTEMATIC ANALYSIS 1997-2013

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London School of Hygiene and Tropical Medicine, London, United Kingdom

Introduction
Neonatal infectious disease imposes great burdens globally. The UK carries out a significant amount of infectious disease research, and this analysis identified the amount of funding and numbers of studies specifically related to neonatal infection research.

Methods
Funding databases were searched and funders were approached directly for information on awards to UK institutions across 1997-2013 related to infectious diseases. Awards were categorised under dozens of keywords and types of research, including neonatal disease.

Results
Across 7393 studies, paediatric research covered 363 awards and investment of £149 million (4% of the total). Within this, neonatal research covered just 34 awards and £13.2 million (0.4% of all paediatrics, 0.4% of all infection). Around £3.3 million was related to sepsis, most other disease categories (e.g. global health, antimicrobial resistance) received small amounts of funding across 2-3 studies. This compare poorly with, for example, paediatric HIV which received investment of £34.2 million over the same time period.

Conclusions
Other areas of infection research, such as influenza, appear to be funded relatively well, compared to disease burden. However, research specifically concerning neonates is clearly and unacceptably underfunded, given the significant global burden of disease in newborns. Further global tracking of R&D investments can further identify funding and knowledge gap and facilitate networking and identifying expertise and infrastructure.
NEONATAL INFECTIONS IN REGIONAL HOSPITAL PRIZREN-ONE YEAR STUDY


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Background and aims. Infections are a frequent and important cause of morbidity and mortality in the neonatal period. Symptoms and signs in neonates are nonspecific. The aim of the study was to evaluate laboratory data and physical examination in the treatment and prognosis of neonatal infections.

Methods. During this retrospective study, examination and laboratory data were studied in 97 neonatal infants admitted in Pediatric Department from 1 -28 days, between January to December 2011.

Results. In 2011 there were 4409 deliveries. 97 neonates (5.09%) admitted with infection of total 1905 hospitalised children. 69% were male vs 30.9% female (p<0.01). The most of them were from rural area 60.82% vs urban area 39.18% (p<0.01). According to age group 43.3% were age 1-7 days. Mean age was 12.2 days. Sepsis neonati was 46.39%, urinary tract infections (UTI) 40.2%, hyperbilirubinemia 32.98%, bronchopneumonia 22.6%, rhinopharyngitis ac 18.55%, omphalitis 10.3%, staphylodermia 2.06%. Sectio Cesarian was in 5.15%, preterm in 1.03%. Poor feeding 42.26%, cough 28.8%, temperature 30.9%, C protein reactive was 49.4%. Average duration of neonatal infections was 9.1 days. Klebsiella spp. was isolated in urinocultures 32.98%, E.coli 4.12%, Citrobacter 1.03%, Proteus 1.03%. Haemocultura was positive in 36 neonates, 32.9% with staphylococcus aureus. Antibiotics used depend of infection: ampicillin 76.2%, gentamicin 48.4%, ceftiraxon 31.9%.

Conclusions. Sepsis neonati is the dominant infection. Poor feeding was frequent symptom. Klebsiella spp. was most positive in UTI. Staphylococcus aureus was in most of sepsis neonati. Ampicillin is most antimicrobial used in treatment of infections..
MULTIPLE BRAIN ABSCESS IN A NEONATE WITH EARLY ONSET NEONATAL SEPSIS(EONS) WITH MULTIDRUG –RESISTANT KLEBSIELLA PNEUMONIAE

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Background: Brain abscesses are uncommon in neonates. Though Klebsiella pneumoniae is a common organism causing neonatal sepsis, it is rarely implicated as etiological agent for brain abscess. Multidrug-resistant Klebsiella pneumoniae is a rare cause of early onset neonatal sepsis (EONS) since the organism is usually community acquired.

Case report: We describe a premature infant, born to mother who was on chronic steroid therapy for dermatomyositis, who developed multiple brain abscess associated EONS with meningitis. Blood culture sent on day one of life showed growth of multidrug -resistant Klebsiella pneumoniae (resistant to amikacin, ceftriaxone, cefoperazone+ sulbactum, levofloxacin, azetronam, meropenem [MIC> 8μg/ml]). Diagnosis was established by ultrasound cranium and contrast enhanced magnetic resonance imaging of brain. Baby was treated with 6 weeks of high dose intravenous meropenem and colistimethate, to which the lesions responded well and didn’t require any surgical intervention.

Conclusion: The uniqueness of this case lies in rarity of the site of infection by the organism and its good response to high dose meropenem despite in vitro resistance and to colistimethate, which is not commonly used in neonates.
NEONATAL TETANUS --- PREVALENCE AND OUTCOME IN A RURAL HOSPITAL IN NIGERIA
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Background and Aim: Neonatal tetanus is a highly debilitating disease with a high mortality. Global efforts at eliminating neonatal tetanus is yielding results but slower than expected. This study aimed at documenting the prevalence and outcome of neonatal tetanus over a five year period in a rural hospital.

Methods: It was a retrospective study in which all records of neonates admitted with neonatal tetanus from January 2009 to December 2013 were retrieved. Data were extracted paying particular attention to the age, sex, maternal antenatal care visits, duration of hospital stay and outcome.

Results: 23 of the total of 1217 babies admitted into the neonatal baby unit during the study period had neonatal tetanus, giving an overall prevalence of 2.46% and annual incidence of 6 cases. All the babies were term, delivered at home and only 3 of the mothers attended antenatal clinics. Twenty two (73.3%) were boys with M:F ratio of 1: 0.36. The mean age at presentation was 6.5 days (range 3-25 days). Three (10%) of the neonates were discharged home, 8 (26.7%) were discharged against medical advice while 19 died; giving a case fatality rate of 63.3% and contributing to 11.9% out of the overall mortality of 160 neonates.

Conclusion: neonatal tetanus contributed significantly to morbidity and mortality. Public enlightenment campaign should be strengthened to achieve its control and elimination.
Background and aims – *Streptococcus pneumonia* (*Sp*) infection is an unusual event in the neonatal period and is associated with substantial morbidity and mortality. It can be acquired from colonized maternal genital tract during vaginal delivery or from maternal acute febrile illness during peripartum. We report a case of an early *Sp* neonatal infection.

Case description – A 1-day-old girl vaginally born at 36 weeks and 6 days, with 1725g birth weight (SGA) and the Apgar score was 6/9. There was a history of gestational tobacco, marijuana and alcohol use. The mother had daily fever without source during the 3 days preceding delivery. Admission exams revealed serum leukocytosis and altered urinalysis. Few hours after delivery, the neonate was transferred to neonatal ICU due to subtle onset of tachypnea, fever, grunting and septic appearance. Initial exams revealed serum leucopenia, mild thrombocytopenia and increased C-reactive protein (9,2 mg/dl). CSF analysis wasn’t collected due to hemodynamic instability. She developed severe thrombocytopenia (10,000/uL) and pulmonary haemorrhage during the following days despite empirical antibiotic treatment (crystalline penicillin plus gentamycin). A multi-susceptible *Sp* grown at initial blood culture and was further identified as serotype 7C. Maternal oropharyngeal, vaginal and blood culture were negative for *Sp*, as well as molecular detection in maternal blood. The patient died after 8 days due to multiple organ dysfunction.

Conclusion – *Sp* infection is an unusual and highly lethal neonatal disease. Adequate treatment of a maternal febrile episode in late pregnancy could have impact in the hematogenic and vaginal *Sp* transmission to the newborn.
KLEBSIELLA INFECTIONS AND POPULATION STRUCTURE OF ISOLATES IN INTENSIVE CARE NEWBORNS IN RIO DE JANEIRO, BRAZIL

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Background: Klebsiella species are broadly responsible for infections and outbreaks in hospitalized newborns. The population structure of Klebsiella pneumoniae recovered from newborns is still unclear. In the present study we determined the incidence of Klebsiella infections, prevalence of ESBL producing isolates and blaCTX-M genes in the main MLST lineages isolated from newborns admitted to four intensive care units (NICU) of the Municipal Health System of Rio de Janeiro.

Methods: During April/2005-November/2006 and March/2008-February/2009, 4,260 newborns were included in a prospective cohort study. Healthcare associated infections were defined by established criteria (CDC). Identification of Klebsiella isolates was performed by phenotypic tests and gene sequencing. ESBL production was determined by double diffusion test. Presence of blaCTX-M genes and MLST were determined by PCR and sequencing.

Results: A total of 38 newborns had infections by Klebsiella, with an incidence of 8.9/100 newborns. Klebsiella isolates (n: 79) from 66 newborns were analyzed; 33 isolates were saved from 32 infections. Fourteen (37%) infected newborns died. Of 33 isolates, 27 (82%) were K. pneumoniae, 5 (15%) Klebsiella oxytoca, and one (3%) Klebsiella variicola. Raoulitta ornithinolytica (2 isolates) caused only colonization. Of the 27 bloodstream infections (BSI) observed, K. pneumoniae caused 22 (81%) and K. oxytoca 4 (15%). ESBL production was observed in 10 isolates from infection (31%), 9 (83%) of which carried blaCTX-M-15, all from one hospital and of CC45 and CC1041.

Conclusions: Klebsiella infections had high incidence and lethality. CC45 and CC1041 were important vehicles for dissemination of blaCTX-M-15 among newborns.
Background and aims: Cytomegalovirus (CMV) hepatitis is generally asymptomatic or rarely can lead to severe complications in immunocompetent hosts. This study aims to evaluate CMV hepatitis in immunocompetent young children discussed relatively rarely in the literature.

Methods: A retrospectively review of forty-nine pediatric patients with CMV hepatitis from January 2005 to December 2010 was performed.

Results: Median age of the patients was 5.81 ± 6.49 months and 57.1% was female. Complaints of patients were prolonged jaundice, vomiting, diarrhea and abdominal distension. Seventeen patients (34.6%) were with congenital or probable congenital CMV infection, while 32/49 (65.3%) were with perinatal CMV infection. CMV hepatitis was accompanied by other system findings in 22 patients (44.9%), and only liver involvement was present in 27/49 (55.1%). Alanine aminotransferase (ALT) and aspartate aminotransferase (AST) were elevated together in all patients. AST values were between 64-2950 (mean 300.1 ± 476.3) IU / L and ALT values were between 69-2085 (mean 256.6 ± 350.4) IU / L. Cholestatic hepatitis was present in 13 patients (26.5%). Four patients (8.16%) were treated with ganciclovir. Complete improvement of hepatitis occurred in 48/49 patients (97.95%). The recovery time of liver function tests was 7-180 days (mean 53.92 ± 40.8).

Conclusions: CMV hepatitis is usually mild and has a good outcome in immunocompetents. However, the cases should be carefully evaluated due to important role of CMV in the etiology of infantile and neonatal hepatitis. This study is noteworthy because of the contribution to the existing literature on CMV hepatitis in immunocompetent infants.
IMPACT OF SEPSIS ON NEUROLOGICAL OUTCOME AT 3 YEARS’ CORRECTED AGE IN PRETERM INFANTS

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Background and aims: Neonatal sepsis causes high mortality and morbidity in preterm infants. However, the neurodevelopmental outcome after sepsis has not been studied extensively. This study aimed to determine the impact of sepsis on neurodevelopment at 3 years corrected age in preterm infants.

Methods: Infants born between 2009 and 2011 at 24 6/7 -30 0/7 weeks GA were included in the study. Neurodevelopmental outcome was assessed using the Bayley III.

Results: Of 114 infants, 42 (36.8%) had proven sepsis, 28 (24.5%) had suspected sepsis, and 31 (27.1%) had no signs of infection. Infants with proven and suspected sepsis scored lower than uninfected infants both in cognitive (106.3±6.9 vs 95.1±13.1 p<0.001) and motor outcomes (94±16.2 vs 106.7±10.8 p<0.001) at 3 years corrected age. CP occurred in 3 of 42 (7.1%) (p=0.064) infants with proven sepsis while autism spectrum disorders occurred in 6 of 42 (14.2%) infants with proven sepsis (p=0.447).

Infants with sepsis from Gram negative bacteria scored lower on cognitive outcome than infants with Gram positive bacteria at 3 years (79±16 vs 99.6±13.9; p=0.006).

Standard multiple regression confirmed that proven sepsis (beta= -0.317; p=0.036), and hearing deficits (beta= -0.598; p=0.002) significantly associated to the cognitive outcome, while sepsis (beta= -0.256; p=0.045), hearing deficit (beta= -0.664; p<0.001), chorioamnionitis (beta= -0.467; p=0.001), ROP (beta= -0.465; p=0.001), and BPD (beta=0.358; p=0.033) significantly associated to motor outcome.

Conclusions: Proven sepsis significantly decreases the neurodevelopmental scores in preterm infants at 3 years. Strategies reducing the incidence of sepsis in this highly vulnerable population are needed.
DIAGNOSTIC SIGNIFICANCE OF DELTA NEUTROPHIL INDEX AND OTHER CONVENTIONAL PARAMETERS IN NEONATEAL SEPSIS: A ROC ANALYSIS

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Introduction: The golden diagnostic standard of neonatal sepsis is a blood culture for bacteria. However, this test can take over 48 hours to obtain the results. For early treatment, various laboratory parameters have been studied as viable tools but with demerits. Therefore, we aimed to verify diagnostic significance of delta neutrophil index (DNI).

Methods: Subjects included neonates less than 31 days old who were admitted to the NICU between January 1, 2012 and December 31, 2014. The subjects were divided into sepsis group, and the other admitted for fever without sepsis. Sepsis was defined as both of the two blood cultures returning positive results. Total WBC count, absolute neutrophil count (ANC), platelet count, DNI, and C-reactive protein (CRP) were carried out immediately upon blood culture collection of each patient. The ROC analysis was performed to identify the diagnostic significance.

Results: Sepsis group showed significantly higher total WBC count, ANC, DNI, and CRP, but significantly lower platelet count. Diagnostic significance was found to be the highest in platelet count (PR>ChiSq 0.0004), followed by CRP (0.0007) and DNI (0.0072). WBC count and ANC showed low diagnostic significance of PR>ChiSq 0.5. Ideal cut-off value of each tool were WBC 14,650/μL (sensitivity 41.6%, specificity 78.3%), ANC 8,135/μL (sensitivity 40.3%, specificity 76.8%), platelet count 240,000/μL (sensitivity 88.4%, specificity 55.8%), DNI 3.15% (sensitivity 54.5%, specificity 81.2%), CRP 3.54mg/dL (sensitivity 64.8%, specificity 81.8%).

Conclusion: Low platelet count and high CRP have the most significant diagnostic power. DNI may be used as an additional diagnostic tool.
CHANGING OF BLOODSTREAM INFECTIONS IN A MEDICAL CENTER NEONATAL INTENSIVE CARE UNIT

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Background

Neonatal sepsis is a major cause of mortality and morbidity in neonatal intensive care units. The epidemiology may change during the years after application of new infection control policies.

Methods

This retrospective study reviewed and analyzed the clinical characteristics of culture-proven bloodstream infections in a neonatal intensive care unit from January 2008 to December 2013 and compared with data from previous period (1992-2007). Patients were divided into early-onset and late-onset groups.

Results

In recent studied period, the overall mortality decreased, Gram-positive infections became more predominant. Coagulase-negative staphylococci were the most commonly isolated organisms, followed by Staphylococcus aureus and Escherichia coli. Groups B streptococcus (GBS) sepsis had the highest mortality. Fungal infection episodes decreased after introduction of prophylactic fluconazole policy, but the fluconazole-resistant Malassezia pachydermatis patient number increased. The incidence of peripherally inserted central catheter associated central line-associated bloodstream infection was 6.6%. The incidence decreased gradually after restricted the catheter duration. Seven of 8 deaths occurred in the early-onset group. The deceased GBS sepsis might be preventable if maternal GBS screening were performed.

Conclusions

Infection control policies change the epidemiology of bloodstream infections in neonatal intensive care units. However, more advanced infection control policies are needed to make a better outcome.
Introduction: Congenital Infections can cause damage to the fetus and newborn, with acute/chronic manifestations. TORCH term describes presence of Toxoplasmosis, Other diseases (such as syphilis), Rubella, Cytomegalovirus (CMV) and Herpesvirus. Co-infection of syphilis and CMV is not well documented in the literature, so that the diagnosis is a difficult exercise, particularly in extremely low birth weight infants.

Methods: case report of a extremely low birth weight newborn co-infected with syphilis and CMV in a Neonatal intensive care unit (NICU) of the municipality of Macae-RJ, Brazil. “Case Report“: male newborn, delivered vaginally in 12/9/2014, weighing 985g, apgar 8/9, developed severe respiratory distress requiring mechanical ventilation. The newborn was admitted in a NICU, received pulmonary surfactant and a 10-day course of penicillin for treatment of congenital syphilis (mother VDRL 1/128 and newborn 1/64). In 12/14/2014 he evolved with cholestatic jaundice, respiratory discomfort and pulmonary bleeding, requiring fresh plasma for 3 days. Interestingly, the blood counts of 10, 11, 14, 15, 21 and 23 December 2014 had respectively 41, 75, 23, 104, 70 and 76,000 of platelets, which aroused clinical suspicion of other infections. TORCH requested for CMV showed positive-IgM. A 45-days course of ganciclovir was started, with a improvement of platelets count to 336,000, but it didn’t avoided an important hearing loss.

Conclusions: The diagnosis of TORCH in neonatal ICU takes into account clinical and laboratory aspects, and can be confused with bacterial sepsis, fungal, among others. In this way, it should be strengthened in all municipalities of Brazil early diagnosis of TORCH in prenatal to avoid irreversible sequelae to the newborn.
Ventilator-associated pneumonia (VAP) is a common type of hospital associated infections (HAIs). VAP is severe and high mortality particularly in infants. Culture of endotracheal aspirate fluid (EA) is an important diagnostic criteria for VAP. EA culture result allows guiding the initial treatment of VAP. This study aims to: measurement of the prevalence of bacteria isolated from EA in young patients on mechanical ventilation NICU of the NHP; description of antibiotic resistance on bacteria isolated from EA. There were 154 antibiotic sensitivity results among 196 EA cultures samples were included in the analysis. There were 12 species and strains of bacteria were identified. Among them the species of gram negative bacilli was predominate with leading are P. aeruginosa (36.4%), K. pneumoniae (20.1%), E. coli (8.4%) and S. maltophilia (5.8%). Recorded a significant increase in the rate of S. aureus (16.2%) in compare with previous similar studies. The bacteria found high resist to almost of common use’s antibiotics (about 80%). Carbapenem group has been resistance to P. aeruginosa, K. pneumoniae, E. coli ... above 50% and no effect S. aureus (100% resistance). There were 10% of S. aureus isolated resist to Vancomycin. Bacteria found in EA are similar to the causative of VAP, so it is necessary to conduct a routine process for EA in patient under mechanical ventilation. It would be right after intubation and 2 times a week. That will help early diagnosis of VAP and orient to choice appropriate antibiotic for VAP treatment.
Background: Continued occurrence of congenital syphilis is a symbol of the failure of basic systems of antenatal care and control of sexually transmitted infections (STIs). Objective: 1) To assess the prevalence of congenital syphilis in a cohort of children referred for investigation and management at a reference center.

Method: Retrospective analysis of 104 children followed at a reference center for congenital syphilis investigation from 1995 to 2014. The project was approved by the institution's Ethics Committee. Demographic characteristics, mother's/partner's/children's treatment type were evaluated. It was considered a confirmed case of congenital syphilis: 1) Child's antibody titles higher than the mother's; 2) Positive non-treponemal tests in children older than six months of age; 3) Positive treponemal tests after 18 months. Quantitative data analysis using descriptive statistics.

Results: 104/125 (83%) were included in this analysis. Antenatal care data were identified in 76/104 patients (73%). Most of the deliveries occurred outside study hospital (56%); syphilis treatment reporting during pregnancy in 61 women (58.6%), but in only 28 (27%) it was possible to know the type of treatment and conclude that it was appropriate; treatment of sexual partner was reported in 48 (46%) patients. Follow-up to the diagnostic definition occurred for 72 children, 8 of them (7.7%) were confirmed with congenital syphilis and 64 (61.5%) considered transplacental passage of antibodies. Follow-up was not completed in 32 of 104 children (30%), despite the routine searches for missing cases.

Conclusions: Despite the increasing global focus on neonatal health and infectious diseases, congenital syphilis still lacks the high priority status it deserves.
Background and aims: Invasive candida infection (ICI) is a leading cause of infection-related morbidity and mortality in neonatal intensive care units (NICU). Aim of the study was to evaluate the predictors of mortality in ICI in the NICU.

Methods: Medical records of newborns admitted in NICU, Lady Hardinge Medical College, January 2011 to December 2014 were reviewed. ICI was defined as candida isolation in culture in otherwise sterile body fluids. Risk factors were evaluated from the time of admission until the onset of culture positivity and then throughout their NICU stay. Data was analyzed by SPSS Version 21.0. Variables significant in univariate analysis were entered into backward step wise regression model in multivariate analysis. All p values (<0.5 considered significant) were two tailed. Adjusted Odds Ratios and 95% Confidence Intervals were calculated for significant variables.

Results: A total of 39 ICI’s were identified. Thirteen (33%) babies died. Birth weight, gestation gender, asphyxia, surfactant administration, antenatal steroids, central catheters, parenteral nutrition, necrotizing enterocolitis had no influence on mortality. Small for gestational age (SGA) status, use of meropenam, patent ductus arteriosis, ventilation duration, thrombocytopenia were associated with increased mortality. In multivariate analysis SGA status was independent risk factor associated with increased mortality OR 0.21 (CI 95% 0.5-0.93) (p=0.039).

Conclusion: SGA neonates are at increased risk for mortality due to ICI.
Background and aims: Despite gentamicin being the most frequently used antibiotic in neonates rich sampling data from the once daily dosing regimen remain scarce. We aimed to describe the PK of gentamicin in term and near term neonates.

Methods: Neonates with gestational age (GA) ≥32 weeks receiving ampicillin or penicillin and gentamicin for the treatment of EOS in two Estonian NICUs, were recruited. Gentamicin was given as 1-hour infusion in a dose of 4 mg/kg q24h. PK samples were collected after the 2nd to 8th dose, before and 5 min, 1h, 3h, 8h, 12h after beta-lactam administration either immediately before or 12h after the nearest gentamicin dose. Drug concentration was measured by UHPLC with MS/MS detection. PopPK analysis was performed with software Pmetrics.

Results. A total of 168 samples were collected from 31 neonates with median (IQR) birth weight of 3030 (2030-3738)g; gestational age 254 (233-280)days and postnatal age 2 (2-3) days. A two-compartmental model provided the best fit, Vd and Clearance were scaled with body weight. Covariate GA further improved model fit. The final parameter estimates from model CL=CL0 * (BW/3.03)**0.75)* (1+THETA2*((GA-252)/252)) and V=V0 * (BW/3.03) are shown in table 2. Table 2. Final parameter estimates.

Conclusions. PK of Gentamicin is highly variable in term and near-term neonates in the first days of life. Clearance of Gentamicin is determined by GA dependent maturation of renal function.
Aim: Extensive evaluation of prognostic risk factors in neonatal Klebsiella spp. sepsis (KS) is limited. The aim of the study to investigate the prognostic significance of platelet mass to predict neonatal ICH occurrence at the beginning of sepsis.

Materials & Methods: Retrospective analysis of newborns admitted to our NICU (2005-2012) with confirmed KS. Data concerning demographics, species of Klebsiella spp., platelet count and mass during the first 3 days after the diagnosis of sepsis, presence of ICH and outcome were recorded.

Results: Twentyeight infants (42.6% male) were enrolled with median gestational age (GA) 31 weeks (IQR 4), median birthweight (BW) 1470g (IQR 1210) and mean age at diagnosis of sepsis (AS) 38.5±7.7 days, respectively. K. oxytoca was recorded in five pts (18%), while K. pneumoniae in 23 (82%). Death was reported in 14.8%, while presence of ICH in 16.4%, respectively. GA, BW and AS was not significantly associated with the presence of ICH, while platelet count and mass at day 0 and day 3 was significantly lower in neonates with presence of ICH (PLTday0 33.1±9×10⁹/L and PLTday0 mass 358.4±124.8fl/nl versus PLTday0 295.1±25×10⁹/L and PLT day0 mass 2812±242fl/nl, respectively (p=0.001, 95% CI:1328-3579) and for day 3 (PLTday3 15×10⁹/L vs 177.5×10⁹/L and PLTday3 mass 156.8fl/nl vs 1782.03 fl/nl, p=0.09). Regression analysis and ROC curve revealed the predictive cut off value of platelet mass 1090 fl/nl (sensitivity 88.9%, AUC:93.4%, p=0.001).

Conclusions: thrombocytopenia and platelet mass at the onset of sepsis in neonates with KS seems to have a prognostic role in the presence of ICH.
THE IMPACT OF GASTROINTESTINAL FLORA DRIVEN HEALTH CARE STRATEGY IN A NEONATAL UNIT.
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Background and aims: Neonates hospitalized in NICUS are susceptible to health care associated infections. Precaution measures such as hand hygiene, use of gloves/aprons or patient isolation when indicated are essential in order to avoid associated septicemias. Our aim was to determine the impact of a designed health care strategy, driven by the profile of the gastrointestinal colonization of the neonates.

Methods: A prospective study was performed from 1/1/2011-31/7/2012 in our NICU. Nasal/perineal swabs were performed twice weekly and if colonization was proven, neonates were isolated and special care (gloves/aprons) was taken. Clinical data and outcome (sepsis) were further analyzed in order to estimate the impact of the measures.

Results: A total of 362 neonates with 506 positive swabs were enrolled. Mean GA was 34wks and BW 2197g. Males were 57%. RDS was recorded in 80% and BPD in 5%. Total parenteral nutrition was administrated for 8.1 days. Gram(-) pathogens were predominantly isolated (99%), regarding Acinetobacter (11%), Enterobacter (30%), Klebsiella sp (15%), Klebsiella pneumonia (28%), Pseudomonas (10%) and Proteus (3%). CONS accounted for 1%. No antibiotics were administered in 16% while half (47%) of the neonates received 2 antibiotics. No correlation between the length or the variety of the antibiotics and the colonization profile was noted. Definite septicemia was documented, during hospitalization, in 60 cases (16.7%), however only 18 (4.9%) were associated to gastrointestinal colonization (date and pathogen accordance).

Conclusion: A precaution health care strategy, driven by the nasal/perineal swabs could contribute to the reduction of the neonatal sepsis.
SIGNIFICANCE OF TRANFONTANELAR NEUROSONOGRAPHY IN NEONATAL BRAIN INFECTIONS

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INTRODUCTION: Based on certain ultrasound findings we suspected intrauterine infection of the CNS, which we serologically confirmed. With neurosonography we can follow the course of meningitis in order to timely detect complications and taken timely treatment. Causes of intrauterine infection are: toxoplasmosis, cytomegalovirus, rubella and herpes simplex virus type II. Infection occurs infiltration of brain membranes and perivascular infiltration of the brain parenchyma, with reactive proliferation of glial cells, which leads to focal necrosis, the occurrence of cysts and later calcification due to deposition of calcium in leukomalacia tissue. Affected ependymal chamber causing reactive gliosis with ingrowth of connective strips in the ventricles, by disrupting the flow of cerebrospinal fluid through a natural narrowing and the common development of hydrocephalus. Tissue necrosis and insufficient perfusion (all of which contributes to cystic degeneration) causes atrophy of the brain. MATERIALS AND METHODS: In twenty years the Pediatric Clinic Kragujevac neurosonographic Viewed 5240 neonates. RESULTS: Ultrasound calcification diagnosed in 143 neonates. Serological analyzes confirmed intrauterine infection in 32 (toxoplasmosis in 8, 21 in cytomegalovirus and rubella in 3 cases). In the same period, 72 neonates diagnosed purulent meningitis were followed. In 18 neurosonographic observed complications (ventrikulitis 7, subdural effusion 4, brain abscess 3, leukomalacia 3 and infarction in one case).

CONCLUSION: Neurosonography as a non-invasive method significantly contributed to the diagnosis of intrauterine infection of the CNS and detecting complications of meningitis in the first months of life.
INVASIVE FUNGAL INFECTIONS IN NEONATAL AND ONCO-HEMATOLOGICAL PEDIATRIC PATIENTS: A COMPARATIVE EVALUATION OF (1,3)-BETA-D-GLUCAN, MANNAN AND ANTI-MANNAN ANTIBODIES

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Background and aims. An early diagnosis of invasive fungal disease (IFD) is essential in neonatal intensive care unit and onco-hematological pediatric settings: the fungemia is one of the major problems in these patients, thus the availability of new diagnostic techniques could improve their outcome. The objective of this study was to evaluate the diagnostic performance of 1,3-beta-D-Glucan (BDG) in comparison with the Candida mannan (CM) antigen and anti-Candida antibodies' test in pediatric population with candidemia (no. 7 due to Candida parapsilosis and no. 13 to Candida albicans).

Methods. Ten preterm infants and ten onco-haematological pediatric patients with Candida bloodstream infections (BSI) already proven by positive culture were examined. In all patients, serum BDG, CM antigens and anti-Candida antibodies were tested on the same day as the positive blood culture and repeated on a sample drawn 24 h later. The study was approved by the Ethics Committee of Hospital and informed consent was obtained from the representative of the patients.

Results. All patients were positive (>80 pg/mL) to the BDG, while CM antigen was negative in all patients with Candida parapsilosis fungemia (7/20) and in one further case due to Candida albicans (1/13). The anti-mannan antibodies were always negative.

Conclusions. These preliminary results give evidence of a potential utility of BDG for early diagnosis of IFD in neonatal and onco-hematological pediatric patients with candidemia. However, its usefulness in routine clinical practice must be confirmed by further studies.
ESSENTIAL NEWBORN CARE PRACTICES AND EARLY-ONSET NEONATAL SEPSIS: EVIDENCE FROM RURAL BANGLADESH

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Background: Newborn deaths now accounting for 61\% of all under 5 mortality. Essential newborn care (ENC) practices are deemed to be vital in increasing chance of survival of newborn. This study assessed the newborn care practices and its association with possible sepsis in rural Bangladesh.

Method: We used data from a large community based trial in Bangladesh where pregnant women were enrolled from 2013-2015 covering 29,497 newborns. Sepsis was defined using neonatal danger sings reported by 'The Young-Infants Clinical Science Study Group". Three key ENC practices were explored (safe cord-care, thermal care and initiation of breast feeding) following National Neonatal Health Guideline, Bangladesh.

Results: More than half of the respondents [66.9\%, (n=19,735)] started breastfeeding within one hour of birth, while 63.6\% (n=18,759) practiced standard cord care. Recommended bathing practice beyond 72 h was 46.4\% while only 9.1\% practiced skin-to-skin contact. Overall only 2.3\% (n=691) complied with standard thermal care practices (drying, delayed bathing and skin contact).

During first week of life around 15\% newborns had signs of sepsis. Neonatal sepsis was lower among children for whom appropriate cord care was practiced [OR=0.66, (95\% CI:0.62-0.70)], and initiated breastfeeding within an hour of birth [OR=0.59, (95\%CI:0.55-0.63)]. Sepsis was also lower among children whose mother received advice on ENC [OR=0.85, (95\%CI:0.79-0.90)]. Overall, recommended ENC practices were associated with lower incidence of neonatal sepsis [OR=0.51, (95\%CI:0.34-0.77)].

Conclusions: Early-onset neonatal sepsis can be prevented by appropriate ENC practices. Promoting ENC practice through community-based interventions has potential to significantly reduce neonatal sepsis in rural Bangladesh.
Introduction: Coagulase-negative Staphylococcus (CoNS) bacteremia are the most common cause of sepsis in Neonatal Intensive Care Units (NICU), being vancomycin (VAN) empirical therapy. Importance of defining a PK-PD parameter able to relate clinical outcome and serum VAN.

Objectives: Clinical microbiological description and therapeutic drug monitoring (TDM) of VAN in neonates with CoNS bacteremia.

Methods: Retrospective descriptive study of episodes of CoNS during 2013-2014. Demographics, management and adjustment of VAN, serum creatinine and trough VAN concentrations (TVC) (ARCHITECT i1000) were included. Identification and sensitivity was performed by Vitek 2C/Vitek MS, susceptibility by disk diffusion and Etest VAN(mg/dl)

Results: 56 episodes of 49 patients. The patient characteristic are shown in Table. From the typing of isolates (n:46, 82.1%) were S. epidermidis 67.4%. Resistance to methicillin was 92.9%, antibiotic resistance are showing in Graphic 1. Range of VAN MIC was 0.125 to 3. Determination of the TVC was performed in 80.3% (n:45). Dosage adjustment is performed in 78.6% (n:44). The presence of suppurative thrombophlebitis (STP) was evaluated, showing thrombosis n:11 events. About clinical outcome, was considered treatment failure in who died within 10 days after the last isolation (n:3), with a diagnosis of CRBSI and without STP with persistently positive blood cultures(PBC) despite removed catheter (n:1) and those with CRBSI persistent for more than 7 days and with more than 4 PBC(n:1). In 3 of the 4 had TVC of 15mg/ml and only one had 10mg/ml.

Conclusions: Following of CoNS bacteremia with STP search and TVC would be necessary to determine therapeutic efficacy.
IS MATERNAL VITAMIN D DEFICIENCY A RISK FACTOR FOR NEONATAL SEPSIS?

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ABSTRACT

BACKGROUND

Sepsis is the commonest cause of neonatal mortality. It is responsible for 30-50% of total Neonatal deaths in developing countries. Vitamin D Deficiency during pregnancy is highly prevalent Worldwide. VDD in pregnancy has adverse effects on maternal and fetal health. Obstetrical complications like low birth weight babies, IUGR, GDM, Pre Eclampsia. Neonatal complications like Skeletal deformities in babies, Rickets, increased rate of preterm deliveries & increased perinatal mortality are expected.

OBJECTIVES

To find relation between Maternal Vitamin D deficiency and proven Neonatal Sepsis.

METHODS

Study was done in Tertiary care centre in Kashipur Uttrakhand for a period of one year. A prospective randomized study conducted on 68 pregnant women who were found to be vitamin D Deficient. All subjects were analyzed in full detail and vitamin D estimation done during 1st visit, in first trimester. Blood cultures were done in all the babies admitted to NICU for various reasons and compared with control.

RESULTS

Out of total 68 subjects, 58 met the inclusion criteria who had required NICU admission due to various reasons and developed neonatal sepsis (EOS). Severe vitamin D deficiency was significantly more common in the sepsis group.

CONCLUSION

Vitamin D Deficiency in pregnancy continues to be a major epidemic worldwide with maternal and fetal complications and neonatal sepsis was found to be associated with severe maternal Maternal Vitamin D Deficiency in comparison to control and Vitamin D is required to be supplemented in mothers during antenatal period.

KEYWORDS

Neonatal Sepsis, Maternal Vitamin D deficiency, Perinatal outcome.
DIAGNOSIS OF NEONATAL BACTERIAL MENINGITIS IN INFANTS WITH AND WITHOUT PRIOR ANTIBIOTIC EXPOSURE USING THE FILMARRAY® MENINGITIS PANEL (FAMP)

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Background and aims: FAMP multiplex PCR (BioFire, USA) detects 6 bacterial, 8 viral and 2 fungal agents of meningitis directly from CSF in 1 hour. Antibiotic treatment of pre-partum mothers or neonates may render CSF bacteria unculturable. We compared FAMP and bacterial culture results in neonates with suspected meningitis and abnormal CSF.

Methods: CSF samples from 55 (53 antibiotic pretreated; 8 bacteremic) neonates (≤3 months) with possible meningitis (fever, leukocytosis, abnormal CSF) were analyzed by both techniques. Study approved by WSU IRB.

Results: 5 CSFs (4 patients) were FAMP positive; Patients 1 (3 months) and 2 (27 days) were FAMP and culture-positive for Streptococcus agalactiae (GBS) prior to antibiotics. CSF from patient 1 was culture- and FAMP-negative after 16 days of antibiotic. After 3 days of antibiotics, CSF from patient 2 remained GBS FAMP-positive but became culture-negative. Two culture-negative, FAMP-positive patients had received antibiotics before spinal tap. Patient 3 (1 day) had E.coli bacteremia, and was E.coli FAMP positive; his febrile mother received 2 days of pre-partum antibiotics. Patient 4 (25 days) received 2 days of antibiotics, was GBS FAMP-positive and had positive cocci on gram stain. No patient was CSF culture positive and FAMP negative.

Conclusion: FAMP detected 2 GBS and 1 E. coli in CSF samples from antibiotic-treated neonates with negative CSF cultures and 2 from untreated patients with positive cultures. Although numbers are small, FAMP appears a sensitive, rapid tool for the diagnosis of bacterial meningitis in neonates, including those with negative CSF cultures after antibiotic treatment.
The First Case of *Raoultella planticola* Conjunctivitis and Bacteremia in a Newborn in Turkey

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Introduction and aim:

*Raoultella planticola* is an aerobic, Gram-negative bacterium within the *Enterobacteriaceae* family. *R. planticola* is rarely associated with clinical infection and child cases have been scarcely reported.

Here in we report the first infection case in a newborn caused by *R. planticola* in our country which was successfully treated with piperacillin-tazobactam.

Case:

A 28-gestational week-old, 880gr weighting female was born to a preeclamptic mother. She was extubated on the 10th postnatal day and full enteral feeding was achieved. When the patient was stable and acute phase reactants were negative, purulent ocular discharge was detected. The conjunctival swab culture was positive for *R. planticola*, which was resistant to ampicillin and piperacillin and sensitive to amoxicillin-clavulanate, gentamycin, cefuroxime, trimethoprim-sulfamethoxazol, piperacillin-tazobactam and carbapenems. Fever (38.5 °C), desaturation and apnea were observed and she was intubated. She had leucopenia (2700/mm³), thrombocytopenia (83,000/mm³) with elevated C-reactive protein (35 mg/L) and procalcitonin (72 ng/ml) levels. Blood, urine and cerebrospinal fluid (CSF) cultures were taken and empirical vancomycin and meropenem were started. Blood culture resulted positive for *R. planticola* with the same antibiogram. CSF and urine cultures were steril. Antibiotherapy was de-escalated to piperacillin-tazobactam. CRP and procalcitonin levels started to decrease and leucopenia and thrombocytopenia resolved. Patient was extubated and antibiotherapy was completed to 14 days.

Conclusions:

To our knowledge, there has been no newborn report of *R. planticola* bacteremia in Turkey. Only two newborn bacteremia cases and no newborn conjunctivitis case were reported all over the world. It should be kept in mind that *R. planticola* can be the etiologic agent in neonatal infections.
Background: In Costa Rica, the incidence of invasive meningococcal infections in children is very low if compared with developed and South American countries. Early neonatal sepsis and/or meningitis by meningococcus are very uncommon and the incidence in Latin America is unknown; however, mortality rates in this age group reach 40-50% in other countries.

Case: A full-term 6-day-old girl born to a teenager mother who had an unremarkable pregnancy was referred to our only national children’s hospital with a 24-hour history of fever and irritability. On admission, temperature was 38.4 C, the other vital signs were normal, she was irritable, had a normal neurological examination, and no purpuric/vasculitic skin lesions. Laboratory analysis revealed normal CBC. CRP was 289 mg/L, and CSF had undetectable glucose, proteins 611 mg/dL, erythrocytes 0/mm³, leukocytes 30,000/mm³ (70% neutrophils, 30% lymphocytes), and few Gram-negative diplococci on stain. Intravenous high-dose ampicillin and cefotaxime were started. At 96 hours, serogroup B fully susceptible meningococcus was isolated in CSF and blood cultures, therefore therapy was changed to sodium penicillin and a total of 12 days of intravenous antibiotics was given. Repeat blood cultures were sterile. Congenital asplenia was ruled out. She recovered well; however, abnormal auditory evoked potentials were documented prior to discharge.

Conclusions: Although very uncommon, N.meningitidis should be kept in mind among the etiologies of neonatal bacterial meningitis and sepsis, even in the absence of purpuric skin lesions or shock. The most appropriate length of intravenous antibiotics for meningococcus in this particular age group is unknown.
BACKGROUND AND AIMS:
Syphilis in pregnancy is an infection with widespread complications for both the infected woman and her fetus. The aim of this study was to review the diagnostic experience of newborns with congenital syphilis at our institution.

METHODS:
Retrospective, descriptive and analytic review of the medical records of pediatric patients with serologic confirmed diagnosis, hospitalized between 2004 and 2014. Demographic characteristics, clinical history and comorbidities were analyzed.

RESULTS:
Our study identified 24 cases, 58% female, with median age of 1 day at diagnosis. In our sample, 71% were full-term pregnancies and 75% had adequate weight for gestational age. There was no health follow up in 25% of pregnancies, 17% had a history of spontaneous miscarriage and there was a previous history of treatment for syphilis in 8%. Diagnosis of maternal and congenital syphilis consisted in a reactive VDRL, followed by FTA-abs positivity and 42% of cases received appropriate treatment during pregnancy. Newborns were asymptomatic in 79%, and all performed lumbar puncture. There were 6 cases of abnormal cerebellar sonography, 4 of them with chorioretinitis and 1 with thrombocytopenia; another newborn had isolated chorioretinitis. Median duration of hospitalization was 16 days, and all completed 14 days of aqueous penicillin G. Sequelae was present in 8%.

CONCLUSION:
Complete resources for infection tracing, adequate prenatal care, proper syphilis screening, and standardized treatment and follow-up are essential. Prenatal testing to prevent congenital syphilis must not fall in our priorities as the rates of infectious syphilis in women approach elimination.
Background and AIMS

Individual of any age, hospitalized with flu-like illness and to present dyspnea or O2 saturation <95% or respiratory distress. The death must be registered by Severe Acute Respiratory Syndrome (SARI) regardless of hospitalization. The objective of this study is to describe the epidemiological profile of SARI cases of Influenza in Brazil in 2014.

Methods

Descriptive study. Data analysis, according to records in the National Notifiable Diseases System (Sinan), by age group, federal unit, viral circulation and evolution.

Results

In 2014 were reported 18 488 cases of SARI, these 1,794 confirmed by Influenza. Noteworthy is the state of São Paulo with 36% (647 / 1,794) cases. Of confirmed, it was observed that 419 cases are the age group under 10 years, and this 55.4% (232/419) were confirmed for influenza A in children under 2 years. This year there were 325 deaths from influenza, this 6.4% (21/325) in children under 10 years.

Conclusions

Influenza is considered a major public health problem in Brazil. The monitoring of cases of SARI enables surveillance to recommend measures to prevent and control.
MENINGOCOCCAL MENINGITIS IN HOSPITALIZED CHILDREN IN A TERTIARY HOSPITAL IN THE
SAVANNAH REGION OF NORTHERN NIGERIA: 2000-2012

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Background/Aims: - Meningococcal meningitis occurs in epidemic and sporadic forms in
Nigeria. This study describes meningococcal meningitis in children.

Methods: - CSF reports of children with suspected acute pyogenic meningitis from 2000-2012
were analyzed in federal teaching hospital Gombe, a 541 bed, 15 year old hospital.

Results: - 11,974 children were admitted. 2,647 lumbar punctures yielded 116 (4.4%) positive CSF
cultures. Neisseria meningitides ranked highest accounting for 41% (47/116). Males were 57.4%
(27/47) and females 42.6% (20/47).

34 %(15/47) were 10-18years; 27.7 %(13/47) infants and 23.4 %(11/47) 6-10years. Children 1-
5years and neonates were 6.4%(3/47) and 8.5%(4/47) respectively. 42.6%(20/47) were
<5years. 53%(25/47) were in 2009 during an epidemic. In 2009, 7%(4/58) died, all (100%) below
2 years. 7%(4/58) had eight cranial deficit and 1/58(2%) cortical blindness. There were no
isolates in 2002, 2005 and 2008. 60%(28/47) occurred during the hot dry months of March/ April.

CSF samples were turbid in 72%(34/47); 17%(13/47) were clear. 81%(38/47) had CSF
pleocytosis >5 cells/mm³, mainly polymorphs; 72%(34/47) elevated fluid protein; 90%(42/47)
CSF-plasma glucose ratios < 75%. 39%(30/77) demonstrated gram negative diplococci
on gram stain but were culture negative, possibly due to prior antibiotic use.

75%(33/44) were sensitive to chloramphenicol; 70%(31/44) to gentamycin; and 97%(44/45)
resistant to benzyl penicillin.

Conclusion: - Epidemic meningococcal meningitis has high mortality in children <2years.
Introduction and Aim: Acinetobacter ursingii is an aerobic, gram-negative, opportunistic microorganism which is rarely isolated among Acinetobacter species. There are few reports of infection with A. ursingii in the literature. In this report, we present two immunocompetent infants developed bacteremia due to A. ursingii.

Cases: The first case is a two-month-old boy who had been hospitalized in pediatric surgery unit for suspected tracheo-esophageal fistula because of recurrent aspiration pneumonia unresponsive to antibiotic therapy. On the admission he had tachypnea and subfebrile fever. The second case is a fourteen-month-old boy with chronic diarrhea. Their peripheral blood cultures signaled growth for gram-negative bacilli. Empirical antibiotic treatment with meropenem and amikacin were started. Microorganism was identified as Acinetobacter ursingii by Vitek MS with a reliability of %99.9. A. ursingii was susceptible to ampicillin-sulbactam, gentamicin, ciprofloxacin and imipenem. The antibiotic therapy was deescalated to ampicillin-sulbactam. On the third day of the treatment, control peripheral blood culture was taken and became sterile. They were successfully treated with ampicillin-sulbactam.

Conclusion: Although A. ursingii recently isolated from a clinical specimen, reports of infection with A. ursingii in children are rare. Even A. ursingii is known as a rare causative agent of invasive infections, it should be kept in mind as an opportunistic microorganism in children.
SEROTYPE 3 STREPTOCOCCUS PNEUMONIAE INVASIVE PNEUMOCOCCAL DISEASES AND PNEUMONIA IN A REFERRAL CHILDREN HOSPITAL, 1998 TO 2014

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Background. S.pneumoniae is the most common cause of Community Acquired Pneumonia (CAP). In Uruguay following introduction of PCV7 a reduction in CAP and vaccine serotype pneumococcal (VST) CAP was observed. The effectiveness for serotype 3 Invasive Pneumococcal Diseases (IPD) and P-CAP is under analysis in several countries.

The purpose was to describe the clinical presentation and the incidence of serotypes 3 IPD and P-CAP hospitalizations before PCV13 universal vaccination (1998 – 2009), the year of implementation (2010) and after implementation (2011 – 2014) in a referral children hospital.

Methods: Retrospective study of hospitalizations for serotype 3 P-CAP and IPD in children under 15 years old between 01/01/1998 and 31/12/2014. Hospital records were reviewed. Discharge rates, clinical features and vaccination status were described.

Results. Serotype 3 was isolated in 54 P-CAP; 38 cases before universal vaccination, 5 in 2010 and 11 in 2011 - 2014. Hospitalization rate per 10,000 before universal vaccination was 2.7 (-0.3 - 5.9), in 2010 4.5 (0.5-8.6) and 2.6 (0.3 - 5.8) in 2011 - 2014. Empyema was presented in 90.5 % of the children. During 2010 - 2014 serotype 3 was associated with necrotizing and multifocal pneumonia. Four strains were isolated from non vaccinated children hospitalized for meningitis, in 2004 (2), 2008 (1) and 2011 (1).

Conclusion: P-CAP hospitalizations remained stable after 2010 and serotype 3 is associated to complicated pneumonia.
Severe Childhood Bacterial Infections

SEROTYPE 1 AND 5 PNEUMOCOCCAL PNEUMONIA IN A REFERRAL CHILDREN HOSPITAL BETWEEN 1998 AND 2013. URUGUAY

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Background. In Uruguay the most common serotypes in pneumococcal pneumonia (PP) before universal vaccination with PCV were 14, 1 and 5. Following PCV7 introduction a significant reduction for PP hospitalization by PCV7 serotype was observed. In 2010 PCV13 replaced PCV7. The effectiveness for serotype 1 and 5 on PP are under analysis. The purpose was to describe clinical presentation and incidence of PP due to serotypes 1 and 5 between 01/01/1998 and 31/12/2013.

Methods: Retrospective study of hospitalizations for serotypes 1 and 5 PP in children under 15 years old between 01/01/1998 and 31/12/2013 was described. Clinical presentation of children hospitalized between 01/01/1998 and 31/12/2005 were compared with the group of children hospitalized between 01/01/2010 and 31/12/2013. Hospital records were reviewed. Discharge rates, clinical features and vaccination status were described.

Results. Hospitalization rates/10,000 discharges for serotype 1 PP before universal vaccination were 14 (7-21), in 2010: 9 (3.4-15) and 1.3 (-0.9-3.5) after vaccination (2011-2013). For serotype 5 PP before universal vaccination hospitalization rate was 11 (5-17.2), in 2010: 3 (-0.3-6.4) and 1 (-0.9-2) after vaccination. PP due to serotypes 1 and 5 was not observed in PCV13 vaccinated children. During 2010 – 2013, PP due to serotypes 1 and 5 was associated more frequently with severe infections (empyema, sepsis and intensive care requirements) than in the group of children hospitalized during the period 01/01/1998 to 31/12/2005.

Conclusions: A significant reduction in serotypes 1 and 5 PP hospitalization was observed. The disease in these few cases is now much more severe.
BACTERIAL INFECTIONS IN HIV INFECTED CHILDREN ADMITTED WITH COMPLICATED SEVERE ACUTE MALNUTRITION IN DURBAN, SOUTH AFRICA

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Introduction

Malnutrition is a common clinical finding at initiation of antiretroviral treatment (ART) in Sub-Saharan Africa. Bacterial infections are frequent and associated with high mortality in these patients, with clinical signs that are masked.

A randomised controlled trial among children presenting with SAM and HIV was conducted, assessing the clinical and pharmacokinetic responses to early versus delayed antiretroviral therapy. We present a description of all bacterial pathogens isolated and assess the factors influencing bacterial infections from this cohort.

Methods

Microbiological sampling included blood cultures and urine cultures at admission. Urine cultures, sputum cultures, lumbar punctures and blood cultures were performed during the child’s inpatient stay at the discretion of the clinician. We characterized all positive bacterial cultures into 2 groups, samples taken within two days of admission or taken between two and thirty day of admission.

Results and Discussion

47.5% of the cohort were culture positive for pathogenic bacteria at least once during the first 30 days of their admission. A trend towards increased thirty-day mortality in children with positive bacterial cultures was seen. All organisms, culture sites and sensitivities are described.

Comparison between children with positive versus negative bacterial cultures within two days after admission revealed no significant characteristics however urine culture accounted for 32% of positive cultures on admission.

High rates of hospital-acquired infections (HAIs) and antibiotic resistance was seen. Timing of ART initiation did not influence frequency of HAIs.

The data highlights the need for antibiotic stewardship programs, hygiene initiatives and isolation facilities, in nutritional units.
Female 2 months, born USA, resides Arandas, Jalisco 1 month ago. Admitted for Fever and convulsions.

2 days prior applying vaccine (pneumococcal and Quintuple), because fever, go to pediatric consultation and dx. Postvacunal reaction handles with paracetamol and physical media, 1 day notice a rare eye movements and look fixed, they return with pediatrician dx. Seizures, same management, the day following return seizures, they come with 2d Pediatrician, repeated treatment, go with 3rd pediatrician, diagnosed acute otitis media and suggests go to Instituto Mexicano del Seguro Social (IMSS) where keep management, at night seizures include hand and arm right, attend Hospital Regional in Tepatitlán they give the same diagnosis and management, the hospitalization by tonic-clonic convulsions generalized febrile attend clinical particular: I.V. solutions, physical media, metamizol, diazepam and DFH, 3:30 hours later, respiratory arrest, starts assisted ventilation, laboratory glucose 156, 9.2 Hb, Hto. 30.1, WB 9200, PMN. 60, band 0, linf.36., TAC’s skull diffuse cerebral edema. The day following consultation to pediatric infectology re-interroga relatives reporting father and 2-year-old sister with upper respiratory infection and grandmother neumopata chronic.

P.E. Good color and hydration, unconscious, pulmonary well ventilated, without visceromegalias, capillary filling 2 sec. Lumbar puncture with slight increase in pressure, yellow, turbid, glucose 14 (156 central), protein 0.7 mg/dl, leukocytes 30 x field (PMN 60%, Linf. 35% 3% monocytes), gram, diplococci gram positive (lanceolate). Starts amikacin and ceftriaxone, culture with coco gram +, Antigen capsule + Streptococcus pneumoniae.

He moved to 3rd level hospital and died 3 days.
SEPTIC PULMONARY EMBOLISM SECONDARY TO OSTEOMYELITIS IN A SEVEN-YEAR-OLD CHILD
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Background and aims: Septic pulmonary embolism (SPE) which is an emergency is rarely seen in children. We presented a child with SPE secondary to osteomyelitis.

Methods: A 7-year-old boy with respiratory distress was followed with the diagnosis of pneumonia and pleural effusion by using intravenous antibiotics and oxygen for 12 days, and then was sent to our center because consolidated areas in his lungs gained nodular characteristics, new cavitary lesions appeared and his clinical status did not improve. At presentation, he was tachypneic and hypoxic. His physical examination revealed bilateral wide-spread rales and diminished breath sounds at the bases. On follow-up, he developed left hip and leg pain. An increase was noticed in the diameter of left thigh and leg.

Results: His pelvic CT was compatible with osteomyelitis, left lower extremity venous doppler ultrasound was compatible with acute deep vein thrombosis (DVT). On thorax CT, "feeding vessel sign" was detected in walls of multiple cavities. No pathology was detected in thrombotic and immunologic work-up. With radiological and clinical findings, patient was diagnosed as DVT and SPE secondary to osteomyelitis. He was treated with teicoplanin and meropenem for six weeks. Low-molecular-weight heparin was administered for DVT. Patient's respiratory distress and CT findings regressed. Repeated doppler ultrasound showed recanalization of thrombus.

Conclusions: SPE, although rare, can be encountered in childhood. Typical features on CT are peripherally located multiple round or wedge shaped nodules or cavities varying in size from 0.5-3.5 cm. Main therapeutic approach is the treatment of primary infection.
NECESSITY OF MANDATORY VACCINATION AGAINST BACTERIAL MENINGITIDES

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²Epidemiology, Medical University, Plovdiv, Bulgaria
³Microbiology, Medical University, Plovdiv, Bulgaria
⁴Anatomy histology and embryology, Medical University, Plovdiv, Bulgaria

In infectious pathology, bacterial meningitides and their complications are one of the most common causes of childhood death. Etiological agents include basically Streptococcus pneumoniae, Neisseria meningitidis, Haemophilus influenzae type b (Hib) and Staphylococcus spp. Some of these agents can be almost completely eliminated through routine vaccination. A mandatory vaccination was started against Hib and pneumococcal meningitis in Bulgaria in 2010.

Aim: We assessed the structure of etiologically confirmed bacterial meningitides in children /0-14 ys/ treated in the clinic of infectious diseases, Plovdiv, Bulgaria in two periods: first (1990-1999) and second (2007-2015). The data were compared.

Methods: We used routine methods for the collection and analysis of data and conventional microbiological detection methods.

Results: The number of patients with etiologically confirmed bacterial meningitides decreased by 48% (from 73 cases in the 1st period to 38 cases in the second one) or the average annual number of cases has decreased from 7.30 to 4.75 per year. The etiological structure between the two periods was changed: Neisseria meningitidis cases decreased during 2nd period from 60.27% to 44.74%, p>0.05, and Haemophilus influenzae type b meningitis decreased from 19.18% to 10.53%, p>0.05. Unchanged remained meningitis caused by Streptococcus pneumoniae - from 19.18% to 18.42%, p>0.05. Staphylococcus spp. meningitis is established for the first time in the 2nd period (10.53%).

Conclusion: A retrospective database review revealed that the implications of the vaccines showed a statistically confirmed decrease in the annual number of cases with bacterial meningitides in children in Plovdiv region, Bulgaria.
INVASIVE PNEUMOCOCCAL DISEASE (IPD) IN CHILDREN IN PORTUGAL. PROSPECTIVE STUDY (2012-2014)

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2FCM, IMM, Lisbon, Portugal
3SPP, SPP, Lisbon, Portugal

Background: The Portuguese Study Group on Invasive Pneumococcal Disease conducted a national study on IPD in children, in Portugal. The seven-valent pneumococcal conjugate vaccine (PCV7V) was licensed in 2001. PCV10V was introduced in 2009 and PCV13V in 2010. The vaccine is not included in national immunization program, and the estimated coverage rate is 79% in 2007 and is 58% actually

Aims: To analyse the incidence, clinical epidemiology data, morbidity and mortality of IPD in children in the last two years

Methods: National, multicenter study in 60 hospitals, between May 2012 and May 2014, in children <18 years old, with positive culture or PCR for Streptococcus pneumoniae in sterile body fluids

Results: A total of 172 cases were identified with an incidence rate of 23.26:100.000 children <2 years. Comparatively to previous years, the incidence rate of children with IPD increased in children ≤12 months (24.8 versus 30.6:100000). Diagnosis were meningitis (14.2%), sepsis (7.6%), pneumonia (55.2%), occult bacteremia (17.5%) and other bacteremia (5.5%). Complications occurred in 37.8% of the children and mortality rate was 1.7%. Serotype 3 and 1 was more frequent (23.0%). Emergence of non vaccine types was detected (37.8%) but also an increase in the proportion (16.0%) of PVC7 types (6B, 14, 23F), probably related to the decrease in vaccination rates (79% versus 58%) due to economic problems in the country.

Conclusion: It is extremely important to enforce the ongoing clinical, epidemiological and microbiological national surveillance of IPD to allow for precise and updated recommendations on vaccination.
BRAIN ABSCESS IN CHILDHOOD. ANALYSIS OF PREDISPOSING FACTORS, ETIOLOGY AND CLINICAL PRESENTATION.

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Background and Aims: Brain abscess (BA) is a rare disease in childhood. We studied and analyzed clinical presentation and etiological diagnosis in patients with BA admitted in a pediatric hospital.


Results: 15 children were admitted with BA; the admission rate was 3.2/10.000/year. Age range: 3 months to 15 years (median 5 years), male/ female ratio 2.7/1. The most common predisposing factor was a contiguous infectious foci 46.6% (4 sinusitis, 2 otitis media, 1 orbital cellulitis), 33.3% meningitis, 13.3% trauma, 6.6 % neurosurgical procedure. Major features: fever (86.6%), headaches (40%) and seizures (33.3%). Frontal lobe was compromised in 86 %. Pathogens were identified in 60% cases; multiple pathogens were isolated in13.3%.

Empiric antibiotic treatment including vancomycin, metronidazol and third generation cephalosporins, was prescribed in 33.3% of cases. Patients received a median of 35 days of intravenous antibiotics. 12 patients required neurosurgical procedures (80%), 2 needed a second surgery (13.3%). 5 patients had sequela at the outcome: deafness (1), neurodevelopment delay (1), hydrocephalus (2), neurodevelopment delay, epilepsy and deafness (1). No deaths were observed.

Conclusions: All patients had a predisposing factor. BA still continues to be associated with high rates of neurologic impairment.

<table>
<thead>
<tr>
<th>Primary source</th>
<th>n</th>
<th>Microorganisms</th>
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<tr>
<td>Meningitis</td>
<td>5</td>
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<tr>
<td></td>
<td></td>
<td>N. meningitis (3)</td>
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<tr>
<td>Chronic otitis media</td>
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<td>Proteus spp</td>
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<tr>
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<td>Sinusitis (one with orbital cellulitis)</td>
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<td>Streptococcus viridans</td>
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<tr>
<td>Neurosurgical procedure</td>
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<td>-</td>
</tr>
<tr>
<td>Trauma (cock peck)</td>
<td>2</td>
<td>multorganism</td>
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</tbody>
</table>
LIVER ABSCESS IN MRSA ERA: EXPERIENCE IN A PEDIATRIC HOSPITAL IN ARGENTINA.


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Background: Liver abscess (LA) is a serious and infrequent disease in children.

Aims: To describe the clinical characteristics of pediatric LA in our setting.

Methods: Retrospective review of medical charts of patients hospitalized with LA between 2009-2015.

Results: Eighteen cases of LA were included. Hospitalization rate: 19.2/10.000/year (CI95 11.4-30.3). Median age: 5 years (0.1-17), male/female ratio 3.5/1. Six patients had predisposing factors: 2 with chronic liver disease, 4 with previous abdominal surgery. Median days at diagnosis: 11. Features: Fever 100% (>14 days 55%), abdominal pain 50%. Leukocytosis 87% , elevated CRP 78% (median 121), elevated liver enzymes 33%.

Ultrasonography detected 16/18, only 2 cases were diagnosed by CT. A single abscess was observed in 66.7%. Right hepatic lobe 66.7%. Purulent material was obtained in 83% cases. 60% were positive.

Clindamycin or vancomycin plus 3rd generation cephalosporin or meropenem was used in 14 cases (77.8%). Treatment shift was needed in 3 patients. The median of treatment was 26 days of intravenous antibiotics and 48 days of total treatment. Surgical procedures were performed in 66.7%.

Conclusions: MRSA was the most frequent organism, specially in healthy children, presenting associated focus. Appropriate antibiotic treatment and eventual drainage allows good outcome without sequela or deaths.

<table>
<thead>
<tr>
<th>Associated Focus</th>
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<td>B.henselae</td>
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<td>K.pneumoniae</td>
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SUCCESSFUL TREATMENT OF TODDLER OSTEOMYELITIS ON HOME ANTIBIOTIC INFUSER THERAPY.
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\textbf{Background}:
years of age) with osteomyelitis with intravenous antibiotics 2>2) Treatment of young children Oral antibiotic therapy compliance .traditionally required lengthy hospital inpatient treatment .can be inconsistent and difficult in this age group

\textbf{Aim}:
We report a 20 month old boy with left calcaneal osteomyelitis treated with percutaneous long line and "Baxter" Pump Infuser administration of Flucloxacillin for a period of 12 days in the home setting

\textbf{Case}:
A 20 month old boy presented with left sided limp over a period of one week. He had no systemic fever. increasing pain and swelling over his left foot. Nuclear Medicine bone scan showed only mild inflammatory changes and normal radiology showed positive uptake in the left calcaneal bone.

He received two days of antibiotic as an inpatient and subsequent 12 days at home antibiotic. He was able to walk with a normal gait by 6.5 gm per 24 hours. treatment with Flucloxacillin 2 weeks oral Flucloxacillin therapy with no recurrence of symptoms.

\textbf{Conclusion}:
This patient highlights the successful treatment of young child on Infuser pump system for the length of stay in the hospital setting. This helped with consistent antibiotic therapy and shorten osteomyelitis osteomyelitis osteomyelitis.
The World Health Organization (WHO) identifies caries as one of the most prominent infectious diseases in the world. The condition affects 60-95% of children in developed and developing countries with especially high rates in Latin America and Asia. From a public health perspective, the rate of early childhood caries (ECC) in developing countries is particularly alarming. The objective of this study was to assess ECC in rural areas of El Salvador in Central America and to investigate the changes in caries and mouth pain in the presence of community-based interventions. Results showed that incorporation of a community oral health education and fluoride supplementation program, using trained community-based health workers, contributed to reductions in children’s caries experience and mouth pain over time.
COMMUNITY ACQUIRED METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS AS A RISK FACTOR AND BEDSIDE MARKERS FOR COMPLICATIONS OF OSTEOARTICULAR INFECTIONS IN A PEDIATRIC HOSPITAL IN ARGENTINA

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Background: Management of osteoarticular infections in children is a challenge. Incidence rates and community acquired methicillin resistant Staphylococcus aureus (CA-MRSA) isolations are increasing.

Aims: To analyze etiology, clinical outcomes and risk factors for complications.

Methods: Cross-sectional study including children under 18 years hospitalized with osteomyelitis (OM) and septic arthritis (SA) between 01/2012-12/2014.

Results: Hospitalization rate 58.2/10000/year (CI95 49.7-67.8). We studied 142 patients, 66.1%(94/142) OM and 33.8%(48/142) SA. Male 60.6%(86/142). Mean age (mo) 89.5 ± 66.3 in OM and 69.5 ± 49.9 in SA. Positive cultures in 65.9% (62/94) OM and 37.5%(18/48) SA (p<0.01). In OM 80%(50/62) of all isolates were Staphylococcus aureus(Sau), 66% CA-MRSA (p=0.01), 2 isolates with vancomycin MIC of 2 mg/L. In SA, 66.7%(12/18) of all isolates were Sau, 58.3% CA-MRSA. Resistance to clindamycin: 5% (2/40). Complications in OM: 20.2% (19/94), most frequent were myositis, pandiaphysitis, lung involvement; in SA: 8.3%(4/48). CA-MRSA rate in osteomyelitis in 2012: 56.3%, increasing to 66% in 2013-2014. Bacteremia rates: OM 26.6%(25/94) vs. 12.5%(6/48) SA (p=0.05). Multivariate analysis: CA-MRSA is a risk factor for complications (OR 26.2, CI95 4.0-173, p<0.01). Higher levels of C-reactive protein (CRP) were significantly associated with complications (p<0.01); CRP levels ≥95 mg/L at admission predicted adverse outcomes (sensitivity 87.5%, specificity 68.7%, AUC 0.8). Children with CA-MRSA had longer hospital stay (mean 21.1 ± 13.1 vs. 14.4 ± 8.3, p<0.01).

Conclusions: CA-MRSA rates have increased. This microorganism is an important risk factor for complications and longer hospital stay. Our data showed that high CRP levels at admission predict adverse outcomes.
REEMERGENCE OF INVASIVE HAEMOPHILUS INFLUENZAE TYPE B INVASIVE DISEASE IN A PEDIATRIC HOSPITAL OF ARGENTINA

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Background: since 1997, mandatory infant immunization has dramatically reduced Haemophilus influenzae type b (Hib) invasive disease in Argentina. Active surveillance is important to opportunely detect variations on these trends.

Aims: To analyze burden of Hib infections over the last years.

Methods: Cross-sectional study including all patients hospitalized with Hib infection since 2012 to date.

Results: Twelve previously healthy children were admitted, male/female ratio 3:1. Median age: 13.5 (4-114) months; 75% younger than 2 years. Nine patients (75%) had complete vaccination schedule, with two or more doses of DPT-Hib-HBV vaccine. Hospitalization rates variations per year are described in below:

<table>
<thead>
<tr>
<th>Year</th>
<th>Hib admissions (n)</th>
<th>Total hospital admissions (n)</th>
<th>Hospitalization rates (per 10,000 admissions/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>1</td>
<td>9,764</td>
<td>1.02</td>
</tr>
<tr>
<td>2013</td>
<td>2</td>
<td>9,304</td>
<td>2.15 (CI95: 0.26-7.76)</td>
</tr>
<tr>
<td>2014</td>
<td>3</td>
<td>9,066</td>
<td>3.31 (CI95: 0.68-9.67)</td>
</tr>
<tr>
<td>2015 (Jan-May)</td>
<td>6</td>
<td>3,793</td>
<td>15.8 (CI95: 5.81-34.4)</td>
</tr>
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</table>

Clinical presentation: meningitis (8/12), pneumonia (4/12) and arthritis (3/12). All patients with meningitis had positive blood cultures, two required surgical drainage of subdural abscess. Hib was isolated from blood in 9/12 cases, cerebrospinal fluid in 4/9, joint fluid in 2/3 and pleural fluid in 1/3. Median WBC: 14,600/mm³ (2,900-42,900) and median C-reactive protein level 78mg/L (9-358). Median hospitalization stay: 13 days (8-41). Four patients required intensive care. None patients died. Immunological studies ruled out immunodeficiency in 9 patients.

Conclusions: Invasive Hib infections increased over the last few years in our setting. Surprisingly adequate immunization was observed in the majority of patients. Further studies should be done to confirm this preliminary data and evaluate possible causes.
MENINGOCOCCEMIA OF SEROGROUP Y
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Invasive meningococcal disease (IMD), commonly manifested as meningitis and/or septicemia, is caused by Neisseria meningitidis which have two peaks of incidence, highest in infants and young children and lower in the elderly. Meningococci have different serogroups with serogroup A, B, C, W-135, X and Y strongly associated with IMD. Different serogroups have a specific distribution around the world with an overall increase of incidence of serogroup Y in the last years.

According to European data, and in our department as well, there is an increasing incidence of IMD caused by serogroup Y in the last 5 years. We report a 6-year-old female child with sudden onset of fever and abdominal pain and no other changes on physical examination, including skin lesions or meningeal signs. Subsequently, patient presented with petechial lesions on the trunk and legs, associated with coagulation disorders and an increase of inflammatory parameters. Given the possible diagnosis of sepsis, patient started empirical antibiotic therapy with ceftriaxone. Neisseria meningitidis was identified on blood cultures, with real-time polymerase chain reaction positive to serogroup Y. Patient presented clinical and laboratory improvement and was discharged without complications.

The knowledge of the IMD incidence rates according to serogroup provides relevant information to public health authorities in order to implement the most appropriate vaccination program for each country. Thus, if serogroup Y continues to increase in Europe, we will probably need to adopt different meningococcal vaccination because it still remains the best way to prevent IMD.
CONCOMITANT BACTERIAL INFECTION AMONG FEBRILE MALNOURISHED NIGERIAN CHILDREN WITH MALARIA

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BACKGROUND: Malaria is known to increase susceptibility to bacterial infection which adversely affects the outcome in children leading to increased mortality. However, not much is known about this co-morbidity among malnourished children which are more susceptible to malaria.

Aim: to determine the prevalence of concomitant bacterial infection among febrile malnourished children with malaria and to document the pattern of bacterial isolates.

Material and Methods: This is a cross-sectional prospective study in which all consecutive malnourished children presenting with fever and in whom diagnosis of malaria was made microscopically were enrolled. The isolation of bacteria was using automated BACTEC method. The study was conducted between May to October 2013 in the Emergency Paediatrics Unit of Aminu Kano Teaching Hospital Kano Nigeria.

Results: Sixty five malnourished children had malaria during the study period. Of these 33(50.7%) had concomitant bacterial infection. The bacterial isolates included 16(48.5%) Gram- positives and 17(51.5%) Gram-negative bacteria with the Staphylococcus aureus and Escherichia coli been the most predominant isolates in each group respectively.

Conclusion: Sepsis work up should be an integral part of managing any febrile child in whom diagnosis of malaria is made or presumed as this will not only improve the outcome but also ensure reduction in the under five mortality and the achievement of the millennium developmental goals.

Acknowledgement: I appreciate the support of CAPBID team and my fellow colleagues for making this research a reality, thank you all.
INVASIVE ACINETOBACTER INFECTIONS IN A PEDIATRIC HOSPITAL IN SAO PAULO, BRAZIL: A THREE-YEAR HOSPITAL-BASED SURVEILLANCE STUDY

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Background and aims: invasive Acinetobacter infections are important cause of mortality in children and of increasingly importance in health care-associated infections, due to it’s extended antimicrobial resistance patterns. Bloodstream infections in a Pediatric Unit were analysed to determine risk factors and antimicrobial susceptibility.

Methods: data from children with positive blood cultures for Acinetobacter spp. from January, 2010 to January, 2013 was collected. Patient's age, sex, antimicrobial susceptibility, underlying condition, need of PICU, length of hospitalization prior to specimen collection, and patient outcome were analysed.

Results: fifty-two pediatrics patients with non-duplicate Acinetobacter spp. isolates were identified during the study, fifty-one (98%) of them as A. baumannii and one as A. lwolfii (2%). Fifty-two percent were male and 48% were female, with the mean age 5.5 years. Base comorbidities were seen in 49 patients (94.2%), of which cardiopathy (19.2%), prematurity (15.4%), gastrointestinal/hepatic disorders (13.5%) and oncologic/hematologic diseases (11.5%) were the most prevalent. Ten children (19.2%) needed invasive procedures. Crude mortality rate was 30.8%, with higher rates among those with multidrug-resistant isolates (75%) than those with susceptible isolates (25%). Median hospitalization time was 52 days, during which 88.5% needed PICU. Isolates were resistant to amikacin (34.6%), ciprofloxacin (42.3%), ampicillin+sulbactam (36.5%) and meropenem (42.3%). Twenty-two patients (42.3%) had multidrug-resistant isolates, from which 13 (59%) of them died.

Conclusions: Acinetobacter spp is an emerging and difficult-to-treat pathogen in pediatric hospitalized patients, especially in PICU. Risk factors for A. baumannii infections were presence of base comorbidity, need of invasive procedures and long periods of hospitalization.
Background: Brain abscess (BA) is an uncommon intracranial suppurative infectious disease, especially in children. Treatment involves surgery and prolonged courses of antibiotics. There is no consensus on the optimal approach. Our objective was to review management and outcome of BA in pediatric departments of Tunisian middle region.

Methods: Forty one patients with brain abscess are analyzed retrospectively, which were treated between 1994 and 2014, according to age, clinical symptoms, etiologic factors, infecting organisms, prognostic factors, localization, diagnostic and treatment methods and outcome.

Patients with mycobacterial, parasitic or fungal abscesses and cases with subdural empyema were excluded.

Results: Of all the children, 75% (31/41) were male patients. Patients were aged between 4 days and 16 years (average age=4.9 years).

Fever and headache were the most common presenting symptoms (60%).

BA was confirmed in all patients on the basis of cranial imaging (CT scan) or stereotactic aspiration. The majority of BAs were supratentorial (n=38, 92%). The causes were locoregional infections (63.4%), metastatic (12.1%), traumatic (7.3%) and cryptogenic (17%).

Surgical drainage was performed in 63.4% (n=26), while 17 patients had non-operative management.

Causative organisms were identified in 14 cases (64% cocci gram+, n=9). Mean duration of treatment was 7 weeks.

At discharge, patient outcomes were good in 51.2% (n=21), ongoing neurological sequelae in 24.4% (n=10), and death in 24.4%. (n=10)

Conclusion: Manifestations of brain abscess may be subtle. Early and adequate treatment may improve the prognosis and reduce complications.
Background: Bibliometric mapping is a techniques to visualize the research production of a scientific discipline.

Objectives: Developing a chronological and taxonomic landscapes of severe childhood bacterial infections research (SCBI).

Methods: The chronology and taxonomy of SCBI research were visually identified using bibliometric mapping on a corpus retrieved from SCOPUS database.

Results: USA (n = 214), France (n = 88), Germany (n = 81) and UK (n = 79) were the most prolific countries. The dynamics of literature production is positive. Incubation period lasted till 1992 followed by a slight exponential growth period ending in 2012 (Figure 1). The chronological landscape revealed that the state of the art research is concerned with AAQ treatment, CAP and PID infections and renal scaring (Figure 2). The taxonomic landscape identified four topics shown in Figure 3.

Conclusions: Bibliometric mapping revealed some important features of the SCBI research which can help a practitioner to better understand the field and an experienced researcher to set future research directions.
Early recognition and treatment of microbial infections is invaluable in survival of cancer patients with neutropenic fever (NF). The aim of this study was to evaluate the value of SeptiFast method in early identification of infectious agents. Ninety-four NF attacks belonging to 62 patients with lymphoma or solid tumors and 50 healthy controls were included. Neutropenia was defined as an absolute neutrophil count < 0.5x10^9/L, or, between 0.5 to 1x10^9/L and expected to decrease to < 0.5x10^9/L within 24 to 48 hrs. Neutropenic cases who had one axillary temperature > 38.3°C, or two 38 °C recordings 12 hours apart were defined as febrile neutropenia. In addition to routine blood cultures, a blood sample was stored at −80°C for SeptiFast test during febrile periods. LightCycler® SeptiFast Test MGRADE kit was used for fast identification of bacterial/fungal organisms in the blood. At least one microorganism was isolated in 35.1 %, and 28.7 % of specimens by the SeptiFast method, and blood culture, respectively (p<0.05). The most frequent agents that were detected by either methods were klebsiella, and pseudomonas spp, and coagulase-negative staphylococci. Sensitivity, specificity, positive predictive value, negative predictive value, and diagnostic performance of the SeptiFast method were 94.12 %, 98.33 %, 97 %, 96.7 % and 0.962, respectively. Although, the SeptiFast method had good diagnostic performance for the early identification of microorganisms in NF, blood culture still continue to be the gold standard method, since it’s required for antibiotic susceptibility tests, which may be very critical in some circumstances.
THE ROLE OF PLEX-ID IN DIAGNOSIS OF STAPHYLOCOCCUS EPIDERMIDIS MENINGITIS – CASE PRESENTATION

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Introduction

Staphylococcal infections are usually determined by Staphylococcus aureus, but in particular situations such immunodeficiency, existence of gateways or invasive medical devices, severe forms of Staphylococcus epidermidis or coagulase negative staphylococci infections can occur.

Material and method

We present the case of a 7 year old boy with no relevant medical history, admitted in the Pediatric Intensive Care Unit of National Institute of Infectious Diseases „Prof. Dr. Matei Bals” with the suspicion of acute meningitis. The clinical examination revealed clinical signs of meningitis and the presence of a sacral dermal sinus.

Results

Lumbar puncture confirmed the acute bacterial meningitis diagnosis. Cultures and biochemical analysis of CSF were performed. The PLEX-ID test was positive for Staphylococcus epidermidis in a few hours.

An MRI scan confirmed the presence of a sacral dermal sinus and the absence of two intervertebral discs. Later on, the CSF cultures confirmed the Staphylococcus epidermidis infection.

Treatment was established based on the antibiogram and evolution was favorable with normalization of CSF after 10 days of treatment.

Conclusions

Staphylococcus epidermidis determined an acute bacterial meningitis in a patient with a dermal sinus, which was quickly diagnosed through PLEX-ID. The patient had a favorable evolution under treatment.

The particularity of the case was the child’s apparent normal state of health until the age of seven with a sacral dermal sinus.

In order to avoid future episodes of meningitis, surgery was performed to close the sinus.
STEVEN'S JOHNSON SYNDROME DETERMINED BY MYCOPLASMA PNEUMONIAE – CASE PRESENTATION

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Introduction

Stevens-Johnson syndrome is a mucocutaneous disease with multiple etiologies, characterized by macules that develop into papules, vesicles, bullae, urticarial plaques, or confluent erythema. Mycoplasma pneumoniae is the etiological agent in 50% of cases.

Material and method

We present 2 cases admitted in the Pediatric Intensive Care Unit of The National Institute of Infectious Diseases "Prof. Dr. Matei Bals" with the suspicion of Stevens Johnson syndrome between 2014 and 2015.

The first case was a 6 year old girl, with no relevant medical history, and the second case was an 8 year old boy, with a medical history of bullous pemphigus.

Both patients presented with respiratory symptoms upon admission, but only the boy received betalactamine antibiotic prior.

The cases will be presented comparatively, according to history and gravity of each case.

Results

Positive diagnosis was established on clinical and laboratory criteria and confirmed through serological testing which identified Mycoplasma pneumoniae.

Evolution was slow and favorable, with resolution of skin lesions and respiratory symptoms.

In the first patient, mucosal involvement was predominant, which required daily debridement in our ophthalmology service, and the second patient presented extensive cutaneous involvement with severe lesions with required 28 days of hospitalization and treatment.

Conclusions

Sudden onset, with respiratory symptoms is suggestive for infectious etiology in both cases. Taking into consideration the boy’s medical history and recent antibiotic use, we recommended precaution in further antibiotic treatments. Because half of the Stevens Johnson cases are determined by Mycoplasma pneumoniae, we recommend increased vigilance among clinicians.
TOLERABILITY AND EFFICACY OF ERTAPENEM IN SEVERE BACTERIAL INFECTIONS IN CHILDREN
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Introduction
Ertapenem is an extended spectrum antibiotic, part of the carbapenems class, reserved for severe bacterial infections. Intestinal bacterial infections in children are often severe and require adequate antibiotic treatment.

Objectives
Evaluating the tolerability and efficacy of ertapenem in severe intestinal bacterial infections in children.

Material and method
We have carried out a retrospective study between 2010 – 2015 on pediatric cases of intestinal bacterial infections admitted in the pediatric department of The National Institute of Infectious Diseases "Prof. Dr. Matei Bals" and treated with ertapenem.

Results
During this period we have analysed a total of 278 cases of intestinal bacterial infections treated with ertapenem. The etiological agents consisted of: Salmonella spp., Shigella spp. and E. coli. 11.5% of cases were diagnosed as digestive sepsis. All cases evolved favorably, with a mean treatment duration of 8.3 days. No deaths were registered. Ertapenem was well tolerated and no major adverse events were encountered. All isolated bacterial strains were sensitive to ertapenem both in vitro and in vivo. No treatment failure was registered.

Conclusions
Intestinal bacterial infections rank high among admissions in our clinic, all cases carrying a risk of potential severe outcome. Most cases required extended spectrum antibiotics because of resistance of etiological agents or failure of initial antibiotic treatment. We also would like to emphasise on the inadequate use of carbapenem antibiotics.
Pertussis is a major cause of childhood disease and death in children < 5 years, mostly in low-middle income countries. We aimed to describe the clinical and epidemiological profile of *Bordetella pertussis* (BP) and to analyze the factors associated with confirmation by PCR and case fatality rate.

From January 2012 to December 2014, we studied children with suspected pertussis integrating diagnosis by conventional PCR, culture and case definition proposed by WHO. We collected demographics, vaccinations, clinical, laboratory, and final outcomes. We used EPI INFO 7 © and SPSS® for statistical analysis, p < 0.05 were considered significant.

In 179 children who met the case definition, 19.6% (35/179) were confirmed for BP, 31 by PCR (positivity 29% [31/102]), 2 by PCR + culture, one was culture positive but PCR negative, and 3 cases by epidemiological link. 47% of children apt to receive pertussis vaccine had not received any dose. The following were independent predictors associated with confirmation of pertussis by PCR: inspiratory stridor (OR 2.5, p = 0.02), posttussive emesis (OR 3.2, p = 0.004) and leukocytosis >20 000/mm³ (OR 7.7, p = 0.000). Average white blood count was 43.133±23.522. Lethality was 34.6%, mean age 3 months, leukocytosis >30 000/mm³ was a predictor of fatality (RR 8.2, p= 0.001).

Pertussis is a frequent disease among infants in our hospital and molecular diagnosis identifies those infected. Infant less than 3 months were affected frequently and had more lethality. Prenatal and earlier infant pertussis vaccination could decrease the burden of pertussis in our institution.
PCV13 SEROTYPES ARE STILL MAJOR CAUSES OF INVASIVE PNEUMOCOCCAL DISEASE IN PORTUGAL DESPITE 10 YEARS OF CONJUGATE VACCINE USE IN THE PRIVATE MARKET

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\textbf{Background and aims.} Conjugate pneumococcal vaccines became available in the private market in 2001 with the introduction of PCV7, followed by PCV10 and PCV13 in mid-2009 and early-2010, respectively. After their introduction, changes in the serotypes causing invasive pneumococcal disease (IPD) were observed. This study aimed at documenting the recent changes in the serotypes causing IPD.

\textbf{Methods:} Between July 2012 and December 2014 a total of 177 cases of pediatric (<18 yrs) IPD were reported. Among these, 145 isolates were available for serotyping and antimicrobial susceptibility testing. The remaining 32 culture negative samples were positive by PCR for pneumococcal specific genes.

\textbf{Results:} Serotype identification was possible in 163 samples. Among these a clear increase of serotypes not included in any PCV formulation (Non-PCV) was observed representing 44\% of the serotypes identified. Serotypes 15B/C (n=11), 10A, 12B and 24F (n=9 each) were the most frequent Non-PCV serotypes. PCV7 serotypes still accounted for 22\% of the IPD cases in the pediatric setting while the additional serotypes included in PCV10 and PCV13 represented 18\% and 16\%, respectively. Among the vaccine serotypes, serotypes 3 (n=20), 1 (n=18), 14 (n=15) and 7F (n=11) are still important causes of IPD in Portugal.

\textbf{Conclusions:} PCV13 serotypes remain major causes of IPD, highlighting the potential role of enhanced vaccination in reducing pediatric IPD in Portugal. The number of cases caused by PCV7 serotypes remained stable but that of PCV13 serotypes declined. The number of IPD cases caused Non-PCV was increasing in the study period.
Acinetobacter baumannii has emerged as an important multi-drug-resistant (MDR) healthcare-associated pathogen. Meningitis caused by these MDR pathogens is a real challenge to treat in Critical care units.

A 8 years old child admitted in PICU (Pediatric intensive care unit) following road traffic accident with fracture of paranasal sinuses, CSF rhinorrhea and altered sensorium. He was intubated and mechanically ventilated. On 5th day there was few febrile spikes, raised WBC count increased endotracheal secretion and x-ray chest showed right lower opacity. Considering a case of ventilator associated pneumonia, empirical antibiotic inj meropenem started after sending ET suction for culture. Culture grew Acinetobacter baumannii sensitive to colistin (MIC<0.5) but resistant to meropenem (MIC>16). Colistin added in antibiotic regime and patient became afebrile after 48 hours.

On 9th day patient again became febrile with drowsiness and neck rigidity. Lumbar puncture was done, CSF findings suggestive of bacterial meningitis. Culture grew same strain of Acinetobacter sp with same antibiotic sensitivity. Considering a case of Acinetobacter meningitis, intrathecal colistin started, along with IV colistin and inj meropenem stopped. Within next couple of days patient became afebrile again, ventilator weaned off and extubated on day15. The treatment continued for a period of two weeks with intermittent screening culture of CSF, till it became microbiologically negative. Patient was discharged on day 25.

Pediatric patients with CNS infection by MDR Acinetobacter isolates, may benefit from adjunct intrathecal colistin therapy, along with IV colistin as colistin cannot achieve adequate CNS penetration after iv administration.
VALIDATION OF A LOOP-MEDIATED ISOTHERMAL AMPLIFICATION ASSAY FOR SIMPLE AND RAPID DETECTION OF BORDETELLA PERTUSSIS IN NASOPHARYNGEAL SAMPLES

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Background and aims: Molecular techniques such as PCR are typically used for detecting B. pertussis, the causative pathogen of whooping cough. Despite its accuracy, PCR has limitations of accessibility, affordability, and results turnaround time. We aimed to develop and validate a novel loop mediated amplification (LAMP) assay for rapid diagnosis (<1 hour) of whooping cough in nasopharyngeal samples versus real-time PCR (time to results within 3 hours).

Methods: The study included all nasopharyngeal samples (n=217) collected from children with clinical suspicion of pertussis admitted to Children’s University Hospital Sant Joan de Déu (Spain). Fresh samples were routinely analyzed by PCR during the period July 2014-December 2014 and stored at -80°C for retrospective analysis by LAMP. An easy 30-minute DNA extraction step was performed by Chelex-100 prior to amplification by both tests.

Results: The LAMP assay showed linearity over a range 10⁵-10¹ CFU/ml. Limit of Detection was 2 CFU/ml. Values of coefficient of variance were 4.31% (intra-assay variability) and 7.38% (inter-assay variability). Diagnostic sensitivity and specificity of the LAMP test compared to the gold standard PCR were 90.00% (95%CI, 74.38-96.54) and 98.40% (95%CI, 95.39-99.45) respectively. Time to detect positive samples (n=27) by the LAMP assay ranged 12-30 minutes.

Conclusions: We have developed a LAMP assay for detection of B. pertussis DNA in nasopharyngeal samples that is 2.5-fold more rapid than real-time PCR while maintaining similar levels of analytical and clinical performance. This simple test could become a useful diagnostic tool in time- or resource-constrained situations, such as point-of-care testing.
HYPERBARIC OXYGEN TREATMENT IN A PATIENT WITH MENINGOCOECEMIA


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Introduction

Meningococcemia may lead to purpura fulminans (PF), multiorgan failure and death unless early intervention is enabled. We hereby present a child whose PF lesions were improved with HBO2 therapy.

Case report

A seven-month-old previously healthy girl presented with fever and generalized purpuric rash which appeared and disseminated in hours. On her examination, she was conscious, septic and agitated with 38.5 °C fever. Glasgow Coma Scale (GCS) was 13. Heart beat, respiratory rate, blood pressure and O2 saturation at room air were noted as following: 130/min, 35/min, 86/57 mmHg, 96%. Initial blood examination showed mild anemia with high procalcitonin and C-reactive protein levels.

She was started on hydration and ceftriaxone therapy in pediatric intensive care unit. Vasopressors and hydrocortisone were admitted due to hypotension. Supportive transfusions were made since anemia, thrombocytopenia and hypoalbuminemia had occurred. In the following hours she got worse and entubated. Subarachnoid hemorrhage leading to convulsion demonstrated by head computerized tomography developed later. She was given anticonvulsant medication. Hyperbaric oxygen therapy was applied to necrotic lesions over her feet. Blood cultures revealed N. meningitidis W 135. Her general condition improved gradually within days and she was discharged from the hospital on 28th day with recovery. Cranial MRI showed regression in the subarachnoid hemorrhage. She is still being followed in our outpatient clinic with wellbeing and minimal lesions.

Discussion

Early diagnosis and appropriate intervention is crucial to decrease mortality and morbidity of fulminant meningococccemia. HBO2 treatment is highly recommended for the management of PF.
NEONATAL MENINGOCOCCEMA AND MENINGITIS PRESENTING WITHOUT A RASH OR FEVER

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Introduction

Neisseria Meningitidis is an uncommon cause of meningitis in neonatal period. We report a 4-week-old with meningococcal sepsis and meningitis without a fever or a rash.

Case Report

She presented with a history of refusing feeds, grunting noises and abnormal skin colour. Past medical history was significant for duodenoplasty at one week for a duodenal web. She was discharged to non-smoking parents by the third week.

Presenting a week later, she was lethargic with a temperature of 37.0°C, heart rate of 180/minute and CRT of 2 to 3 seconds but with warm extremities. BP was 85/35mmHg.

Full blood count showed haemoglobin of 105g/L, WBC of 1.5 x 10⁹/L, with neutrophil differential of 0.5 x10⁹/L. CRP was 83mg/L. In view of suspicion of sepsis, she had an LP, with CSF showing RBC of 80 x 10⁶/L and WBC of 65 x10⁶/L, with 99% Polymorphs. CSF glucose was 1.1mmol/L and protein was 1.7g/L, gram stain was negative. She had received resuscitation fluids and IV Cefotaxime and Amoxicillin as par hospital protocol.

Confirmation of positive Blood and CSF culture for N. Meningitidis, Type b was reported after 24 hours of admission. Organism was susceptible to Cefotaxime and Penicillin.

She was discharged after 10 days of treatment with Paediatric and audiology follow up.

Conclusion

We cannot tell if this was a nosocomial or community acquired infection but more importantly, is for physicians to be aware of subtle signs and symptoms that would suggest a seriously ill baby.
The aim: This is a retrospective study to present epidemiological dates of children with central nervous system infections, hospitalized in the infectious diseases service at the pediatric department during 2002-2015.

Material and method: In this study are included 346 children aged 1-14 years, hospitalized in our service, and treated for bacterial and aseptic meningitis, meningococccemia, meningoencephalitis and encephalitis during January 2002- May 2015. The data interpretation is made in report with the age, sex, location, time.

Results: 346 hospitalized children, with CNS infections, from of all hospitalizations. The bacterial meningitis takes the main place in the morbidity with 154 cases (44.5%), serous meningitis with 97 cases (28.%), meningoencephalitis with 37 cases (10.7%), 36 cases of meningococccemia (10.4%) and encephalitis in 22 cases (6.4%).

According the age, hospitalized infants are divided into: 1 month-1 year with 61 cases(17.6%) 1-4 years old with 95 cases (27.5%), 4-10 years old with 139 cases (40.2%), 10-14 years old with 51 cases (14.7%).

According to the sex, predominated males with 207 cases (59.8%) and females with 139 cases (40.2%).

According the location, city’s hospitalizations (together with the suburbs) are 258 cases (74.6%)

Conclusion: Viral and bacterial meningitis is a disease that continues to remain in high numbers in Albania. The group most affected is the age of 4-10 years.
HIGH-RISK MENINGITIS IN PICU: COMPARISON BETWEEN LATE-ONSET GBS AND PNEUMOCOCCAL MENINGITIS

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Background and aims. Although global intensive care for high-risk meningitis have improved in the last decades also including adjunctive therapy both mortality and morbidity remain high (up to 25% with neurological sequelae about 50% of survivors)

Methods. Clinical charts review at 2 PICUs.

Results. From 2005 to 2014 30 infants with late-onset GBS meningitis (GBSM) and 39 with pneumococcal meningitis (PNM) were admitted to both PICUs. Clinical and demographic data are outlined in the Table. The prevalence of early cerebrovascular lesions resulted quite important: 45-50% for PNM and >60% for GBSM of surviving patients showed cerebral ischaemic lesions, both as arterial ischaemic stroke or sinovenous thrombosis. Both PRISM-III₂₄ and DIC score were predictive regarding mortality and PICU stay (GBSM), while PRISM-III₂₄ LCR-plasma glucose ratio influenced outcome in PNM

Conclusions. According to literature data, in our population, antibiotic susceptibility did not impact significantly on clinical outcome. Given the high prevalence of ischaemic lesions on neuroimaging and the pathophysiology of meningitis, a serial determination of antithrombotic factors has been introduced. Protein C and antithrombin levels have been assessed on admission and replacement has been performed in selected cases (PC <40% and antithrombin < 70% of predicted values, respectively). Adjuvant therapy rather than new antibiotics will improve the prognosis and neuroprotection. Antithrombotic therapy should be evaluated in the setting of a global care to improve the clinical outcome of these devastating diseases.
A REVIEW OF PEDIATRIC SEPTIC SHOCK IN PICU PATIENTS, WITH RESPECT TO THEIR IMMUNITY STATUS

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BACKGROUND AND AIMS: Pediatric septic shock remains therapeutic challenge, with doubtful outcome. Our aim was the evaluation of the characteristics of septic shock in immunocompetent and immunocompromised children.

METHODS: The records of all patients with septic shock, hospitalized in the PICU of ‘Aghia Sophia’ Children’s Hospital, Athens, Greece, during 2011–2015, were retrospectively reviewed. Patients underwent bone marrow transplant were excluded.

RESULTS: Totally 14 patients were enrolled and classified into immunocompetent (43%) and immunocompromised (57%). Patients of first group were younger (median 2.2y), otherwise healthy individuals, however, 50% of them had undergone major surgical intervention. Patients of second group were older (median 9.7y), under treatment for haematological/solid malignancy (62.5%), or with primary immunodeficiency (37.5%).

Septic shock presented intra-hospitally in 50% of both groups, typically with refractory hypotension, fever and decreased GCS (83% and 88%, respectively), respiratory distress and anuria (67% and 75%). Immunocompetent patients were mechanically ventilated for 12±6d, received inotropes for 5.3±3d and hospitalized for 26.5±20d while immunocompromised ventilated for 10.3±6d (p>0.05), received inotropes for 5±2.5d (p>0.05) and hospitalized for 16±12d (p>0.05). Renal failure, required CVVHDF, recorded in 33% of immunocompetent and 50% of immunocompromised patients (p>0.05).

Blood culture yield pathogen in 40% of immunocompromised (Pseudomonas, Stenotrophomonas or E.Coli), however, was negative in remaining patients. Overall mortality was 21% (immunocompetent 17%, immunocompromised 25%, p>0.05).

CONCLUSION: Pathogen isolation is not always feasible in patients with septic shock. No significant difference noted between immunocompetent and immunocompromised children (when BMT recipients excluded), regarding days of mechanical ventilation, length of hospitalization and mortality.
PROFILE AND PREDICTORS OF HISTOPATHOLOGICAL CHANGES IN SEPTIC ACUTE KIDNEY INJURY IN CRITICALLY ILL CHILDREN – COHORT OF POSTMORTEM RENAL BIOPSIES

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Background

Critically ill children often manifest the acute kidney injury (AKI) with incidence up to 82% and are independently associated with mortality. The pathogenesis of septic AKI is remaining unclear. There are no consistent histopathological changes in septic AKI.

Materials and Methods

Children aged <12 years died with septic AKI underwent percutaneous USG guided kidney biopsy after written consent from July 2013 to May 2015. Three core of kidney tissue were taken for histopathological evaluation by light, immunofluorescence and electron microscopic examination. Sepsis and AKI was defined using international pediatric sepsis consensus conference and pRIFLE criteria respectively. Events related to death, laboratory parameters and microbiological details preceding 24 hours of death were recorded.

Results

A total of 62 kidney biopsies were done during the study period. Median (IQR) age was 12 (6 – 36) months and PRISM-III was 14 (14-18). Most common change was normal histology 38.7% (n=24) followed by tubular change alone 30.6% (n=19), glomerular change alone in 4.8% (n=3) and blood vessel change in 1.6% (n=1) of specimen. 15 specimens were showing combination of changes (Tubular+Glomerular+Interstitial=5; Tubular+Glomerular+Bloodvessels=3;Tubular+Glomerular=3;Tubular+Interstitial=3;Tubular+Glomerular+Interstitial+Blood vessels=1). All tubular changes were consistent with acute tubular necrosis (ATN) and changes involved from 5% to 30% of cortex. Thrombotic microangiopathy was diagnosed in 8% (n=5) of specimen. Baseline characteristics and events related to mortality are similar and not associated with specific changes and ATN vs non-ATN-groups.

Conclusion

Most common pathological change in septic AKI in critically ill children is normal histology then ATN.
AN APPROACH FOR THE ENHANCED IDENTIFICATION AND TYPING OF STREPTOCOCCUS PNEUMONIAE IN CULTURE NEGATIVE CSF SAMPLES OF ACUTE MENINGITIS BY QMPCR AND SEQUENCING.

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Background and Aims

Streptococcus pneumoniae is the leading bacterial cause of acute meningitis in children. Precise identification and typing is critical for diagnosis, treatment and prevention of infection. Culture methods require up to 48 hours to yield results and lacks sensitivity, specifically in patients receiving treatment. We prospectively assessed the utility of latex agglutination test (LAT), Binax NOW, quantitative multiplex real time PCR (qmPCR) and sequencing for identification and typing of S. pneumoniae in culture negative CSF samples.

Methods

Forty four culture negative CSF specimens from children clinically diagnosed with acute meningitis were tested with LAT, Binax NOW and qmPCR. Four specific genes - pneumolysin, autolysin, pneumococcal surface adhesin-A and spn9802 were targeted for the identification of S. pneumoniae in qmPCR. Positive samples were typed by Sanger sequencing.

Results

LAT, Binax NOW and qmPCR were positive for S. pneumoniae in 8 (18%) of the 44 specimens. CSF cell count ranging from 320 to 2600 cells/mm³ with raised protein and decreased level of glucose was observed in positive samples. Sanger sequencing provided sequetyping results as SGTs 3, 9V, 14 (each n=2) and 19F, 22F (each n=1).

Conclusion

Addition of LA, Binax NOW to the conventional culture methods supplant the identification of S. pneumoniae. qmPCR assay offer enhanced sensitivity, specificity and speed required for the diagnosis of S. pneumoniae infection in culture negative CSF samples. S. pneumoniae types can be identified from clinical samples directly by sequetyping. Our results suggest that previous studies have underestimated the S. pneumoniae as an etiological agent of acute meningitis.
BACTERIAL MENINGITIS - AN INCREASING TREND OF A RARE SEROGROUP
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Invasive meningococcal disease (IMD) is a rare but severe and potentially life-threatening disease, caused by Neisseria meningitidis, a common commensal of the upper respiratory tract.

We report the case of an 8-year-old male patient, admitted to the emergency department with headache, fever and vomiting for five days. Past medical history was irrelevant, the vaccination schedule was completed, including 13-valent pneumococcal conjugate vaccine, serogroup C meningococcal vaccine and Haemophilus influenzae type B vaccine. Upon examination the patient was lethargic but reactive to stimuli, meningeal signs were present and no other alterations were observed. Due to the relatively indolent clinical presentation and course of the disease, the diagnosis of viral meningitis was considered. Lumbar puncture was performed, revealing a cloudy cerebrospinal fluid (CSF). The CSF cytochemical analysis showed predominance of polymorphonuclear cells and an increase in protein levels. Gram analysis revealed Gram negative diplococci, establishing the diagnosis of bacterial meningitis. Empiric antibiotic therapy with ceftriaxone was initiated. Later, direct polymerase chain reaction test detected the presence of a serogroup Y Neisseria meningitidis in CSF.

Clinical presentation cannot differentiate bacterial from viral meningitis. Prompt initiation of antimicrobial therapy should be considered in any patient with suspected meningitis.

The dominance of serogroup B remains in the european pediatric population, however there is an increasing prevalence in serogroup Y (3% of all IMD in 2008 to 8% in 2012). Meningitis caused by serogroup Y Neisseria meningitidis is still rare in our Pediatric Department, with only 3 cases in the last 10 years.
INVASIVE PNEUMOCOCCAL DISEASE MORTALITY IN A PEDIATRIC POPULATION OF BOGOTA, COLOMBIA, SOUTH AMERICA

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Objective: Describe Invasive Pneumococcal Disease (PID) mortality in a pediatric population of Bogotá, Colombia


Results: In 239 registered cases of PID, showing a mortality of 8% (n=18). The average age of patients who died was 43.7 months, with an age range from 2 to 176 months (14 years); 66% of the cases were male. Serotypes were identified in 8 patients, finding: 6A, 6B, 10A, 14, 18C, 23B, 23F, 35B. The most common clinical presentation of the cases of meningitis with mortality was 33% (6 cases), followed by bacteremia without focus in 28% (5 cases) and pneumonia with 27% (5 cases). Combined clinical situations such as pneumonia and meningitis in 11% (2 cases) were presented.

Discussion: The mortality rate was higher in men and children under 2 years (60%) cases. Two patients had a history of having been immunized against pneumococcus. There was no predominance of any serotype pneumococcal serotypes identified 5 of it are included in the currently available vaccines. Meningitis was the highest mortality.

Conclusions: PID mortality is particularly high in children under 2 years in male patients, especially when presented meningitis. Serotyping was not possible in all patients who died. Continuously and systematically to evaluate the impact of vaccination and possible changes in the pattern of presentation of disease surveillance is required.
EXTENSIVE RETROPHARYNGEAL AND MEDIASTINAL ABSCESS FORMATION BY PVL MRSA INFECTION
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BACKGROUND
10 month old previously healthy boy of Phillipino origin presented with a one week history of high grade fever associated with diarrhoea and two day history of chicken pox.

PRESENTATION
He was noted to be irritable with a hoarse voice and neck extension. He was noted to have high infection markers and was commenced on Ceftriaxone. He deteriorated over the next 24 hours and his blood cultures were positive for S. aureus. On further testing the organism was identified as a PVL producing MRSA. Due to persistent fever and neck extension, a CT neck and thorax was performed which revealed an extensive retropharyngeal abscess extending into the mediastinum (Fig. 1). An echocardiogram showed a small tricuspid vegetation.

Fig.1

MANAGEMENT
The abscess was surgically drained and the patient was treated with 6 weeks of Vancomycin and 2 weeks of oral Linezolid following IV therapy. He required intensive care support following drainage and subsequently was managed on the ward. Follow-up scans showed a resolving infection. Pus culture from drainage grew the same organism. Further history from mother revealed that she had worked in the radiology department in an overseas hospital previously. Immunology work up did not reveal evidence of an immunodeficiency.

CONCLUSION
Severe staphylococcal infections due to resistant or toxin producing organisms should be considered in children with predisposing risk factors and require care by a multidisciplinary team in a tertiary centre.
LEMIERRE'S DISEASE DUE TO METHICILLIN SENSITIVE STAPHYLOCOCCUS AUREUS
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Lemierre’s disease is thrombophlebitis of the internal jugular vein (IJV) seen usually with Fusobacterium necrophorum throat infection. We present 2 patients with Lemierre’s syndrome due to methicillin sensitive staphylococcus aureus (MSSA).

**Case 1:** A 1 year old girl presented with swelling over right side of neck and fever for 3 days and respiratory distress, altered sensorium, neck stiffness and abdominal distension. Blood culture grew MSSA. CT chest showed right sided loculated hydropneumothorax. There was partial thrombosis of right IJV and superior vena cava (SVC). CT abdomen showed left hip septic arthritis. Doppler of neck vessels showed near total subacute thrombosis of right IJV extending into right brachiocephalic vein. Intercostal drainage (ICD) was done. She was treated with cloxacillin, metronidazole and rifampicin, low molecular weight heparin (LMWH) to which she responded.

**Case 2:** A 10-month old boy presented with fever, anasarca and respiratory distress for 3 days. On presentation, child was in shock and had gangrene over right great toe. He was ventilated and required inotropic support. Child received cloxacillin and clindamycin as blood culture grew MSSA. He had two episodes of GTC on day 6 of antibiotics. CSF showed 9000 cells/cmm with 98% of polymorphs. CSF culture did not grow any organism. MRI brain showed subdural effusion in left frontoparietal region with right IJV thrombosis involving right distal sigmoid sinus and right cavernous sinus. He was continued on same antibiotics and LMWH was added. He became afebrile after 10 days of antibiotics. He was given antibiotics for 6 weeks.
Severe Childhood Bacterial Infections

S. AUREUS: NEW TREATMENT CHALLENGES FOR AN OLD AGENT
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Introduction: S. aureus is the most common cause of acute bacterial infection of skin and soft tissues. Bacteremia is common and can result in serious or fatal infections. Choosing the best initial empirical scheme is a challenge in clinical practice because of the modified resistance profile.

Case: 6-year-old boy, fall from standing height followed by 102.2°F (39°C) fever, lameness and swelling of the left lower limb (LLL) for 3 days, with progressive worsening of pain. Vancomycin and clindamycin were started. Patient developed dyspnea, decreased level of consciousness and septic shock requiring mechanical ventilation. In ICU oxacillin and cefepime were added. CT chest: extensive consolidation and pleural effusion. CT LLL: ileopsoas muscle and left thigh adductors pyomyositis. Echocardiogram: no alterations. Marked improvement despite positive blood cultures for S. aureus sensitive to methicillin (MSSA) from 1st-6th day of antibiotics. Transferred to Pediatric Infectious Disease Unit, only oxacillin was maintained. There was an increase in psoas and gluteus abscesses, surgically drained. Continued daily fever, new echocardiogram: left atrial vegetation. Rifampicin was associated for 17 days. Completed 6 weeks of EV oxacillin and 2 more of oral cephalexin.

Discussion: Emergence of strains resistant to methicillin and its spread in the community (MRSA-CA) demanded modification of the initial empiric therapy in order to contain the use of drugs like vancomycin. Resistant strains are not necessarily more virulent. Oxacillin is the drug of choice for sensitive strains even in serious infections due to superior efficacy. Rifampicin or gentamicin may be associated for synergism.
**Introduction:** Veillonella is an anaerobic nonfermentative gram-negative coccus that is part of normal flora. Veillonella species are often accepted as a contaminant but they could be a pathogen in infections of bone, sinuses, etc. Here, we report a soft tissue and implant infection due to *V. parvula* in a 10 years-old girl who underwent implant placement because of osteosarcoma.

**Case:** A 10 years-old girl admitted to hospital with complaints of pus coming from her incision site of right leg for three days. Her medical history revealed that she was diagnosed as osteosarcoma and underwent excision of tumor and implant placement 8 months ago. In her physical examination swelling, erythema and tenderness over the right leg and yellow-green pus discharge from incision line were observed. She underwent debridement surgery and intravenous cefoperazone-sulbactam treatment was started empirically. On the 10th day of admission the anaerobic tissue biopsy culture yielded gram negative coccus. *V. parvula* was identified by VITEK system. Meropenem was replaced with cefoperazone-sulbactam. The 16S rRNA gene sequences were identical with 99.9% similarity with the 16S rRNA gene from *Veillonella dispar* (Genbank accession number:NR_115355) and 99.9% similarity with the 16S rRNA gene from *Veillonella parvula* (Genbank accession number:AY995769.1). Despite antibiotherapy her symptoms worsened, purulent drainage continued and she underwent second debridement. Her symptoms recovered after debridement. She was discharged with oral amoxicillin-clavunate for 2 weeks. She has been asymptomatic during the 6-month follow-up.

**Conclusion:** We present soft tissue and implant infection due to veillonella spp which is a very rare cause of tissue infection.
CEREBRAL ATROPHY FOLLOWING SALMONELLA ENCEPHALOMENINGITIS IN 2-MONTH-OLD BOY: A CASE REPORT

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Background

Nontyphoid salmonellae are involved in a spectrum of diseases including gastroenteritis, bacteriemia, focal infections. Infections of the CNS caused by salmonella spp. are rarely reported. Herein we report a case of salmonella meningitis followed by a severe brain damage in 2-month-old boy with no underlying diseases.

Case presentation

A 2-month-old boy was hospitalized due to salmonella gastroenteritis. The child received trimethoprim/sulfamethoxazole according to the stool culture results. After 6 days of treatment he developed encephalomeningitis. Salmonella enteritidis was obtained in the CSF culture. Despite proper antimicrobial therapy with meropenem and amikacin, high pleocytosis and protein concentrations in CSF were observed up to two months after the infection. Resolution of brain edema was followed by a progressive brain atrophy and an increase in ventricular volume. The Evan’s ratio has reached 87% on the right and 52% on the left side (Fig. 1). Placement of the ventriculoperitoneal shunt resulted in slight and nonpermanent improvement. The child developed epilepsy and has noticeable developmental delay. Surprisingly neither hearing nor visual loss was observed. The source of infection has not been identified.

Conclusion

Salmonella spp. should still be considered as a possible etiologic factor of meningitis in developed countries. Despite proper treatment, bacterial meningitis can lead to major neurological sequele in infants.

Figure 1. Magnetic resonance imaging (A) 2 weeks; (B) 8 months after the infection
Tuberculosis (TB) still remains a growing public health problem globally. Here we present a very young infant with granulomatous thoracic mass.

A 3-month-old girl has been hospitalized for cough and wheezing and received multiple courses of antibiotics during the last 6 weeks. She was born at term and no parental consanguinity was present. Her mother had pneumonia 8 years ago and her grandfather died due to chronic obstructive respiratory disease 1 week before. She was referred for further evaluation. Physical examination revealed body weight 5500 g, temperature 36.2°C, respiratory rate 20/min, breath sounds were normal bilaterally. Laboratory data revealed white blood cell count 18,000/mm$^3$; C-reactive protein 4.3, erythrocyte sedimentation rate 81/h. Computed tomography of chest revealed a dense heterogeneous consolidation on left lower lobe. During exploratory thoracotomy multiple hilar and upper mediastinal lymph nodes (LNs) and a fragile mass occupying 80% of left lower lobe were observed. The lesion was tightly adherent to the chest wall, very fragile, and prone to fragmentation. Granulomatous inflammation was detected on histologic examination of LNs and thoracic mass. Tuberculin skin test resulted in 10 mm induration. Treatment with isoniazid, rifampisin, and pyrazinamide was initiated. No microbiological growth was detected but M. tuberculosis PCR was positive.

Childhood TB represents an important part of the disease burden but its diagnosis remains challenging. Evidence of an adult TB index case is clue for diagnosis.
FATAL CHROMOBACTERIUM VIOLACEUM SEPSIS IN A COSTA RICAN BOY PRESENTING WITH FEVER, GASTROINTESTINAL SYMPTOMS, AND EARLY SHOCK

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Background: Chromobacterium violaceum is a GNR from soil and water, found more commonly in Asia and rare in Latin America. Human infections are uncommon, however, mortality rates reach 50-60%. Open wounds or skin lesions as potential entry sites are described in around 60% of cases.

Case report: A 6-year-old boy was transferred to our hospital with a 4-day history of fever and hyporexia, and 2 days of watery diarrhea and vomiting. He had no history of skin lesions or trauma. On admission, he was febrile, dehydrated, had a tender abdomen, increased peristalsis, and both knees were edematous, warm and painful on mobilization. Over the next hours he underwent septic shock, DIC, acute respiratory failure, and required mechanical ventilation. Laboratory tests were remarkable for bicytopenia, metabolic acidosis, hyperlactatemia, CRP 322 mg/L, and acute liver failure. CXR showed extensive bilateral infiltrates; cefotaxime and clindamycin were initiated, and vancomycin was added later. He was transferred to the PICU, developed ARDS, ARF and was treated with IVIG, inotropic support and CVVHF. He was switched to HFOV and required nitric oxide. Despite all resuscitation measures, he developed multiorgan failure, refractory shock and died 27 hours after hospital admission. Blood cultures showed GNR after 9 hours, then confirmed as Chromobacterium violaceum (susceptible to aminoglycosides, ciprofloxacin, TMP-SMX and imipenem). Stool and urine cultures were sterile.

Conclusions: Chromobacterium violaceum can produce life-threatening infections in children without evidence of skin wounds. Early suspicion should be made as this microorganism is usually susceptible only to TMP-SMX, ciprofloxacin, aminoglycosides and carbapenems.
MICROBIOLOGICAL AUDIT OF A NEWLY ESTABLISHED PEDIATRIC UNIT IN TERTIARY CARE INSTITUTE IN CENTRAL INDIA
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Background and Aims: The indiscriminate use of antibiotics with emergence of resistance over the past decades in developing countries has challenged the management of infections. We studied the yield of blood culture and microbiological spectrum of blood stream infection (BSI) in all patients admitted with fever due to suspected bacterial infection in pediatric unit.

Method: Data was retrieved from the medical records of patients admitted with fever due to suspected bacterial infection from April 2014 till May 2015. Organisms were isolated by conventional culture method. Antimicrobial sensitivity was done by disc diffusion technique.

Results: Two hundred thirty six blood culture samples of 195 patients were enrolled. Male to female ratio is 1.2:1. Age of the patients ranged from 0.1 to 17 years with median age of 5 years. Organisms were isolated in 17(7.2%) samples. Most common organism isolated was Salmonella typhi(17%) followed by coagulase negative staphylococcus(11%), Klebsiella pneumoniae(11%), Enterococcus(11%), Staphylococcus aureus(11%). Other organisms isolated were Staphylococcus epidermis, Pseudomonas, Acinetobacter, Salmonella parathyphi. Community acquired Salmonella typhi was sensitive to all antibiotics. Multidrug resistance (17%) was seen in Acinetobacter, Klebsiella and Coagulase negative staphylococcus which were hospital acquired.

Conclusions: The audit showed that the yield of blood culture is very poor in febrile pediatric patients, indicating the need for further newer and advanced technique of isolation of organism. The study reveals that community acquired infections are susceptible to common antibiotics and these results will help to judiciously use the antibiotics and curb the emerging antibiotic resistance in the region.
**A STUDY OF THE ANTIBIOGRAM OF SALMONELLA TYPHI IN AN INDIAN SETTING WITH THE EFFECTIVENESS OF AZITHROMYCIN IN ENTERIC FEVER**

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Background: Typhoid fever has high mortality rate of 30% which is reduced to 0.5% with good treatment. Multidrug resistant (MDR) strains including nalidixic acid resistant strains (NARS) is on the rise in India, limiting treatment options.

**AIM:**

1. To determine current antimicrobial susceptibility pattern of Salmonella typhi in blood culture in Indian setting
2. To determine MIC values of azithromycin against Salmonella
3. To assess clinical efficacy of azithromycin compared to cephalosporins

**Materials & Methods:**

Prospective analytical study from August 2013 to April 2014 in a pediatric tertiary care hospital in Chennai, India.

Clinical details of 40 children one month to 18 years of age with confirmed enteric fever collected. Antibiotic susceptibility testing and azithromycin MIC of Salmonella typhi determined. Children treated with oral Azithromycin (20mg/kg/day) for 7 days or intravenous ceftriaxone (100 mg/kg/day), followed up and monitored for relapse. Out of 40 children, 26 received azithromycin and 14 received ceftriaxone.

**Results:**

Ampicillin sensitivity was 36/40 (90%); ciprofloxacin sensitivity was 21/40 (52.5%); ceftriaxone and azithromycin were 100% sensitive. Nalidixic acid was 100% resistant.

65% of the 40 isolates had MIC <4µg/ml, 20% had MIC 6 µg/ml and 12.5% had MIC 8µg/ml. Only one (2.5%) had MIC of 12 µg/ml.

Clinical cure achieved in 96% in Azithromycin group and 100% in Ceftriaxone group with time to defervescence 84 hours and 96 hours respectively. There were no relapses.

**Conclusion:**

Azithromycin is very effective against uncomplicated typhoid fever in children. Once daily oral administration and short therapy makes it score more than parenteral ceftriaxone.
Background: Antimicrobial resistance is a global concern. Reliable ongoing data on prescribing practices are essential to guide antibiotic stewardship programmes.

Methods: Two point prevalence surveys (PPS) were performed in October 2012 and May 2015, at a tertiary paediatric hospital in Cape Town. All children in the paediatric wards at 8:00 am on the day of survey and receiving antimicrobial treatment were included. Number of hospitalised children and total available beds per ward were used for denominator data.

Results: Bed occupancy rates increased significantly over the two surveys (81% [102/126] in 2012 and 97% [142/147] in 2015) (p<0.0001). Antibiotic prescription was similar in both surveys (55% [55/102] and 51% [72/142]; p=0.8). The majority of children on antimicrobials were <2 years of age (63% and 74%; p=0.2). The proportion of prescriptions for Hospital Acquired Infection (HAI) was unchanged (25% [20/79] and 18% [21/116]; p=0.28). Empirical treatment constituted the majority of prescriptions and increased over the two surveys (83% [75/90] vs 94% [112/119]; p=0.02). Parenteral administration was the preferred route (70% [63/90] and 69% [82/119]; p=0.89). Ampicillin remained the most frequently prescribed antibiotic for community acquired infections (22% [13/59] vs. 25% [24/95]), whilst the carbapenems were most frequently prescribed for HAI (30% [6/20] vs. 33% [7/21]).

Conclusions: Minimal change in practice suggests a need for increased antibiotic stewardship interventions focused on iv to oral switch and increased use of targeted therapy. PPS remains a simple and reproducible method of identifying targets for stewardship interventions.
THE USE, OUTCOMES AND APPROPRIATENESS OF OPAT IN CHILDREN
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3Infectious Diseases Unit, Royal Children’s Hospital, Melbourne, Australia

Background: Outpatient parenteral antimicrobial therapy (OPAT) delivered via our hospital-in-the-home (HITH) service has grown rapidly. We aimed to assess our OPAT usage and evaluate the quality outcomes and antibiotic appropriateness.

Methods: Data regarding OPAT were prospectively collected over two consecutive 12 month periods: period A (Aug 2012-July 2013) and period B (Aug 2013-July 2014). In period B increased medical oversight was introduced to the HITH service, which included a paediatric infectious diseases consultant, a hospital-in-the-home registrar, and the introduction of antibiotic guidelines specifically for patients on HITH.

Results: Demographics: In period A, there were 1899 patients admitted to HITH of which 246 (13%) received OPAT. In period B there were 2675 patients of which 546 (20%) received OPAT.

Clinical features: Cystic fibrosis exacerbation was the most common diagnosis (32%). The most commonly isolated microorganisms were Enterobacteriaceae (24%), and methicillin sensitive Staphylococcus aureus (8%).

Antibiotic prescribing: The most commonly prescribed antibiotics were ceftriaxone and gentamicin (Figure 1). The broad spectrum antibiotics ceftriaxone (p=0.01), ticarcillin/clavulanate (p=0.02) and piperacillin/tazobactam (p=0.03) were used more frequently in period B. Appropriateness of antibiotic prescribing improved from 67% to 75% (p=0.03). The greatest improvement was seen in reducing excessive duration from 7% to 2% (p<0.001).

Outcomes: The unplanned admission rate was similar between both periods (10% vs 7%). CLABSI rates were very low at <1%. There were no serious adverse events during either period of data collection.

Conclusion: Our OPAT quality outcomes remained good and appropriate antibiotic prescribing has improved significantly.
IMPACT OF AUDITING ON APPROPRIATENESS OF CARBAPENEMS USAGE IN PEDIATRIC CANCER PATIENTS IN EGYPT

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²general pediatrics, CCHE, Cairo, Egypt
³pharmaceutical services, CCHE, Cairo, Egypt
⁴pediatrics, Al-Azhhar university, Cairo, Egypt
⁵clinical pathology, National Cancer Institute Cairo University, Cairo, Egypt

Background & aim: Auditing is considered one of the most effective interventions in antimicrobial stewardship programs (ASP). Our objective is to analyse the appropriateness of carbapenem and its impact.

Methods: Analysis of the restricted drug forms as a part of implementing an ASP for optimization of Cabapenem prescription over 1 year according to Pre-set Indications (IDSA 2010). electronic charts and prescriptions were revised. The results were linked to antimicrobial resistance data.

Results: Throughout the whole period a total of 460 patients were prescribed a carbapenem. During the 1st quarter, 75 electronic records were revised with 36 (48%) adequate (A) prescription and 39 (52%) inadequate (IA). The recommendations were to revise the restricted drug form to clarify the indications, provide electronic formulary restricted forms, and educate the medical staff continuously. During the 2nd quarter, 124 electronic records were revised with 64 (52%) adequate (A) prescription and 60 (48%) inadequate (IA). During the 3rd quarter, 153 electronic records were revised with 96 (63%) adequate (A) prescription and 57 (37%) inadequate (IA). During the 4th quarter 108 electronic records were revised with 68 (63%) adequate (A) prescription and 40 (37%) inadequate (IA). The data was linked to the Antibiogram for blood stream resistant organisms. During the 1st quarter 23 (7%) , the 2nd quarter 30 (6%), the 3rd quarter 35 (4%), and the last quarter 19 (3.4%) were MDR bacteremias.

Conclusion: Auditing with non-compulsory advise has proven to be effective and successful. Optimization of antimicrobial therapy can lead to decreasing MDR organisms.
PYRIDOXINE PROTECTS AGAINST CERTAIN SIDE EFFECTS INDUCED BY LINEZOLID

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²Biochemistry, Suleyman Demirel University, Isparta, Turkey

BACKGROUND: Serious gram-positive bacterial infections are common in childhood. Linezolid is the first member of oxazolidinone group in the clinical use and myelosuppression has been reported as a side-effect. In this study, we aimed to show the effectiveness of pyridoxine against linezolid induced side-effects on an experimental animal model.

METHODS: Forty pediatric rats were randomly separated into four groups. We administered 1mL of saline solution to the control group (C), 125 mg/kg/day of linezolid to second group (L), 100 mg/kg/day of pyridoxine to the third group (P) and 125mg/kg/day of linezolid plus 100mg/kg/day pyridoxine to the last group (LP) for 14 days per 12 hours. Glutathione peroxidase (GSH-Px), superoxide dismutase (SOD), catalase (CAT) and malondialdehyde (MDA) levels were measured in the erythrocytes to show oxidative stress.

RESULTS: There was a significant decrease in white cell number in L, P and LP groups when compared to control group. Activity of antioxidant enzymes SOD, GSH-Px and CAT, and level of serum MDA were higher than control group in L group. Level of MDA, which is an indicator of lipid peroxidation, and antioxidant enzyme activities were decreased in L+P given group.

CONCLUSIONS: Levels of MDA, ALT and activities of SOD, GSH-Px and CAT were increased significantly in the linezolid group. The pyridoxine may protect against the oxidative stress that occurs in erythrocytes by reducing the activity of antioxidant enzymes and MDA levels. This study, first in the literature, examined the side effects of linezolid will hopefully be a source for the future.
Combating antimicrobial resistance and antimicrobial stewardship

EXTENDED SPECTRUM BETA LACTAMASE (ESBL)-PRODUCING BACTERIA CAUSING COMMUNITY-ACQUIRED URINARY TRACT INFECTIONS (CA-UTI) IN AN INDIAN SETTING

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Aims and Objectives: The aim of this study was to assess the frequency of and identify risk factors for CA-UTIs due to ESBL-producing microorganisms (CA-ESBL-UTI) in Indian children.

Materials and Methods:

Retrospective case control study in a paediatric tertiary care centre from May 2013 to April 2014. 100 cases of CA-UTI (Age 1 month to 12 years) due to Gram negative organisms were included and predictive factors for ESBL analysed such as age < 1 year, children on uroprophylaxis, hospitalization within 3 months, recent antibiotic usage and recurrent UTI. Antibiogram and clinical response to antibiotics including cephalosporins studied.

Results:

Out of 100 gram-negative isolates, 80% were E.Coli and 12% Klebsiella pneumonia, 3.3% each Pseudomonas aeruginosa, Klebsiella oxytoca, Proteus mirabilis & Morganella morgani, 1.6% of Citrobacter. Our study reported 40% of urinary isolates as ESBL producers; of which 46% were E.Coli and 25% were Klebsiella.

We analysed the antimicrobial sensitivity pattern and found resistance to Ceftriaxone and Cefotaxime in 68%, to Trimethoprim-sulphamethoxazole in 72%, to Amoxicillin-clavulanic acid in 90%. Although in-vitro third generation Cephalosporins were resistant, one-third cases (32%) responded and recovered.

No statistically significant difference in risk factors for ESBL vs Non ESBL Groups.

Conclusion:

1. This study showed 40% of urinary isolates were ESBL producers with high in vitro resistance to ceftriaxone although 1/3rd were treated successfully.

Therefore treatment with ceftriaxone for acute pyelonephritis in children is acceptable if good clinical response even if isolates reported as ESBL producers.

2. There was no risk factor that could predict ESBL producers.
EXTENDED SPECTRUM BETA-LACTAMASE - PRODUCING ORGANISMS ISOLATED IN BLOODSTREAM INFECTIONS

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Introduction: Detection of Extended Spectrum beta-lactam (ESBL) - producing organisms isolates is necessary for infection control and disease management.

Objectives: Aim of the study is the evaluation of ESBL - producing organisms from isolates of bloodstream infections. This study includes the blood cultures isolates during a year period January 2013 to January 2014.

Methods: ESBL-producing strains were studied by phenotypic methods.

Results: The most common pathogens from 227 bloodstream infections in decreasing order were: Coagulase-negative staphylococci (72), Staphylococcus aureus (64), Escherichia coli (67), Gram-negatives bacteria (8), Klebsiella pneumonia (8), Enterobacter spp (4), Pneumococcus (2), Enterococcus spp (2).

Distribution of bloodstream infections in different hospital wards was: Pediatric ICU (59), Pediatric ward (62), Infectious diseases ward (71), Surgery clinic (35).

ESBL-producing strain were found in 11 (16.4%) isolates of E. coli and in 3 (37.5%) of K.pneumoniae. Distribution of ESBL-producing E. coli and K.pneumoniae from different hospital wards was: Pediatric ICU (10), Infectious diseases ward (1), Surgery clinic (3).

Conclusion: ESBL-producing strains were more frequently reported in ICUs than in other medical wards (16.9% vs 2.4%).
Combating antimicrobial resistance and antimicrobial stewardship

ANTIBIOTIC USE AMONG HOSPITALIZED CHILDREN IN KOSOVO

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⁴Pharmacology, University of Prishtina, Prishtina, Kosovo
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Background and aims: Antibiotic use and related resistance are tending towards escalation in many countries across Europe. There are no reliable data on antibiotic use in Kosovo hospitals. The aim of this survey was to monitor volumes and patterns of antibiotic use in hospitalized children in order to identify targets for quality improvement.

Methods: Data on antimicrobial use were collected from seven hospitals in Kosovo during 2013 using the point prevalence survey (PPS) methodology as developed by the ARPEC (Antibiotic Resistance and Prescribing in European Children).

Results: Overall 322 children were included in study. Hospital bed occupancy was 47%. Of all hospital inpatients, 58.6% received at least one antibiotic during hospital stay. In all hospital centers the most common prescribed antibiotic was ceftriaxone with 35.8%. Antibiotics were administered mainly through parenteral route - 93.6%. Empiric antibiotic prescription was higher as compared to targeted antibiotic therapy based on susceptibility tests (96.2% vs 3.8%). The top 3 antibacterial subgroups (ATC level 3) were beta-lactam antibiotics, other beta-lactam antibiotics and aminoglicosides. Out of all recorded child admissions, General Paediatric Medicine Ward accounted for 37.7%, followed by Special Pediatric Medical Ward with 26.3% of patients, and Neonatal Intensive Care Unit & General Neonatal Medical Ward with 22.87%.

Conclusions: Gathered data will be an important tool to identify targets for quality improvement in Kosovo and will support the preparation of guidelines and protocols for prudent use of antibiotics.
COMPARISON OF MINIMUM INHIBITORY CONCENTRATIONS FOR GENERIC CEFTRIAXONE AND ROCEPHIN FROM GUATEMALA FOR E. COLI AND S. PNEUMONIAE

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²Microbiology, Children’s Hospital Colorado, Aurora, USA
³Infectious Disease, Children’s Hospital Colorado, Aurora, USA

Background: Generic ceftriaxone costs less and is more accessible than Rocephin (Hoffman-La Roche) in developing countries making it an appealing alternative. Equivalency, however, is controversial.

Aims: To obtain the minimum inhibitory concentrations (MICs) for Rocephin and 6 generic ceftriaxones from Guatemala for E. coli and S. pneumoniae. To compare MICs to established standards. To determine if price impacts equivalency.

Methods: 6 different generic ceftriaxones and Rocephin were purchased from Guatemalan pharmacies and reconstituted to standardized concentrations. Broth macrodilution using Clinical and Laboratory Standards Institute was prepared for each antibiotic. Dilutions were inoculated with E. coli ATCC 25922 and S. pneumoniae ATCC 49619, incubated then MICs read. MICs were compared by categorical agreement with quality control (QC) and breakpoint standards.

Results: 5 of 6 generics and Rocephin had MICs that met QC standards (0.03-0.12 mcg/mL) for E. coli and S. pneumoniae. One generic (Drogueria Washington) did not meet QC standards for E. coli but did for S. pneumoniae. All MICs were below breakpoint (≤1 mcg/mL). There was a maximum 17-fold difference in price.

Conclusions: While most generics met QC standards, all were below the breakpoint suggesting they would adequately treat susceptible E. coli and S. pneumoniae. Price did not correlate with better MIC. Generic low-cost ceftriaxone in Guatemala may be an acceptable alternative to Rocephin for treatment of susceptible infections.

<table>
<thead>
<tr>
<th>Product</th>
<th>Manufacturer</th>
<th>Origin</th>
<th>Price US$</th>
<th>MIC E. coli (mcg/mL)</th>
<th>MIC S. pneumo. (mcg/mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceftriaxona</td>
<td>Selectapharma</td>
<td>Guat.</td>
<td>$1.55</td>
<td>0.125</td>
<td>0.063</td>
</tr>
<tr>
<td>Ceftriaxona</td>
<td>Caplin Point</td>
<td>China</td>
<td>$2.19</td>
<td>0.063</td>
<td>0.063</td>
</tr>
<tr>
<td>Ceftriaxona</td>
<td>Drogueria Washington</td>
<td>Guat.</td>
<td>$4.12</td>
<td>0.250</td>
<td>0.063</td>
</tr>
<tr>
<td>Ceftriaxona</td>
<td>CU Unk.</td>
<td></td>
<td>$5.80</td>
<td>0.125</td>
<td>0.063</td>
</tr>
<tr>
<td>Rocephin</td>
<td>Arts Pharma</td>
<td>Guat.</td>
<td>$12.89</td>
<td>0.063</td>
<td>0.063</td>
</tr>
<tr>
<td>Axtar</td>
<td>Unipharm</td>
<td>Guat.</td>
<td>$13.02</td>
<td>0.031</td>
<td>0.063</td>
</tr>
<tr>
<td>Rocephin</td>
<td>La Roche</td>
<td>Switz.</td>
<td>$26.29</td>
<td>0.063</td>
<td>0.063</td>
</tr>
</tbody>
</table>
EVALUATION OF A NOVEL INTRANASAL VACCINE AGAINST RESPIRATORY SYNCYTIAL VIRUS INFECTION IN ADULTS AND CHILDREN

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Introduction – Respiratory Syncytial Virus (RSV) is a viral agent causing serious lower respiratory tract disease. Responsible for around 200,000 annual deaths worldwide, there is currently no protective licensed vaccine against the infection.

Methods – Immune cells from airway immune tissue following elective adenotonsilectomy and Peripheral Blood Mononuclear Cells (PBMCs) from 6 adults and 5 children were isolated and cultured for immunological analysis following stimulation by the recombinant viral PanAd3RSV vaccine. The capacity of the vaccine to induce both IgA and IgG anti-F antibody responses was assessed, alongside the proliferative responses of adaptive T cells.

Results – Significant increase in IgA antibody production in response to stimulation was seen in children, with borderline significance seen in IgG antibody titres in adults and children. No significant T cell responses were seen in response to stimulation in adults or children. Significantly greater antibody responses were seen in tonsillar cells, in comparison to PBMCs.

Conclusion - Unlike many other vaccine targets, RSV has a known correlate of protection, in the form of the antibody to the F glycoprotein. Providing a foundation to build an efficacious and safe vaccine, we showed significant or increased F-specific antibody production in response to stimulation in both adults and children. Confirming the potential efficacy of intranasal vaccination over parenteral vaccination, our study did not show any significant T lymphocyte proliferation in response to stimulation. Our preliminary results suggest a significant F-specific antibody response from airway immune cells can be achieved in children following vaccination against RSV.
SCREENING OF RECTAL SWABS FOR CARBAPENEM NON-SUSCEPTIBLE BACTEROIDES FRAGILIS GROUP BACTERIA IN HOSPITALIZED CHILDREN.

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¹Department of Microbiology, Marmara University Medical Faculty, ISTANBUL, Turkey
²Division of Pediatric Infectious Diseases, Marmara University Medical Faculty, ISTANBUL, Turkey

Objectives: The carbapenem-non-susceptible Bacteroides fragilis group (BFG) bacteria have been reported in several countries recently with increasing global attention. In this study, we aimed to screen and characterise isolates from intestine for carbapenem-non-susceptible Bacteroides strains in hospitalised children.

Material and Methods: Rectal swab specimens (n=1361) were collected from 680 hospitalized pediatric patients, between 3rd of February -24th of May 2014 and 28th August 2014-9th March 2015. All anaerobic colonies were submitted to identification using MALDI-TOF (Vitek MS, bioMérieux) automated system and antibiotic susceptibility testing for meropenem by agar dilution method (CLSI- M11-A7). The presence of the cfiAgene was investigated by PCR.

Results: During the screening period 79 BFG organisms (12%) were isolated from rectal swab specimens of 674 patients. Seven different BFG species were recovered, the main species were B. fragilis (n=29; 37%), B.ovatus (n=16; 20%), P. distasonis (n=13; 16%) and B. vulgatus (n=12; 15%). The presence of cfiA was (n=25; 32%), and the meropenem non-susceptibility (MIC:≥4 mg/L) rate was (n=29; %38) among isolates. All of the cfiA gene positive strains (n=24) were B.fragilis and 17 (71%) of these strains were meropenem-non-susceptible.

Conclusion: The high carriage rate in our hospitalized children for carbapenem-non-susceptible Bacteroides fragilis group creates a great risk for serious infections and mortality and deserves significant attention. Results of this study seems to be another reason for prudent use of antibiotics in critically-ill patients in accordance with antibiotic stewardship programs.
INTRODUCTION: Antimicrobial stewardship programmes (ASPs) aim to improve appropriate antimicrobials use. We sought to evaluate the impact of ASP interventions on clinical outcomes where carbapenems were used inappropriately.

METHODS: We retrospectively reviewed carbapenem ASP interventions between July 2011 and December 2014 where use was inappropriate according to institutional guidelines. Data were analyzed in groups where physicians accepted all interventions (“Accepted”) vs. those who rejected interventions (“Rejected”).

ASP interventions include: 1) discontinue carbapenem, 2) change to narrower-spectrum antimicrobial, 3) optimize dosing, 4) further investigations, 5) Infectious Diseases referral, 6) discontinue antibiotic other than audited, and 7) intravenous-to-oral switch.

RESULTS: Out of 220 unique patients, carbapenem use was inappropriate in 101 (45.9%). There were no significant differences in baseline characteristics between groups. Significant reduction in carbapenem consumption was observed between the “Accepted” and “Rejected” groups (median defined daily doses (DDD): 0.224 vs 0.668 per 1000 patient-days, p<0.001). There was a significant reduction in 30-day mortality in “Accepted” (no mortality) vs. “Rejected” group (11 deaths, p=0.03), and a non-significant trend towards reduced length-of-stay and 30-day readmission rates in the “Accepted” group (Table 1).

CONCLUSION: Carbapenem ASP interventions can impact clinical outcomes, particularly where they were inappropriately used.

Table 1:

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Rejected(n=67)</th>
<th>Accepted(n=34)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDD (defined-daily-doses) per 1000 patient-days(median)</td>
<td>0.668</td>
<td>0.224</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>DOT (days-of-therapy) per 1000 patient-days(median)</td>
<td>0.764</td>
<td>0.417</td>
<td>0.018</td>
</tr>
<tr>
<td>Length-of-stay(median)</td>
<td>39</td>
<td>26</td>
<td>0.112</td>
</tr>
<tr>
<td>30-day readmission (excluding in-hospital mortality)(n,%)</td>
<td>29 (51.8)</td>
<td>13 (38.2)</td>
<td>0.212</td>
</tr>
<tr>
<td>Infection-related readmissions(n,%)</td>
<td>7 (12.5)</td>
<td>3 (8.8)</td>
<td>0.737</td>
</tr>
<tr>
<td>30-day mortality(n,%)</td>
<td>11 (16.4)</td>
<td>0</td>
<td>0.03</td>
</tr>
<tr>
<td>Infection-related mortality(n,%)</td>
<td>5 (7.5)</td>
<td>0</td>
<td>0.251</td>
</tr>
</tbody>
</table>
ANTIMICROBIAL PROPHYLAXIS AND THE RISK OF NEONATAL SURGICAL SITE INFECTIONS: A NATIONAL SURGICAL QUALITY IMPROVEMENT PROGRAM-PEDIATRICS (NSQIP) ANALYSIS

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Background and aims: There is paucity of data focusing on surgical site infection (SSI) in infants. Controversies exist in the use of antimicrobial prophylaxis (AMP) in newborns. Our objective is to examine the practice of AMP in our hospital, as part of an antimicrobial stewardship initiative and explore its relationship with SSI.

Methods: We conducted a two-year retrospective review in our tertiary Neonatal Intensive Care Unit (NICU) between Jan2012–Dec2013, utilizing the population and outcome of SSI as measured by the National Surgical Quality Improvement Program-Pediatrics (NSQIP). Antibiotic prophylaxis was to be given within 60 minutes of incision.

Results: There were 165 operations performed in neonatal population. The overall incidence of SSI was 20/165 (12.1%). [Table 1]. There was no association between timely administration of AMP and SSI, even after adjustment for wound classification or gestational age.

Conclusion: In our cohort, we did not find any association between AMP and SSI. However, we found a significant proportion of infants did not receive AMP within 60 minutes of incision.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>SSI</th>
<th>No SSI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Born preterm</td>
<td>9/20</td>
<td>79/145</td>
<td>0.522</td>
</tr>
<tr>
<td>Gender (Male)</td>
<td>8/20</td>
<td>12/145</td>
<td>0.032</td>
</tr>
<tr>
<td>*Body weight (median)</td>
<td>2990g</td>
<td>2980g</td>
<td>0.879</td>
</tr>
<tr>
<td>Antibiotics given within 60 minutes of incision</td>
<td>10/20</td>
<td>93/145</td>
<td>0.221</td>
</tr>
<tr>
<td>Intra-operative antibiotics</td>
<td>14/20</td>
<td>111/145</td>
<td>0.522</td>
</tr>
<tr>
<td>Post-operative antibiotics</td>
<td>19/20</td>
<td>117/145</td>
<td>0.115</td>
</tr>
<tr>
<td>Wound classification</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clean</td>
<td>0/20</td>
<td>20/145</td>
<td>0.357</td>
</tr>
<tr>
<td>Clean/Contaminated</td>
<td>15/20</td>
<td>104/145</td>
<td></td>
</tr>
<tr>
<td>Contaminated</td>
<td>2/20</td>
<td>8/145</td>
<td></td>
</tr>
<tr>
<td>Dirty</td>
<td>3/20</td>
<td>12/145</td>
<td></td>
</tr>
<tr>
<td>ASA classification</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2/20</td>
<td>5/145</td>
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Chi-square/Fisher’s exact test; *Mann-Whitney U test
Combating antimicrobial resistance and antimicrobial stewardship

EPIDEMIOLOGY AND MICROBIOLOGY OF COMMUNITY-ACQUIRED METHICILLIN-SUSCEPTIBLE (CA-MSSA) AND METHICILLIN-RESISTANT (CA-MRSA) STAPHYLOCOCCUS AUREUS SKIN/SOFT TISSUE (SSTI) AND INVASIVE INFECTIONS IN COSTA RICAN CHILDREN: A PROSPECTIVE STUDY

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Background and aims: In Costa Rica, pediatric rates of CA-MRSA SSTI and invasive infections during the last decade ranged from 44-68% and resistance to clindamycin was 4%. Our main objective is to describe the current antibiotic resistance pattern of CA-staphylococcal infections in patients (pts) hospitalized at our only national pediatric tertiary referral hospital.

Methods: Ongoing prospective descriptive study of pts admitted to our institution with a CA-MSSA or CA-MRSA SSTI or invasive infection episode (S.aureus isolated in a normally sterile site), from December-1-2014 to May-31-2015.

Results: 47 pts have been enrolled so far, 55.3% were boys. Distribution by age groups was the following: <24 months, 17 (36.2%) pts; 25-59 months, 8 (17%) pts; and >60 months, 22 (46.8%) pts. The main clinical presentations were soft tissue abscesses, 25 (53.2%) pts, acute osteomyelitis/septic arthritis, 9 (19.1%) pts; pyomyositis/muscle abscesses, 5 (10.6%) pts; pneumonia/empyema/lung abscess, 3 (6.4%) pts; meningitis, 2 (4.3%) pts; and acute endocarditis, septicemia and pelvic inflammatory disease, 1 pt each (2.1% each). 70.2% of isolates were MRSA, 16.3% were clindamycin-resistant, and no resistance to TMP-SMX, rifampin, and vancomycin was documented. 69.2% and 71.8% of isolates were PVL(+) and mecA(+), respectively. 44 (93.6%) pts required ≥1 local or extensive surgical drainages. No deaths occurred.

Conclusions: At our institution, increasing rates of CA-methicillin and clindamycin resistant S.aureus isolates has increased during the last years. Continuous surveillance and more molecular studies to these isolates, including determination of circulating clones should be performed. To our knowledge, our rates of CA-MRSA are the highest among Central American children.
INTRODUCTION

Human rotavirus infection is the leading cause of acute gastroenteritis among children less than 5 years of age in most developing countries. In the Philippines, diarrhea continues to be one of the leading causes of child morbidity and mortality. In 2012, the National Rotavirus Surveillance was established to estimate burden of the rotavirus disease and the Philippines has included vaccine as part of Expanded Programme on Immunization.

METHODS

RESULTS

A total of 2,209 cases were received from seven sentinel hospitals for 2013 and 2014. Among these cases, 913 (41.33%) children were positive for rotavirus antigen. The G1P[8], G2P[4], and G9P[8] strains were the common types.

Group A rotavirus detection increased from 2013 (37.64%) to 2014 (43.78%). An increase in the frequency of G1P[8] genotype was observed from 2013 (71.47%) to 2014 (85.08%). It was accompanied by a reduction in detection of G2P[4] genotype, 17.24% in 2013, 6.90% in 2014. We noted the presence of G3P[8], G2P[6] and G4P[6] in 2013 and emergence of genotypes G2P[8] and G4P[6] in 2014.

CONCLUSION

The data showed that rotavirus positivity continued to remain significant each year (2013-2014). Most of the circulating genotypes detected in the Philippines belong to commonly detected genotypes but it also marked the circulation of unusual combinations of G and P types. Such finding implies, continued monitoring of prevalent rotavirus strains before and after the implementation of rotavirus vaccines is critical to help in identifying the possible reemergence of a new strain and to develop a more effective vaccine.
IMPACT OF ROTAVIRUS VACCINATION ON ACUTE GASTROENTERITIS HOSPITALISATIONS IN CHILDREN AGED LESS THAN 5 YEARS IN WESTERN AUSTRALIA

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Background

Rotavirus gastroenteritis is one of the leading cause of acute gastroenteritis requiring hospitalisation in children aged less than 5 years. Rotavirus vaccine for infants was introduced into the National Immunisation program in Australia in July 2007. We aimed to evaluate the impact of the rotavirus vaccine on all-cause gastroenteritis and rotavirus-related hospital admissions in Western Australia.

Methods

We conducted a retrospective analysis of population-based hospital admission data for all hospitalisations, between 1 Jan 2005 and 31 Dec 2011 with ICD-10AM coding for acute gastroenteritis (including rotavirus) as principal diagnosis, for children less than 5 years in Western Australia. Hospitalisation rates, based on age, Indigenous status and remoteness, for rotavirus and non-rotavirus acute gastroenteritis before and after the introduction of rotavirus vaccine were compared.

Results

There were a total of 9726 acute gastroenteritis-related hospital admissions including 848 rotavirus admissions, in children less than 5 years. 22% of these admissions were identified as being Indigenous. When compared to the pre-vaccine period, there was a significant reduction of 76% in rotavirus-coded hospitalisations (from 135 to 33 per 100,000) and 40% in non-rotavirus gastroenteritis hospitalisation rates (from 1008 to 600 per 100,000) in the post-vaccine period. These declines was across all age-groups, in both Indigenous and non-Indigenous children.

Conclusion

Rotavirus vaccine introduction has been associated with significant reduction in gastroenteritis hospitalisations in Western Australia. Apart from vaccine protection, the reduction in rotavirus hospitalisations for children in the cohort who were not eligible for vaccine age-wise, is suggestive of herd immunity.
Acute gastroenteritis (AGE) is a major cause of morbidity and mortality worldwide, mainly in children under five years old. This study aimed to search for norovirus/adenovirus in sera and stools of children hospitalized with AGE in two pediatric clinics from Belém, Pará, Northern Brazil. From March/2012 to March/2015 418 sera and 434 stool samples were tested for norovirus by RT-qPCR and EIA, respectively. Positivity rates of 21.4% (93/434) were yielded in the stools and 23.6% (22/93) in sera of those children whose stools were norovirus-positive. Genotyping showed the predominance (91%) of norovirus GII.4 strains, with identical genotypes being identified in both stools and sera. We also searched for adenovirus in samples that were negative for rotavirus/norovirus, from March/2012 to August/2014, using Nested-PCR. Positivity rates of 46.8% (81/173) and 50% (10/20) were yielded in stools and sera, respectively. Of the samples sequenced, 79% (stools) and 75% (sera) were assigned to subgroup F types-40/41, the main types causing AGE. The age distribution of the positive cases for norovirus/adenovirus included all age groups (0->60month), mainly before 36 months for norovirus and before 48 months for adenovirus. Positive cases for both viruses were detected in sera mainly until 48 months. The monthly distribution demonstrated that both viruses circulated throughout the whole period of the study. Our data denoted norovirus/adenovirus viremia in children with AGE and warrant the conduct of further studies toward a better knowledge in norovirus/adenovirus pathogenesis in young children.
GENOTYPES OF ROTAVIRUS GROUP A CIRCULATING AMONG CHILDREN CONSULTING AT A REFERRAL HOSPITAL, MONTEVIDEO, URUGUAY.

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Background and aims.

Rotavirus is a major cause of diarrhea in children, constituting a Public Health problem worldwide. Only groups A, B and C infect humans, having group A the highest morbidity and mortality. Group A rotavirus are classified according to proteins VP7 (G type) and VP4 (P type). The circulating strains vary temporarily and geographically. G1P[8], G2P[4], G3P[8], G4P[8] and G9P[8] represent 74% of infections worldwide. In Uruguay previous reports have shown the circulation in children of G1, G2, G4 and G9, being the most frequent combination G4P[8].

The aim of our study was to genotype the strains of Rotavirus group A circulating among children who consulted at the pediatric hospital Centro Hospitalario Pereira Rossell, during 2012 and 2014.

Methods.

Fifty stool samples positive for Rotavirus group A by immunochromatographic test (Certeest®) were randomly chosen (25 samples from 2012 and 25 from 2014). The samples were freezed at -80°C at the moment of processing for diagnosis of the etiology of diarrhea. The ARN extraction was made by the Trizol® method following the manufacturer’s instructions. VP7 and VP4 were amplified by PCR following WHO recommendations. The products were sequenced in both directions and analyzed using bioinformatics programs.

Results.

The circulation of G3P[8] and G1P[8] was detected.

Conclusions.

We report the circulation of G3 that had not been reported in our country until now. Surveillance is important due to the variation of circulating strains and foreseeing the introduction of the Rotavirus vaccine.
CHARACTERISTICS OF SOME BIOLOGICAL MARKERS OF THE ANTIOXIDANT SYSTEM IN THE CHILDREN WITH VIRUS INFECTIOUS DIARRHOEA

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Introduction Antioxidant defense system is opposed to damaging effects of free radicals. The main active elements are biological endogenous antioxidants.

Materials Investigation was conducted in 138 children aged 1 to 3 years, admitted to hospital with diagnosis acute virus intestinal infection (main group) and control group (25 identical healthy children).

Result were detected tendency to increase of antioxidant defense markers, which included transferrin level (2.47±0.09 g/L), but also it was heading to upper reference limit and it can be considered as the activation process. Levels of antiphospholipid antibodies in the main group varied within reference values in the pool AFL IgG, (13.39±0.23 U/ml), which was similar to the literature date about the transitory character of their levels increased. IgG synthesis and its level in blood serum increased in response to infection (IgG was noted a significant increase in 2.5 times). At admission level of IFN-α was reduced (amounted to 25.32±3.12 pg/ml). The cytokines levels in the children of main group were significantly higher in the acute phase (amounted 2.3 times).

Conclusion Antioxidants can neutralize of free radicals before the onset of damage effect on the biomolecules. Protection of free radicals damaging effect at infectious diarrhoea takes place at all levels of the organization: from the cell membrane to the whole organism and has transitory character.
**Background & Aim**

Rotavirus is the most important etiological agent of severe childhood diarrhea. The Rotarix® vaccine was introduced in Bolivia in 2008. In the pre-vaccine period, rotavirus-associated hospitalizations represented 51% of acute diarrheal cases. Three major common G (G1, G2, G9) and P (P[4], P[6], P[8]) genotypes co-circulated between 2004-2008. We describe impact of Rotarix® in diarrhoeal-hospitalizations and patterns of genotype distribution of circulating strains.

**Methods**

The study was conducted in Bolivia along 2009-2014. Clinical data & diarrheal specimens were obtained from hospitalized children (0-2 years of age). Samples were analyzed for rotavirus detection by ELISA. Reverse-transcription PCR-assays were performed to determine rotavirus genotypes.

**Results**

During 2009-2014, hospitalizations caused by rotavirus significantly declined up to 23% in 2014, concomitantly with major seasonal outbreak reduction. A decrease in the severity of the diarrhea was also detected. Along this period, G genotypes predominated, while cycling of G2P[4] and the emergency of G3 and G12 genotypes was observed. G3P[6] was particularly associated with outbreaks during 2014. Moreover, difference in strains distribution between high-land and low-land regions has been observed. Despite circulation up to 7 strains along the outbreak period, there is a strong vaccine protection against the disease.

**Conclusions**

In the post-vaccine period, a major decline of rotavirus-hospitalizations and disease-severity was observed. The emergence of G12 & G3 genotypes was registered, being G3P[6] associated with major outbreaks during 2014. These findings are consistent with global reports of the spread of G12 and G3P[6] strains reinforcing the need for continue rotavirus surveillance in the country.
INTRODUCTION OF ROTAVIRUS VACCINE AFTER A DIARRHEAL OUTBREAK CAUSED BY G1P[8] ROTAVIRUS STRAIN IN SWAZILAND

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Background

In Swaziland Rotarix vaccine was introduced in May 2015 after a diarrheal outbreak that occurred between July and August 2014. Reported diarrheal cases exceeded 10% of normally observed cases both in government and private health facilities, with majority of cases from children < 2 years of age. Although the case fatality rate (0.35%) was below the 1% target for the diarrheal disease, however a number of infant’s deaths occurred during this period. Thus, the aim was to determine the cause of the diarrheal outbreak.

Method

A total of 186 stool samples were collected from children with severe gastroenteritis from both government and private hospital facilities. Detection of Group A rotavirus antigen was performed using ProSpecT™ rotavirus enzyme immunoassay kit. The P and G genotypes were established by multiplex hemi-nested reverse transcription polymerase chain reaction.

Results

Group A rotavirus most predominant causative organisms at 74%(138/186). A random sample (n=30) of these rotavirus positive samples indicated coexisting with adenovirus, astrovirus and sapovirus. Escherichia Coli and Ascaris Lumbricoides were occasionally detected. The most affected children were aged between 0 – 12 months at 84%(156/186). The G1P[8] rotavirus strains were the most predominate at 93%(91/98) followed by G1P[6] 4%(4/98) and the least detected genotypes were 2% (2/98) G2P[4] and 1% (1/98)G3P[8].

Conclusion

The G1P[8] rotavirus strain was the causative organism for this diarrheal outbreak. Hence, the Ministry of Health introduced Rotarix vaccine in the Expanded Programme of Immunization schedule to reduce the severity of the gastroenteritis among infants and improving the quality of life.
USE OF LABORATORY TESTS TO PREDICT DEHYDRATION IN CHILDREN WITH GASTROENTERITIS.

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Introduction: Gastroenteritis is a common affliction among children and accounts for a large proportion of visits and admissions at a pediatric emergency facility. In every patient case it is necessary to evaluate the degree of dehydration in order to determine the appropriate level of care. This is usually done by using clinical scores. There have been several attempts to identify a laboratory parameter that can aid in this estimation of dehydration. Base Excess is a parameter commonly used today despite lack of evidence. This study aims to determine whether there is a correlation between the value of base excess and the clinical evaluation of dehydration measured in Skånes Universitetssjukhus (SUS) for children with gastroenteritis.

Methods: In a retrospective study 1239 patient files, all of which had been given the diagnosis of gastroenteritis, were reviewed. The degree of dehydration and the value of base excess were recorded among several other parameters. Spearman correlation coefficient was used to assess the correlation between base excess and the clinical evaluation of dehydration.

Results: There was a negative correlation between base excess and the clinical assessment of dehydration ($r=-0.499$, $p<0.005$).

Conclusion: We found a significant correlation between base excess and the clinical evaluation of dehydration. However, it was not possible to find a clear cut off value to distinguish between mild, moderate or severe dehydration. Whilst not replacing the clinical evaluation, this result supports the use of base excess as a clinical tool for assessing dehydration.
THE EFFECT OF CARBOXYMETHYLATED BETA-GlUCAN IN PATIENTS WITH ACUTE GASTROENTERITIS ON ITS CLINICAL IMPROVEMENT AND LENGTH OF HOSPITAL STAY

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BACKGROUND AND AIMS: Beta-glucan is a scientifically proven biological defense modifier that nutritionally potentiates and modulates the immune response. The aim of this study was to determine the effect of beta-glucan on the recovery of patients with acute viral gastroenteritis.

METHODS: This is a prospective, randomised, nonblinded controlled trial. One hundred twenty patients with acute viral gastroenteritis were randomised to receive either ORS + Zinc + 1 gm CM-glucan or ORS + Zinc only. The frequency and consistency of the stools were monitored daily until discharge. The length of hospital stay was also determined.

RESULTS: There was early resolution, as early as Day 3 of treatment, of the stool consistency in the CM-glucan group compared to the control group. There was also a significant decrease in the frequency of bowel movement in the CM-glucan group. Consequently, there was a significant decrease in the length of hospital stay in the CM-glucan group compared to the control group.

CONCLUSIONS: CM-glucan is effective on the speedy recovery of patients with acute viral gastroenteritis.
PREVALENCE OF INTESTINAL ENTEROPATHOGENS IN AN AFRICAN-DESCENDANT COMMUNITY IN NORTHERN BRAZIL

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Gastroenteritis is a major cause of morbidity and mortality in children with few data about diarrhea, enteric viruses and intestinal parasites especially in African-descendant communities. The aim of this study was to determine the frequency of these pathogens in children and adults living in an African-descendant community in northern Brazil. Fecal specimens were collected from children aged less than 10 years or adults with clinical symptoms or without symptoms. From April 2008 to September 2010, a total of 375 stool samples were collected. RVA, PBV and RVC were detected in 6.4% (24/375), 1.3% (5/375), and 1.1% (1/88) of samples, respectively. Parasitological tests were performed on 349 stool specimens, showing that 86.2% patients had infestation with at least one intestinal parasite. The most frequent parasites were Entamoeba histolytica 28.4% (99/349), Ascaris lumbricoides (27.8%; 97/349) and Trichuris trichiura (25.8%; 90/349). Associations between viruses and parasites were observed in 40% (44/110) of the diarrheic group and in 1.9% of the asymptomatic group (5/265) (p<0.0001). The frequency of vomiting and fever was of 41.5% and 46.3% in diarrheic children, while in the non-diarrheic was 5% and 3.4%, respectively. Nutritional analysis showed that 81.6% children aged 0-10 years were eutrophic and 18.4% malnourished, including nutritional risk (2.6%), severe acute malnutrition in 13.2%, and chronic malnutrition in 2.6%. This study highlights the occurrence of enteropathogens and malnutrition in the Quilombola community, showing the need to implement preventive actions involving improvement of health services and universal access to adequate sanitation conditions.
Intestinal spirochetosis is an unusual cause of infection and its clinical significance in humans is uncertain. The severity of disease can vary from asymptomatic colonization to invasive and rapidly fatal progression.

We report the case of a 7 year-old girl, who presented with greasy stools, 2-3 times per day, for over 3 months, with no other associated symptoms such as weight loss, anorexia, fever or abdominal pain. Physical examination showed no alterations. Patient started treatment with albendazole without symptomatic improvement, so laboratorial investigation for the most common causes of steatorrhoea was initiated. Stool culture, ova and parasites test was negative. Fecal chymotrypsin and elastase, vitamin A, D, K and E levels were normal; amylase and lipase levels were low. Sweat testing for cystic fibrosis was inconclusive, but genetic test was negative for the more frequent mutations. Upper and lower gastrointestinal endoscopy revealed no alterations. The tissues were biopsied and analyzed and histological examination on hematoxylin and eosin stain of the colonic biopsies demonstrated a diffuse blue fringe along the border of the intercryptal epithelial layer, highly suggestive of human intestinal spirochetosis, despite the inconclusive result of Warthin-Starry impregnation. Patient initiated treatment with metronidazol, with complete resolution of symptoms.

Etiological investigation of steatorrhoea poses a diagnostic challenge. A high degree of suspicion is required to consider alternative diagnoses, when the most common causes are excluded. Intestinal spirochetosis may be more frequent than suspected, and the definitive diagnostic can only be made by the histological examination of colonic biopsies.
CAN OPD BASED SUPPORTIVE THERAPY IN ACUTE GASTROENTERITIS, DECREASE HOSPITAL ADMISSIONS?

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BACKGROUND

Acute gastroenteritis is the major cause of hospital admission in Pediatrics IPD. Most of the diarrhoeal disorders are viral in origin for which antibiotics are not required and the cause of admission is usually dehydration.

OBJECTIVES

To assess the role of Supportive therapy for diarrhea in OPD to decrease hospital admission and decrease irrationale usage of antibiotics.

METHODS

Study was done in OPD cases in a Tertiary care centre in kashipur Uttrakhand for a period of one year. A prospective randomized study was conducted on 678 children aged 6 months to 16 years where gastroenteritis was one of the predominating presenting complaint. All subjects were analysed and categorized into no dehydration, Some dehydration and Severe dehydration. In the test Group children were started on Zinc/Racecadotril/Pre-Probiotics and ORS. The control group were kept on ORS alone. Antibiotics were started in case of high grade fever, severe dehydration, abdominal pain, dysentery. Choice of antibiotic was Nitazoxanide and Cefixime in less than 8 years of age and Ofloxacin and ornidazole in more than 8 years of age.

RESULTS

The rate of revisit in Test group was 15% and admission rate was 7%. Where in the control rate rate of visit was 33% and admission rate was 32%.

CONCLUSION

ORS therapy +Zinc, Racecadotril, pre-probiotics are more effective than ORS alone in treating, no or some dehydration with acute gastroenteritis, and decreases the admission rate.

KEYWORDS

Acute Gastroenteritis, zinc, racecadotril, probiotics
ROTAVIRUS VACCINES EFFECTIVENESS AND GENOTYPES CIRCULATING IN LATIN AMERICA AFTER ROTAVIRUS VACCINE INTRODUCTION: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: We aimed to describe the effectiveness of the vaccines and the frequency of rotavirus strains experienced by Latin America (LA) countries after vaccine introduction.

Methods: We performed a systematic review and meta-analysis of published studies (Figure 1).

Results: We found a rotavirus incidence of 16.1% (95%CI 13.2-19.3) in LA. G2 was the most prevalent G genotype (51.6%, 95%CI 37.8-65.3), followed by G9 (14.5%, 95%CI 7.4-2.3) and G1 (14.2%, 95%CI 6.9-23.3). Among P genotype, P[4] (54.1%, 95%CI 41.3-66.5), P[8] (33.2%, 95%CI 21.9-45.5), and P[6] (3.9%, 95%CI 1.7-6.7) were the most common (Table 1). G2P[2] was the most frequently found genotype in most studies. The estimated overall odds ratio was 0.50 (95% CI, 0.43-0.59), indicating a protective efficacy of 50% against infection among vaccinated children after exposure compared with unvaccinated children (Figure 2).

Interpretation/Conclusion: Rotavirus vaccines are effective in preventing rotavirus-diarrhoea in children in LA countries. Surveillance studies after vaccine introduction with detail to rotavirus incidence and rotavirus genotype are essential to assess rotavirus incidence and rotavirus genotype circulation in various settings.
ANTIBIOTIC PRESCRIBING AMONG PEDIATRIC INPATIENTS REGISTERED WITH ACUTE GASTROENTERITIS IN TWO PRIVATE SECTOR HOSPITALS IN CENTRAL INDIA

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Background and Aim

Pediatric patients with acute gastroenteritis (AGE) are commonly prescribed antibiotics, although the most common cause for AGE are viruses. According to the international guidelines, antibiotics are only indicated for bloody diarrhoea. The aim was to describe antibiotic prescribing among paediatric inpatients with AGE in two private sector hospitals; one teaching (TH) and one non-teaching (NTH) in Central India.

Methods

Data from all inpatients with AGE at the pediatric departments at both hospitals was collected for 3 years (2008-2011) using a customized manual form. Data from inpatients aged 0-17 were analyzed. Antibiotic prescriptions were analyzed using the WHO Anatomical Therapeutic Chemical (ATC) classification system and Defined daily dose (DDD).

Results

In the TH, 30% (51/168) patients diagnosed with acute gastroenteritis received antibiotics compared to 75% (695/925) in the NTH. None of the patients were registered with bloody diarrhoea. The most commonly prescribed antibiotics (constituting >90% of the antibiotic prescribing in DDDs) were amikacin, (J01GB06: 237 DDD/1000 patients) and ceftriaxone (J01DD04: 250 DDD/1000 patients) at the TH and ceftriaxone (J01DD04: 266 DDD/1000 patients) and ceftriaxone with tazobactum combination (J01RA85: 252 DDD/1000 patients) at the NTH.

Conclusions

Antibiotics were prescribed to un-indicated patients, 30% versus 75% of patients diagnosed with AGE at the TH and NTH respectively. However, none of the patients with AGE were registered with bloody diarrhoea. Broad-spectrum antibiotics were prescribed frequently in both hospitals. The results demonstrate a need to reduce the prescribing of antibiotics among paediatric patients with acute gastroenteritis, especially in the NTH.
INCIDENCE OF NOROVIRUS AMONG CHILDREN WITH ACUTE DIARRHOEA IN THE SERGIPE STATE, NORTHEAST BRAZIL

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Introduction: Despite substantial decreases in recent decades, acute diarrhoea is the second leading cause of mortality among children under 5 years old in low-and-middle-income countries and norovirus (NoV) has assumed a major position as responsible for gastroenteritis worldwide, after rotavirus vaccines introduction. This study aimed to detect the presence of NoV in diarrheal faecal samples of children in the main paediatric urgency of Sergipe State, Northeast-Brazil.

Methods: This was a prospective survey of children <12 years old presenting with acute diarrhoea attended in the paediatric urgency service of Sergipe Urgency Hospital (HUSE) from June-2011 to January-2013. After providing informed written consent, parents were interviewed to establish the clinical profile. Stools specimens were collected and screened for rotavirus (ELISA, Rotacloon®) and norovirus detection (Reverse Transcription-Polymerase Chain Reaction - RT-PCR). Nakagomi score was used to classify diarrhoea severity. Categorical variables were described using frequencies and percentages. We used the chi-square and Mann-Whitney tests.

Results: Stool samples of 318 children were analysed and 72 (22.6%) were NoV-positive, while 32 (10.1%) were RV-positive. NoV was more prevalent in all months, except in January 2012 (Figure). NoV-positive children were younger than NoV-negative (p=0.013). The diarrhoea severity score was lower in children with NoV-positive than in children with RV-positive (p= 0.018). There was no significant difference between age distribution of NoV-positive and RV-positive groups.

Conclusion: NoV was more frequent than RV in children with gastroenteritis after the introduction of vaccination against rotavirus. However, the severity of NoV illness was lower and more frequent in young children.
EPIDEMIOLOGY OF ROTAVIRUS GASTROENTERITIS IN TOGO PRIOR TO ROTARIX VACCINE INTRODUCTION INTO EPI


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Background and aims: Rotavirus is the most common cause of severe gastroenteritis and dehydration in young children in both industrialized and developing countries. Data for rotavirus disease burden estimation was generated in Togo through sentinel surveillance prior to vaccine introduction into EPI. Rotarix vaccine was introducing since June 2014.

Methods: We conducted sentinel surveillance for rotavirus gastroenteritis among children <5 years of age in two sentinel sites in Lome (Sylvanus Olympio Teaching Hospital since February 2008 and Be Hospital since December 2013), basing on the World Health Organization’s generic protocol. Rotavirus was detected in stool specimens by ELISA. Strain characterization by genotyping was performed at Noguchi Memorial Institute in Accra (Ghana) and at Medunsa campus in Pretoria (South Africa).

Results: From January 2010 to June 2014, 1025 children with acute gastroenteritis were enrolled and of which 570 (56%) were positive for rotavirus. The difference of age among children with rotavirus and non-rotavirus gastroenteritis was significant (p=0.020) with rotavirus cases younger than non-rotavirus cases. Every year, from December to March, significantly (p=0.000) more cases of rotavirus gastroenteritis were enrolled compared with other months of the year. Vomiting (p=0.000) and dehydration (p=0.000) were more common in children with rotavirus than non-rotavirus gastroenteritis. The most common G-P combination was G12P[8] (18%), followed by G3P[6] (14%) and G1P[8] (13%).

Conclusions: Prevalence of rotavirus is high among children with acute gastroenteritis in Togo. Continued and extended rotavirus surveillance will be important for epidemiological changes monitoring and vaccine impact evaluation.
NOROVIRUS DISEASE SEVERITY IS COMPARABLE TO ROTAVIRUS DISEASE IN CHILDREN IN MEDICAL SETTINGS

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Background and aims

Rotaviruses (RV) and Noroviruses (NoV) are the most common causes of severe acute gastroenteritis (AGE) in children. Many studies have assessed and compared the roles of both viruses, but to our knowledge, there are no systematic reviews comparing the severity of NoV and RV disease.

Methods

We searched MEDLINE for studies reporting data for both NoV and RV medically attended disease severity in children. We included studies where all children had been tested for both NoV (RT-PCR) and RV (ELISA and/or RT-PCR) and that reported disease severity using the Vesikari or modified Vesikari score, or provided clinical information on severity. We generated pooled estimates of the mean with 95% confidence intervals using random effects meta-analysis.

Results

We identified 212 publications in our search. After screening for relevance and application of the inclusion criteria, we were left with 29 studies for the analysis. Fifteen studies provided data on Vesikari or modified Vesikari severity score. The pooled mean severity score (95%CI) among outpatients was 10 (8-12) for NoV and 11 (8-14) for RV. Among inpatients, it was 11 (9-12) for NoV and 12 (11-14) for RV. The difference was statistically significant among inpatients, albeit of unclear clinical relevance.

Conclusions

Norovirus and rotavirus disease are comparable in severity in children both in outpatient and inpatient settings. This should be considered when evaluating the introduction of an eventual NoV vaccine in national immunisation programs.
Two siblings with human cutaneous anthrax: Case report

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Introduction: Anthrax is a disease caused by Bacillus anthracis, a Gram-positive, rod-shaped endospore-forming, capsulated bacterium. Anthrax is manifest in three primary forms: cutaneous, respiratory, and gastrointestinal. Cutaneous anthrax accounts for approximately 95% of all cases of anthrax in humans. There is usually a history of contact with animals. Here we report two siblings with cutaneous anthrax.

Case: Two siblings who are 15 and 17 years of age were admitted because of skin wounds. Ten days ago they cut a goat. One of the brothers who carried the goat at his back had a wound on the back (Figure 1) and the other brother who helped him had a similar wound on his palm (Figure 2). Cutaneous anthrax was diagnosed by the identification of typical anthrax lesions and the presence of Gram-positive-capsulated bacillus after staining with Gram stain and methylene blue in pathology samples obtained from these lesions. Cultures were positive for the presence of bacillus.

Conclusion: Although the prevalence of anthrax is a decreasing worldwide, it is still a significant problem in developing countries. Early supportive treatment and appropriate antimicrobial measures are necessary to avoid this potentially life-threatening disease.
Objective: To describe the evolution of the epidemic of Chikungunya virus in El Salvador.

Background: In the epidemic in El Salvador, the index case was identified in April 2014 in Zapote Abajo, municipality of Ayutuxtepeque, with a population of 1300 inhabitants. The first cases were characterized by onset of fever of 39-40 °C, which was accompanied by itchy rash, malaise that prevented ambulation, severe arthralgia and myalgia preferably in joints of the hands, feet and ankles, with an average duration 5 days.

Method: Bibliographic review of the literature.

Results: All homes visited had active mosquito breeding sites. The disease began to appear in other family members in about two weeks after the first case. In addition, the common link between the cases were that people had attended Christian churches. An attack rate of 64% was determined; the people affected were between the ages of 10-19 years old and the two main symptoms: fever and arthralgia. Currently up to week 19 of 2015, 135,226 suspected cases were reported and 157 were confirmed.

Conclusions: Chikungunya virus has become endemic in Latin America and we have not seen yet the effects that occur in the chronic phase. Moreover, in our country, we have to characterize the atypical presentation of the disease and have a more active search for deaths related to this virus. Since it has found a different viral genotype than the other two found in the old world, we can be still discovering new variants of the same disease.
Emerging and zoonotic disease

HYDATIDOSIS - CASE REPORTS OF TWO IMMIGRANT CHILDREN
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Background and aims: Hydatidosis is caused by larval stage of Echinococcus granulosus with high prevalence in Eastern Europe and nonspecific clinical features. We describe two cases illustrating the need for diagnostic suspicion and relevance of following-up.

Methods: Data collected from patients’ hospital file.

Results: Case 1 - A 17-year-old Romanian female, with one year epigastric pain, without nausea or vomiting. In Romania she had contact with dogs. Abdominal ultrasound (US) showed right lobe hepatic cyst and central septa. She had no extra hepatic involvement, neither analytical abnormalities. Echinococcus antibody tests by ELISA were positive (2.32). After five months treatment with albendazole, as cyst dimensions remained the same, surgery was held with cyst aspiration, injection of hypertonic saline and omentoplasty. She left the follow-up one month later.

Case 2 - An asymptomatic seven-year-old female with pulmonary and hepatic hydatid disease surgically treated in Bulgaria at the age of 3 years. She had elevated total IgE (558UI/mL) and serologic tests positive (1/512) for Echinococcus. Abdominal US revealed four hepatic cysts. She was treated with five months of albendazole, cystectomy and continued antiparasitic drug for three months. A six-year follow-up revealed persistent positive serologic results confirmed by ELISA technique and abdominal calcified cysts sequelae.

Conclusions: Though not common in our country, hydatidosis should be suspected in children from endemic countries. An adequate follow-up of these patients must be performed to prevent risk of relapse.
NON-TUBERCULOUS MYCOBACTERIA (NTM) IN CHILDREN WITH CYSTIC FIBROSIS: LONGITUDINAL CHARACTERIZATION BY WHOLE-GENOME SEQUENCING (WGS) AND ASSOCIATION WITH PULMONARY FUNCTION

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Background: The role of nontuberculous mycobacteria (NTM) in children with cystic fibrosis remains ill-defined. Despite of the increased appreciation of the relevance of NTMs and the challenges their resistance patterns pose for successful treatment, data assisting the interpretation of these findings in the clinical context remain scarce.

Method: All respiratory specimens of cystic fibrosis patients at Children’s Hospital Los Angeles from 03/2012 to 09/2014 were prospectively collected. All NTM isolates underwent next-generation whole-genome sequencing and extended-panel phenotypic susceptibility testing. Linear modeling with repeated measure adjustment before and after NTM acquisition was performed on patients’ pulmonary function test in comparison with matched controls.

Results: We identified 32 NTM-isolates in 14/125 patients (11.2%). Ten patients isolated M. avium complex, four M. abscessus; one identified as M. abscessus subsp. massiliense. Longitudinally within each patient, isolates showed negligible variation in their genomes as assessed by WGS and in susceptibility genotypes independent of antimicrobial exposure; with high-level of antimicrobial resistance at onset of NTM presence. Lower pre-existing FEV₁, FVC, FEF25 and SBN2 were associated with mycobacterial acquisition (P<0.005); whereas RV and TLC did not differ before acquisition, but worsened significantly thereafter (P<0.005).

Conclusions: Patients who isolated NTM showed worse dynamic lung function parameters prior to the acquisition, whereas RV and TLC worsened in patients following NTM acquisition when compared to matched controls. Once acquired, NTM strains remained virtually unchanged, both in pheno-and genotypic susceptibility profile and on a genome-wide level.
CARACTERIZACION CLINICA DEL CHIKUNGUNYA EN RECIEN NACIDOS Y LACTANTES MENORES EN EL HOSPITAL NACIONAL DE NIÑOS BENJAMIN BLOOM DE EL SALVADOR DE MAYO 2014-DICIEMBRE 2014

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Antecedentes: Latinoamérica está afectada por epidemias causadas por vectores, con altos índices de hospitalizaciones así como morbimortalidad, ejemplo Chikungunya producido por del zancudo Aedes Aegypti o A. Albopictus hembra, además es responsable del Dengue y Zica.

Objetivo: Caracterizar el cuadro clínico en recién nacidos y lactantes menores que es muy similar a la sepsis neonatal.

Métodos: Se revisó 24 expedientes del Hospital Bloom del 1 de Mayo al 31 de Diciembre 2014 quienes presentaron proceso febril en el contexto de la epidemia.

Resultados: 24 lactantes presentaron fiebre (100%), irritabilidad (92%), llanto persistente a la movilización (85%), Rash en las primeras 24 horas (80%), Rash con pequeñas ampollas (35%), signos de hipo perfusión (30%), signo de mar rojo con islas blancas (15%)

Hallazgos de laboratorio fueron leucocitosis, predominio de linfocitos en el 78 %, plaquetas normales en > del 85 %, Hb disminuida el 60 %, proteína C elevada en el 26% de casos.

Conclusiones: El cuadro de Chikungunya en lactantes menores y recién nacidos es similar al de la sepsis neonatal, pero con rasgos clínicos diferentes. Por lo cual es importante para los clínicos conocer las diferencias para un mejor manejo.
ECHINOCOCCOSIS IN CHILDREN AND TEENAGERS IN HOSPITALS OF CUSCO PERU AT HIGH ALTITUDE 3400 MASL 2010-2014
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Introduction: Echinoccosis or cystic hydatidosis is a zoonotic parasitic disease due to the larval stage of taenia. In children that are the endangered group that gets the infection initially, it is said has special features such as higher rate of lung infection rather than in liver. The objective of this descriptive study was to evaluate the features of this disease in a high incidence setting in Cusco in the Peruvian Andes at 3400 meters above sea level.

Methods: Through observational study and analysis of medical records of patients, children and teenagers during the last five years. Descriptive analysis was done.

Results and conclusions: More than 274 cysts and 132 medical records were found and evaluated. In this Andean region hydatidosis affects mainly male and teenagers. The main organ affected are the lungs. 81.1% had exposure to dogs, el 11.4% have relatives with echinococcosis and 65.2% were sheep owners. In lung echinococcosis the cough was the most common symptom (88%), in the liver infection, it was the abdominal pain (86.7%). The predominant treatment was surgery plus Albendazole in 93.3%, the most common surgical approach was right posterolateral in the lung infection (93.1%), and right subcostal laparotomy in the liver parasitation (68.2%), the most used surgical techniques in both cases were partial pericystectomy plus drainage if conservative and cystectomy plus drainage in radical technique. NaCl 20% was the favorite agent to use during surgery against scolex. The most common complication after lung surgery was the atelectasis and infection in liver surgery.

Keywords: Hydatidosis (Source: MeSH-NLM)
CAT SCRATCH DISEASE AMONG CHILDREN IN THE COUNTRY OF GEORGIA

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Background: Among Bartonella bacteria-associated human infections, Cat Scratch Disease (CSD) caused by Bartonella henselae is the most common. CSD typically is a benign, self-limiting, acute febrile illness, and often accompanied by regional lymphadenopathy. Laboratory diagnostic was not established in the country, and a diagnosis had been mostly based on clinical manifestations and epidemiological observations.

Objective: Investigating CSD in clinically CSD-suspected pediatric patients who were admitted to Tbilisi Clinics using Indirect Immunofluorescence Assay (IFA).

Materials and Methods: Sera from 12 pediatric patients (1-16 years old) with lymphadenopathy were submitted to the National Center for Disease Control and Public Health in 2014. IFA was performed on detection of antibodies against B. henselae. Epidemiological investigation was conducted for each case following a standardized questionnaire.

Results: Enlarged lymph nodes were observed in all patients, with cervical, inguinal and axillary nodes being most frequently affected. All patients reported a long period of fever (>2 weeks). Three patients had skin lesions. IFA demonstrated a presence of antibodies against B. henselae in 3 cases; titer: >320 (22 months old, 8 years old, and 16 years old). Cat contact was reported for each confirmed case. Antibiotic therapy resulted in full recovering in all patients.

Conclusions: The results of laboratory and epidemiological investigations have proved a circulation of B. henselae in the country of Georgia and indicated a necessity of improving the diagnostic of CSD in the country.

Acknowledgments: We are grateful to the International Science and Technology Center for the financial support.
CASE REPORT: ATYPICAL PRESENTATION OF CAT-SCRATCH DISEASE IN AN IMMUNOCOMPETENT 12-YEAR-OLD CHILD

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Background and aims – Cat scratch disease is an infectious disease caused by Bartonella henselae, associated with scratch or bite of cats, and cause a granulomatous inflammation in the tissue. Its most common manifestation is unique and more frequent axillary and epitrochlear lymphadenopathy, in addition to fever, but can be disseminated form in immunocompromised children. In this article, we describe an immunocompetent 10-years-old child with pathological and serological diagnosis cat-scratch disease refractory to the initial treatment.

Case report – A 12-year-old girl, previously healthy, with daily fever for 1 month, painful axillary, epitrochlear and supra clavicular right lymphadenopathy, in addition to arthritis in shoulder, elbow and knee in the same side. There was contact with domestic and unknown cats. Empirical treatment with azithromycin initiated and requested laboratory tests. After 7 days of treatment, the clinical picture remained unchanged and the tests were normal, including serology for Bartonella was negative. Opted for hospitalization and axillary lymph node biopsy that showed granulomatous lymphadenitis with necrosis and new serology for Bartonella was positive. Held new round of treatment with azithromycin, and introduced clindamycin for maintaining the clinical picture. At ambulatory return, 1 week later, the child showed significant improvement, afebrile, and maintaining painless epitrochlear lymphadenopathy.

Conclusion – Atypical cat-scratch disease is difficult to diagnose and treatment. Whenever there are report of contact with cat associated with lymphadenopathy and fever, this diagnosis cannot be overlooked. Often the diagnosis is possible only through the lymph node biopsy and treatment may be extended to clinical improvement.
Materials and methods: 55 children, admitted to the Infectious Diseases Service during 2012-2013, have been included in the study. Children were divided by age groups: 0-1 year old, 1-3 years old, 3-6 years old and 6-14 years old. Data are extracted according to age groups, sex, seasonality and geographical distribution.

Diagnosis was determined using bone marrow aspiration in 100% of cases. Serological tests resulted positive only in 9 children, 16.36% of cases.

Treatment study: Meglumine Antimoniate; 50 children 90.91%; AmBisome (liposomal amphotericine B) 5 children 9.09%

Conclusions: Visceral Leishmaniasis is a frequent disease in Albania presented with a considerable number of cases. The most affected age group is from 1-4 years old with 36.36% of cases, the male gender is the most affected (61.81%) and urban areas are also predominant over rural ones with 60%. It is noticeable a higher incidence of Leishmaniasis in spring 47.27% and in summer 29.09%. Diagnosis was determined using bone marrow aspiration in 100% of cases. Serological tests resulted positive only in 9 children, 16.36% of cases. The first-line therapy in most patients must be AmBisome (liposomal amphotericine B) but it is used only in 5 children (9.09%). Meglumine Antimoniate is used in 50 children (90.91%).
RURAL CHILDREN IN YILI PREFECTURE ARE AT INCREASED RISK OF EXPOSURE TO RICKETTSIAL DISEASES

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Rickettsioses, caused by the pathogenic members of the order Rickettsiae, are nationwide acute zoonoses in China and the outbreaks of the traditional and emerging rickettsial diseases have significantly increased during the past 10 years. Xinjiang Province, located in central Asia and neighboring Mongolia, Russia and Kazakhstan, is famous for vector-borne rickettsial diseases in China. Historically, spotted fever, caused by Rickettsia sibirica, was demonstrated by etiology. More recent years, the emerging Anaplasma phagocytophilum and Ehrlichia chaffeensis are documented by molecular and serological evidences in Xinjiang. To better understand the prevalence of Rickettsioses among rural children residents, a total of 246 children (range, 6-12 years, male 118 and female 128) were recruited in Yili Prefecture, Xinjiang Province, during the 2011 and sera samples were tested with indirect immunofluorescence assay for IgG antibodies against R.sibirica, A. phagocytophilum, E. chaffeensis, Bartonella henselae, Bartonella quintana, R.typhi, Orientia tsutsugamushi, Coxiella burnetii. A high prevalence of tick borne rickettsiae including R.sibirica, E. chaffeensis, A. phagocytophilum and C. burnetii were detected in 37.4%(92/246) and 29.2%(72/246), 15.4%(38/246) and 12.6% (31/246), respectively. Similarly, a significant seroprevalence were detected in 15.8% (39/246) of flea-borne B.henselae, 12.2%(30/246) of B.quintana and 5.7%(14/246) of R.typhi, respectively. In addition, the mite borne O.tsutsugamushi, which is considered to be mainly endemic in south areas of China before, was first confirmed among rural children residents and the seroprevalence was 11.8%(29/246).The evidences in the study indicated that the vector borne zoonotic Rickettsia is highly prevalence among the young children in the local areas.
SEROPREVALENCE OF VACCINE-PREVENTABLE DISEASES IN EMIRATI CHILDREN

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Background and aims

Optimal vaccination should provide early and sustained protection. These goals require the use of better vaccines and well-timed schedules. Appropriateness of vaccination programs is appraised by studying population-specific immunity against vaccines. This study aimed at: (1) assessing efficacy of the United Arab Emirates (UAE) Childhood National Immunization Program (NIP) and (2) using post-vaccine responses to evaluate humoral immunity.

Methods

Serological testing for nine vaccine-preventable infections was performed in 152 children (age, 44±16 months) who had completed their childhood immunization.

Results

Only 32 (23%) children had seropositivity for the studied nine tested antigens (Fig. 1). All children were seropositive for rubella and Haemophilus influenzae type B (HIB); thus, these antigens can be used to assess humoral immune competency. Other vaccines with highly prevalent seropositivity are measles, polio, tetanus, and diphtheria (≥94% each). In contrast, the prevalence of seronegativity for pertussis was 62%, varicella 31%, and mumps 18% (Fig. 2). Forty-two (30%) children had no antibody response to ≥2 vaccines and 66 (47%) had no antibody response to one vaccine.

Conclusion

In our community, young children are susceptible to pertussis, varicella and mumps. Studies are needed to explore if this problem can be solved by modifying the UAE-NIP.
IMPACT OF 7-VALENT PNEUMOCOCCAL CONJUGATE VACCINATION ON PNEUMONIA HOSPITALISATIONS IN INDIGENOUS AND NON-INDIGENOUS CHILDREN IN WESTERN AUSTRALIA

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Background

Pneumonia is the leading cause of mortality and serious morbidity in children worldwide. 7-valent pneumococcal conjugate vaccine (PCV7) has been shown to reduce rates of pneumococcal disease. PCV7 was included in Australia’s National Immunisation Program for Indigenous children in mid-2001 and non-Indigenous children in 2005, and recommended in a 2-4-6-month schedule with a further pneumococcal polysaccharide booster at 18-24 months for Indigenous children. We assessed the effect of PCV7 vaccination on pneumonia-related hospitalisation rates in Western Australia (WA).

Methods

A population-based retrospective cohort study linked all live births in WA from 1996-2012 to hospitalisations, with an ICD-9 AM or ICD-10 AM coding for pneumonia as principal or additional diagnosis. Incidence rate ratios (IRRs) and yearly trends for age-specific hospitalisation rates for all-cause pneumonia, in Indigenous and non-Indigenous children, for pre- and post-PCV7 time periods were examined using log-linear modelling.

Results

A total of 469,589 live births had 14,978 pneumonia-related hospitalisations. IRRs for all-cause pneumonia, comparing the pre- and post-PCV7 periods, showed significant declines across all age groups in both Indigenous and non-Indigenous children. Following PCV7 introduction, log-linear modelling showed a significant decline of 24% (95% CI: 8-38) and 23% (95% CI: 41-0.1) in hospitalisation rates in Indigenous children aged 12-23 months and 24-35 months respectively. Similar declines were also observed in non-Indigenous children.

Conclusion

PCV7 has had a consistent and significant impact on pneumonia-related hospitalisations in WA. Ongoing surveillance is required to assess the impact of serotype replacement and introduction of extended valency pneumococcal vaccines on pneumonia rates.
ANTIBODY PERSISTENCE AT 3.5 YEARS OF AGE AFTER PRIMARY SERIES / BOOSTER VACCINATION WITH DTAP-IPV-HB-Hib VACCINE IN LATIN AMERICA

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Background and Aims: A newly licensed, fully liquid, hexavalent DTaP-IPV-HB-Hib vaccine (Hexaxim®, Sanofi Pasteur, Lyon, France) was assessed for antibody persistence at 3.5 Years of Age in infants in Colombia.

Methods: Phase III study in subjects who completed a 3-dose primary series at 2, 4 and 6 Months of Age (MoA) and booster vaccination at 12 to 24 MoA with either Hexaxim® or Infanrix® hexa; all subjects also received hepatitis B vaccination at birth. No investigational vaccine was administered. All subjects provided one blood sample for immunogenicity assessment at inclusion visit at 3.5 years of age. All analyses were descriptive. All subjects received co-administered vaccines: PCV7 (at 2, 4, and 6 MoA and booster phase) and Rotarix™ (at 2, and 4 MoA).

Results: Persistence rates (Hexaxim and Infanrix hexa):

<table>
<thead>
<tr>
<th>Component</th>
<th>Criteria</th>
<th>Group 1 (N=210)</th>
<th>Group 2 (N=206)</th>
<th>Group 3 (N=210)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-Hi (MEIA)</td>
<td>≥ 0.1 IU/mL</td>
<td>100.0%</td>
<td>99.5%</td>
<td>100.0%</td>
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<tr>
<td>Anti-Hi (ELISA)</td>
<td>≥ 0.1 IU/mL</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
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<tr>
<td>Anti-PC (ELISA)</td>
<td>≥ ELIZA</td>
<td>79.2%</td>
<td>82.0%</td>
<td>80.5%</td>
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<tr>
<td>Anti-PHA (ELISA)</td>
<td>≥ ELIZA</td>
<td>99.5%</td>
<td>100.0%</td>
<td>98.4%</td>
</tr>
<tr>
<td>Anti-poli 1 (MTH.WT.1.4b)</td>
<td>≥ 414 EL</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Anti-poli 2 (MTH.WT.1.4b)</td>
<td>≥ 414 EL</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Anti-poli 3 (MTH.WT.1.4b)</td>
<td>≥ 414 EL</td>
<td>100.0%</td>
<td>98.5%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Anti-HbB (VITDHEG ag/mL)</td>
<td>≥ 10.0 IU/mL</td>
<td>95.4%</td>
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<td>96.2%</td>
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<tr>
<td>Anti-PF22Ha (µg/mL)</td>
<td>≥ 1.35 µg/mL</td>
<td>100.0%</td>
<td>100.0%</td>
<td>99.2%</td>
</tr>
</tbody>
</table>

Conclusions: Completion of a 3-dose primary series and a booster administration in the first 2 years of life with the newly licensed DTaP-IPV-HB-Hib vaccine (Hexaxim®) induced strong Ab responses towards the antigens included in the investigational vaccine which persisted in significant percentages of children at 3.5 years of age.

ClinicalTrials.gov: NCT01983540
A COMPARISON OF CYTOKINE RESPONSES TO KILLED PATHOGENS AND INNATE LIGANDS IN BCG-VACCINATED AND NON-BCG-VACCINATED NEONATES

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Background & Aims

Bacille-Calmette-Guérin (BCG) vaccine reduces all-cause mortality in the neonatal period in high-mortality settings. BCG has strong immunomodulatory effects that protect against infection in animal models. We investigated the influence of neonatal BCG vaccination on cytokine profiles following in vitro challenge with clinically significant killed pathogens and toll-like receptor ligands.

Methods

A subset of participants from a randomised controlled trial of BCG vaccination with primary outcomes of allergic sensitisation and respiratory infection (misbair.org.au) were investigated. Samples were taken 7-days after randomisation to BCG or no BCG vaccination. An in vitro whole blood assay with 16 antigens, including killed pathogens and toll-like receptor ligands, was used. Following overnight incubation, 12 cytokines were quantified in culture supernatants. After log transformation, geometric means were calculated for each cytokine:stimulant pair. Responses in BCG-vaccinated and non-BCG-vaccinated infants were compared. Logistic regression was used to investigate the effect of sex, mode of delivery and feeding.

Results

Of 163 newborns randomised to BCG (n=70) or no BCG (n=92), 75 (46%) were male and 88 (54%) were female, 98 (60%) were vaginal births and 73 (40%) were Caesarean births. Cytokine responses in response to both pathogens and innate ligands differed between BCG- and non-BCG-vaccinated groups. This effect was modified by sex.

Conclusions

BCG vaccination at birth influences the neonatal immune response to pathogens and innate receptor ligands, and is modified by sex. Further studies should focus on establishing the clinical consequences of the heterologous effects of BCG vaccination.
PREVALENCE BORDETELLA PERTUSSIS ANTIBODIES IN MOTHERS AND NEWBORN IN MEXICO CITY.

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Background and aims: Many countries have experienced increasing pertussis disease rates and/or outbreaks during the past 2 decades, despite having effective immunization programs. In México we didn’t know the prevalence of the seropositivity of bordetella antibodies. Which will be interesting because we can consider to vaccine to pregnant women in the case that we find a low prevalence of antibodies in mothers and newborns.

Methods. We analyzed serum samples of mothers and newborns from 3 maternal hospitals in México City. The serum samples were send to Instituto Nacional de Pediatría. All samples were frozen at -20 C until analysis. Specific immunoglobulins against pertussis was used in all samples (Euroinmmune). Ig G - PT >100 U/ml was positive. Data were analyze using SPSS.

Results. We analyzed 200 serum samples (mother and newborn). The mothers have a median years 25.5 years (18-35 years), with a median gestacional age 38 weeks. The mothers have a vaccine shot in 14.3% and adolescent dose in 4.8%. All the serum samples were negative < 1000 UI/ml.

Conclusions. In Mexico we have patients with bordetella disease in children < 1 year so we believe it will be useful to vaccine the pregnant woman because we don’t have positive seroprevalence in our community.
THE DEPENDENCE OF THE MEASLES COURSE FROM VACCINATION IN THE CHILD’S CONTINGENT

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Introduction Vaccination is a way of creating immunity to certain diseases. Vaccines help protect against many diseases and can prevent development of complications and serious consequences.

Materials We investigated 135 children (66 immunised, 69 unimmunised) aged 1-5 years with measles according to date of Regional Clinical Infectious Hospital, Uzhgorod.

Results Heavier duration of the measles was observed in unimmunised children (UC), which were confirmed by such signs: photophobia - in 40 (57.97%), against 24 (36.36%), dyspnea - in 35 (50.72 %) against 12 (18.18%), diluted stools - in 52 (75.36%), against 23 (34.85%). Duration catarrhal syndrome in UC was longer than such in immunised children (IC) 45 (65.22%) to 27 children (40.91%), p<0.01. Piretic fever type was more typical for IC, when UC had predominant febrile fever type and it was more prolonged (6.16±0.15 to 5.75±0.41 days, p<0.01). The 55 UC (79.71%) and 24 IC (36.38%) had Respiratory Tract complications. Staing in Hospital of UC (p<0.05) which composed more than 10 days – was in 5 times higher than in group of UC. Decrease in the level of copper and iodine in blood serum (p<0.05) were observed in group of UC. Was noted significant prevalence levels IL-1 and IL-6 (p<0.01) in UC, which were correlated with catarrhal period duration (more than 5 days) and fever duration.

Conclusion We noted heavier course of measles in UI (Digestive Tract and Bronchopulmonary system complications). Activation process with inclusion of cytokines (IL-1,2,6,10) and trace element status IC had adequate response on penetration infectious factor and confirmed that vaccination should be done in time.
NONINFERIORITY OF PENTAVALENT VACCINE QUINVAXEM® IN COMPACT PREFILLED AUTO-DISABLED (CPAD) INJECTION SYSTEM VERSUS SINGLE-DOSE VIALS IN HEALTHY INFANTS: RANDOMIZED, OPEN-LABEL, PARALLEL-GROUP, PHASE-3 STUDY
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Background and aim: Quinvaxem is a fully liquid, pentavalent childhood vaccine providing active immunization against five pathogens: hepatitis-B (HepB), Corynebacterium diphtheriae, Clostridium tetani, Bordetella pertussis and Haemophilus influenzae type-b (Hib). This randomized, open-label, parallel-group, phase-3 study was designed to demonstrate noninferiority of 3 doses of Quinvaxem in a compact prefilled auto-disabled (cPAD) injection system versus single-dose vials with respect to seroprotection/seroconversion rates for all antigens one month after primary vaccination course.

Methods: Healthy infants (N=400) between 42-64 days of age eligible for local Expanded Program on Immunization were enrolled and randomized equally to two vaccine groups. A 6–10–14 week schedule was used.

Results: Overall, 395 (98.8%) infants completed the study (cPAD: n=197; single-dose vials: n=198). Seroprotection rate against Hib was 98.5% for cPAD and single-dose vials. Both groups achieved 100% seroprotection against tetanus. Seroprotection rate against diphtheria was 100% for cPAD group and 99.0% for single-dose group. Seroprotection against HepB and B. pertussis was achieved by 92.9% and 95.4% with cPAD and by 93.4% and 97% with single-dose group, respectively. The lower limits of all the 95% CIs were simultaneously >10% for all antigens, demonstrating non-inferiority of cPAD versus single-dose vial arm. The incidence of solicited and unsolicited adverse events was similar for both groups, and decreased after subsequent vaccinations. No vaccine-related serious adverse events were reported.

Conclusions: The immunogenicity of Quinvaxem in cPAD was noninferior to Quinvaxem in single-dose vials in healthy infants aged 6, 10 and 14 weeks. Overall safety profiles for both presentations were similar.
ETHICAL CHALLENGES WITH CONDUCTING VACCINE TRIALS IN AFRICA

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Background

Several clinical vaccine trials are currently being conducted in diverse settings in sub-Saharan Africa; many as part of global North-South collaborations. The diversity of the region and difference between the cultural and regulatory settings in the global North and South create often complex ethical situations. Timely and attentive attention to these differences is key to ensure an ethical review process and trial conduct that meets international and local needs.

Methods

Some of the ethical challenges encountered in these situations include age for consent/assent, provision of trial information to trial participants in an understandable format, minimizing coercion in low resource settings with poor health care and the non-existence or poor functioning of regulatory authorities in many of these settings.

Results

Strategies being employed or proposed to circumvent some of these challenges include the need to understand the study setting and interact with whatever formal or informal regulatory systems obtain; the need to innovate to provide standards that are acceptable locally and internationally, while thinking outside the box and the need for constant dialogue between partners.

Conclusion

The complex landscape of vaccine trials in sub-Saharan Africa requires innovative thinking and constant dialogue to circumvent the ethical dilemmas which arise.
Cancer survival rates and longevity of patients after therapy have significantly improved during the last decades. Thus, durable protection against infections should be provided. The aim of the study was: (1) Do levels of specific antibodies in children diagnosed with cancer before treatment differ from a control group? (2) How does the therapy influence the levels of specific antibodies? (3) Does vaccine-derived immunity reconstitute spontaneously after therapy and does the type of cancer influence it? A group of 40 children, diagnosed with ALL (acute lymphoblastic leukemia) or ST (solid tumors), followed in Poznan University of Medical Sciences Department of Pediatric Hematology, Oncology, and Bone Marrow Transplantation, were recruited for evaluation of humoral immunity. Antibodies level was checked before the treatment and 3, 6, and 12 months after the treatment. In patients with ALL or ST levels of IgG against tetanus and diphtheria were significantly lower than in the control group. 9% of ALL patients remained negative for tetanus and diphtheria antibodies 12 months after therapy. In 12% of patients with ST 3 months after chemotherapy, there were no protective antibodies against tetanus, and 18% against diphtheria. Six and twelve months after therapy all patients reconstituted immunity. Our data showed that a considerable number of cancer patients lose immunity against diphtheria and tetanus after therapy. Compared to ST, patients with ALL lose protective antibody levels more often. Patients with ST reconstituted antibodies after the treatment cessation, while levels in ALL patients remained low.
ENHANCING ROUTINE IMMUNIZATION COVERAGE THROUGH RAISING AWARENESS VIA NOVEL MODES OF COMMUNICATION INCLUDING COMMUNITY RADIO: EVIDENCE FROM A NORTH INDIAN STATE

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Background and aims: With 26 million children being born each year, India is grappling with achieving Goal 4 of the Millennium Development Goals (MDG) with an estimated under 5 mortality of 1.2 million per year. In Northern states of India 16% of the districts fail to achieve even 50% immunization coverage. Awareness regarding Routine Immunization (RI) remain low. The current study delineates novel modes of communication and the experience of implementing these.

Methods: Two districts, Lalitpur and Badaun were chosen in the North Indian state of Uttar Pradesh among which 4 blocks in each district and 2 villages in each block were chosen through a cluster sampling method. Ten households in each village were sampled in the second stage. Intervention to raise awareness was performed through multimodal media including community radio, interpersonal communication, print media, community systems and platforms.

Results: Among the sampled households, 61 eligible children were present among whom 72.4% were immunized for age and 30 pregnant women were present among whom 63.3% were adequately immunized. Baseline awareness regarding child immunization was 15% in Badaun and 40% in Lalitpur. The community radio station “Lalit Lokyani” was established with a reach of 15 kilometers covering 120 villages with a population of one lakh. Health phones were provided in 15 Indian languages preloaded on memory cards which do not require mobile signals or download of data.

Conclusion: Novel modes including community radio and health phones can supplant the reach of health workers in raising awareness regarding RI.
INTRODUCTION

In the society, doubts about the effectiveness and protection of vaccines begin to be comprised. Families get insufficient information about the new vaccines.

OBJECTIVE

To share updated information regarding vaccines and diseases that can be prevented by vaccination with the families, to ensure the completion of missing vaccines of children, and to contribute to public health.

MATERIALS AND METHODS

The project was carried out between April 2014 and May 2015. The families were applied to a 27-question survey. Preformed brochures, posters and coloring books were handed out to the parents of children attending to the kindergartens. Each kindergarten was visited by a person in charge for this project and the seminars about “vaccine-preventable diseases and vaccines” were held. At the end of the seminars a second survey was applied to check whether if there is any change or not.

FINDINGS

30 kindergartens were visited and seminars were held during the study. 1022 families completed the first survey, 735 families completed the second survey. The fourth dose of DTaP/IPV/Hib vaccine was not administered to 68.7% of the children. While the second dose of MMR was missing in 21.6% of the children. People with sufficient knowledge about meningococcal and meningitis were 30.5% and 55% of them were doubtful about vaccination.

CONCLUSION

Pre-school children deficiencies in vaccines except a single dose of measles were identified. The meningococcal and influenza vaccines were not administered. In this regard; society, healthcare workers and families are required to be more informed about this issues.
EPIDEMIOLOGICAL PROFILE OF PNEUMOCOCCAL MENINGITIS OCCURRED IN CAMPOS DOS GOYTACAZES-RJ AFTER THE INTRODUCTION OF 7 AND 13 PNEUMOCOCCAL CONJUGATE VACCINE. IS THIS A REPLACEMENT EVIDENCE?

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Introduction: Streptococcus pneumoniae is usually carried in the nasopharynx of healthy people, but occasionally leads to invasive diseases such as pneumonia, bacteremia and meningitis, which is responsible for high rates of mortality and morbidity. The Pneumococcal conjugated 13-valent vaccine (PCV-13) was introduced in public vaccination program of the municipality of Campos dos Goytacazes, Brazil, in September, 2010, replacing PCV-7, which was introduced in this municipality in May 29, 2009, and has been the first and the unique city that has introduced these vaccines in a Brazilian program of immunization.

Methods: Polymerase chain reaction (PCR) was performed for identification of the serotypes of Streptococcus pneumoniae involved in the registered infective process by dividing them in vaccine-related and non-related vaccine serotypes. The vaccine was applied in three doses, being the first dose at three months old, the second at five, and a booster at 13 months of age.

Results: The city reached significant PCV coverage (nearly 89.3%), within total of 7000 births/year. In 2010 there was no one case of pneumococcal meningitis, however, from 2011 to 2013 there were notified 22 new cases. Considering the distribution of serotypes isolated, 06 were PCV related and 09 were non PCV related (eg. Serotype 16F, 15B, 15C, 21);07 did not have a proven diagnositis Conclusions:The introduction of PCV-7 and PCV-13 changed the epidemiology of pneumococcal meningitis in this city, based on the reduction of the incidence of cases in all age groups, and for changes in the serotypes isolated, which might describe the phenomenum of replacement.
**Introduction:** Streptococcus pneumoniae is a nasopharynx colonizing bacteria responsible for over a million deaths in children under five years of age in underdeveloped countries. It causes invasive diseases such as medium otitis, bacteremia and meningitis. The main group of risk that is affected is composed by children up to two years of age, who are considered the largest colony reservoir. Campos dos Goytazes is the first and unique Brazilian city to introduce free of charge in 2010 the 13-valent conjugated pneumococcal vaccine (VPC-13).

**Methods:** Continuous and categoric variables were tested, such as: age, isolated serotypes, microbial resistance to antibiotics, prior diseases, number of people living in the home. A Culture Swab liquid Stuart was collected from the nasopharynx of the infants. Isolated colonies were colored by using Gram’s method with the identification of Gram positive cocos. Once confirmed, strains were identified by Polymerase chain reaction.

**Results:** Among the examined sample of 398 individuals, 58 (14.6%) showed Streptococcus colonization. The age of higher prevalence was three months, totaling 37.9%. It was found that number of people with whom the infant lives is directly related upwardly with the prevalence of colonization. The strains manifested higher resistance to penicillin and sulfamethoxazole/trimethoprim and sensitive to vancomicina. The most prevalent strains were 23F(22.7%), 6B(13.6%), 14(13.6%), 15B(13.6%).

**Conclusion:** The lower prevalence of colonization found in the study can be inferred because the previous introduction of pneumococcal conjugate vaccine 7-valent in this city in 2009, as well as the other potential factors. There was a high antimicrobial resistance and were found present in strains VPC-13. These results demonstrate the right decision of the municipality in the introduction of VPC-13.
INTRODUCTION OF AN ADOLESCENT MENINGOCOCCAL QUADRIVALENT (MENACWY) CONJUGATE VACCINE PROGRAMME TO CONTROL A RAPID INCREASE IN INVASIVE MENINGOCOCCAL GROUP W (MENW) DISEASE IN ENGLAND

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INTRODUCTION

England is experiencing a small but steady increase in invasive meningococcal group W (MenW) disease since 2009. Here, we describe the current epidemiology of invasive MenW disease in England and the rationale for rapid introduction of a national adolescent meningococcal quadrivalent (ACWY) vaccination programme.

METHODS

Public Health England conducts enhanced national surveillance of meningococcal disease and provides a national reference laboratory service for confirmation and typing of invasive clinical isolates as well as a free national PCR-testing service for patients with suspected meningococcal disease.

RESULTS

Invasive MenW cases have been increasing since 2009, with the number of cases doubling every year. In the current epidemiological year (to the end of April 2015), there were 155 confirmed invasive MenW cases in England, compared with 80 and 46 to the same point in the previous two epidemiological years, respectively. This increase initially occurred in older adults, but is now seen in adolescents and young children. Compared with previous years where there were only 5–7 cases annually among toddlers, 18 cases have already been diagnosed in this age-group by the end of April 2015. Nearly all the increase is due to MenW:2a, a surrogate for MenW clonal complex 11 (cc11) which is now endemic in England and closely related to the clone causing epidemics in South America.

CONCLUSIONS

An adolescent MenACWY conjugate vaccination programme for 14–18 year-olds has been planned and will begin this summer. Targeting this age-group for vaccination should also provide indirect (herd) protection by preventing carriage.
LEADING THE WAY WITH IMPLEMENTATION OF THE NOVEL, MULTI-COMPONENT MENINGOCOCCAL GROUP B VACCINE (BEXSERO) INTO THE NATIONAL INFANT IMMUNISATION PROGRAMME IN THE UNITED KINGDOM

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INTRODUCTION

The novel multi-component, protein-based vaccine, Bexsero®, will be offered to all infants in the United Kingdom as part of the national immunisation programme its implementation pose new and unique challenges for policy makers, public health specialists, immunisation coordinators, general practices delivering the programme, front-line paediatricians and families of young infants.

METHODS

We reviewed recent national and local implementation strategies for childhood vaccines to identify areas requiring specific consideration before Bexsero® was introduced into the national infant immunisation programme. A project planning approach was implemented in advance of formal decisions to facilitate a smooth introduction of the programme. We also commissioned additional attitudinal work to establish the needs and understanding of parents and health professionals.

RESULTS

Bexsero® is associated with very high rates of fever, which can be significantly reduced with prophylactic antipyretics. To minimise medical consultations for post-vaccination fever, we also identified a need to provide parents with balanced information about treating fever after vaccination and seeking medical help if the infant is unwell. Frontline clinicians will also have to be informed to avoid extensive invasive investigations in recently-vaccinated infant who are otherwise well. Attitudinal work results have been helpful in ensuring both parents and health professionals are given access to the information they identified as being most important for them.

CONCLUSIONS

The introduction of Bexsero® requires careful and considered planning to ensure that that implementers, clinicians and families are well-informed in order to establish high vaccination coverage, reduce potential confusion and minimise unnecessary medical attendances.
MMR VACCINATION IN CHILDREN WITH EGG ALLERGY IN A VACCINATION REFERRAL CENTER IN BRAZIL

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Background
Despite studies have demonstrated that children with egg allergy can safely receive MMR, many pediatricians are afraid of anaphylactic reactions. In Brazil, MMR is part of the National Vaccine Program for children at 12 and 15 months. Skin test for egg allergy is not recommended for children referring egg allergy.

Aim
To clarify the misconception of mothers and pediatricians of the use MMR vaccine in children egg allergic.

Methods
From January 2011 to May 2015, all children with egg allergy referred to the Reference Center of Vaccines were included. The children received antihistamine one day previous the vaccination to 5 days after. MMR was produced by Oswaldo Cruz Foundation[EDFP1].

Results
Forty-five children received MMR. The results of the previous allergic test, in 31 (68%) children (RAST or IMUNOCAP) were: one had class IV (very high); 13-class III, 5-class II (moderate) and one was negative. The reports of allergic reactions after eating egg or food containing egg were: face edema in 26.6%; hives-33.3%; facial edema and hives-11%; 8.9% atopic diagnosis and 8.9% bronchospasm. The medium time of delay for vaccination was 4 months (3m-20m). No child had immediate hypersensitivity after MMR.

Conclusion
As measles is re-emerging in Brazil and other parts of the world, our experience may help to reduce the fear of parents, immune allergists and pediatricians with MMR vaccine and anaphylactic reactions.

[EDFP1]
EVIDENCE OF HERD PROTECTION AFTER INFANT IMMUNIZATION WITH THE 10-VALENT PNEUMOCOCCAL NON-TYPEABLE HAEMOPHILUS INFLUENZAE PROTEIN D-CONJUGATE VACCINE (PHID-CV): A REVIEW

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Background and aims: Protecting unvaccinated individuals through vaccination of a subset of the population, known as herd protection, can be mediated by decreased pathogen carriage and therefore decreased transmission from vaccinated to unvaccinated individuals. PHID-CV (GSK Vaccines) has been shown to decrease vaccine-type (VT) pneumococcal nasopharyngeal carriage in vaccinated young children in randomized controlled trials and post-marketing studies. We therefore aimed to evaluate the extent of the indirect impact of PHID-CV on disease.

Methods: Review of data on herd protection against invasive pneumococcal disease (IPD) and pneumonia from the cluster-randomized Finnish IPD trial (FinIP/NCT00861380) and post-marketing studies up to 4 years post-PHID-CV introduction.

Results: In FinIP in unvaccinated ≥5-year-olds, in 2011 (first year after enrolment completion), hospital-diagnosed suspected non-confirmed IPD decreased by 29% (95%CI: -6 - 35) in PHID-CV versus control clusters. A decrease in culture-confirmed VT IPD (32% [11 - 47]) was observed in 2012 (second year after enrolment completion).

3-4 years after PHID-CV implementation in national vaccination programs in Finland and Iceland, reductions in VT and overall IPD were observed in vaccine-ineligible populations. In Finland, rate reductions in hospital-diagnosed (12% [6 - 17]) and hospital-treated pneumonia (28% [21 - 35]) were also observed. Pneumonia hospitalization rates declined in some vaccine-ineligible age groups in Brazil, as did IPD and pneumococcal meningitis. In some cases, reductions in IPD and pneumococcal meningitis in Brazil may have been masked by surveillance artifacts.

Conclusions: Increasing evidence from low- and high-transmission settings suggests that PHID-CV confers herd protection against VT IPD, pneumococcal meningitis and pneumonia in vaccine-ineligible children and adults.

Funding: GSK
ETIOLOGY OF INCOMPLETE VACCINATIONS IN CHILDREN UNDER 3 YEARS OF AGE IN A LARGE URBAN AMBULATORY CENTER IN CENTRAL NEW JERSEY.

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Background & Aim
In the United States, we had presumed that the recent surge in vaccine preventable diseases is related to parental refusal of vaccines. But is this so? To answer this question, we performed an impact study in our large medically indigent urban ambulatory center.

Methods
We performed a pre-intervention (2014) and post-intervention (2015) study to evaluate the etiologies of missed vaccination opportunities. All well child visits for children age <36 months were analysed for vaccination delays as per CDC recommendations. Each visit is classified into one of six categories, ranging from no problem in getting vaccination to incomplete vaccination with no chance of completion with catch-up schedule. In between the studies, we implemented a number of performance improvement measures.

Result
In 2014, 200/365(54.8%) patients had issues, with 53% of these being due to vaccine unavailability. Our vaccine supply was drastically curtailed because the New Jersey Vaccine for Children program required that we input all vaccines given into the New Jersey Immunization Information System registry, and thereby accounting for every vaccine we gave, else they will not supply us with more! In 2015, after implementing the intervention measures, only 71/192(37%) patients had issues, of which only 23% were due to vaccine unavailability. However, missed appointment visits increased from 31% to 67% of issues. In spite of this, our vaccine completion rate increased from 71% to 73%.

Conclusion
Systemic issues that resulted in vaccine shortage and missed appointment visits are major factors deterring completion of childhood vaccination.
Background & Aim

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Conclusion

Systemic issues that resulted in vaccine shortage and missed appointment visits are major factors deterring completion of childhood vaccination.
Introduction Acute diarrhea (AD) is one of the most important causes of children mortality worldwide. Rotavirus (RV) is the most common cause of viral AD in this group. Epidemiological surveillance is essential for making health decisions, such as the introduction of the vaccine. RV vaccination is an important tool to reduce severe AD, lethality and its negative socio-economic impact.

Objective To assess the burden of disease and mortality of AD and ARD in 2005-2014.

Materials and Methods Descriptive study. Analysis of cases and incidence rate (per 10,000) of AD and ARD reported between 2005-2014; hospitalizations between 2005-2012 and mortality between 2009-2013.

Results Between 2005-2014 11,490,412 AD cases were notified (45% <5 years old-y.o.), annual average <5 y.o: 513,197 cases (incidence rate:1466-1680). RV was the main etiology (67.9%) of viral AD between 2009-2014. 56% of the ARD occurred in <1 y.o. Seasonal epidemic pattern in winter (peak: 27EW). Among 196,260 AD hospitalizations in <5 y.o (55% were <1 y.o) were recorded from 2005 to 2012. AD caused 60 to 130 deaths annually between 2007-2013. The <1 y.o population had the highest mortality rate (0.88).

Conclusions ARD prevention is a priority for public health in Argentina. The <2 y.o had the highest rate of AD, hospitalization and mortality. RV was the main viral agent.

RV vaccine introduction to NIH from 2015 was decided in order to reduce ARD morbidity and mortality. It is necessary to continue the surveillance to measure the impact of this intervention.
MATERNAL IMMUNIZATION IN ARGENTINA. A NATIONAL STRATEGY TO PREVENT INFANTS MORBIDITY AND MORTALITY

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Introduction: Vaccination against flu and whooping cough (WC) is a priority within the comprehensive care strategy for pregnant women (PW) and small infants in Argentina. Flu vaccine was included in the National Immunization Schedule (NIS) in 2011. Argentina recommended a vaccination strategy for PW against WC in 2012, with the aim of reducing complications and deaths related to these diseases.

Objective To describe the national strategy of maternal immunization, 2011-2014.

Methods: Descriptive study. National vaccination coverages (NVC) between 2011-2014, mortality, lethality and vaccines safety profile were analyzed. Adverse events following immunization (AEFI) notifications were performed passively.

Results: Since 2011 1,422,059 doses of flu vaccine were applied (NVC>95% most years). There were no notifications of influenza related deaths in vaccinated PW during this period. There were 10 notified AEFI (rate-r 0.7/100,000): 4 mild reactions vaccine related and 5 program errors. A flaccid paralysis was classified as non-conclusive event due to lack of complementary studies.

In 2012, Tdap was recommended after the 20th gestation week. Between 2012-2014 1,347,649 doses were applied reaching NVC of 50.9%, 67.1% and 66.2%. 22 AEFI were reported (r:1.63/100.000), 7 vaccine related and 1 coincident event. Program errors were 63%. Comparing 2011 and 2014, the WC fatality rate dropped 60.3% while the number of deaths fell by 92%.

Conclusions: Both vaccines presented a suitable safety profile. Since 2012 a downward trend in pertussis mortality was evident and no deaths from influenza in vaccinated were notified in pregnant women. Our country became the first Latin-American country to have a strategy of vaccination against WC universally and consolidated as an example of influenza vaccination in the region.
SAFETY AND REACTOGENICITY OF AN INVESTIGATIONAL PROTEIN-BASED PNEUMOCOCCAL VACCINE FOLLOWING 3+0 OR 2+1 IMMUNIZATION SCHEDULES IN GAMBIAN INFANTS: A PHASE II RANDOMIZED TRIAL

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Background and aims: To provide protection independent of capsular polysaccharides included in pneumococcal conjugate vaccines (PCVs), protein-based pneumococcal vaccines are being investigated. A phase II, randomized, observer-blinded study (NCT01262872) in 2-4-year-old Gambian children showed that an investigational vaccine (PHiD-CV/dPly/PhtD-30) containing pneumococcal proteins pneumolysin toxoid (dPly) and histidine-triad protein D (PhtD) (30µg each) combined with polysaccharide conjugates of 10-valent PCV (PHiD-CV, GSK Vaccines) was well-tolerated (Odutola-ISPPD2014). We present safety/reactogenicity results of two investigational vaccine formulations in infants.

Methods: Following ethical approval and parents'/guardians' written informed consent, 1200 healthy 8-10-week-old infants were randomized 1:1:1:1:1:1 to receive either PHiD-CV/dPly/PhtD-30, PHiD-CV/dPly/PhtD-10 (PHiD-CV conjugates combined with dPly and PhtD, 10µg each), PHiD-CV or the 13-valent pneumococcal CRM197-conjugated vaccine (13vCRM, Pfizer) in a 3+0-schedule at ages 2,3,4 months, or either PHiD-CV/dPly/PhtD-30 or PHiD-CV in a 2+1-schedule (2-dose-priming+booster) at ages 2,4+9 months. Solicited/unsolicited adverse events (AEs) within 4/31 days post-vaccination, respectively, and serious AEs (SAEs) from dose-1 until 12-months-of-age were assessed.

Results: ≥1 SAE was reported for ≤4 (2.0%) infants in the 3+0-schedule groups (N=200 per group), and ≤5 (2.5%) in the 2+1-schedule groups (N=200 per group); none were considered as vaccine-related. Table 1 summarizes AE reporting.

Conclusions: The safety/reactogenicity profiles of the two investigational protein-based pneumococcal vaccine formulations were similar to those of PHiD-CV and 13vCRM when administered to Gambian infants.

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Table 1. Incidence of solicited and unsolicited solicited and unsolicited adverse events (SAEs) in each vaccinated cohort

<table>
<thead>
<tr>
<th>Category</th>
<th>PHiD-CV/dPly/PhtD-30</th>
<th>PHiD-CV/dPly/PhtD-10</th>
<th>PHiD-CV</th>
<th>13vCRM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solicited</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain</td>
<td>13.6%</td>
<td>13.2%</td>
<td>13.4%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Redness</td>
<td>10.7%</td>
<td>10.5%</td>
<td>11.4%</td>
<td>10.5%</td>
</tr>
<tr>
<td>Swelling</td>
<td>14.3%</td>
<td>13.9%</td>
<td>14.2%</td>
<td>13.8%</td>
</tr>
<tr>
<td>Other</td>
<td>10.7%</td>
<td>10.5%</td>
<td>11.4%</td>
<td>10.5%</td>
</tr>
<tr>
<td>Total</td>
<td>39.3%</td>
<td>38.1%</td>
<td>39.3%</td>
<td>36.5%</td>
</tr>
<tr>
<td>Unsolicited</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nasal</td>
<td>13.9%</td>
<td>13.7%</td>
<td>14.1%</td>
<td>13.2%</td>
</tr>
<tr>
<td>Conjunctivitis</td>
<td>9.3%</td>
<td>9.3%</td>
<td>9.3%</td>
<td>9.3%</td>
</tr>
<tr>
<td>Other</td>
<td>10.7%</td>
<td>10.5%</td>
<td>11.4%</td>
<td>10.5%</td>
</tr>
<tr>
<td>Total</td>
<td>34.9%</td>
<td>34.5%</td>
<td>35.3%</td>
<td>33.5%</td>
</tr>
</tbody>
</table>

Note: Incidence refers to adverse events and not to participants at risk. SAEs defined as any event that required medical attention and resulted in death, was life-threatening, required hospitalization, or led to permanent disability. Incidence in each group was calculated as number of events divided by number of participants at risk (number of participants at each dose level x number of months observed until 12 months).
THE EFFECT OF PNEUMOCOCCAL VACCINATION ON INCIDENCE OF COMPLICATIONS IN YOUNG CHILDREN WITH ACUTE RESPIRATORY INFECTION

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²Epidemiology, São Paulo University School of Public Health, São Paulo, Brazil
³Pathology, Federal University of Bahia School of Medicine, Salvador, Brazil
⁴Pediatrics, Federal University of Bahia School of Medicine, Salvador, Brazil

Background and aims: Acute respiratory infection (ARI) is the most frequent reason for children being seen by doctors worldwide. We aimed to estimate the incidence of complications in children aged 6-23 months during ARI episode and to evaluate association between poor evolution and factors present on recruitment.

Methods: This prospective cohort enrolled children who had shown ARI for up to 7 days and subsequently followed them up 14-21 days, in Salvador, Brazil. Data on recruitment were registered. The vaccine card was personally checked. Poor evolution was defined when hospitalization, pneumonia or otitis were informed during the follow-up visit. Pneumonia and otitis were diagnosed by a doctor. Multiple logistic regression analysis was performed.

Results: Of 576 children, 422(73%) returned and 79 (19%;95%CI:15%-23%) had poor evolution. The mean interval between admission and follow-up was 23±13 days. Pneumonia (11%), hospitalization (7%), and otitis (4%) were reported. Most of the patients presented one complication (84%) followed by two (16%). Report of fever (92% versus 79%;OR[95%CI]:2.90[1.18-7.14]), birds at home (24% versus 14%;OR[95%CI]:2.13[1.07-4.26]), ronchi (48% versus 36%;OR[95%CI]:2.06[1.16-3.67]) or crackles (17% versus 7%;OR[95%CI]:2.36[1.04-5.38]) on auscultation were directly associated with poor evolution whereas pneumococcal vaccination (PCV10) (59% versus 75%;OR[95%CI]:0.46[0.26-0.82]) was inversely associated. Birds at home (OR[95%CI]:5.80[1.73-19.38]) and ronchi (OR[95%CI]:6.39[1.96-20.85]) were associated with otitis; PCV10 was inversely associated with otitis (OR[95%CI]:0.16[0.05-0.52]). Crackles were associated with pneumonia (OR[95%CI]:2.55[1.01-6.40]).

Conclusions: One fifth of the children presented complications. Pneumococcal vaccination independently protects against otitis. Birds at home and ronchi are risk factors of otitis. Crackles are a risk factor of pneumonia.
HEPATITIS B VACCINATION RATE AMONG MEDICAL STUDENTS AT THE UNIVERSITY OF PORT HARCOURT TEACHING HOSPITAL (UPTH)

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2Paediatrics, NIGER DELTA UNIVERSITY TEACHING HOSPITAL BAYELSA STATE NIGERIA, BAYELSA STATE, Nigeria

Background: Hepatitis B virus (HBV) infection causes significant morbidity and mortality worldwide. Occupational exposure of health care workers and medical students increases their risk of acquiring HBV infection, and many authorities recommend vaccination. However, significant proportions of health care workers do not receive HBV immunization, and remain at increased risk to HBV infection.

Objective: To determine the hepatitis B vaccination rate among Medical students at the University of Port Harcourt Teaching Hospital (UPTH) and their knowledge of HBV infection.

Result: Three hundred and sixteen medical students at UPTH completed Self-administered questionnaires which included questions about demographic characteristics, HBV vaccination status, knowledge of hepatitis B vaccine and reasons for not receiving the vaccine. All (100%) of the respondents had heard of hepatitis B vaccine. Two hundred and twenty two (70.2%) of them thought they were at risk of acquiring hepatitis. Two hundred and seventy (85.4%) had received at least one dose of hepatitis B vaccine while 46 (14.6%) had never received the vaccine. One hundred and ten of the respondents had received 3 doses of hepatitis B vaccine, giving a vaccination rate of 34.8%. One hundred and sixteen (36.7%) had received 2 doses, while 44 (13.9%) had received one dose. There was a statistical significant relationship between marital status (p=0.01), clinical level (p=0.02) and hepatitis B vaccine uptake.

Conclusion: The hepatitis B vaccination rate among medical students at UPTH is low. National and institutional legislation for adult vaccination against Hepatitis B should be promulgated for those at higher risk.
Background and Aims: Victims of sexual violence that have been inadequately vaccinated are referred to CRIE to receive immunoglobulin anti-Hepatitis B.

Reviewed data were collected between 2003 and 2013 by the National Program of Immunizations (PNI), of the Brazilian Government, and for that the computer programmes SI-CRIE and SI-PNI were used.

The objective was to establish the profile of CRIE’s patients who received immunoglobulin anti-Hepatitis B in the period between 2003 and 2013 and evaluate intervention measures.

Results: From a group of 1701 victims of sexual violence assisted, 643 were aged between 0-19 years, representing 38% of cases and 93% was female, with the highest incidence occurring in adolescents aged between 15-19 years old. The incidence was higher between girls from 10 to 19 years (more than 90%), especially between 15 to 19 years of age, representing 62 percent of the cases. In the male’s group the highest incidence occurred between 5 to 14 years (more than 65%).

Conclusion: The numbers for sexual violence against children and adolescents are considerably high in the state of Rio de Janeiro, even to individuals who are entitled to free vaccination. High coverage for vaccination should be encouraged and notifications of cases should be required to assess the actual incidence of sexual violence.
IMPACT OF UNIVERSAL VERSUS TARGETED VACCINATION POLICY ON CHILDHOOD INFLUENZA VACCINATION RATES IN CHILDREN WITH AND WITHOUT HIGH-RISK CONDITIONS IN THE UNITED KINGDOM

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²Division of Infectious Disease, MedImmune, Gaithersburg, USA

Background: The extension of the UK’s influenza immunisation programme to 2–3-year-olds in 2013/2014 and 2–4-year-olds in 2014/2015 provides an opportunity to examine the effect of universal versus targeted vaccination policy on vaccination rates in children with and without high-risk conditions for developing influenza-related complications.

Methods: All children aged 2–17 years on 1 September of each season (2012–2014) with ≥12 months’ medical history in the UK Clinical Practice Research Datalink (CPRD) were included in this analysis.

Information on administration of influenza vaccine was retrieved from immunisation, clinical, and therapy records between 1 September and 28 February of each season. High-risk conditions were defined using definitions adapted from PRIMIS specifications (University of Nottingham).

Results: In total, 807,277, 747,597 and 653,250 children were included for the 2012/2013, 2013/2014 and 2014/2015 seasons, respectively.

Table 1: Vaccination rate by age category in children with and without any high-risk condition

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Any high-risk condition</th>
<th>Without high-risk condition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Season 12/13, %</td>
<td>Season 13/14, %</td>
</tr>
<tr>
<td>2</td>
<td>(n=54,216)</td>
<td>(n=48,683)</td>
</tr>
<tr>
<td>3</td>
<td>39.0</td>
<td>60.3</td>
</tr>
<tr>
<td>4</td>
<td>42.2</td>
<td>61.2</td>
</tr>
<tr>
<td>5-11</td>
<td>40.6</td>
<td>45.6</td>
</tr>
<tr>
<td>12-17</td>
<td>41.8</td>
<td>45.0</td>
</tr>
</tbody>
</table>

Conclusions: Vaccination rates increased in 4-year-olds with and without high-risk conditions in 2014/2015, while uptake remained consistently high in 2–3-year-olds during the second season of the extended programme, and higher than in season 2012/2013, including for children with high-risk conditions.

This study was sponsored by AstraZeneca.
EFFECT OF AGE ON INCIDENCE OF CLINICALLY-DIAGNOSED INFLUENZA AND ACUTE RESPIRATORY ILLNESSES IN CHILDREN CAPTURED THROUGH A NETWORK OF GP PRACTICES ACROSS ENGLAND

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2-, LASER Analytica, London, United Kingdom
3Division of Infectious Disease, MedImmune, Gaithersburg, USA
4-, LASER Analytica, New York, USA

Aims: This study analysed the effect of age on incidence of clinically-diagnosed influenza-like illness and six other acute respiratory illnesses.

Methods: Data were obtained on 775,000 respiratory related GP diagnoses recorded during GP consultations, including 297,406 for children aged ≤18 years, across four influenza seasons (2010-2014) from the Clinical Practitioners Research Datalink. Eligible patients were registered with 12 months history with a practice at the start of the defined influenza season (September-April). Practice-level incidence rates for each outcome were determined by age and season. A Poisson mixed effect model was fitted to analyse age effect controlling for inter-practice and inter-season variations.

Results: Table 1 details the hazard ratios relative to a reference group of 18-65 year old patients. Younger children (0 to <5 age) were at higher risk of clinical diagnosis, with an inverse relationship between risk and age seen across all outcomes except for influenza-like-illness and asthma exacerbations. Notably, the risk for lower respiratory tract infections, pneumonia and influenza-like-illness were lower in the 5 to <18 age groups than the reference population.

Conclusions: Decreasing age is associated with a higher likelihood of respiratory GP diagnoses amongst children. The strength and shape of this association vary across diagnoses. For diagnoses most closely related to influenza (pneumonia and influenza-like-illness), a strong association of increasing risk with decreasing age exists for pneumonia.

Table 1: Hazard ratio (HR) for age groups for each outcome

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Age group</th>
<th>HR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza like illness</td>
<td>0 to ≤5</td>
<td>1.13 (0.97-1.31)</td>
</tr>
<tr>
<td></td>
<td>2 to ≤4</td>
<td>1.16 (1.01-1.33)</td>
</tr>
<tr>
<td></td>
<td>4 to ≤5</td>
<td>0.99 (0.90-1.22)</td>
</tr>
<tr>
<td></td>
<td>5 to ≤11</td>
<td>0.63 (0.56-0.70)</td>
</tr>
<tr>
<td></td>
<td>11 to ≤18</td>
<td>0.69 (0.53-0.86)</td>
</tr>
<tr>
<td>Upper respiratory tract</td>
<td>0 to ≤5</td>
<td>1.34 (1.24-1.45)</td>
</tr>
<tr>
<td></td>
<td>2 to ≤4</td>
<td>1.33 (1.21-1.46)</td>
</tr>
<tr>
<td></td>
<td>4 to ≤5</td>
<td>1.29 (1.14-1.45)</td>
</tr>
<tr>
<td></td>
<td>5 to ≤11</td>
<td>1.19 (1.04-1.37)</td>
</tr>
<tr>
<td></td>
<td>11 to ≤18</td>
<td>1.16 (1.01-1.34)</td>
</tr>
<tr>
<td>Lower respiratory tract</td>
<td>0 to ≤5</td>
<td>4.55 (3.86-5.24)</td>
</tr>
<tr>
<td>infection</td>
<td>2 to ≤4</td>
<td>2.94 (2.76-3.20)</td>
</tr>
<tr>
<td></td>
<td>4 to ≤5</td>
<td>1.96 (1.90-2.13)</td>
</tr>
<tr>
<td></td>
<td>5 to ≤11</td>
<td>0.69 (0.67-0.71)</td>
</tr>
<tr>
<td></td>
<td>11 to ≤18</td>
<td>0.39 (0.38-0.40)</td>
</tr>
<tr>
<td>Other acute respiratory tract</td>
<td>0 to ≤5</td>
<td>5.46 (4.36-6.75)</td>
</tr>
<tr>
<td>infection</td>
<td>2 to ≤4</td>
<td>4.69 (4.19-5.27)</td>
</tr>
<tr>
<td></td>
<td>4 to ≤5</td>
<td>3.95 (3.64-4.37)</td>
</tr>
<tr>
<td></td>
<td>5 to ≤11</td>
<td>1.92 (1.59-2.36)</td>
</tr>
<tr>
<td></td>
<td>11 to ≤18</td>
<td>1.11 (1.01-1.23)</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>0 to ≤5</td>
<td>3.02 (2.67-3.42)</td>
</tr>
<tr>
<td></td>
<td>2 to ≤4</td>
<td>2.51 (2.21-2.85)</td>
</tr>
<tr>
<td></td>
<td>4 to ≤5</td>
<td>1.97 (1.72-2.24)</td>
</tr>
<tr>
<td></td>
<td>5 to ≤11</td>
<td>0.54 (0.48-0.63)</td>
</tr>
<tr>
<td></td>
<td>11 to ≤18</td>
<td>0.29 (0.24-0.35)</td>
</tr>
<tr>
<td>P value</td>
<td>0.005</td>
<td></td>
</tr>
<tr>
<td>Asthma exacerbiation</td>
<td>0 to ≤5</td>
<td>2.19 (1.77-2.11)</td>
</tr>
<tr>
<td></td>
<td>2 to ≤4</td>
<td>1.71 (1.61-1.71)</td>
</tr>
<tr>
<td></td>
<td>4 to ≤5</td>
<td>1.53 (1.50-1.56)</td>
</tr>
<tr>
<td></td>
<td>5 to ≤11</td>
<td>0.64 (0.51-0.79)</td>
</tr>
<tr>
<td></td>
<td>11 to ≤18</td>
<td>2.31 (2.16-2.37)</td>
</tr>
<tr>
<td>P value</td>
<td>0.005</td>
<td></td>
</tr>
</tbody>
</table>
IMMUNOGENICITY OF 10-VALENT AND 13-VALENT PNEUMOCOCCAL CONJUGATE VACCINES GIVEN AT 1-2-3 MONTHS OF AGE IN PAPUA NEW GUINEAN INFANTS: A RANDOMISED CONTROLLED TRIAL

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4North Coast, University Centre for Rural Health, Lismore, Australia

Background: Infants in low income countries have high rates of pneumococcal disease with diverse serotypes. 10- and 13-valent pneumococcal conjugate vaccines (PCV10 & PCV13) are being introduced but haven’t been compared in high-risk populations. We evaluated PCV10 and PCV13 in infants in Papua New Guinea (PNG).

Methods: We randomised 262 infants to receive PCV10 or PCV13 1-2-3 months of age with routine EPI vaccines. Infants were then randomised to receive 23-valent pneumococcal polysaccharide vaccine (PPV) or no PPV at age 9 months. Serotype-specific IgG for PCV13 serotypes (VT) and serotype 2 were measured at ages 1, 4, 9 and 10 months. Geometric mean concentrations (GMCs) were calculated.

Results: Pre-vaccination maternally-derived IgG were high at 1 month of age but fell rapidly for non-PCV serotypes. At age 4 months, infants receiving PCV13 had significantly higher (P<0.05) GMCs for non-PCV10 serotypes 3, 6A and 19A as well as shared serotypes 7F, 19F and 23F but infants receiving PCV10 had a significantly higher serotype 14 GMC. By 9 months of age GMCs remained significantly higher for 6A, 7F and 19A in the PCV13 group but were higher for serotypes 6B, 18C and 19F in PCV10-vaccinated infants. PPV induced robust responses (2 to 8-fold rise in GMCs) for all serotypes except 6A (not in PPV).

Conclusions: Both PCV10 and PCV13 are immunogenic in PNG infants under the 1-2-3 month schedule for VT with good antibody persistence to 9 months of age though immunogenicity varies between serotypes. PPV responses are consistent with priming for immunologic memory.
PRETERM CHILDREN AND RISK OF PERTUSSIS IN NORWAY

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Background and aims: Changes in the epidemiology of pertussis may affect the risk of disease in preterm children (PT; gestational week < 37). We compared pertussis incidence rates in PT vs. full term (FT) children.

Methods: We conducted a nationwide cohort study of 739,715 Norwegian children.

Results: Among 1,027 pertussis cases, 99 (9.6%) occurred in PT children. Incidence rates per 100,000 person-years for 1998-2004 and 2005-2012, were 69.2 (95% CI 63.0–76.0) and 66.1 (95% CI 60.5–72.2), respectively, for FT children and 120.7 (95% CI 92.7–157.2) and 83.2 (95% CI 61.9–111.8) for PT children. Compared to FT children, PT children had significantly increased risk of pertussis, multivariable IRR = 1.57 (95% CI, 1.26–1.95). A four-fold increased risk was found for children born at gestational week 23–27, IRR = 3.93 (95% CI 2.10–7.36). PT children had significantly higher risk of pertussis than FT children in the first year of life, IRR = 1.70 (95% CI 1.33–2.17), but not thereafter, IRR = 1.22 (95% CI 0.76–1.95).

Conclusions: PT children had higher risk of pertussis than FT children. We found no evidence of increasing incidence rates for PT children.
HIGH PREVALENCE OF MULTI-SEROTYPE PNEUMOCOCCAL CARRIAGE AMONG WARAO AMERINDIAN CHILDREN FROM VENEZUELA PRIOR TO THE INTRODUCTION OF THE 13-VALENT PNEUMOCOCCAL CONJUGATE VACCINE (PCV13)

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⁴Laboratory of Pediatric Infectious Diseases Department of Pediatrics, Radboud Institute for Molecular Life Sciences Radboud University Medical Center, Nijmegen, Netherlands

Background and aims: Nasopharyngeal colonization with Streptococcus pneumoniae is a surrogate marker for assessment of PCV coverage and efficacy. Detection of the presence of multiple serotypes in the nasopharynx is necessary to understand the effects of pneumococcal vaccination. This study aims to identify the prevalence of pneumococcal multi-serotype carriage in the nasopharynx of Warao children prior to the introduction of PCV13.

Methods: Nasopharyngeal swabs were collected from 508 Warao children aged 6 weeks - 59 months and from 228 siblings aged 5-10 years. Pneumococcal isolates were serotyped by serial multiplex PCR (mPCR). DNA, isolated from primary cultures of pneumococci with a semi-quantitative growth of >200 colonies on blood agar plates, from nasopharyngeal swabs of 126 and 32 children and siblings respectively, was used for the detection of multiple pneumococcal serotypes.

Results: Pneumococcal carriage rate was respectively 73% (371/508) and 54% (124/228) among children and siblings. 59% (76/126) and 37% (12/32) of the children and siblings carried more than one serotype. Serotypes covered by PCV13 were identified in 62% of the children. The serotype distribution in children and siblings carrying one or multiple serotypes was not different.

Conclusions: High colonization and co-colonization rates were found in Warao children with a predominance of vaccine serotypes. PCV13 may offer good protection in this high risk population and the carriage of multiple serotypes doesn’t alter the serotype distribution. Surveillance of pneumococcal carriage and detection of multiple serotypes will provide better understanding of vaccine efficacy and dynamics of carriage and subsequent serotype replacement.
IMPACT OF THE 13-VALENT PNEUMOCOCCAL CONJUGATE VACCINE (PCV13) ON THE NASOPHARYNGEAL FLORA OF WARAO AMERINDIAN CHILDREN FROM VENEZUELA

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Background and aims: PCV13 reduces nasopharyngeal carriage (NP) of serotypes of Streptococcus pneumoniae included in the vaccine, which may in turn change the presence of other nasopharyngeal bacterial pathogens. The aim of this study was to determine the NP rates of S. pneumoniae, Moraxella catarrhalis, Haemophilus influenzae and Staphylococcus aureus in Warao children before and after implementation of PCV13.

Methods: Nasopharyngeal swabs were collected from 212 Warao children aged 6 weeks - 59 months before and 2 years after vaccinating with a primary series of the PCV13 vaccine. Bacteria were isolated with standard laboratory techniques and pneumococcal isolates were serotyped with a serial multiplex PCR.

Results: Comparing the pre and post-PCV13 periods we observed a slight but non-significant decrease of pneumococcal carriage from 65% to 59% and a significant decrease of PCV13 serotypes from 62% to 34%. The carriage rate of S. aureus increased to 7% to 12% (p>0.05) and M. catarrhalis carriage increased from 15% to 32% (p=0.001). H. influenzae colonization remained stable with 1.8%.

Conclusions: We show that the PCV13 vaccine reduces carriage of vaccine serotypes but not the colonization rate of S. pneumoniae. Carriage of M. catarrhalis raised significantly in vaccinated children suggesting a regulating effect of S. pneumoniae vaccine serotypes on the colonization of this pathogen.
S. PNEUMONIAE: PRE AND POST VACCINE SEROTYPES IN PEDIATRIC PATIENTS WITH BACTEREMIA IN A NATIONAL REFERENCE HOSPITAL FROM ARGENTINA

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Introduction: According the Ministry of Health, in Argentina the incidence of bacteremia by \textit{S. pneumoniae} (Spn) is 98.6 /100,000 in children less than 2 years, with a fatality rate of 1.5% in children under 5 years. The introduction into national immunization schedule of 13-Valente Pneumococcal Conjugate Vaccine since 2012 was aimed to prevent invasive infections, pneumonia and acute otitis media.

Aim: Evaluation of Spn serotypes isolated from blood cultures in the pediatric population from a tertiary hospital in pre (P1) and post vaccinal (P2) periods.

Methods: Retrospective study, P1(years 2010-11) and P2(years 2013-14). Serotyping by Quellung reaction and MICs to penicillin (PEN), ceftriaxone (CRO), erythromycin (ERY) and meropenem (MER) (CLSI-agar dilution) were performed in the INEI-ANLIS Dr C.G.Malbrán (SIREVAII/PAHO). For statistical analysis SPSS 20.0 was used.

Results: 165 strains were analyzed: 111 in P1 (76% vaccine serotype) (VS) and 54 in P2 (42.6% VS). Mean age (months): 39 (range 30-48) in P1 and 56 (range 40-72) in P2. Serotype 14 (n=28, 25.2%) was the most frequent serotype in P1 and serotype 1 in P2 (n= 9, 16.7%). An univariate analysis about VS in P1 and P2 showed significant differences (p:0.000): decreasing VS (except serotype 1) and increasing non-VS in P2. An analysis multivariate by period showed no significant differences for PEN, CRO, ERY and MER (p:0.466 CI -1.915 - 0.938).

Conclusions: Maintaining the same demographic characteristics in both periods, we observed significant reduction in bacteremia by Spn in P2. Significant changes in 13-valent vaccine serotypes were observed among P1 and P2, except for VS 1. There were not significant changes in the medians of MICs for PEN, CRO, ERY and MER.
In Latin America (LA), FIDEC (Fighting Infectious Diseases in Emerging Countries) set up a network of vaccines investigation sites (VaccineNet®) to carry out two multicentre international polio vaccines trials. We present the organization and execution of these trials.

Two multicenter, open, randomized, controlled studies to assess the induction of humoral and intestinal polio immunity were carried out between April, 2013-February, 2015. Healthy infants 6-8 weeks old attending well-child care clinics in Chile, Colombia, Dominican Republic, Guatemala and Panama were enrolled and received different polio vaccination schedules with bOPV and/or IPV, and a challenge of mOPV2 to estimate viral excretion. Common SOP, quality assurance control and administrative procedures were set up. Sera and stool samples were submitted to CDC. An independent CRO monitored the study. Local country Ethics committees and regulatory authorities participated. Sites and sponsors were audited by an independent German company, a Data Safety Monitoring Board was set up and an internal and external communication plan was developed.

In total, 1989 infants were enrolled as planned in 3 months (90% retention rate). Over 12,000 sera and stool samples were sent to CDC (90% completed endpoints). In the audits no safety or data findings were identified. Twelve DSMB meetings were organized, no safety risks were identified and data suggested the trials were conducted in compliance with GCP.

To our knowledge this is the first network of vaccines investigation sites in LA. This type of network allows for the implementation of multicentre studies ensuring highest standards for research and development.
IS THE ROUTINE MEASLES VACCINE PROTECTIVE AGAINST RECENT MEASLES VIRUS GENOTYPES?

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Background: Despite the accessibility of a promising measles virus (MV) vaccine, measles outbreaks take place even in well vaccinated populations. From all 24 known genotypes of MV, D4, H1 and B3 genotypes have been detected from different regions in Iran. It is necessary to evaluate the protective efficacy of vaccine against currently circulating MV genotypes in elimination phase.

Methods: Forty serum samples were selected from individuals with an age range of 4-5 years old after at least two months of vaccination by MMR. A focus reduction neutralization test (FRNT) was developed to measure the neutralizing antibody titers against different genotypes of MV, including D4, H1, B3 and A (Vaccine strain).

Results: The geometric mean titer (GMT) of the sera against D4, H1, B3 and A genotypes were 1:98, 1:93, 1:32, 1:79, respectively. Low GMT of antibody against B3 genotype was detected comparing to other genotypes. Also a significant difference in plaque size between genotype B3 with both H1 and D4 genotypes was observed.

Conclusion: Our results indicated that the anti-MV antibody titers in the sera of vaccinees are sufficient to neutralize all circulating genotypes. However, neutralizing antibody titers against B3 genotype was significantly lower than the H1, D4 and A genotypes. Since the size of B3 plaque had significant differences compared to both genotypes H1 and D4 but not genotype A, so the diameter of plaque may be indicative of the pathogenicity of the virus which requires further evaluations to clarify the relation of virus pathogenicity and their plaque size.
PREGNANCY INCREASES THE IgG4 AND DECREASES THE IgG1 RESPONSE TO INFLUENZA VACCINE

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Although the increased morbidity and mortality of influenza during pregnancy provide a compelling reason to vaccinate pregnant women, pregnancy is associated with a decreased hemagglutination inhibition (HAI) response to influenza vaccine. We hypothesized that in addition to this quantitative reduction, pregnancy-associated increases in IL-4, IL-10 and IL-13 secretion might promote production of IgG4 over the better complement- and Fc receptor-activating isotypes, IgG1 and IgG3; such a change might decrease antibody-dependent killing of virus. To begin to evaluate this hypothesis, we compared antibody titers to B/Brisbane/60/2008 influenza vaccine antigen using hemagglutination inhibition (HAI) in sera obtained from 35 pregnant and 40 non-pregnant 18-39 year old women 24-31 days after 2014-15 seasonal influenza vaccination. We then compared IgG1, IgG3 and IgG4 anti-B Brisbane titers by ELISA in these same participants. IgG1 titers were significantly decreased in pregnant compared to non-pregnant women (p=0.045), and IgG4 titers were significantly increased in pregnant compared to non-pregnant women (p=0.018). Titers were similar between groups for IgG3 (p=0.22). These results suggest a need to reconsider approaches to the way pregnant women are immunized against influenza. Individuals with low IgG1 and high IgG4 may have poor protection against influenza infection, both because of the magnitude of total antibody response (HAI) and because IgG4 should be less protective than IgG1. It also shows that pregnancy affects systemic immune responses, not just immune responses at the maternal/fetal interface.
EXPRESSION AND PURIFICATION OF RECOMBINANT DIPHTHERIA ANATOXIN CRM197 FOR THE DEVELOPMENT OF VACCINE CONJUGATES

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Background and aims:

Diphtheria anatoxin, “cross-reactive material 197” (CRM197) is well-established partner protein for activation of immune response in glycoconjugate vaccines. A number of experimental and clinically approved vaccines for prevention of diphtheria, pneumonia, typhoid fever, etc. were prepared using CRM197 conjugates. Several protocols were proposed for its production, though establishment of cost-efficient and reproducible procedures for obtaining of GMP-grade CRM197 at industrial scale can still be improved. The purpose of the present study was to develop convenient, reproducible and cost-effective procedure for the production and purification of pharmaceutical grade CRM197.

Methods

Expression of recombinant construct encoding codon-optimized gene for CRM197 was carried out in \textit{E.coli} host. Protein was purified from bacterial biomass by sequential steps of IMAC, ion-exchange and size-exclusion chromatography. Purity, homogeneity and immune characteristics of recombinant CRM197 were checked by HPLC and immunobiological assays.

Results and Conclusions

The developed procedure yielded more than 1 g/L of 98\% pure tagless CRM197 produced at the pilot scale, and obtained in just three chromatographic steps. Purified CRM197 is suitable for the preparation of vaccine conjugates.

Acknowledgements

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MEASLES SEROPREVALENCE IN ADULTS IN THE CZECH REPUBLIC - RELATIONSHIP TO THE CHILDREN VACCINATION PROGRAM

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Objectives

Despite high vaccination coverage measles outbreaks have been reported in recent years in many European countries. The Czech Republic started routine measles vaccination in 1969. Long term vaccination coverage is > 95%. The aim of study was to determine measles seroprevalence in adult population in relationship to the child vaccination program.

Methods

This multicentric, cohort study was organized among the adults ≥18 yoa in 2011-2012. The study participants were randomized into age cohorts and blood sample was taken from all participants. The presence of specific IgG antibodies against measles was determined by ELISA.

Results

We collected 1911 serum samples from individuals aged 18-87 years. Overall seropositivity of IgG measles antibodies reached 83.3%, 14.3% of the samples were seronegative and 2.4% repeatedly borderline. When we compare the individual age cohorts, the highest seropositivity (> 96%) was in persons ≥50 yoa. The lowest seropositivity was recorded in the age group 30-39 years (61.5%), followed by the age group 40-49 years (77.5%), which consisted of vaccinated and unvaccinated individuals and the age group 18-29 years (81.1%).

Conclusion

The results show high seropositivity of measles antibodies in individuals ≥50 yoa, who have not been vaccinated and most of them reported measles in their medical history. This demonstrates the long term persistence of protection after infection. In contrast, after vaccination the seropositivity decreases in time. Based on these results it is questionable the level of adult susceptibility to measles after vaccination in childhood. Adults with measles can be source of infection for unvaccinated children.
MUMPS SEROPREVALENCE IN ADULTS IN THE CZECH REPUBLIC - RELATIONSHIP TO THE CHILDREN VACCINATION PROGRAM

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Objectives

The Czech Republic started routine mumps vaccination in 1987. Long term vaccination coverage is >95%. Despite the high vaccination coverage, outbreaks of mumps have been reported through the last decade in the Czech Republic. The aim of study was to determine seroprevalence IgG antibodies against mumps in the adult population in relationship to the child vaccination program.

Methods

This multicentric, cohort study was organized among the adults ≥18 yoa in 2011-2012. The study participants were randomized into age cohorts and blood sample was taken from all participants. The presence of specific IgG antibodies against mumps was determined by ELISA.

Results

We collected 1911 serum samples from individuals aged 18-87 years. The overall seropositivity of IgG mumps antibodies reached 55.3%. The lowest seropositivity was in age cohort 18-29 years (27.4%). Only in this cohort the vaccinated individuals (71.5%) were presented. The seropositivity rate was always >60% in cohorts ≥40 yoa. In all age cohorts, high proportion of samples with borderline antibody concentrations was determined (15.5-21.9%).

Conclusion

Total seropositivity level of IgG antibodies against mumps in whole group reached 55.3 %. The lowest rate was in the youngest age group 18-29 years of age (27.4 %), which consisted of vaccinated and unvaccinated individuals. Similar results were achieved in the national serological survey. Based on these data, the update of the national immunization program is proposed in the Czech Republic.
Background and aims: Immunogenicity and reactogenicity of quadrivalent meningococcal conjugate vaccines may differ on the basis of polysaccharide chain length, the conjugation chemistry applied for protein-polysaccharide coupling, and whether the vaccine uses cross-reacting material 197 (MenACWY-CRM, Novartis, now GSK) or tetanus toxoid (MenACWY-TT, GSK) as a carrier protein.

Methods: Overall, 202 children 12 to 15 months of age were randomized 1:1 to receive a single dose of MenACWY-CRM or MenACWY-TT. Sera collected at baseline and at 1 and 6 months after vaccination were tested with bactericidal activity assays using human complement (hSBA) and rabbit complement (rSBA). Reactogenicity and safety were assessed. All analyses were descriptive.

Results: At 1 month after vaccination, the percentages of subjects with hSBA ≥1:8 against serogroups A, C, W, and Y were comparable for the MenACWY-CRM (90%, 96%, 62%, and 41%, respectively) and MenACWY-TT groups (88%, 86%, 72%, and 56%). The percentages of subjects with rSBA ≥1:8 against serogroups A, C, W, and Y were also similar between groups: 100%, 92%, 90%, and 90%, respectively, for MenACWY-CRM, and 100%, 97%, 91% and 89% for MenACWY-TT. At 6 months after vaccination, hSBA titers in both groups had waned for MenA, and had further increased for MenW and MenY. The two groups were similar with respect to reactogenicity, including rates of severe solicited reactions, and safety.

Conclusions: In spite of the difference in carrier proteins and physicochemical characteristics, MenACWY-CRM and MenACWY-TT vaccines, given as a single dose in toddlers, were comparable in terms of immunogenicity and reactogenicity.
Background and aims: Madrid regional immunization plan (RIP, 95% uptake) included PCV7 in November-2006 and PCV13 in June-2010, which was later on excluded in May-2012 due to the economic crisis, reducing the vaccination rates. We evaluated the impact of this vaccine uptake evolution on IPD in children <15 years old.

Methods: A prospective, laboratory-confirmed surveillance of all hospitalized IPDs was performed as previously reported (Picazo JJ, CVI 2013).

Results: In the year 2014/15, 55 cases of IPD were identified. The evolution of vaccine and non-vaccine type (NVT) cases, IRs and vaccine uptake throughout the study is shown in the Table1 and Graph1. This last study period was also characterized by the reappearance of ST19A IPD in an unvaccinated child.

Conclusions: After PCV13 introduction into the Madrid RIP, significant decrease of PCV13 IPD IRs was observed, which was later on stalled as a result of decreased vaccine uptake after PCV13 exclusion from the RIP. Though a slight improvement in PCV13 vaccination rates in the last study year was followed by a further reduction in PCV13 IPD IRs, this seems not to have been enough to prevent the reappearance of ST19A IPD.

Graph1: IPD IRs evolution per year in children <15 years of age in the Autonomous Community of Madrid, Spain

Table1. PCV13 and NVT type IPD case evolution in children <15 years of age in the Autonomous Community of Madrid, Spain

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*No cases by ST15 or ST38 were detected in 2013-14.*
Background

Rotavirus (RV) is a leading cause of diarrhea in children <5yo, generating morbi-mortality and high costs to healthcare system and families. RV vaccine is effective but was hardly affordable to Argentinean low-income households until its incorporation to national calendar in 2015. We aimed to assess diarrhea-associated out of pocket expenses (OPE) and RV universal vaccination cost-effectiveness by wealth level.

Methodology

Diarrhea-associated OPE were assessed through a questionnaire. Those surveyed were classified according to socioeconomic quintiles from lowest (Q1) to highest (Q5). We compared RV vaccination cost-effectiveness versus no-vaccination in each quintile, from healthcare system and societal perspectives, for 1 cohort through 5 years. Costs were estimated in US dollars for 2012-2013. OPE ≥40% of monthly household income (HHI) were considered catastrophic.

Results

Average OPE per episode were higher in richest quintiles. Considering average HHI, poorest quintiles were most affected in relative terms (Q1 vs Q5: 5.5% vs 2.7% for ambulatory cases and 12% vs. 4.2% for hospitalized cases). These did not represent catastrophic expenses.

No significant differences in expenses composition were found among quintiles. Transportation represented 50% followed by food&bev, diapers and medicines.

From a healthcare system perspective, cost per DALY averted was lower in poorest quintiles (Q1: US$8,580 vs. Q5: US$25,208). Same happened when incorporating OPE (Q1: US$6,724 vs. Q5: US$18,707). For all quintiles, RV vaccination was cost-effective according to WHO guidelines.

Conclusion

Higher OPE reductions and cost-effectiveness for poorest quintiles, which had no access to this vaccine until now, highlight RV universal vaccination as a strategy towards equity.
Background: The resurgence of pertussis has resulted in an increased morbidity and mortality, especially among young infants. The aim of our study was to determine the antibody concentrations against pertussis antigens in cord and maternal blood in both preterm and term infant–mother pairs and to evaluate the efficacy of transplacental antibody transfer.

Methods: Antibodies to pertussis toxin (PT) and filamentous hemagglutinin (FHA) in maternal and cord blood samples were measured by in-house enzyme linked immunosorbent assay (ELISA) in 100 preterm infant–mother and 100 term infant–mother pairs. Geometric mean concentrations (GMCs) of pertussis antibodies and cord:maternal GMC ratios were calculated.

Results: There were no differences between the groups with regard to maternal anti-PT and anti-FHA GMC. Placental transfer ratios for anti-PT and anti-FHA in preterms were 68% and 72%, respectively. The same ratios in terms were 107% and 120%, respectively and were significantly higher than those of preterms (p < 0.001). Placental transfer ratios were even lower in preterms <32 weeks when compared to preterms ≥32 weeks and terms. There was a strong correlation between maternal and cord anti-pertussis antibody levels both in preterm and term infants.

Conclusions: Anti-pertussis antibody levels were generally low in infant–mother pairs and would not be adequate to confer protection until the onset of primary immunization series. Transplacental anti-pertussis antibody transfers and antibody levels were lower in the cord blood of preterms, especially in those <32 weeks. These findings support the rationale for maternal immunization, which in combination with cocooning, could be a better option for preterm infants.
MEASLES AND PNEUMOCOCCAL IMMUNIZATION OF CHILDREN IN SHANGHAI, CHINA: ASSESSING PREDICTORS FOR VACCINATION AND IMMUNIZATION TIMELINESS

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Background. Measles and pneumococcal vaccines have reduced morbidity and mortality in Chinese children although delayed measles vaccination and limited uptake of pneumococcal vaccines due to cost both pose challenges. These issues are compounded in China’s mega-cities where there is greater difficulty reaching non-locals, migrants from outside the city. In this study, we estimate the proportion of Shanghai children with timely measles and pneumococcal vaccinations; compare vaccination in non-locals versus locals; and assess the impact of township-level characteristics on vaccination outcomes.

Methods. Individual-level data from a cohort in the Shanghai Immunization Program Information System were linked to township-level data from the 2010 China Census. We used generalized estimating equations with logistic regression models to assess individual- and township-level predictors of vaccination outcomes.

Results. Non-locals had lower vaccination levels than locals. Non-locals had 0.44 times the odds of timely measles vaccine (95% CI: 0.42, 0.47), 0.27 times the odds of timely MMR (95% CI: 0.25, 0.30), 0.36 times the odds of PCV by 8 months of age (95% CI: 0.31, 0.41), and 0.73 times the odds of PCV by 4 years of age (95% CI: 0.67, 0.80), compared to locals. For local children born in 2007, a higher proportion of non-locals in the township was associated with less timely measles vaccinations but greater odds of pneumococcal vaccination.

Discussion. Untimely measles vaccination and low uptake of pneumococcal vaccination negatively impact disease control efforts in Shanghai. Non-locals should especially be targeted for vaccination. Immunization information systems are essential to tracking progress in eliminating vaccination disparities.
THE IMPACT OF SUPPLEMENTARY IMMUNIZATION ACTIVITIES ON THE EPIDEMIOLOGY OF MEASLES IN TIANJIN, CHINA, 2005-2014

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Background. China has adopted a goal of measles elimination with supplemental immunization activities (SIA) serving as a key control strategy. Non-locals, migrants from rural to urban areas, are often blamed for disproportionately contributing to ongoing measles transmission. We characterize temporal trends in measles incidence by non-local vs local residency and evaluate the impact of SIAs on measles incidence in Tianjin, China, over a ten-year period.

Methods. We tabulated daily counts of measles cases for both locals and non-locals. These two datasets were then combined into a single dataset with each day having two observations. We conducted a multivariable Poisson regression using generalized estimating equations with an exchangeable correlation structure to account for two counts in each day.

Results. From 2005 through 2014, there were 12,465 laboratory-confirmed cases of measles reported in Tianjin. A substantial disparity in the rate of measles between non-locals and locals is observed before the 2008 SIA (RR: 3.60, 95% CI: 3.27, 3.96) which subsequently attenuates with non-locals having a rate of measles only 1.22 times higher between the 2008 and 2010 SIAs compared to locals (95% CI: 1.02, 1.45). Following the 2010 SIA, non-locals had a lower rate of measles compared to locals (RR: 0.78, 95% CI: 0.69, 0.87).

Discussion. Although we observed a gradual reduction in measles disparities over time between locals and non-locals following SIAs, persistent public health efforts are needed to maintain a low incidence of measles among non-locals in urban settings because of sustained migration of large numbers of people throughout China.
Introduction: Pseudocysts can be seen after acute or chronic pancreatitis, but it is rare in children. Here we described a rare pediatric case with pleural effusion due to pancreatic pseudocysts.

Case: Previously known to be healthy 20-month-old female patient was admitted to the hospital because of abdominal pain for two months. Abdominal tomography revealed multiple anechoic cysts, reach to 60x40 mm in size, located either within and outside of the pancreatic location (Figure 1). Serum level of amylase was 345 U/L, lipase was 680 U/L. Abdominal cysts were thought as pseudocysts due to pancreatitis. As it was found that all of the cysts were shrunk or lost, previously planned “ultrasound guided percutaneous drainage” was abandoned. Next day bilateral pleural effusion was found to be more on the left side on the thoracoabdominal tomography (Figure 2). Chest tube was placed and 130 cc exudative pleural fluid was drained. There was 550/mm^3 leucocytes, cultures were negative. Amylase and lipase levels of the fluid were 1159 U/L and 6994 U/L, respectively. Etiology of pancreatitis could not be determined.

Conclusion: To best of our knowledge, this is the first case younger than two years of age, who developed pleural effusion after multiple pseudocysts. As in our patient, pleural effusion can result from disruption of the pancreatic duct, leading to fistula formation to the chest, or rupture of a pseudocyst with tracking of pancreatic juice in to the pleural space. Pancreatic pseudocysts must be kept in mind for differential diagnosis of pleural effusions.
CRP MONITORING OF PNEUMONIA IN PRESCHOOL CHILDREN AND APPROPRIATE ANTIBIOTIC THERAPY

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OBJECTIVE: The aim of this study is determining the correlation of CRP from initial to control after 72 h to 96 h (3-4 days) antibiotic therapy and its possible percentage of decline determining the success of a particular antibiotic therapy in five main preschool age groups from six months to seven years.

METHODS: The study was designed as a prospective, cohort and realized it in the colder period last year. Every five groups divided in subgroups from two to ten members. Immunoturbidimetric test was used for the quantitative determination of C-reactive protein CRP in human serum and plasma.

RESULTS: The expected values vary depending on the child's age, sex of child, season time or month of therapy, level or initial CRP and the type of antibiotic. The results of the work is seen to decrease the percentage of success CRP illustrates the different values of 44.0% to 73.0% for the different type of antibiotic, age groups, sex of child, initial value of CRP and with an average decline for all groups and all children of 55.0%. There no differencies in success of antibiotics therapy between male and female preschool children, intitial value of CRP, month or season of therapy during monitoring of CRP level in bronchopneumonia.

CONCLUSIONS: Early appropriate antibiotic use, depending on the value of CRP and CRP monitoring therapy are very successful in improving the results of treatment for bacterial pneumonia in the outpatient conditions of preschool children.
A CASE OF NECROTISING PNEUMONIA WITH STREPTOCOCCUS PNEUMONIA SEROTYPE-3, IN A CHILD VACCINATED WITH 13-VALENT CONJUGATED PNEUMOCOCCAL VACCINE

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INTRODUCTION

Although the frequency of invasive pneumococcal disease has reduced globally; *Streptococcus pneumonia* (*S. pneumonia*) is still the leading cause of community onset pneumonia in children. Necrotising pneumonia, is a significant clinical complication of this disease.

CASE

A 3.5 year-old female patient was admitted with cough, fever and exhaustion. She was tachypneic, hypoxic and respiratory sounds in the lower zones of left lung were decreased. White blood cells were 30000/mm³. C-reactive protein (CRP) was 259 mg/L. There was bilateral infiltration on chest radiograph (Figure1).

Trans-thoracic ultrasonography revealed, 12 mm parapneumonic effusion. She was started with ceftriaxone 100 mg/kg/d and vancomycin 60 mg/kg/d. Blood culture grew *S.pneumonia*, susceptible to penicillin. In spite of the antibiotic treatment and effective drainage of effusion, her fever persisted and cavitary necrotizing pneumonia was detected in thorax tomography (Figure2). On the 12th day, because of the progression of necrotising pneumonia, we decided to implement 2gr/kg intra-venous immune globuline (IVIG). Fever mildly persisted so 1 gr/kg IVIG was repeated, after 48 hours. Then the patient’s fever resolved completely and CRP dropped to 17mg/L. Her respiratory distress and need for O2 markedly reduced. The strain of pneumococus in the blood culture was serotype 3. The antibiotic treatment was completed for 21 days, the chest tube was taken off and she was discharged from the hospital with cure (Figure3).

CONCLUSION

Here we present a case of necrotising pneumonia with *S.pneumonia* serotype-3 in a child vaccinated with 13-valent conjugated pneumococcal vaccine for four doses.
PNEUMONIA COMPLICATED WITH PARAPNEUMONIC EFFUSION IN A PEDIATRIC POPULATION WITH HIGH PNEUMOCOCCAL VACCINATION COVERAGE

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Background and aims

Parapneumonic effusion, the most common complication in community-acquired pneumonia, is associated with bacterial disease. 13-valent pneumococcal conjugate vaccine seems to have halted the increasing incidence seen the past 3 decades. The aim of the present study was to examine the microbiological etiology of pediatric pneumonia complicated with parapneumonic effusions including empyema.

Methods

This prospective, observational study enrolled patients 0-18 years with clinical and radiological signs of pneumonia over a 2-year period, and included all patients with radiological signs of parapneumonic effusion. Paired sera, nasopharyngeal PCR and bacterial cultures from blood and pleural fluid were analyzed to detect potential viral and bacterial causative pathogens. The cases were categorized into empyema, complicated or uncomplicated parapneumonic effusion. Participants signed a written, informed consent. The Regional Ethics Committee approved the study.

Results

15 cases of parapneumonic effusion were included from 265 cases of radiologically proven pneumonia. Chest drain was inserted in 7 of 15 cases. In 3 of 4 cases of empyema etiology was found: one pneumococcus, one group A streptococcus and one H. Influenzae, while etiology (Mycoplasma pneumonia) was found in 1 of 3 cases of complicated parapneumonic effusion. In all 8 uncomplicated cases one or more etiological agents were found (M. mycoplasma in three, RSV in four, influenza virus in two, other viruses in three).

Conclusions

Bacteria accounted for most cases of empyema or complicated parapneumonic effusion, but only 1 of 7 cases had evidence of pneumococcal disease. Mycoplasma and virus contributed to the majority of parapneumonic effusions.
THE CHARACTERISTICS OF CHILDREN AND ADOLESCENTS WITH INFLUENZA PNEUMONIA WHO VISITED EMERGENCY ROOMS OF KOREA IN 2007-2012

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Background: The seasonal flu has a characteristic clinical symptoms, and is a common cause of respiratory infections to visit the ER.

Methods: We analyzed the National Emergency Department Information System (NEDIS) records of 117 ERs in Korea of all pediatric patients aged under 18 years with influenza pneumonia from January 2007 to December 2012.

Results: A total of 52,489 subjects were found and the male to female ratio was 1.0:0.8. The number of patients per year was 342(0.7%) in 2007, 910(1.7%) in 2008, 34,111(65.6%) in 2009, 6,349(12.1%) in 2010, 1,196(2.3%) in 2011, 9,281(17.7%) in 2012. The rate of yearly hospital admission was 53.2% in 2007, 47.9% in 2008, 8.1% in 2009, 27.5% in 2010, 30.4% in 2011, 22.6% in 2012. Patients aged under 12 months was 8.4%, aged 1 to 3 years was 31.4%, aged 4 to 6 years was 21.4%, aged 7 to 12 years was 21.4%, and aged 13 to 18 years was 17.3%. The hospitalization rate under 12 months was 28.9%, aged 1 to 3 years was 17.9%, aged 4 to 6 years was 15.8%, aged 7 to 12 years was 11.9%, and aged 13 to 18 years was 3.0%.

Conclusions: The most of patients who visited to ER due to influenza pneumonia was children of aged 1 to 3 years, and hospitalization rate was higher under 12 months. When the flu epidemic in 2009, the number of patients visiting the emergency room was best but hospitalization rate was lower.
REDEFINING RISK FOR PNEUMOCOCCAL DISEASE IN PEOPLE ≤18 YEARS: THE RISK STACKING APPROACH
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Background and aims: We conducted a hospitalized-based, case-control study in order to identify the main risk factors (RF) for CAP, as well as the impact of the risk stacking (RS) in people ≤18 years.

Methods: Cases were identified from an Argentinean health insurance database by searching for codes for CAP as discharge diagnosis (ICD-10) (January 1st 2010-December 31, 2014). A group of controls was matched by age and randomly selected each comprising up to two controls per case. A conditional logistic regression has been used in order to identify those RF associated with CAP hospitalization (AR [chronic heart disease, chronic lung disease, stroke and diabetes] and HR [HIV, immunosuppressive drugs/conditions and oncohematological disease] conditions).

Results: 438 cases and 953 controls were included. Both, AR and HR conditions were identified as significantly associated with CAP diagnosis. We consider the exponentiated coefficients showed in the table to obtain the corresponding OR for having ≥1 RF in each group.

<table>
<thead>
<tr>
<th>Condition</th>
<th>coef exp</th>
<th>OR by number RF</th>
<th>coef exp</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>At risk</strong></td>
<td>0.55 (p&lt;.001)</td>
<td>1.74</td>
<td>3.04</td>
</tr>
<tr>
<td><strong>High risk</strong></td>
<td>0.79 (p 0.09)</td>
<td>2.21</td>
<td>4.90</td>
</tr>
</tbody>
</table>

Conclusions: OR in subjects ≤18 years with ≥2 AR conditions were similar or higher to those observed in persons with HR conditions. These findings demonstrate the high impact of the RS on the probability to suffer CAP. Prevention strategies for CAP such us pneumococcal and influenza vaccination recommendations, should consider the RS impact beyond the defined risk conditions (AR and HR).
INVASIVE PNEUMOCOCCAL DISEASES, ANTIMICROBIAL RESISTANCE AND SEROTYPE DISTRIBUTION IN CHILDREN AND ADOLESCENTS FROM ANTIOQUIA-COLOMBIA, DURING 2014 AND 2015.

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The pneumococcus is a major cause of morbidity and mortality in children, adolescents and in the elderly, due to severe manifestations of meningitis, pneumonia and sepsis. However, epidemiological data on Invasive Pneumococcal Diseases (IPDs) among individuals less than 18 years of age in Colombia are scarce. The aim of this work was to record data and analyze the IPD cases presented in children and adolescents in Antioquia - Colombia, with relation to antimicrobial resistance and pneumococcal serotype distribution. A total of 34 cases of IPD were identified in the period of 2014 - 2015 among hospitalized patients aged from 1 month to 18 years. Most of the IPDs (76.5%) occurred in children less than 5 years, whereas individuals between 6 and 18 years of age accounted for 23.5% of the cases. Patients were mainly affected by pneumonia, sepsis, meningitis and bronchitis, and the main source of Streptococcus pneumoniae isolation was blood (82.3%). According to the Diffusion Agar Test, the highest rates of antimicrobial resistance were observed with Trimethoprim-Sulfamethoxazole (R47.1%), Penicillin (NS38.2%) and Erythromycin (R35.3%). Other antibiotics such as Chloramphenicol and Vancomycin exhibited high level of susceptibility (S100%). The most common pneumococcal serotypes responsible for disease were: 19A (20.6%), 14 (11.8%), 3 (8.8%), 6A (8.8%), 15B (5.9%) and 25A (5.9%). Other serotypes, not included in the conjugate vaccine formulations (NVTs), such as 9A, 12F, 12B, 23B, 24F, 29, and 38 were also found here. Typing of virulence factor genes and clonality by PFGE and MLSTs are currently under evaluation for these clinical isolates.
TREATMENT REGIME FOR ERADICATION OF PSEUDOMONAS AERUGINOSA INFECTION IN PATIENTS WITH CYSTIC FIBROSIS

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Background and aims: In children with cystic fibrosis (CF) chronic Pseudomonas aeruginosa (Pa) lung infection is associated with more rapid decline in lung function, increased morbidity and mortality. Intermittent Pa colonization nearly always precedes chronic infection, and this window of opportunity can be utilized to eradicate Pa from the respiratory tract. The aim of study was to evaluate the efficacy of our Pa eradication regimen by microbiological studies of sputum samples.

Methods: All children with CF (1-18 years) and a new isolation of Pa from sputum, in the period from 2005 to 2014, were included in study. Combination of oral ciprofloxacin (30mg/kg/day) for 6 weeks plus inhaled colistin (2x1-2 mil U/day) for 3-6 months was used as eradication regime for new Pa colonization. If the patient had clinical signs of Pa infection, I.V. treatment for 2 weeks plus inhaled colistin was given as before. The prevention of the development of chronic Pa infection was indicator for successful treatment. Chronic Pa infection was defined as persistent presence of Pa at least 6 consecutive months.

Results: Over the study period, 87 Pa eradication in 39 intermittently colonized CF patients (range 1-4) were documented. Immediate eradication was high - 87.2%. 34 of those treated patients are still Pa free.

Conclusions: Prevention or delay of chronic Pa infection caused by the mucoid phenotype, is of great importance for long-term prognosis in CF. Early eradication therapy with nebulised colistin and oral ciprofloxacin provides 87% CF patients with protection against the onset of chronic Pa infection.
INTRODUCTION
Most community acquired pneumonias (CAP) are caused by Streptococcus pneumoniae or Staphylococcus aureus. In Colombia, there is lack of substantial penicillin resistance for invasive S. pneumoniae. We aimed to describe our experience with the use of narrow spectrum antibiotics for simple or complicated CAP.

METHODS
From March 1st, 2014 we implemented an in-patient CAP protocol to administer IV ampicillin for simple CAP, in addition to IV clindamycin for complicated CAP. CAP was defined as a febrile acute respiratory infection and alveolar consolidation or non-consolidative infiltrates with a CRP > 40 ug/mL. Complicated CAP was defined as CAP with pleural effusion, multilobar disease, or more serious disease. Treatment failure was defined as lack of improvement or clinical relapse. Data was collected prospectively in all fully immunized, previously healthy children presenting with non-life threatening CAP to the 2 participating hospitals.

RESULTS
Thirty-three patients with simple CAP and 19 with complicated CAP were included. Of patients with simple CAP, 29(88%) had single-lobe consolidation, while 4(12%) had non-consolidative infiltrates with a CRP>40 ug/mL. Of patients with complicated CAP, 13(68%) had multilobar disease and 8(42%) had pleural effusions larger than ¼ of the hemitorax. Six (32%) required ICU admission. One patient with complicated necrotizing CAP failed therapy but fully recovered after thoracotomy and antibiotic modification.

CONCLUSIONS
In our experience, fully immunized children with non-life threatening simple or complicated CAP may be treated with narrow spectrum antibiotics. Local epidemiology data is necessary to optimize treatment strategies for CAP, aiming at implementing judicious use of antibiotics.
BURDEN OF COMMUNITY ACQUIRED PNEUMONIA AMONG CHILDREN IN A TERTIARY HOSPITAL IN A RESOURCE LIMITED SETTING

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BACKGROUND: Pneumonia significantly contribute to morbidity and mortality especially amongst under five children.
AIM: To determine the prevalence and outcome of pneumonia among children admitted in Federal Medical Centre Birnin Kudu, Jigawa State, Nigeria.

Materials and methods: This was a cross-sectional retrospective study conducted on all consecutive admissions with features consistent with pneumonia between January 2010 to November 2011 among children aged 6 months to 12 years of age at the Emergency Paediatric unit of Federal Medical Centre Birnin Kudu. The following data were extracted from the retrieved case files; age, sex, diagnosis and outcome.

RESULTS: A total of 1259 children were admitted during the study period. Of these 192 had clinical features consistent with pneumonia giving an overall prevalence of 15.2%. One hundred and two 120 (62.5%) were males while the remaining 72 (37.5%) were females with m:f of 1.7. The median age at presentation was 22 months with a range of 5 to 75 months. The mean hospital stay was 6 ± 2.3 days. One hundred and sixty 160 (83.3%) children were discharged home, 12 (6.3%) and 20 died; giving a case fatality rate of 10.4% and contributing to 41.7% of the 48 total deaths.

Conclusion: The burden of pneumonia is still enormous, aggressive control measures should be taken to reduce the associated morbidity and mortality.

Acknowledgement: we thank our esteem colleagues, nurses and medical record officers for their support.
Pneumonia

OCCURRENCE OF COMMUNITY-ACQUIRED PNEUMONIA AMONG ACUTE RESPIRATORY DISEASES IN CHILDREN’S HOSPITAL.

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²Respiratory infections, Children City Clinical Hospital of Saint Vladimir, Moscow, Russia

Pneumonia is one of the most serious diseases of respiratory tracts at children which frequency and prediction are directly connected with social and economic conditions.

The aim of our work was to evaluate occurrence of community-acquired pneumonia (CAP) among acute respiratory infections (ARI’s) in children’s hospital.

Methods: We performed a retrospective analysis of histories of children admitted at Department of respiratory infections of Saint Vladimir Children’s City Hospital in 2011-2014 years.

Results. Our cohort included children with ARI’s aged from 1 months to 17 years old (in 2011 – 2960, 2012 - 3373, 2013 - 3417, 2014 – 3833 children). Children with ARI’s were mainly from 1 months to 3 years old (in 2011 – 82.4%, 2012 – 71.3%, 2013 – 71.1%, 2014 – 71.3%). We have found increase of frequency of CAP in different years of observation from 9% to 17% (2011 – 9%, 2012 – 12%, 2013 – 13%, 2014 – 17% admitted children with AIR’s). 70% of these children were treated antibiotics prior to admission (macrolids, amoxicillins), but it was not so effective. The diagnosis pneumonia was established on the basis clinical findings and chest x-ray. The average time of stay in a hospital was 7-10 days. In the hospital, the most commonly used treatments were combitations of antibiotics (third-generation cephalosporins, macrolides, aminoglycosides).

Conclusion: Increase of frequency of CAP in children admitted at children’s hospital is connected with possible growth of an antibiotic resistance of microorganisms and underestimation of a condition of the child at an out-patient stage.
CHEST X-RAY FINDINGS IN CHILDREN HOSPITALIZED WITH WHO-DEFINED -SEVERE, VERY-SEVERE PNEUMONIA IN A HIGH HIV PREVALENCE SETTING IN THE ERA OF BACTERIAL CONJUGATE VACCINES

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¹Diagnostic Radiology, University of the Witwatersrand and Chris Hani Baragwanath Academic Hospital, Johannesburg, South Africa
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³Director: MRC Respiratory and Meningeal Pathogens Research Unit, University of Witwatersrand, Johannesburg, South Africa

Introduction: Globally pneumonia is the leading infectious cause of morbidity and mortality in children <5 years. Chest X-ray (CXR) can be an indirect indicator of the likelihood of bacterial and other aetiologies of pneumonia.

Objectives: We compared CXR features between HIV-infected, HIV-exposed-uninfected and HIV-unexposed children <5 years hospitalized with WHO-defined-severe or very-severe pneumonia.

Methods: CXRs from children enrolled into the Pneumonia Etiology Research for Child Health (PERCH) study in South Africa over two years, were independently evaluated by 3 radiologists (blinded to all clinical data) using modified WHO CXR interpretation criteria. The majority consensus was used as the final reading.

Results: Interpretable CXRs were available in 858(93%) of 921 children of 9.03 months mean age. This included 108(13%) HIV-infected, 284(33%) HIV-exposed-uninfected, 428(50%) HIV-unexposed and 38(4%) of unknown HIV-exposure-status. WHO end-point consolidation (CXR-AC) more common OR 3.1(95%CI 1.9-4.9) in HIV-infected(60%) compared with HIV-exposed-uninfected (33%) and HIV-unexposed (38%) children. There was no statistical significant difference between these 3 groups for other CXR findings including “other infiltrate only”(21-27%), bilateral air trapping(14-19%), lymphadenopathy(14-17%), cardiomegaly(4-6%) and bronchiectasis/cavities(1-5%). This was consistent when evaluating CXR findings by HIV status within 3 age categories <6months, 6 months to 11 months and 12 months to 59 months.

Conclusion: CXR-AC remains the most common CXR abnormality in HIV-infected, HIV-exposed-uninfected and HIV-unexposed South African children hospitalized with WHO-defined severe, very-severe pneumonia, even in the era of HiB and PCV immunization. This suggests an ongoing high burden of bacterial (possibly PCP) aetiology among cases being hospitalized for pneumonia in this setting.
FINAL: CHEST X-RAY FINDINGS IN CHILDREN HOSPITALIZED WITH WHO-DEFINED SEVERE, VERY-SEVERE PNEUMONIA IN A HIGH HIV PREVALENCE SETTING IN THE ERA OF BACTERIAL CONJUGATE VACCINES

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Results: Interpretable CXRs were available in 858(93%) of 920 children of 9.0 months mean age. This included 108(13%) HIV-infected, 284(33%) HIV-exposed-uninfected, 428(50%) HIV-unexposed and 38 (4%) of unknown HIV-exposure-status. WHO alveolar consolidation (CXR-AC) more common in HIV-infected (60%) compared with HIV-unexposed (38%) [OR 2.5 (95% CI 1.6-3.9)]; and HIV-exposed-uninfected (33%) [OR 3.1 (1.9-4.9)] children. The three groups were similar for other CXR findings: “other infiltrate only” (21-27%), bilateral air trapping (14-19%), lymphadenopathy (14-17%), cardiomegaly (4-6%) and bronchiectasis/cavities (1-5%). This was consistent when evaluated by age <6 months, 6-11 months, and 12-59 months.

Conclusion: CXR-AC remains the most common CXR abnormality in children hospitalized for WHO-defined severe, very-severe pneumonia in this setting, even in the era of HiB and PCV immunization. HIV-infected children had higher CXR-AC compared with HIV-exposed-uninfected and HIV-unexposed children, which could be due increased susceptibility to bacterial infection or other opportunistic pathogens such as Pneumocystis Jirovecii.
Pneumonia and diarrhea are the leading infectious cause of mortality among children under 5 in Pakistan. Research evidence suggests that undernutrition, lack of immunization, low birth weight and poor access to primary health care service are some of the factors contributing towards higher pneumonia incidence in developing countries like Pakistan. Timely diagnosis and early treatment with proper medicines and care can prevent death from pneumonia. We assessed the pattern of health care use among children with suspected pneumonia of randomly selected 300 children ages 0-59 months in low income urban areas of Karachi through a cross-sectional survey. Overall 210 (70%) children sought care. Antibiotics and fever reducing medicines were used by 90 (30%) and 240 (80%) respectively. Only 30 (10%) were taken to the tertiary care facility. Odds ratios for independent predictors of care seeking behaviors were breathing problem 3.12 (95% CI=1.50-7.11), high fever 2.5 (1.29-5.69). Perception of high cost of antibiotics and physician consultation fees were associate with reduced care seeking behavior odds ratio 0.30 (0.1-0.8) and 0.28 (0.12-0.78) respectively. There is a strong need for improving community awareness and education along with improving affordable and easily accessible treatment for pneumonia.
Background and aims: *Streptococcus pneumoniae* is a major cause of pneumonia, including complicated cases, such as those associated with empyema or pleural effusion (PE). However, the etiology is frequently not established, given the low microbiological yield of the specimens by traditional methods. The aim of this study was to identify the serotypes of pneumococci in PE of children (< 18yrs) in Portugal using both cultural and PCR approaches.

Methods: From January 2010 to December 2014, the pediatric departments of 30 hospitals were asked to submit samples of all cases of complicated pneumonia with a suspected pneumococcal etiology. The serotype of the isolated pneumococci was determined by Quellung. Conventional (end-point) or real-time PCR (RT-PCR) analysis targeting the *lytA* and *cpsA* genes was performed for culture negative cases. Amplification of specific capsular genes by conventional PCR was used to identify the serotype in culture negative samples.

Results: A total of 161 samples were submitted. Isolation of pneumococci was possible in 15 PE samples (6%). In the remaining 146 culture negative cases, pneumococci were identified in 108 samples (74%), of which 44 samples (41%) by both conventional and RT-PCR and in an additional 64 samples (59%) by RT-PCR only.

The main capsular serotypes identified were serotypes 3 (n=29), 1 (n=20) and 19A (n=10).

Conclusion: RT-PCR offers a significant enhancement relative to conventional PCR and culture (52% of pneumococcal positive samples were identified by RT-PCR only). Serotypes 1 and 3 are the major causes of complicated pediatric pneumonia cases in Portugal (accounting for 40% of cases).
Invasive Pneumococcal Diseases (IPDs) in humans begin frequently with nasopharyngeal colonization by the pneumococcus. Resistance of Streptococcus pneumoniae to multiple antimicrobial agents is becoming a serious clinical and public health problem worldwide and in Latin-American countries. To estimate the prevalence of carriage and the antimicrobial resistance of S. pneumoniae isolates among young children attending Kindergartens and Day-Care Centers during 2014 in Medellín-Colombia, a cross-sectional study including collection of questionnaire data and nasopharyngeal swab specimens was conducted. A total of 629 children under five years of age were sampled, 349 (55.5%) of whom were colonized with the pneumococcus. The 86.6% of children had received at least one dose of PCV10 (Pneumococcal Conjugate Vaccine introduced in Colombia in 2010), and 74.2% had accomplished the 2+1-dose immunization schedule. According to the diffusion agar test, 49.8% of these isolated pneumococcal strains had reduced susceptibility to penicillin, and exhibited high rates of resistance to Trimethoprim-Sulfamethoxazole (50.7%), Tetracycline (31.1%), Erythromycin (24.9%), and Clindamycin (17.7%). In addition, these S. pneumoniae isolates demonstrated high levels of susceptibility to Vancomycin (100%), Levofloxacin (100%) and Chloramphenicol (94.3%). In multivariate models, younger age (less than 2 years), upper respiratory symptoms and illness, modality of child care (daily assistance), the no-affiliation to the health security systems and the consumption of steroidal medicaments in the preceding 3 months were found as factors associated to nasopharyngeal colonization with S. pneumoniae in Medellín. Serotyping, genotyping and PFGE/MLSTs are currently under evaluation. This study shows the pneumococcal carriage and antimicrobial resistance scenario in children in Medellín-Colombia.
COULD NASOPHARYNGEAL PNEUMOCOCCAL BACTERIAL LOAD BE A USEFUL MARKER FOR THE DIAGNOSIS OF COMMUNITY ACQUIRED PNEUMONIA?

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Introduction: S. pneumoniae remains one of the most common causes of community-acquired pneumonia (CAP). It is challenging to establish a rapid non-invasive etiologic method to diagnose this disease. Our aim is to assess if nasopharyngeal (NP) pneumococcal bacterial-load could be a useful marker for the diagnosis of CAP, especially pneumococcal-CAP.

Methods: All children S. pneumoniae was performed by Multiplex-PCR.

Results: 117 CAP episodes (22 from Group-1, 95 from Group-2) and 44 controls were recruited. Mean age of patients in each group were 63.7, 57.1, and 68.2 months. Previous antimicrobial treatment was detected in 45.5%, 30.5% and 0% of children. 36.4%, 57.1% and 50% had received at least one dose of pneumococcal vaccine. Rates of pneumococcal carriers were 86.4%, 61.1% and 52.3%. A high proportion of serotype 1 and 3 carriers were detected in patients with CAP. Among carrier patients non-exposed to antimicrobial agents (n=82) a high DNA bacterial-load was observed in CAP-patients compared to controls: 6.2(5.9–6.5) vs. 5.5(4.9–6.2), p=0.05. In contrast no significant bacterial-load differences were found neither comparing Group-1 vs. Group-2(p=0.96) nor Group-1 vs. Group-3(p=0.18).

Conclusion: NP pneumococcal-load could be a useful tool for diagnosis of CAP, however further studies are needed to evaluate its value as a diagnostic marker of pneumococcal-CAP.
Background and aims: We aimed to investigate whether there is an association of seasonality and meteorological factors with the frequency of antibody responses against antigens from three bacteria in children with pneumonia.

Methods: In a 54-month period, 690 patients from Salvador, Northeast Brazil, had acute and convalescent serum samples evaluated for antibody responses against eight Streptococcus pneumoniae, three Haemophilus influenzae, and five Moraxella catarrhalis proteins. Data about rainfall, relative humidity, air temperature, and sunshine were collected. Time series analyses were assessed using Prais-Winsten generalized linear regression.

Results: The total frequency of antibody responses was 19% against pneumococcal antigens, 5.8% against H influenzae antigens, and 2.3% against M. catarrhalis antigens. The monthly count of M. catarrhalis responses showed seasonal distribution, with higher counts during fall-winter, and was positively associated with relative humidity and negatively associated with air temperature and sunshine. The frequency of antibody responses against S. pneumoniae and H. influenzae did not show a seasonal pattern and was not associated with meteorological factors.

Conclusions: M. catarrhalis antibody responses show seasonal variation and are associated with meteorological factors in children with non-severe pneumonia in a tropical region. Conversely, S. pneumoniae or H. influenzae antibody responses did neither show seasonal variation nor association with meteorological factors in this context.

Acknowledgements: We thank Sanofi-Pasteur for supplying PcpA and PhtD; Prof. Elaine Tuomanen at St. Jude Children’s Research Hospital for supplying Ply, CbpA, PspA 1; Profs. Susan Hollingshead, David Briles, and Pat Coan at University of Alabama for supplying PspA2; and Valneva Austria GmbH for supplying Stk-P-C, PcsB-N, NTHi_Protein_D, NTHi0371-1, NTHi0830, MC_Omp_CD, MC_RH4_2506, MC_RH4_1701, MC_RH4_3729-1, and MC_RH4_4730.
ALL-CAUSE PNEUMONIA HOSPITALIZATIONS IN CHILDREN

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Background

We have previously shown that all-cause pneumonia hospitalizations for children <2 years old were significantly reduced by 23% after the introduction of PCV7 vaccination in Sweden, and then decreased further in the County Councils that transitioned to PCV13 but not in County Councils that switched to PCV10¹. In the present follow-up study, we evaluated the impact of inpatient pneumonia after one additional year of use of PCV10 or PCV13, which has now replaced PCV7 for three full years, in a national setting of high compliance, as >97% of the children receive all three doses of the 2+1 schedule.

Methods

Swedish national registers hold ICD coding records for all individuals hospitalized. We identified all hospitalizations for children <2 years old with pneumonia, (ICD-10 J12 to J18) for two periods 1998-2005, before NIP was introduced, and 2011-2013, when young children had been vaccinated with either PCV10 or PCV13, depending on the County Council.

Results

The preliminary findings indicate that the incidence of inpatient pneumonia was reduced even more in the additional year 2013 in County Councils that were utilizing PCV13; by contrast, this was not observed in County Councils that had switched from PCV7 to PCV10.

Conclusion

Impact on pneumonia after introduction of PCV7 may depend on the chosen sequence of higher-valent PCV introduced.

Background and Aim
Respiratory syncytial virus (RSV) is a major cause of pneumonia in young children. Factors associated with RSV infection, prevalence of nosocomial infection were studied. The strains causing infection at Red Cross Children’s Hospital, Cape Town were molecularly characterised.

Methods
The clinical and strain results for 2012 season were analysed for children testing positive for RSV infection. A multiplex PCR assay was used to confirm the diagnosis on respiratory specimens.

Results
A total of 226 children were studied, ages ranging between one week and 92.5 months (median: 11 weeks). There were 117 (51.8%) males and the median duration of symptoms prior to diagnosis was 2 days. Nosocomial infection accounted for 22 (9.7%) and there was pre-existing medical conditions in 116 (51.3%), most commonly prematurity in 58 (50.0%) and congenital heart disease 34 (29.3%). Fifty nine (26.1%) required ventilation. A mortality rate of 0.9% was recorded. RSV A accounted for 181 (80.1%) while subtype B accounted for only 45 (19.9%) of the infections. The prevalent genotypes were NA1 127 (56.2%), ON1 (45, 19.9%) and NA2 (9, 4.0%) for subtype A and the only circulating RSV B genotype was BA4. In addition to RSV, co-pathogens were detected in 70 (31.1%); most commonly rhinovirus 22 (31.4%) and adenovirus 12 (17.1%).

Conclusion
RSV infection remains an important cause of morbidity in children with pre-existing medical conditions; active surveillance and control of nosocomial infections is necessary. RSV strains need to be characterised to determine prevalent and newly emerging genotypes.
Introduction: Community acquired pneumonia (CAP) is one of the most important cause of mortality and morbidity in children. Regarding to its prevalence and complications, we decided to evaluate the impact of Dexamethasone on outcomes in children with CAP.

Method: This was a prospective, case-control study. 100 patients with age of 1 month to 14 years old who admitted with proved CAP. Sample method was convenience sampling and patients were randomly divided to case and control group (every group 50 patients). Dexamethasone (0.2mg/kg every 12 hour last to 2 days) administered to patients in case group. Collected data entered to spss version 16 and analyzed with descriptive (mean, standard deviation) and comparative (t-test) tests.

Results: Mean age in dexamethasone and control group were 24.6 and 20.32 months. 58 boys and 48 girls were enrolled. The sign and symptom in the dexamethasone group compared with the control group showed: tachypnea (43 patients of case and 34 in control group), cough (38 patients of case and 29 in control group), and chest pain (14 patients of case and 9 in control group). Median length of stay was 3.51±0.16 days in the dexamethasone group compared with 3.68±0.16 days in the placebo group (P>0.05).

Conclusion: Based on our findings, there was no significant relation between dexamethasone use and decreasing the duration of admission of pneumonia.

Key word: Dexamethasone, community acquired pneumonia, children.
THE USE OF OXYGEN CONCENTRATORS FOR PNEUMONIA IN A LOW-RESOURCE SETTING: PNEUMONIA AND THE LAOS OXYGEN PROJECT

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**Background**: Pneumonia remains a major cause of childhood mortality in low resource settings. Oxygen, a key intervention, is often unavailable due to cost and other resource constraints. It is unknown if the provision of a low cost oxygen system improves outcomes in the Laos setting.

**Aims and methods**: We conducted a country-wide prospective cohort study in Laos examining the effect of providing a low cost oxygen system. There were 10 intervention and 10 control hospital study sites. All patients who received oxygen therapy at these sites between January to June 2013 were included with a subgroup receiving a diagnosis of pneumonia. Intervention sites were provided with standardized oxygen concentrators, pulse oximetry and training support. Patients at control sites received routine care.

**Results**: There were 222 cases of pneumonia, of which 91 (41\%) were < 12 months and 132 (59.5\%) < 5 years of age. Those in the intervention group had longer duration of oxygen use (median 1 vs <1 day, p<0.001) and hospital stay than those in the control group (median 2 vs 1 day, p<0.001). The intervention group was also more likely to have oxygen therapy guided by oximetry (98.6\% vs 67.5\%, p<0.001). There was a trend toward improved outcome in the intervention group.

**Conclusion**: The provision of a low cost oxygen system, pulse oximetry and training support in this low resource setting improves access to and appropriate use of oxygen therapy in children with pneumonia. Larger studies will establish the effect on clinical outcomes.
BACTERIAL INFECTIONS ASSOCIATED WITH VIPERIDAE SNAKEBITES: A 14-YEAR EXPERIENCE AT THE HOSPITAL NACIONAL DE NIÑOS DE COSTA RICA

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Background and aims: Secondary bacterial infections in Costa Rican children following Viperidae snakebites envenomation are common. Bothrops spp (particularly B.asper) is the most common Viperidae snake causing these accidents. The objective of this study was to describe secondary bacterial infections and microbiological aspects in these patients (pts).

Methods: Retrospective descriptive study of children who suffered a Viperidae snakebite accident and were discharged from our institution. Study period: January-2001 to December-2014. Microbiological data of soft tissue, joint, and blood cultures were collected.

Results: Among 75 analyzed pts, 14(18.7%) had a bacterial infection secondary to the snakebite. 52(70%) were boys. Mean age was 8.5(0.8-12.8) years. All pts were bitten by Bothrops spp. 18 positive cultures by 7 different microorganisms were isolated from 14 pts, from which 4(28.5%) pts had a polymicrobial infection. 11(78.6%), 1(7.1%), 1(7.1%), and 1(7.1%) pts developed soft tissue abscesses, necrotizing fasciitis, septicemia, and septic arthritis, respectively. Morganella morganii (27.7%), Aeromonas hydrophila (22.2%), and Providencia rettgeri (16.7%) were the 3 most common identified pathogens. All pts required intravenous combined antibiotic therapy with clindamycin or penicillin and an aminoglycoside. 7(9.3%) pts developed a nosocomial infection, being Staphylococcus spp. the most common. There were no deaths, but 21% pts had functional limitation as a long-term sequelae.

Conclusions: Our data support previous observations that wound infections are common in Viperidae snakebite patients, being M.morganii and A.hydrophila the 2 most common responsible pathogens. Empiric initial antibiotics for these patients should be based on local etiological agents and antimicrobial susceptibilities.
Infection with Ascaris lumbricoides is common in children living in developing or tropical countries and has a varied manifestation. But extra-intestinal complication such as encephalopathy is a very rare presentation.

A 5-year-old boy was admitted to the hospital with fever and lethargic. Approximately 3 hours before admission, he had generalized tonic-clonic convulsions for 20 minutes without regaining consciousness. His histories included abdominal pain lasting 1 week, fever for 4 days and have not taken any medication yet. He had abdominal distension and rhonchi were auscultated at the both hemithorax, but his airway was maintainable and he had normal circulation. There was no neck stiffness or any signs of meningismus and other neurological examination was normal. Laboratory tests were all within normal limits except for low hemoglobin and hematocrit. Unfortunately, the hospital does not have any radiology equipment to support further workup. After 4 hours of admission, he was passing 5 Ascaris worms by his stool and 2 Ascaris worms by his nose. For the seizure, he was loaded with phenobarbital and he had no seizure recurrence thereafter. He was given single dose of 400 mg albendazole for 7 days. He rapidly improved and regained his normal sensorium within 72 hours of admission.

In conclusion, encephalopathy is a rare manifestation of ascariasis but may be encountered in tropical areas and developing countries. Therefore, physicians should be aware of this unusual presentation of ascariasis and should consider it in the differential diagnosis of unexplained encephalopathy.
UROGENITAL SCHISTOSOMIASIS: DESCRIPTIVE STUDY OF A HIGHLY ENDEMIC DISEASE AMONG CHILDREN IN MOZAMBIQUE

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Background and aims: Urogenital schistosomiasis caused by Schistosoma haematobium is a parasitic disease highly endemic in developing countries in Africa. In Mozambique, lack of hygiene and lack of wastewater treatment contributes to this situation.

Methods: Retrospective descriptive study from January 2013 to January 2015 of patients under 18 diagnosed with urogenital schistosomiasis in a tertiary private hospital in Maputo Mozambique. Urogenital schistosomiasis was diagnosed with a urine CCA test and haematuria with a urine dipstick.

Results: We found 28 cases of urogenital schistosomiasis. The average age of presentation was 5. We registered 3 patients under 2 years with positive CCA. 57% of the patients were male. All cases were treated with Praziquantel. Only 7 cases presented haematuria. We confirmed the schistosomiasis diagnose with serology in 2 cases. Urine CCA test was repeated in 9 cases between 1 and 7 months after the treatment; 6 were negative, 3 were positive. The treatment was repeated in 1 patient 6 months after the first one and CCA was confirmed negative posteriorly. 1 patient repeated CCA 2 months after the treatment and it was negative. 1 patient repeated CCA in 3 occasions with a positive result and is currently waiting to do a serology.

Conclusions: Schistosomiasis remains highly endemic in Mozambique. The majority of the cases present in school-aged children however we registered 3 cases in infants. Haematuria was associated in 25% of the cases. A prospective study is needed to further describe the epidemiology of Schistosomiasis in our hospital.
SOCIO DEMOGRAPHIC FEATURES AND WATER CONTACT ACTIVITIES OF ITINERANT QURANIC SCHOOL PUPILS INFECTED WITH URINARY SCHISTOSOMIASIS IN A RURAL COMMUNITY IN KANO STATE, NIGERIA.
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Background: Urinary schistosomiasis is a neglected tropical disease of public health importance. School children have been observed to have the highest burden of the disease as a result of recreational and domestic activities in snail infested streams. Itinerant quranic school system being an informal school system with less supervision may increase their predisposition to the disease.

Aims: This study aimed to determine the prevalence of urinary schistosomiasis amongst Itinerant quranic school pupils in a rural environment. Their socio demographic features and water contact activities associated with the infection were also determined.

Methodology: Two hundred Itinerant quranic school pupils were studied. Diagnosis was made by demonstrating the egg of S. hematobium using urine microscopy. An interviewer-administered questionnaire was used to obtain socio demographic and water contact data.

Results: The prevalence of urinary schistosomiasis amongst these pupils was 55.5%. Fifty five percent of those infected were aged five to ten years. Majority 61.3% of the infected pupils were children of farmers. The least infection occurred in ward B (Kosawa). The infection was not observed to have any statistically significant association with differences in age group, gender, parental education and wards. p > 0.05. Contact with water bodies (93.7%) and farming (70.3%) were common amongst those infected. However this was not statistically significant. p > 0.05.

Conclusion: Health education and control programmes should target this vulnerable group of children.
DIPHTHERIA AFFECTING TONSILS & UNCOMMON SITES (CONJUNCTIVA & NOSE). REPORT OF 3 CASES
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Purpose/Objective: WHO reported 4887 cases of diphtheria in the year 2011, of them 3485 are from India which appears to be a gross underestimation. This report highlights involvement of uncommon sites and one of its cardiac complications.

Materials and Methods: Three children of diphtheria involving conjunctiva, nose and tonsils presenting to South Indian Children Hospital have been described with their profile and outcome.

Results: A five year female child presented with history of fever, left eye swelling with redness and throat pain. Examination revealed right tonsillar and left eye palpebral conjunctival membrane with hemorrhage of bulbar conjunctiva (Fig 1). Another five year male child presented with bloody discharge from right nose 8 days back and blocked nose of 15 days duration (Fig 2). No other systemic findings were noted in both of them. Another 7 year child presented with tonsillar membrane. Smears from conjunctiva, nose and tonsils were positive for C. diphtheria by Albert’s stain. All of them were treated with standard regimen of antit-diphtheretic serum and benzyl penicillin. The first two children had uneventful recovery. The third child developed missed beats on 5th day of admission with ECG showing sinus arrhythmia (Fig 3), however recovered completely.

Conclusion: In the era of effective vaccination being available and humans being the only reservoirs these morbidity and mortality are unacceptable. WHO needs to prioritize its eradication next to poliomyelitis.
EVALUATION OF CHILDREN WITH GASTROINTESTINAL PARASITES IN A RURAL PART OF TURKEY


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BACKGROUND AND AIMS: Intestinal parasitosis is usually associated with poor sanitary conditions. It was aimed to investigate its effects on the clinics and laboratory of children.

METHODS: Children with gastrointestinal parasites from January 1 to May 31, 2015, in our hospital were evaluated prospectively.

RESULTS: One hundred and fifty children, of which 82 (54.7%) were male and median age was 97 (range, 24 to 184) months, were evaluated. Three children had chronic disorders (immunodeficiency, celiac disease, and Tourette syndrome). The duration of symptoms was 65 (range, 1 to 1020) days. Abdominal pain (n=111, 74%), anal pruritus (n=90, 60%), hypersalivation (n=63, 42%), constipation (n=33, 22%), diarrhea (n=4, 2.7%), loss of appetite (n=35, 23.3%), and increased appetite (n=6, 4%) were recorded symptoms. The distribution of parasites is seen in Table 1. Three (2%) EV cases were unresponsive to treatment. Median values of body mass index (BMI) and Z-scores of children with only EV were 15.3 (range, 12.1 to 23.1) and -0.48 (range, -3.6 to 1.9), while (BMI) and Z-scores of children with other parasites were 15.2 (range, 10.9 to 22.6) and -0.67 (range, -3.85 to 2.3), respectively. Serum IgE levels were weakly correlated with symptom duration (r=0.185, p=0.02), while hemoglobin levels, white blood cell, absolute eosinophil, and thrombocyte counts were not.

CONCLUSIONS: Intestinal parasitosis results in increment in IgE levels, while none of the parasites were related to malnutrition.

Table 1. The distribution of parasites

<table>
<thead>
<tr>
<th>Name of the parasite</th>
<th>Number of the patients (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterobius vermicularis (EV)</td>
<td>103 (68.7%)</td>
</tr>
<tr>
<td>Taenia saginata</td>
<td>20 (13.3%)</td>
</tr>
<tr>
<td>Giardia intestinalis</td>
<td>4 (2.7%)</td>
</tr>
<tr>
<td>Entamoeba histolytica</td>
<td>2 (1.3%)</td>
</tr>
<tr>
<td>Ascaris lumbricoides</td>
<td>1 (0.7%)</td>
</tr>
<tr>
<td>Blastocystis spp</td>
<td>2 (1.3%)</td>
</tr>
<tr>
<td>Strongyloides stercoralis</td>
<td>1 (0.7%)</td>
</tr>
<tr>
<td>Enterobius vermicularis + others*</td>
<td>5 (3.3%)</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>2 (1.3%)</td>
</tr>
<tr>
<td>Unidentified hook/tapeworm</td>
<td>10 (6.7%)</td>
</tr>
</tbody>
</table>

* Others, Giardia intestinalis, Taenia saginata, Hymenolepis nana, Ascaris lumbricoides; Miscellaneous, Taenia saginata + Entamoeba histolytica, Ascaris lumbricoides + Giardia intestinalis
CASE REPORT AND SYSTEMATIC REVIEW BAGGIO-YOSHINARI SYNDROME AND NEUROLOGIC DISORDER IN ADOLESCENT


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Introduction: The Baggio-Yoshinari syndrome (BYS) is an emerging tropical zoonosis in Brazil. Trasmitted by ticks, the etiological agent is an uncultivable spirochete. The symptoms are similar to Lyme disease, except for the recurrent character of neurological symptoms. Scarce epidemiological data on the disease in Brazil.

Objective: Describe a case of BYS with neurological disorder and systematic review of the literature.

Case report: Female, 16 years, urban area resident, near the river with capybaras. Two months ago it began epigastric pain, asthenia, loss of appetite, weight loss, vomiting, depression, back pain, asymmetric paresthesia in the face and four members with asymmetrical changes in superficial and deep sensitivity. Electromyography with an asymmetric pattern of axonal sensory polyneuropathy (NPFS) serious. CSF protein concentration with no other abnormalities. Brain and normal spine in magnetic resonance. Treated empirically with doxycycline for 14 days and corticosteroids. Lyme disease simile: IgM Elisa 1: 100 and 1:50 IgG and IgM positive W. Blot.

Discussion: The patient does not had typical skin disease, the Migratory Erythema. In the literature, 20 to 50% of patients do not have skin lesion and not remember of the arthropod’s bite. The diagnosis occurred in stage 2 of the disease, with neurological disorder and psychiatric manifestations. The diagnosis of BYS is difficult. To improve the prognosis, we have to value the anamneses epidemiological history, detailed physical examination immediately treatment the patient.
BRUCELLA INFECTION IN A CHILD WITH PROGRESSIVE FAMILIAL INTRAHEPATIC CHOLESTASIS TYPE 2 WHO HAD UNDERGONE LIVER TRANSPLANTATION

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Introduction

Brucellosis is considered the most widespread zoonosis in the world. In endemic regions of brucellosis, childhood brucellosis includes up to one-third of all cases of human brucellosis. Brucellosis constitutes a public health problem in Turkey.

Case

A boy aged 12 years who had progressive familial intrahepatic cholestasis type 2 (PFIC2) had undergone deceased donor liver transplantation in 2008 at the age of seven. The boy presented with fatigue, fever, and pain in the right leg and hip, and was admitted to the hospital. The patient had pain and tenderness in the right leg and hip. C reactive protein was slightly elevated (CRP: 12 mg/L, normal range:<5 mg/L). Complete blood count was normal except mild leukopenia (WBC: 3720, normal 71 range: 5.0–14.5x10³/µL); and platelet count at lower limit (Plt: 157.000, normal range: 150–72 450x10³/µL). The patient’s MRI screen of the right leg was normal but bursitis was seen in the right hip. Bone scintigraphy was normal. Brucella melitensis grew in the blood culture and the standard agglutination test was positive at a titer of 1:640. The patient was treated with oral doxycycline and rifampicin for 8 weeks. After treatment, the patient recovered and his blood cultures became negative. The patient’s mother also had a high Brucella agglutination titer of 1:320 positive and was treated in the internal medicine department with spiramycin and doxycycline.

Conclusion

Brucella infection should be suspected in liver transplant recipients who have fever of unknown origin, especially in a recipient who has lived in an endemic area.
A CASE OF MULTIPLE GIANT PRIMARY BILATERAL LUNG HYDATID CYSTS IN A VERY YOUNG CHILD

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Background:
Hydatid disease,a zoonosis, caused by Echinococcus spp. most commonly affects liver and lungs. Primary and bilateral lung involvement with multiple giant cysts in a three years old child is very uncommon..

Aim:
To report a case of primary, bilateral, multiple, giant hydatid cysts.

Case report:
A three years old girl from eastern India presented with fever and cough along with anorexia, weight loss, abdominal discomfort, backache, breathlessness. History of hemoptysis, coughing out of cystic material, icterus were absent. On admission she had poor nutrition, mild cyanosis, tachycardia, tachypnoea. Auscultation revealed bilateral diminished breath sound with few crepitations. Cardiovascular and abdominal examination were unremarkable. She received preoperative albendazole followed by thoracotomy and removal of two huge cysts along with destroyed lung tissue. She is doing better and is on oral albendazole awaiting second surgery for left lung.

Methods:
Blood tests, radiology and histopathology of excised cysts were done.

Results:
1) Pre and postoperative chest x-ray (figure 1)
2) CECT thorax and abdomen (figure 2)
3) Echinococcus serology-positive
4) HPE of excised tissue-hydatid disease

Conclusion:
1) Giant, bilateral, multiple cysts in a three years old child is unavailable in literature
2) Primary lung cysts, as other potential sites remain unaffected
3) Hydatidosis is a possibility in cystic disease of lung in young children

Figure.1: Preoperative(A) and postoperative(B) CXR

Figure.2: CECT thorax(A) and abdomen(B)
Background: Dengue and salmonella are common infectious diseases in Indonesia. Since the clinical manifestations are similar, it is often difficult for clinicians to make a diagnosis. Therefore, we explore data of acute febrile illness requiring hospitalization (AFIRE) in children to provide pediatricians the clinical characteristics, and laboratory findings of these two diseases.

Methods: Data were collected from children participating in AFIRE study, conducted at 6 provincial hospitals in Indonesia from mid-2013-2014. Diagnoses were made based on the hospitals’ standard of care, except of blood culture which was compulsory.

Results: Suspected dengue and salmonella infections contributed 53.8%(134/249) of the total subjects.. Dengue was etiologically confirmed in 61.8%(55/89), whereas salmonella in 86.7%(39/45). Co-infections of dengue and salmonella were identified in 4 subjects. Dengue was confirmed mostly by serology (83.6%), whereas salmonella by serology (57.5), blood culture (17.5%) and both (25%). Males were predominant in dengue cases (61.8%) while equal in salmonella cases. Dengue was more frequent in Bali, Yogyakarta and Semarang (95.4%, 75% and 68.4%), whereas salmonella in Bandung and Makassar (78.3% and 75%). Children with dengue came earlier to the hospitals (4.5 vs. 10.5 days after fever onset, p=0.001). Headache, myalgia, vomiting, and bleeding manifestations are more common (p<0.05) in dengue, while lethargy, coughing, abdominal pain, diarrhea and constipation are more frequent (p<0.05) in salmonella cases.

Conclusion: Dengue and salmonella infections are the important etiologies of acute febrile illness. The distribution varied in different regions in Indonesia. Diagnoses were confirm mostly through serological tests, therefore more specific diagnostic tools are still needed.
THE IMPORTANCE OF SCABIES CO-INFECTION IN THE TREATMENT CONSIDERATIONS FOR IMPETIGO


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Skin infections account for a high disease burden in Indigenous children living in northern Australia. We report the prevalence, demographics and treatment success outcomes of impetigo and scabies co-infection in Indigenous children who were participants in a randomised controlled trial of impetigo treatment conducted in remote communities of the Northern Territory, Australia.

508 out of 1715 screened children were randomised to receive intramuscular benzathine benzylpenicillin, twice daily co-trimoxazole for 3 days or once daily co-trimoxazole for 5 days. A clinical diagnosis of scabies, was made on all children. 16.5% of all randomised children had scabies. Treatment success for impetigo with and without scabies co-infection, independent of the treatment groups, was 75.9% and 86.6% respectively. Treatment success for impetigo with and without scabies co-infection in the BPG group was 69.6% and 88.0% respectively, absolute difference 18.4% (95% CI –1 to +38%). In the pooled SXT groups the treatment success for impetigo with and without scabies co-infection was 78.6% and 86.0% with absolute difference 7.4%. Treatment success in the pooled SXT group with scabies (78.6%), was higher than in the BPG group (69.6%) with scabies, absolute difference 9.0% (95% CI +0.1 to +18%). Prediction of treatment success is dependent on the presence or absence of scabies and was higher in the group treated with SXT.

The burden of scabies in an impetigo trial for Indigenous children was high. Treatment success for scabies co-infection was lower than for impetigo overall, with a higher success seen in the co-trimoxazole group than the benzylpenicillin group.
ESTIMATING SENSITIVITY AND SPECIFICITY OF RK39 ANTIGEN TEST IN PEDIATRIC DIAGNOSIS OF VISCERAL LEISHMANIASIS USING LATENT CLASS ANALYSIS IN A RURAL KENYAN ENDEMIC POPULATION

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Background and Aims: Diagnosis of visceral leishmaniasis (VL) entails the demonstration of Leishmania donovani amastigotes in splenic aspirates of patients with clinical suspicion of VL. However, with its high invasiveness, the absence of a criterion standard due to its low sensitivity, and limited laboratory support in rural settings, minimal invasive tests with high diagnostic accuracy and fast turn-around time are required so as to expedite timely treatment of VL in children. The aim was to evaluate the performance of the rK39 antigen kit in diagnosis of VL using latent class analysis.

Methods: Retrospective study among children with clinical suspicion of VL at Kimalel Visceral Leishmaniasis Health and Research Center in Baringo County, Kenya, between 2010-2014. Files with results of complete blood counts, splenic aspiration and staining, and serum sample testing using the rK39 antigen kit were assessed. Latent class regression using XLSTAT 2015 ® software was done to calculate the prevalence of VL, and the sensitivity and specificity of the test. Ethical approval was sought from the Baringo County Ministry of Health Ethics Committee.

Results: 162 children with clinical suspicion of VL were studied. Prevalence of VL was noted to be at 30.2% (95 C.I: 23.1-37.3%), with the sensitivity and specificity of rK39 antigen kit noted to be 97.5% and 99.5% (L²=1.093, AIC(LL)=9.093, p=0.895) respectively.

Conclusion: The rK39 antigen kit was proven to have a high diagnostic accuracy in determining evidence of VL, thus should be used as an alternative to splenic aspiration in areas with limited laboratory support.
Background and Aims. Acute rheumatic fever (ARF) is an illness caused by immune reaction to infection with group A streptococcus. The incidence of ARF in the developed countries decreased dramatically during the last century. This decline is attributed to improved living conditions and increased access to penicillin-based antibiotics. Despite major healthcare improvements in countries of the Arabian Peninsula, ARF continues to be a problem. This study aims to describe a cluster of 5 children with ARF in Al Ain city, United Arab Emirates, over 3 months period (October to December 2014).

Methods. Demographic, clinical, laboratory, electrocardiogram and echocardiography findings were collected.

Results. The age range was 5 to 12 years. All patients met the revised Jones criteria. Migratory polyarthritis was evident in all 5 patients. Three had cardiac involvements (carditis; valvular lesions or prolonged PR interval). One had Sydenham’s chorea. None had erythema marginatum or subcutaneous nodules. All had raised antistreptolysin O titer and inflammatory markers (erythrocyte sedimentation rate and C-reactive protein). None had evidence of positive throat culture or positive rapid strep test. The household overcrowding was the commonest risk factor.

Conclusion. Pediatricians in countries with improved healthcare standards should be aware of ARF. High index of suspicion is needed especially among patients presenting with migratory polyarthritis. The presentation in winter season was unusual and could be attributed to an outbreak of rheumatogenic streptococci strains.
Saturday, November 21, 2015

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WSPID-0279
Miscellaneous

ACUTE TRANSVERSE MYELITIS ASSOCIATED WITH HERPES SIMPLEX VIRUS TYPE 1 INFECTION
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Introduction: Herpes Simplex Virus Type 1 (HSV-1) may cause various neurologic diseases like aseptic meningitis, brainstem encephalitis, transverse myelitis, acute disseminated encephalomyelitis, encephalomyeloradiculitis. Acute transverse myelitis is a rare, acquired, neuro-immune spinal cord disorder that can present with rapid onset of weakness, sensory alterations, and bowel or bladder dysfunction. HSV-1 infection rarely leads to transverse myelitis.

Case: 30 months old girl presented to emergency ward with the complaint of difficulty in walking and unbalanced walking. Physical examination revealed fever and agitation. Cranial nerves examination was normal. Lower and upper extremities had normal muscle tonus. Deep tendon and abdominal skin reflexes disappeared. Babinski sign was bilaterally negative. Optic fundus examination was normal. Complete blood count, biochemical assays and muscle enzymes were normal. Cranial magnetic resonance imaging (MRI) was normal, however spinal MRI showed mild heterogenous signals on cervical and upper-mid spinal cord which was considered to be consistent with myelitis.

The acute-phase serology for HSV-1 IgM antibodies was positive by enzyme-linked immunosorbent assay HSV-1 Polymerase Chain Reaction was positive. The patient was diagnosed as transverse myelitis. Acyclovir 1500 mg/m²/d for 14 days and intravenous immunoglobulin 0.5 g/kg/d for four days were administered. After the second day of treatment, the complaint of difficulty in walking regressed.

Conclusion: HSV-1 infection was diagnosed during investigating the etiology of transverse myelitis, which was rarely reported in the literature. Therefore, HSV-1 infection should be included in the differential diagnosis of this rare neurologic disease.
PYODERMA GANGRENOSUM ASSOCIATED WITH ARTHRITIS: CASE PRESENTATION
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Introduction: Pyoderma gangrenosum (PG) is a rare, inflammatory and destructive disease characterized with painful and rapidly growing necrotic ulcers. Lesions can be sporadic or associated with systemic diseases like inflammatory bowel disease, arthritis or monoclonal gammopathy. This case is presented to emphasize the presence of PG in the differential diagnosis of children presenting with abscess and infected skin lesions.

Case: Eleven-year-old girl was admitted for bilateral diffuse painful necrotic lesions on the lower extremities and swelling and pain on both knees. On her skin examination, there were painful, necrotic, edematous, peripherally violent ulcers with raised borders on the lower extremities (Figure 1). Skin biopsy was taken due to unresponsiveness to antimicrobial therapy. Skin biopsy was found to be consistent with PG. Clinical properties and histopathological signs were evaluated together and diagnosis of PG was established and methylprednisolone treatment was initiated thereafter. With these signs pyogenic artritis, PG, acne (PAPA) syndrome was thought and genetic analyses was planned. At the end of the first week of treatment, progression of the ulcer ended and signs of artritis improved (Figure 2). Treatment with methylprednisolone was discontinued gradually at the end of third month. Six months after the cessation of treatment, control examination showed neither relapse nor any sign of systemic disease (Figure 3).

Conclusion: PG, should be kept in mind for the cases of abscess and ulcered lesions. When diagnosed, possibly associated systemic diseases should be evaluated carefully. In the presence of artritis, PAPA syndrome should be kept in mind.
BULLOUS PEMPHIGOID IN A 5 MONTH OLD INFANT: CASE REPORT
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³Pediatric Infectious Diseases, Bakirkoy Dr.Sadi Konuk Hospital, Istanbul, Turkey

Introduction: A wide variety of disorders can result in the formation of blisters on the skin. Autoimmune disorders, drug reactions, infections, genetic disorders, and traumatic injury are among the potential causes of cutaneous blistering. Autoimmune disorders include bullous pemphigoid (BP), linear IgA bullous dermatosis and dermatitis herpetiformis, etc. BP is an acquired disease that belongs to the group of autoimmune subepidermic bullous disorders. It is uncommon disease to begin during childhood and even rarer during infancy.

Case: 5 month-old male infant presented with multiple bullae that developed five days earlier. Bullae were initially on palms and soles, with progressive involvement of trunk and limbs. There was no family history for atopy, other cutaneous diseases or autoimmune disorders. Dermatological examination revealed the presence of multiple vesicles and widespread blisters with serous content, in different sizes, affecting areas of normal as well as erythematous skin. He presented with serohemorrhagic crusts, papules and annular urticarial erythematous plaques, some topped by vesicles and blisters. Lesions were located predominantly on the hands, feet, limbs and trunk (Figures 1, 2, 3). There was no mucosal lesion. Histopathology showed subepidermal dehiscence and eosinophil infiltration into the dermis. Direct immunofluorescence showed linear deposition of IgG and C₃ at the basal membrane zone. The set of clinical and histopathological data confirmed the diagnosis of infantile bullous pemphigoid.

Conclusion: BP is very rarely reported during infancy in the literature. However, childhood BP is a diagnosis that should be considered in any case of bullous eruptions, particularly if the palms and soles are affected.
Background and aims: More than half of the patients with encephalitis do not have an identifiable infectious cause. Autoimmune encephalitis is one of the important causes of non-infectious encephalitis. Early diagnosis and treatment of autoimmune encephalitis may prevent irreversible cognitive deficits, ongoing seizures, and death.

Methods: A 4-year-old boy was admitted for lethargy and ataxic gait. He had fever 10 days ago, that persisted for 3 days, and then resolved. In the follow-up, choreoathetoid movements and focal seizures occurred. Complete blood count, CRP, routine biochemistry, screening tests for inborn errors of metabolism, cerebrospinal fluid (CSF) examination, and cranial magnetic resonance imaging were normal. EEG showed generalized slow activity. CSF PCR was negative for Herpes simplex virus type 1 and enteroviruses. Cell surface and intracellular antibodies were negative for autoimmune encephalitis.

Results: Pulse steroid therapy and intravenous immunoglobulin were given with the diagnosis of autoimmune encephalitis without clinical response. Plasmapheresis was then initiated, yielding a dramatic response. Oral steroid therapy was given for one year. Now, the patient is 5.5 years old and his neurological examination and psychometric tests are normal.

Conclusions: In patients with a possible diagnosis of infectious encephalitis, without microbiologic and radiological evidence, autoimmune encephalitis should be considered in differential diagnosis. Treatment decision of such patients should be based on a comprehensive clinical assessment, even when serology is negative for autoimmune encephalitis.
USEFULNESS OF MANNAN ANTIGEN AND REAL-TIME PCR DETECTION OF CANDIDA DNA FOR THE DIAGNOSIS OF CANDIDEMIA IN PEDIATRIC PATIENTS IN MEXICO CITY

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¹Department of Infectious Diseases, Hospital Infantil de México Federico Gómez, Mexico City, Mexico
²Laboratory of Molecular Biology, Hospital Infantil de México Federico Gómez, Mexico City, Mexico
³Clinical Laboratory, Hospital Infantil de México Federico Gómez, Mexico City, Mexico
⁴Center of Economics and Social Studies in Health, Hospital Infantil de México Federico Gómez, Mexico City, Mexico

Background and aims

Candidemia is a major infectious complication in pediatric patients. Timely diagnosis of candidemia remains difficult as clinical presentation is unspecific and blood cultures lack sensitivity and need long incubation periods. We aimed to assess the usefulness of two non-culture-base methods in the diagnosis of candidemia.

Methods

Our eligible population included patients aged <18 years with persistent fever for more than 3 days and with clinical suspicion of candidemia, in patients admitted to Hospital Infantil de Mexico Federico Gomez between August 2014 and January 2015. We prospectively evaluated the performance of Mannan antigen (Mn) and plasma real-time PCR (RT-PCR). Candidemia was defined by the presence of a blood culture positive for Candida spp. We determined sensitivity, specificity, positive and negative likelihood ratio (LR) for RT-PCR and Mn. We constructed the receiver operating characteristic (ROC) curve.

Results

Our study population comprised 50 patients, for whom the predominant diagnosis was cancer (36%). Candidemia was microbiologically documented in 6 patients. RT-PCR was more sensitive 80% [95% CI: 29% - 98%] vs. 66% and more specific 89% [95% CI: 74% - 96%] vs. 72% than Mn for identifying candidemia. RT-PCR and Mn positive LR were 4.0 and 2.3 respectively, and negative LR 0.25 and 0.4, respectively. The area under the Mn ROC curve was 0.67 (95% IC 0.52-0.80).

Conclusion

Our results suggest that RT-PCR could be more useful for the diagnosis of candidemia than Mn. However, more studies with bigger sample size and homogeneous population are needed.
EVALUATION OF CULTURES OF ACHROMOBACTER SPECIES IN HOSPITALIZED CHILDREN

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2Department of Microbiology, Gazi University Faculty of Medicine, Ankara, Turkey

Background and Aims: Achromobacter species (spp) are increasingly recognized as causative agents of nosocomial infections and usually reported to be transmitted from the environment. They are rarely reported in non-cystic fibrosis patients. We describe the characteristics of hospitalized children whose culture results were positive for Achromobacterspp.

Methods: Clinical and laboratory characteristics of children with positive culture results for Acromobacter spp in a 2 year period (June 2013- June 15) were evaluated. All culture results were from Phoenix Automated Microbiology Systems (BD Diagnostic Systems Sparks, MD).

Results: Acromobacter species were isolated from 7 patients. Characteristics of patients are shown in Table 1. All patients were febrile at the time of culture obtainment. Only one species could be subtyped as A. piechaudii. Antibiotic susceptibilities of Acromobacter species are shown in Table 2.

Table 1: Characteristics of patients with positive cultures for Acromobacter

<table>
<thead>
<tr>
<th>Case</th>
<th>Age</th>
<th>Site of Isolation</th>
<th>Infectious Disease</th>
<th>CVC</th>
<th>Concurrent Organism</th>
<th>Underlying Disease</th>
<th>CRP (mg/L)</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>Central line</td>
<td>Blood stream infection</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>207</td>
<td>Cured</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>Blood</td>
<td>Crystal arthritis</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>2.12</td>
<td>Cured</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>Blood</td>
<td>Pneumonia</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>1.44</td>
<td>Cured</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
<td>Blood</td>
<td>Pneumonia</td>
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<td>No</td>
<td>Yes</td>
<td>65.5</td>
<td>Cured</td>
</tr>
<tr>
<td>5</td>
<td>17</td>
<td>Blood</td>
<td>Metabolic disease</td>
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<td>Yes</td>
<td>No</td>
<td>377</td>
<td>Cured</td>
</tr>
<tr>
<td>6</td>
<td>18</td>
<td>Wound</td>
<td>Chronic osteomyelitis</td>
<td>Yes</td>
<td>No</td>
<td>Enterobacter spp</td>
<td>35.1</td>
<td>Cured</td>
</tr>
<tr>
<td>7</td>
<td>18</td>
<td>Blood</td>
<td>Pneumonia</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>15.7</td>
<td>Died</td>
</tr>
</tbody>
</table>

y: year, CVC: central venous catheter HSCT: hematopoietic stem cell transplantation : CRP: C reactive protein, PNET: Primitive neuro-ectodermal tumor

Table 2: Antibiotic susceptibilities of Acromobacter species in each cases

<table>
<thead>
<tr>
<th>Antimicrobial Agent</th>
<th>A. piechaudii</th>
<th>A. baumannii</th>
<th>A. xylosidans</th>
<th>A. asaccharolyticus</th>
<th>A. thiooxidans</th>
<th>A. ratraundersii</th>
<th>A. denitrificans</th>
<th>A. cycloclastes</th>
<th>A. alcaligenes</th>
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<tr>
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<tr>
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<td>Pseudomonas</td>
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<td>R</td>
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NT: not tested

Conclusion: Acromobacter species can be presented with different types of infections even in non-cystic fibrosis patients.
BCG ERYTHEMA IN PATIENTS WITH KAWASAKI DISEASE (KD) IN TEMUCO, CHILE. EXPERIENCE BETWEEN 2005 AND 2014

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EK was first described in Japan in 1967 by T. Kawasaki, who also described the associated erythema at the site of inoculation of Bacillus Calmette-Guerin (BCG). Diagnostic criteria are fundamentally clinical. In the absence of all clinical criteria but coronary disease, the diagnosis is EK Incomplete. In countries where have vaccination against TB, the erythema and induration of BCG is an early and specific sign of EK.

Retrospective-descriptive analysis of 75 pediatric patients diagnosed with KD at time of discharge between January 2005 and August 2014 in Dr. Hernan Henriquez Aravena Hospital in Temuco, Chile. Data were tabulated in Microsoft Office 2007 from which the analysis was performed. Inclusion criteria regarding international clinical and laboratory criteria.

Average age 36 months, 51% women (38/75). 52% were diagnosed EK at the beginning (39/75), 72% typical EK (54/75). 19% had BCG erythema (14/75). Average age 15 months, 71% (10/14) conjunctival injection, 79% (11/14) pharyngeal erythema, 93% (13/14) rash and 71% (10/14) irritability. On admission, 43% (6/14) had coronary disease, 2 of them with severe dilatation. 100% received GGEV 2 mg/kg and ASA 50 mg/kg initially. At follow-up, 14% (2/14) with coronary dilatation persisted. Only 1/14 EK Incomplete.

20% of patients showed BCG erythema, lower than in Asian countries. There was no relationship between BCG erythema and incomplete forms. It occurs in children of smaller ages and was associated with severe forms.

Searching erythema of BCG at the physical examination can guide us suspecting EK in infants, despite not being included in the diagnostic criteria.
ASSOCIATION OF RESPIRATORY SYNCYTIAL VIRUS HOSPITALIZATION AND CHILDHOOD RECURRENT WHEEZING/ASTHMA IN PRETERM INFANTS AT GESTATIONAL AGE ≤32 WEEKS

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Objectives:
Respiratory syncytial virus (RSV) infection is associated with subsequent recurrent wheezing. The purpose of this study was to evaluate the association of palivizumab prophylaxis, RSV hospitalization and recurrent wheezing/asthma among high-risk infants.

Material and methods:
We enrolled high-risk premature infants followed-up till March 2015 at Department of Pediatrics of Mackay Memorial Hospital. Infants were classified as not receiving, receiving partial or full prophylaxis based on palivizumab doses. Their birth history and hospitalization records were collected and analysis. [Ethical approval IRB: 10MMHIS015]

Results:
A total of 99 high-risk infants of gestational age ≤32 weeks were studied. The median Gestational age was 27 weeks and birthweight was 914 grams. Sixty (60.9%) infants had CLD. There were 32 infants hospitalized due to RSV infection and 14 RSV hospitalization occurred during first year. Among them, higher percentage of partially prophylaxis infants (14.6%) were hospitalized with an RSV-infection in the first year compared to fully prophylaxis infants (9.1%). RSV infection in the first year were significantly associated with wheezing (92.9% vs. 56.5%, \( p = 0.015 \)) and asthma (71.4% vs 28.2%, \( p = 0.004 \)). Multivariate analysis revealed the RSV hospitalization in the first year was most important factor for wheezing [OR 13.6; 95% CI 1.5-122.7, \( p = 0.02 \)] and asthma [OR 7.9; 95% CI 2.0-30.9, \( p = 0.003 \)]. The status of palivizumab prophylaxis was not associated with wheezing or asthma diagnosed during childhood.

Conclusion:
This study confirms RSV infection in the first year of is associated with wheezing and asthma during childhood in high-risk infants at gestational age ≤32 weeks.
POST VARICELLA HEPATIC ACTINOMYCOSIS IN A 5-YEAR-OLD GIRL MIMICKING ACUTE ABDOMEN
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¹Pediatric Surgery, GULHANE MILITARY MEDICAL ACADEMY, ANKARA, Turkey

Actinomycosis is an indolent, slowly progressive infection caused by gram-positive, anaerobic or microaerophilic bacteria. Hepatic involvement is rare and generally secondary to abdominal or thoracic actinomycosis. Hepatic actinomycosis in children may mimic a wide variety of diseases and thus make the diagnosis much more challenging.

Here, we report a 5-year-old girl with apparently primary hepatic actinomycosis mimicking acute abdomen 2 weeks after varicella. The diagnosis was made by ultrasonic guided fine needle aspiration biopsy of a hypoechoic lesion of 3.5 cm diameter in the liver showing sulfur granules surrounded by neutrophils. Intravenous ampicillin/sulbactam (100 mg/kg/day) and metronidazole (25 mg/kg/day) therapy was started, and the patient received penicillin G (250 mg/kg/day) after the diagnosis of actinomycosis was established. Immunosuppression is well known after measles, varicella and herpes zoster as testified in these cases by infections as pneumonia, staphylococcus and streptococcal septic shock syndrome, necrotizing fasciitis, central nervous system involvement, and purpura fulminans. We assume that the most likely reason for the acute onset of symptoms in this case is immunodepression by varicella. Therefore, hepatic actinomycosis should be taken into account when evaluating acute abdomen symptoms in children, especially after diseases causing immunosuppression.
SCABIES: DO NOT MISS THE DIAGNOSIS IN VERY YOUNG CHILDREN


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2Dermatology, Bakirkoy Dr. Sadi Konuk Training and Research Hospital Istanbul Turkey., ISTANBUL, Turkey
3Pediatric Infectious Diseases, Cukurova University Medical Faculty Adana Turkey., ADANA, Turkey

BACKGROUND: Scabies is a very contagious skin infection caused by the mite Sarcoptes scabiei. The young babies usually presents with generalized eruption with frequent involvement of the face, scalp, palms, and soles, in contrast to the intertriginous localization of lesions in older patients. We present a young infant with scabies that mimicking other skin conditions.

CASE: A three-months-old male baby presented to our hospital with a skin rash lasting for four weeks. The rash appeared first on his trunk, then rapidly spread over the limbs and soles and polymorphous in appearance: maculopapular, vesicular and pustular. He tended rubbing the lesions. He did not show any signs of systemic toxicity and all basic laboratory tests were normal. Viral exanthem or bacterial superficial skin infection were considered in differential diagnosis but the story was too long for those diagnoses. The baby was consulted to pediatric dermatology and he was diagnosed as scabies infestation after examination with a dermatoscope. His mother had been suffering from itchy skin lesions for a period of time. The baby was treated with permethrin cream and he was well at follow-up.

CONCLUSION: An infant can exhibit erythematous macules, papules, vesicles/bullae, and pustules due to many different causes. Symptoms of scabies infestation resemble other skin diseases, including eczema, infantile seborrheic dermatitis, syphilis, allergic reactions, insect bites and other ectoparasites, such as lice and fleas. Typical manifestations of scabies in infants are different from adults. Timely diagnosis will aid to avoid unnecessary laboratory work-up and to manage proper treatment.
DIRECT COSTS OF COMPLICATED VARICELLA IN MEXICO

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1Infectious Diseases, Hospital Infantil de México Federico Gómez, Mexico City, Mexico
2Pediatrics, Infectious Diseases Hospital, Mexico City, Mexico
3Health Economic Evaluation, Hospital Infantil de México Federico Gómez, Mexico City, Mexico

Introduction: Varicella is considered a self-limited disease, however complications of varicella may require inpatient treatment. Since in Mexico not have varicella universal immunization, it’s necessary estimate the direct costs of complicated varicella in order to inform the key decision makers about the burden of disease.

Objective: Perform estimations of the direct costs of complicated varicella from the perspective of the Mexican Institute of Social Security.

Methods: Retrospective review of 74 medical records of children hospitalized due to varicella in a tertiary hospital of Mexico City. Demographic and clinical variables were collected as well as medical inputs data related with the management of patients. Unit cost were obtained from the financial department of the hospital and cost estimates were performed using the bottom-up approach. Descriptive statistical analysis was done and generalized lineal models were adjusted to evaluate the relationship between clinical characteristics and costs. All values were converted to US dollars.

Results: Mean age was 6.3 years old, 45.9% were female. Average length of stay in general ward was 11.2 days (sd:10.4) while mean stay at ICU was 2.2 days (sd:6.5). 71.6% of cases were considered complicated varicella. Mean cost of treatment were US$5,589.63 (sd:US$10,718.11). Complication category and ICU admission were the covariates strongly related to total cost.

Conclusions: The economic burden of complicated varicella for the Mexican social security is important and these results may help decision makers to perform economic evaluations to know if inclusion of varicella vaccine in the Mexican immunization program represents good value for money.
BACKGROUND AND AIMS: Thiol/disulphide ratio has been shown to play a critical role in various clinical disorders, but not yet in infections. By this study, we aimed to assess the association of thiol/disulphide ratio with acute tonsillopharyngitis in children.

METHODS: Ninety-four tonsillopharyngitis patients and 88 control children in Gazi University and Ankara Hematology Oncology Children’s Training and Research Hospitals were included.

RESULTS: Both viral and bacterial tonsillopharyngitis patients had lower native thiol values than control children (p<0.001 and p=0.008, respectively), as shown in Table 1. Also patient groups had lower total thiol values than control children (viral tonsillopharyngitis, p=0.002; bacterial tonsillopharyngitis, p=0.011). No significant difference was found between viral and bacterial tonsillopharyngitis patients in terms of native and total thiol values. Disulphide values were significantly different among three groups. Bacterial tonsillopharyngitis patients had lower serum disulphide values than viral tonsillopharyngitis patients (p=0.04). Also, between viral tonsillopharyngitis and control groups, difference was significant (p<0.001). Native thiol/total thiol ratio was significantly lower in each patient group than in controls (viral tonsillopharyngitis, p<0.001; bacterial tonsillopharyngitis, p=0.017). In both infection groups, disulfide/native thiol and disulfide/total thiol ratios were higher than in control children (viral tonsillopharyngitis, p<0.001; bacterial tonsillopharyngitis, p=0.017). A negative correlation was present between CRP and native thiol (r=-0.211, p=0.04), CRP and total thiol (r=-0.217, p=0.036) in total viral tonsillopharyngitis patients.

CONCLUSIONS: Thiol/disulphide ratio was shown to discriminate between acute tonsillopharyngitis patients and healthy children, but not bacterial from viral.
Background and aims: Bronchiolitis is one of the most common respiratory system infections in young children and infants. Congestion in the small airways (bronchioles) of the lung causes the symptoms. Most children get better with supportive care. Few of children require hospitalization. The aim of this study was to investigate the changes in CBC parameters in patients with bronchiolitis.

Methods: A total of 80 patients, 39 with bronchiolitis and 41 healthy controls were enrolled in this retrospective study. The diagnosis of subjects were based on clinical presentation, the patient’s age, seasonal occurrence, and findings from the physical examination and laboratory tests. The control group consisted of age and gender matched healthy children during the study period. Values for MPV, PDW and RDW obtained on first presentation were recorded for each patient.

Results: Mean ages for bronchiolitis and control groups were 20.2±16.2 and 21.6±18.4 months. In bronchiolitis group; mean value for RDW was 13.27±1.56%, MPV was 7.64±0.63fL, leukocyte was 10.51±3.95x10⁹/L and lymphocyte was 4.03±2.09x10⁹/L. In control group mean value for RDW was 12.28±1.06%, MPV was 7.35±0.88fL, leukocyte was 9.65±3.11x10⁹/L and lymphocyte was 4.08±2.33x10⁹/L retrospectively. Patients with bronchiolitis had higher RDW values than their healthy counterparts (p:0.011 ). Area under the curve (AUC) in predicting bronchiolitis for RDW was 0.661±0.0061 (0.541 – 0.781) (fig 1).

Conclusion: This study demonstrates a statistically significant difference in RDW values between bronchiolitis and healthy controls. Our findings suggest that RDW may also be a useful diagnostic predictor for bronchiolitis in children.
Background and aims: Acute upper respiratory tract infections (URTIs) contribute substantially to pediatric morbidity and mortality worldwide. Prevention of these infections in childhood is a very important public health challenge. This study was performed to determine the association between hematological indices and URTI.

Methods: Thirty patients with URTI (diagnosed as tonsillitis, pharyngitis, sinusitis, otitis media) and 41 healthy controls were included to this retrospective study. Hematologic data of these subjects were obtained from their medical records. Groups were compared in terms of white blood cell (WBC) mean platelet volume (MPV), platelet distribution width (PDW) and red cell distribution width (RDW).

Results: Average ages of groups were 33.7±24.18 and 20.21±16.21 months in patient and control groups. Mean values of WBC, MPV, PDW and RDW were 11.5±6.08, 8.08±0.92, 12.22±1.38 and 13.39±1.14 in URTI group and 9.65±3.11, 7.35±0.88, 10.86±2.01 and 12.28±1.06 in control subjects retrospectively. Patients with URTI had higher MPV (p<0.01), PDW (p<0.02) and RDW (p<0.01).

Conclusion: Our data did not support a relationship for WBC values between URTI and healthy controls. However, a statistically significant higher MPV, PDW and RDW was detected in the subjects with URTI. MPV, PDW and RDW are routinely measured parameters in complete blood count and requires no additional cost and they might be used as new and convenient markers for children with URTI.
Background:

Some infections are commonly associated with hematologic abnormalities like anemia, leucopenia and thrombocytopenia. However, Coombs' positive hemolytic anemia has rarely been reported especially in children.

Purpose:

We report 9 cases of immune hemolytic anemia caused by infection and we study clinical, biological course, etiologies, treatment and evolution.

Results:

The study population included 5 girls and 4 boys. The mean age was 2.3 years [5 months-12 years]. Eight patients were admitted in our pediatric unit because of fever and only one out of pallor. Splenomegaly was present in 7 cases. The mean hemoglobin level was 6.2 g/dl [3.1 - 8.8 g/dl]. Coombs test type IgG was detected in 8 cases.

Visceral leishmaniasis infection was identified in six cases, mycoplasma infection in 2 cases and cytomegalovirus infection in one case.

Only four patients, with history of transfusion dependent refractory anemia, required prolonged immunosuppressive therapy (from 4 months to 6 months). One patient received veinglobuline. For the other patients, only infection specific treatment was sufficient for laboratory abnormalities improved. The Coombs test remind positive for 2 months in 8 cases.

Conclusion:

Hemolysis is a rare but potentially life-threatening complication of some infection disease described mostly in immune compromised children, however it can be describe in immune competent children. The true incidence of this complication may be underestimated. Immunosuppressive therapy is an option, required only if the remission is not achieved.
EVALUATION OF PRE TRAVEL VISIT IN A PRIVATE TRAVEL MEDICINE CENTER.

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INTRODUCTION
From 2000 works a travel medicine clinic at the Instituto del Niño in Rosario, Argentina. Since 2009 the travel medical center provides pre travel care, risk assessment, provision of advice about prevention and management of travel-related diseases and vaccinations for children and adults, in charge of an infectious disease pediatrician.

AIMS
Communicate the experience of this travel medical center in the last 6 years.

MATERIAL AND METHODS
Descriptive study, focused on the second stage of the travel medical center, from 06/2009 to 05/2015. Patients included were those seen in pre travel visit. Mails or telephone inquiries were excluded.

Destinations, age, type of trip, transportation and duration of stay, accommodation, travel insurance, risk of malaria, yellow fever, disaster, vaccines indicated (routine, recommended, required), time of visit before travelling were analyzed.

RESULTS
Most patients were older than 18 years, followed by adolescents (13- 17 years). Travellers to Americas (Brazil and USA) and domestic travellers were the two more frequent groups. Average duration of the trip: less than a month. Air transport or air/terrestrial. Almost all have hotel accommodation and travel insurance recruitment. 10% needed prophylaxis for malaria, 8% yellow fever vaccine. Only one patient travelled to a disaster zone. 80% updated their immunization schedules. On average consulted 6 weeks before travelling.

CONCLUSIONS
The key element of pretravel visit is a health risk assessment of the trip. Going at least 4-6 weeks before you travel is best so you have plenty of time for those who require more than a dose.
EVALUATION OF PRE TRAVEL VISIT IN A PRIVATE TRAVEL MEDICINE CENTER.
M. Lanzotti1
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INTRODUCTION
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CONCLUSIONS
The key element of the pre travel visit is a health risk assessment of the trip. Going at least 4-6 weeks before travel allows to get vaccines that requires more than a dose and to start prophylaxes evaluating side effects.
A RARE PRESENTATION OF HEPATIC STRONGYLOIDES STERCORALIS IN AN HIV INFECTED CHILD IN SOUTH AFRICA

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Strongyloides stercoralis is an intestinal nematode of humans that infects tens of millions of people worldwide. Cases with liver derangement are rare. We have a case report of an HIV infected male who has shown an obstructive pattern in liver enzymes, with elevations of the alkaline phosphatase and bilirubin, alanine aminotransferase and aspartate aminotransferase.

Patient TS an eight year old male from a coastal city in South Africa was referred to the paediatric infectious disease unit with a three month history of yellow eyes and an acute history of generalized abdominal pain for one week with deranged liver enzymes. The patient was initiated on antiretroviral therapy at one year age and had a regimen change seven years later. He had treatment interruption three months prior to admission (CD4 1914 (46%), viral load 13722 copies/ml) Then recommenced on HAART (CD4 1917 (46.7%), 330 copies/ml).

Clinically patient was jaundiced with a tender hepatomegaly. Diagnostic workup included viral studies, imaging, stool for parasites and eventually a liver biopsy. Tuberculosis was excluded. The biopsy revealed hepatic strongyloides stercoralis.

Treatment with the only available benzimidazole, albendazole, was administered to the patient for a prolonged period, case considered to be dissemination. Patient then recommenced on HAART but with modified regimen as he had slight liver derangements with the current regimen. On discharge his liver functions were showing an improving trend and on follow up there was no evidence of deterioration and clinically the liver enlargement was improving.
Voriconazole is a triazole antifungals, even safe has some adverse events; especially neurological disturbances. Here in we present a case developed photophobia, altered color sense and hallucination during voriconazole treatment in order to remind these side effects of voriconazole to prevent unnecessary investigation for psychological disorders.

9 year-old boy with cystic fibrosis was admitted to hospital because of acute exacerbation of disease. His clinical response to broad spectrum antibiotic treatment was not enough, than Aspergillus fumigatus was yielded in his sputum culture. Voriconazole 9 mg/kg every 12 hours followed by 8 mg/kg every 12 hours was started intravenously. At the second day of treatment he developed photophobia with beginning of voriconazole infusion, he winked his eyes about 10 minutes at each administered dose. At the third day during infusion the same event occured for 15 minutes, additionally he complained from hallucination. He said that he saw ant colony and saw pink and red flowers on his mother's clothes even her cloths was black at the same day. He continuously closed his both eyes to avoid these hallucinations. Just he mentioned about his neurological disturbance, voriconazole treatment replaced with caspofungin. Hallucinations and other coplanits subside and now he is on 10th days of discontinuation of voriconazole treatment, and no any complaint of him.

Hallucinations associated with voriconazole may be overlooked by physicians, so it should be kept in mind. Even serum voriconazole leve was not measured in this case, especially in pediatric patients monitoring of serum voriconazole level is important.
Background and aims – Bordetella pertussis is responsible for an acute infectious respiratory disease transmission, universal distribution and compulsory notification, called whooping cough. It affects both children and adults, specifically the respiratory system and characterized by paroxysms of dry cough. We performed a comparison of results of PCR and culture of upper respiratory tract samples to evaluate the sensitivity and specificity of the diagnostic methods available today.

Methods – Retrospective study performed in the children’s database with clinical picture suggestive of whooping cough hospitalized in Santa Casa de Sao Paulo from May 2010 to May 2015. Comparison of accuracy will be held between the PCR and culture methods for the diagnosis of pertussis.

Results – Results were analyzed 167 children with diagnosis of whooping cough, of which 31 (18.5%) showed PCR positive result and only 10 (5.9%) with positive culture for Bordetella pertussis. There was no positive culture result that PCR wasn’t positive too. The average age of children investigated was 6.6 months.

Conclusion – Pertussis is a vaccine preventable disease but its incidence is increasing over the years. The diagnosis by PCR method is faster and with greater accuracy when compared with the culture. The result of this study is in accordance with the published literature up to the present time.
SACCHAROMYCES KLUYVERI FUNGEMIA IN AN INFANT WITH SEVERE COMBINED IMMUNODEFICIENCY (SCID)

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Saccharomyces species are usually non-pathogenic and have never been reported in patients with SCID. We report a child with SCID who had Saccharomyces kluyveri fungemia.

A 5 months old male infant presented with fever and cough for 15 days and one episode of GTC 2 hours ago. He had oral thrush at 1 month of age and right sided otitis media at 2 months of age. He had been immunized with BCG, OPV, DPT vaccines. An elder brother had died at 11 months of age due to respiratory illness. On examination, patient had oral thrush, diffuse greyish rash all over body with hepatosplenomegaly. Tonsils were absent and there were no lymph nodes palpable. Chest X-ray shows ill-defined patch on left upper zone. Serum immunoglobulins showed low IgG, IgM and IgA. Lymphocyte subset showed low CD3, CD4, CD8 and CD16/56 suggestive of T-B+NK- SCID. Blood culture did not grow any organism. HIV, measles, rubella, Parvovirus IgM were negative. He was given ceftriaxone for 14 days but had no response so antibiotics were shifted to meropenem and fluconazole was added. A simultaneous blood fungal culture grew Saccharomyces Kluyveri which was sensitive to Amphotericin B, Itraconazole. He was started on Liposomal Amphotericin B (5 mg/kg/day) and fluconazole was stopped. However he continued to run fever and had persistent thrombocytopenia though the skin rash disappeared. On Day 10 of liposomal amphotericin B, his blood culture still grew Saccharomyces Kluyveri and thus caspofungin was added. However patient succumbed to his illness.
A child with anti-N-Methyl-D-Aspartate receptor positive encephalitis which developed after herpes infection

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Introduction

Herpes encephalitis (HE) is an important cause of viral encephalitis. Adult and pediatric case series report development of secondary autoimmunity after HE. We here describe a child who developed anti-NMDR positive encephalitis after herpes infection.

Case

A 2-year-old girl presented with choreoathetoid movements which developed and augmented within ten days. She had been healthy before admission to another hospital with complicated febrile seizure a month ago. In prior hospitalization, cerebrospinal fluid analysis (CSF) had revealed positive herpes polymerase chain reaction (PCR) and cranial MRI had showed biparietalotemporal lesion compatible with encephalitis. She had been treated with acyclovir for 21 days and discharged from the hospital with recovery. Ten days later, she admitted to our clinic with newly onset choreoathetoid movements. She was unconscious with spontaneous eye opening and capable of localizing painful stimuli. Her involuntary movements disappeared during sleep. Lumber puncture was performed and she was started on acyclovir treatment with suspicion of relapse. Her CSF was reported as negative for herpes PCR, while anti-NMDR was positive. Cranial MR and MR spectroscopy revealed increased intensity on bilateral parietotemporal region compatible with encephalomalacia. She was given intravenous immunoglobulin and pulse methylprednisolone treatment. Later plasmapheresis was performed since clinical remission was not observed.

Discussion

Recent findings support an autoimmune association with anti NMDA receptor encephalitis and viral infection. Successful treatment of this condition requires prompt diagnosis and early initiation of immunotherapy.
EVALUATION OF EPIDEMIOLOGICAL AND CLINICAL FEATURES OF INFLUENZA AND OTHER RESPIRATORY VIRUSES

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Aim: We aimed to evaluate clinical and epidemiological aspects of respiratory tract infections (RTI), in which viral etiology was detected by molecular methods, and to compare influenza and other viral RTI in this regard.

Material-Methods: From December 2013 to April 2014, 178 children >2 years, admitted to pediatric emergency room with symptoms of RTI were retrospectively assessed.

Results: A respiratory virus was determined in 78.6% (n=140): Influenza A 33.5%, Influenza B 16.4%, respiratory syncytial virus (RSV) 9.2%, adenovirus 7.8%, rhinovirus 7.1%, coronavirus 7.1%, Human metapneumovirus 5.7%, Human bocavirus 5.7%, parainfluenza virus 3.5%, Mycoplasma pneumoniae 0.71%, coinfection 2.8%. Mean age was 6.3±3.6 years. Half of the cases were aged between 2-5 years. Etiologic agents showed some differences with age. The second common agent was Influenza B in >5 years olds (p=0.008), while it was RSV in 2-5 years olds (p=0.003). Upper RTI was diagnosed in 65.7% of cases and lower RTI in 34.2%. Of the 118 cases presented with an ‘influenza like illness’ defined by Center for Disease Control and Prevention (CDC), 55.9% were identified as Influenza viruses and 44% as other respiratory viruses. No difference was determined in terms of clinical diagnosis and radiological findings between influenza and other respiratory viruses.

Conclusion: It has been concluded that distinction between Influenza and other respiratory viruses cannot be made on clinical and laboratorial features alone. Identification of viral etiology in RTI not only increase our knowledge about presentation and clinical course of individual viruses but also improves the case management.
A high degree of suspicion is needed for diagnosis of cutaneous aspergillosis. Prompt biopsy for histology and culture has paramount importance for treatment of the disease.
**BCG Scar Changes in Latin American Infants and Children with Kawasaki Disease: A Prospective Multinational Multicenter Study of the REKAMLATINA Network**

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**Background and Aims:** BCG scar changes can be helpful in the clinical diagnosis of vaccinated children in whom Kawasaki Disease (KD) is suspected. In Asia BCG scar changes occur in 10 to 50% of KD pts. We describe the first multinational, multicenter prospective study evaluating BCG scar’s usefulness in the clinical diagnosis of KD.

**Methods:** As part of an ongoing prospective multinational multicenter surveillance study of KD in Latin America (LA), information regarding BCG changes was retrieved from 35 participating hospitals in 15 LA countries between June-1-2014 to June-3-2015.

**Results:** Among the 222/249 (89.2%) pts in which previous BCG vaccination history was documented, 34 (15.3%) pts had BCG scar changes at the inoculation site. 24 (70.6%) were male. Distribution by age groups revealed: < 6months, 3 (8.8%) pts; 6-<12m, 12 (35.3%); 12-<24m, 12 (35.3%); 24-<60m, 6 (17.6%); and <60m, 1 (2.9%). BCG scar changes included: erythema, 29 (85.3%) pts; edema, 18 (52.9%); crust formation, 6 (17.6%); and ulcer, 2 (5.9%). Mean number of days of fever at admission was 6.9 (3-28) days. According to chronological order of appearance since the first day of fever, erythema and edema were seen from days 1-4 in 69% and 55.6%, respectively; crust formation was more common >5 days, in 83.5%. Coronary artery abnormalities on admission ECHO were found in 7 (20.6%) pts.

**Conclusions:** In LA children, BCG changes occur less frequently than in Asian countries. However, when present, it may be an early and helpful sign for suspecting KD particularly in children <2 years.
ANTIBIOTIC USE AND NUMBER OF MEDICAL VISITS PRIOR TO KAWASAKI DISEASE DIAGNOSIS IN LATIN AMERICAN CHILDREN: A PROSPECTIVE MULTINATIONAL MULTICENTER STUDY OF THE REKAMLATINA NETWORK


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Background and Aims: Despite the importance of Kawasaki disease (KD) in children, previous local studies in individual countries from Latin America suggested that late recognition and poor awareness of KD was common. We describe the first prospective multinational multicenter study among LA children with KD, analyzing the number of medical visits and antibiotic (ATB) prescriptions prior to final diagnosis.

Methods: Multicenter surveillance study of KD in children from 36 hospitals in 15 LA countries: Mexico, Guatemala, Honduras, El Salvador, Costa Rica, Panama, Cuba, Dominican Republic, Colombia, Ecuador, Peru, Brazil, Uruguay, Chile, and Argentina. Study period: June-1-2014 to June-3-2015.

Results: Among 249 KD patients (pts), mean days of fever at admission were 7. The number of medical visits (v) prior to final diagnosis was: 0v, 10(4.0%) pts; 1v, 66(26.5%) pts; 1v, 77(30.9%) pts; 3v, 67(26.9%) pts; 4v, 12(4.8%) pts; 5v, 8(3.2%) pts; ≥6v, 7(2.8%) pts; unknown, 2(0.8%) pts. A total of 186/249 (74.7%) pts received ≥1 ATB <30 days preceding KD diagnosis as follows: 1 ATB, 92(49.5%) pts; 2 ATB, 56(30.1%) pts; 3 ATB, 25(13.4%) pts; 4 ATB, 6(3.2%) pts; 5 ATB, 1(0.5%) pts; ≥6 ATB, 1(0.5%) pt; and unknown, 5(2.7%) pts. The 3 most common diagnoses for which ATB were prescribed were: ART1 (61.8%), scarlet fever (10.8%), and UTI (6.9%).

Conclusions: In LA children, the number of medical visits and antibiotic prescriptions prior to final KD diagnosis is concerning. Awareness and prompt recognition of KD by health care workers and parents should be promoted and improved in LA.
HOW COMMON IS HOARSENESS IN LATIN AMERICAN CHILDREN WITH ACUTE KAWASAKI DISEASE? RESULTS FROM A PROSPECTIVE MULTINATIONAL MULTICENTER STUDY OF THE REKAMLATINA NETWORK


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Background and Aims: In the only prospective study describing hoarseness as a presenting sign in Kawasaki disease (KD) in 2012, hoarseness was present in 30% of patients. Suggested mechanisms include transient laryngeal inflammation/edema of the true vocal cords, transient recurrent laryngeal nerve paresis, vocal fold nodules, and unlikely to be caused by viral infections. We describe the first prospective multinational multicenter study describing the presence of this symptom/sign in children with KD.

Methods: Multicenter surveillance study of KD in children from 36 hospitals in 15 LA countries, study period: June-1-2014 to June-3-2015.

Results: Among 244/249 (98%) eligible KD pts in which information about this symptom/sign was present, hoarseness was documented in 25 (10.2%) pts by history and/or physical examinations on admission. 17 (68%) pts were male. Of interest, 76% were from Central America, 16% from South America, and 8% from Mexico. Mean days of fever at admission were 5.5. Distribution by age groups was: <24 m, 17 (68%) pts; 24-59m, 7 (28%); and >60m, 1 (4%) pts. Mean temperature at admission was: 38.3(36.0-39.3) C; cough and respiratory distress were reported in 68% and 4.4%, respectively. A baseline abnormal echocardiogram was described in 9 (36%) pts; coronary dilatations/aneurysms were found in 2 (8%) pts. IVIG was given in 23 (92%) pts (1-dose, 20 pts; 2-doses, 3 pts); and steroids in 1 (4%) pts.

Conclusions: Hoarseness should be added to the clinical manifestations of KD. Among other mechanisms, the role of climate conditions and viral infections in the pathogenesis of this finding should be studied in larger-scale populations and different ethnic groups.
ANALYSIS OF EBV INFECTION IN SHORT-TERM PEDIATRIC CARRIERS AS A RISK FOR EARLY LYMPHOMA DEVELOPMENT

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Epstein-Barr virus (EBV) behaves as a harmless passenger in most carries; however, some of them develop EBV-associated neoplasias. In Argentina primary infection is mostly subclinical at young age and EBV associated lymphomas prevail in patients younger than 10 years. Therefore, it represents an interesting population to analyze EBV infection since most studies are usually performed in adults. Tonsil biopsies in short-term pediatric carriers were studied to characterize EBV infection. Viral antigen presence in subepithelial (SubEp) and interfollicular (IF) lymphocytes were observed at young age, probably indicating the virus has recently infected. Latency (L) III was prevalent and related to the germinal centre (CG), while LII was associated with non-GC (p=0.0159, Chi2 test). In older patients EBV was detected at GC and epithelial cells, perhaps since they have been infected time ago. This finding is sustained by viral load, which was higher at the SubEp-IF regions and decreased when EBV was not expressed at the SubEp region (p=0.0236, Mann Whitney test). We mainly observed EBV+ lymphocytes at interfollicular region. EBERs+/IgD+ cells were statistically prevalent in our pediatric short-term pediatric carriers (p=0.0021, Chi2 test). These findings confirmed that EBV infection models, GC (target IgD+B cell) and direct infection (target memory B-cell), are not mutually exclusive. In our series the oncogenic potential of LIII proteins acting together could be involved in pediatric B-cell lymphomagenesis at young age. This analysis will shed light on some aspects of EBV pathogenesis, in order to assess if viral protein expression and occasional transformation process could eventually arise as a complication of early infection.
EPSTEIN BARR VIRUS INVOLVEMENT IN THE PATHOGENESIS OF DIFFUSE B CELL LYMPHOMA IN PEDIATRIC PATIENTS

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DLBCL is one frequent malignancy in childhood. In Argentina, children are EBV+ quite early in their life and usually asymptomatic. EBV is associated with early development of lymphomas in our population. EBV-positive diffuse large B-cell lymphoma (EBV+DLBCL) of the elderly is an entity included in the 2008 WHO classification of lymphoid tumors that occurs in immunocompetent patients ≥50 years old. It was related to the immunosenescence inherent to the aging process. Current literature does not establish a definitive EBERs cutoff to define an EBV+DLBCL case. Our aim was to study the role of EBV in DLBCL pathogenesis in pediatric patients from our country and to characterize tumor microenvironment. Twenty-six DLBCL cases were collected. EBERs in situ hybridization (Fig.A1) and immunohistochemistry for EBNA2 (Fig.B1), EBNA3A (Fig.C1), LMP1 (Fig.D1), LMP2A (Fig.E1) and BMRF1 (Fig.F1) viral antigens and CD4 (Fig.A2), CD8 (Fig.B2), Foxp3 (Fig.C2), GrB (Fig.D2) and PD-1 (Fig.E2) cell markers were performed. EBV gene expression, TGFβ, IL-10, IFNγ and CCL-20 transcripts were measured using real-time PCR. EBV+ and - cases were compared. EBV+ DLBCL frequency was 35% (9/26) using ≥20% EBERs+ tumor cells as a cutoff; the viral latency patterns II-III together with lytic expression were prevalent. GrB+ cells were markedly increased in EBV+ DLBCL cases (Fig.F2), in which a trend to lower event-free survival was noticed. In conclusion, EBV is involved in the pediatric EBV+DLBCL, thus may be an entity that is not only restricted to patients ≥50 years old and the revision of age-cutoff may be a current goal.