

**13TH WORLD
CONGRESS OF THE
WORLD SOCIETY FOR
PEDIATRIC INFECTIOUS
DISEASES**
DURBAN, SOUTH AFRICA



ABSTRACT BOOK

The abstracts included in this book were accepted and presented during the 13th World Congress of the World Society for Pediatric Infectious Diseases (WSPID 2023)

Invited Speaker Presentations



IS001 / #720

**SALLY GATCHALIAN RESEARCH WORKSHOP
14-11-2023 07:30 - 14:30**

LESSONS FROM MY CAREER

Miguel O'Ryan
University of Chile, Faculty Of Medicine, Santiago, Chile

I am a 63-year-old pediatric infectious disease specialist from Chile and an academician and researcher around enteric infections and vaccines with what can be considered some important contributions to the field of rotavirus and norovirus immunity and prevention, in poliovirus vaccination, in novel approaches for *Helicobacter pylori* during childhood, and as many, in generating knowledge for the COVID19 Pandemic. I take pride of developing my career fully in Chile upon my return from my fellowship, which has been my base for international collaborations. I have done the full academic ladder. In this context I want to share with young trainees and physicians my experience, basically what has been most helpful and key elements that I consider useful for those at the beginning or mid-career. Countries striving to develop as societies need young, motivated researchers, and early training hopefully in rigorous international centers is critical here. Insertion into an academic environment that provides at least some opportunities to develop research, focusing on just a few key and relevant questions, rigorously addressed, that can have local/regional impact is important to become relevant. Being a person that invites, promotes and/or joins national and international collaborations is also a critical element for a successful research career. More than asking for solutions from others, try to provide the solutions; in countries with limited resources and low consciousness of the relevance of generating local knowledge, the lack of support can become very frustrating, but it is important to strive and be resilient and perseverant, searching for different sources of support and funding (we have all been neglected and suffered frustrations many times during our careers). I hope to promote interactions with the audience and stimulate young physicians in challenging environments, often perceived as hostile, to embrace the beauty of academics/research; in the long run it is highly rewarding.



IS002 / #721

**SALLY GATCHALIAN RESEARCH WORKSHOP
14-11-2023 07:30 - 14:30**

HOW TO WRITE A SUCCESSFUL GRANT APPLICATION

Ian Michelow

Connecticut Children's and University of Connecticut, Infectious Diseases, Hartford, United States of America

Writing a successful grant can be very challenging and it may take several attempts. This talk aims to provide participants with essential tools needed to plan and write a competitive grant application using a systematic, practical and team-based approach. First and foremost, Dr Michelow will discuss how to formulate a worthwhile research question that is informed by the current medical literature and that will fill a knowledge gap. Applications with the greatest chance of success are those that test a hypothesis, will have a significant clinical impact, involve innovative approaches, are methodologically rigorous, have clearly defined expected outcomes, and explain alternative approaches if needed. It is important to understand how to showcase the capabilities of the team of investigators, and list a realistic budget and timeline. Examples of these and other key components of successful grant writing will be presented. The goal is to have an interactive session with audience participation.



IS003 / #722

**SALLY GATCHALIAN RESEARCH WORKSHOP
14-11-2023 07:30 - 14:30**

TIPS ON WRITING MANUSCRIPTS, POSTERS & ABSTRACTS:

Shai Ashkenazi¹, Regina Oladokun², Daniel Jarovsky³

¹Adelson School of Medicine, Professor Of Paediatrics, Dean, Ariel, Israel, ²College of Medicine, University of Ibadan, Paediatrics, Ibadan, Nigeria, ³Santa Casa de São Paulo, Pediatrics, São Paulo, Brazil

This session will be co-convened by Regina Oladokun (Professor of Paediatric Infectious Diseases, College of Medicine, University of Ibadan & University College Hospital, Ibadan, Nigeria), Shai Ashkenazi (Professor of Paediatrics, Dean, Adelson School of Medicine, Israel) and Daniel Jarovsky (Professor, Santa Casa de Sao Paulo School of Medical Sciences, Brazil).

The practical session will start with how to write a manuscript and get it published, followed by a presentation on designing and delivering world-class PowerPoint presentations. The last talk will be on writing abstracts and posters.



IS004 / #909

**SALLY GATCHALIAN RESEARCH WORKSHOP
14-11-2023 07:30 - 14:30**

SCIENTIFIC WRITING

Peter Nyasulu

Stellenbosch University, Stellenbosch University, Faculty Of Medicine And Health Sciences,
Epidemiology And Biostatistics, Cape Town, South Africa

Background In medicine and health sciences, it is imperative to build insights and skills among scientists so that they can apply some of the fundamental ideas and concepts on good scholarship, methodological rigor, peer review and attention to peer review comments. Publication from Africa in high impact factor journals has been perpetually low owing to challenges with skills and techniques on how to draft a marketable manuscript, that will pass through the peer review process successfully. Thus, highlighting critical pitfalls in the process of scientific publication is essential to minimize the rate of rejection and increase success in publishing in high impact factor journals that are internationally competitive. One of such key strategic approach to publication is overcoming peer review challenges, as this does improve the acceptance rate among many authors. Aim and objectives. The aim is to engage with scientists in the early stages of their scientific career to unravel critical skills required to sustain good scientific outputs but also publish in high impact factor accredited journals. Specifically, this will focus on highlighting the criteria for authorship, choosing the correct journal, attending to peer review comments and resubmission of manuscripts. Furthermore, it is generally believed that experiencing the approach to scientific publishing will help the authors to shift their own model of publishing and practice around the designing and delivering of an effective and well thought out manuscript that will stand the eyes of a rigorous peer reviewer. Strategic Approach This will be a highly interactive and participatory discussion, designed to create experientially based insights into the process and approaches to successful publication. It is hoped that by the end of the session participants mainly those who will have been working on manuscripts will possibly just require a much shorter period to complete and submit their work.

IS005 / #746

MEET THE PROFESSOR 03: MENINGITIS
15-11-2023 08:30 - 09:15

EXPERT 1

Tobias Tenenbaum

Sana Klinikum Lichtenberg, Academic Teaching Hospital, Clinic For Child And Adolescent Medicine
Charité-universitätsmedizin Berlin, Berlin, Germany

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. An overview of the burden of bacterial and viral meningitis will be given as well as an update on diagnostics and therapy. In practical case presentations, useful management algorithms will be discussed.

IS006 / #747

MEET THE PROFESSOR 03: MENINGITIS
15-11-2023 08:30 - 09:15

EXPERT 2

Ronald Van Toorn
Stellenbosch university & Tygerberg Hospital, Paediatrics And Child Health, Cape Town, South Africa

The most lethal and disabling form of TB is tuberculous meningitis (TBM), for which more than 100 000 new cases are estimated to occur per year. Early diagnosis in childhood is difficult due to nonspecific clinical features and the paucibacillary nature of the disease complicating cerebrospinal fluid (CSF) mycobacterial confirmation, resulting in delayed diagnosis and treatment. Untreated, TBM is uniformly fatal, and even when treated, the neurological sequelae can be severe. Unfortunately, the evidence to guide treatment remains limited. This session will review current TBM diagnostics, recent clinical trials which may potentially inform antituberculous dosing regimens, the potential role of adjunctive anti-inflammatory, host-directed therapies-including corticosteroids, aspirin and thalidomide, and practical clinical recommendations relating to the management of TBM-related complications such as hyponatremia and hydrocephalus.

PLENARY SESSION 02: GLOBAL WARMING AND CLIMATE CHANGE
15-11-2023 09:30 - 10:30

CLIMATE CHANGE AND INFECTIOUS DISEASES

Paige Van De Vuurst^{1,2,3}, Luis Escobar^{1,3}

¹Virginia Tech, Center For Emerging, Zoonotic, And Arthropod Borne Pathogens, Blacksburg, United States of America, ²Virginia Tech, Translational Biology, Medicine, And Health, Blacksburg, United States of America, ³Virginia Tech, Fish And Wildlife Conservation, Blacksburg, United States of America

Climate change presents an imminent threat to almost all biological systems across the globe. In recent years there have been a series of studies showing how changes in climate can impact infectious disease transmission. Many of these publications focus on simulations based on in silico data, shadowing empirical research based on field and laboratory data. A synthesis work of empirical climate change and infectious disease research; however, is still lacking. To fill this research gap, we have conducted a systemic review of research on climate change and infectious diseases to identify major trends and current gaps of research. Our review revealed that both taxonomic and geographic biases are present in climate and infectious disease research, specifically with regard to types of disease transmission and localities studied. Empirical investigations on vector-borne diseases associated with mosquitoes comprised the majority of research on the climate change and infectious disease literature. Furthermore, demographic trends in the intuitions and individuals published revealed research bias towards research conducted across temperate, high-income countries. We also identified key trends in funding sources for most recent literature and a discrepancy in the gender of publishing authors which may reflect current systemic inequities in the scientific field. Future research lines on climate change and infectious diseases should consider diseases of direct transmission (non-vector-borne) and more research effort in the tropics. Inclusion of local research in low- and middle-income countries was generally neglected. Research on climate change and infectious disease has failed to be socially inclusive, geographically balanced, and broad in terms of the disease systems studied, limiting our capacities to better understand the actual effects of climate change on health. In the talk I will discuss results of this review, and broader trends in infectious diseases and climate change.

IS008 / #114

WSPID SYMPOSIUM 02: PROGRESS IN MALARIA
15-11-2023 11:00 - 12:30

CAN WE IMPROVE THE MANAGEMENT OF CEREBRAL MALARIA?

Yamikani Chimalizeni

Kamuzu University of Health Sciences, Paediatrics And Child Health, Blantyre, Malawi

Malaria, despite a decrease in incidence, still causes significant morbidity and mortality especially in the Sub-Saharan Africa. As of 2021, there were 247 million malaria cases reported. The incidence of malaria cases has reduced from 82 cases per 1000 population at risk in 2000 to 59 malaria cases per 1000 population at risk in 2020. Global malaria deaths have reduced from 897,000 to 568,000 over a period of about 20 years. Cerebral malaria (CM) is one of the severe forms of malaria which significantly contributes to both mortality and morbidity especially in children. Management of CM includes administering IV Artesunate then Lumefantrine Artemether when the patient can take oral medicines, correcting hypoglycaemia, treating seizures and managing shock when present. Proper clinical management of children presenting with CM across sub-Saharan Africa would improve their outcome. Multiple studies have identified a variety of important risk factors for poor outcomes. Recognizing these risk factors helps to identify patients that require closer observation and management, hence improving their outcome. The risk factors for death or neurological sequelae include severe lactic acidosis, hypoglycaemia, severe coma, recurrent seizures, persistent fever, and most importantly increased brain swelling. Although many of these can be identified at the bedside, some require equipment and techniques that are not accessible in many settings, therefore there is also a need to find ways to recognize these risk factors easily. Therefore, as well as clinical trials to correct and control known contributors to poor outcome, there is also a need to identify point of care biomarkers for these prognostic factors. The early, inexpensive identification of those children most likely to progress to severe disease would ensure appropriate patient triage and allocation of limited resources, hopefully leading to improved outcomes across the continent.

IS009 / #107

SOCIETY SYMPOSIUM 01 - ASPID WORLD DENGUE DAY: A CALL FOR ACTION
15-11-2023 11:00 - 12:30

DENGUE: PAST, PRESENT AND FUTURE

Usa Thisyakorn

Tropical Medicine Cluster, Chulalongkorn University, Pediatrics, Bangkok, Thailand

DENGUE: PAST, PRESENT AND FUTURE Usa Thisyakorn*, Chule Thisyakorn** *Tropical Medicine Cluster, Chulalongkorn University, Bangkok, Thailand **Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand Dengue is the most common arboviral infection in humans in the world and it continues to pose a significant public health threat at the global level. The increasing number of dengue cases over the past decades has been explained by the modern dynamics of climate change, globalization, travel/commercial development, socioeconomics, settlement, demographic transition lack of efficient health facilities, limited efficacy of the vector control efforts, and also viral evolution. Four closely related dengue serotypes cause the disease with different clinical manifestations often with unpredictable clinical evolutions and outcomes. The clinical presentations of dengue range from mild illness to the life-threatening severe forms of the disease associated with plasma leakage, shock, severe bleeding, or multi-organ failure, which may be fatal. Although shock and plasma leakage seems to be more prevalent as age decreases, the frequency of severe bleeding or internal hemorrhage augments as age increases. An increase in liver enzymes, unlike conventional viral hepatitis, indicates liver involvement during dengue infections. Fatal cases were found to have significant frequencies of shock, altered consciousness, massive gastrointestinal bleeding, renal/hepatic failure, and concurrent bacteremia. The early recognition of dengue infection, bleeding tendency, and signs of circulatory collapse would reduce the mortality rate in patients with dengue infection. Proper management of dengue patients must consider the different age-specific clinical manifestations and severity of dengue disease. Laboratory diagnosis includes detection of ribonucleic acid, serology, and virus isolation. The implementation of effective dengue vaccines and effectively sustainable vector control together with collaboration with the environmental sector and engineers to reduce mosquito habitats are keys to success in the prevention and control of this disease.

IS010 / #108

SOCIETY SYMPOSIUM 01 - ASPID WORLD DENGUE DAY: A CALL FOR ACTION
15-11-2023 11:00 - 12:30

ROAD MAP TO ZERO DENGUE DEATH

Nattachai Srisawat

Tropical Medicine Cluster, Chulalongkorn University, Bangkok, Thailand

Dengue is a global public health burden affecting over 120 countries. An alarming 5.2 million dengue cases were recorded in 2019. Though 50% of the world's population is at risk of dengue, Asia contributes 70% of the global dengue burden. The World Health Organization (WHO) target for 2021–2030 Global Strategy for Dengue Prevention and Control is to reduce the dengue case fatality rate to 0% by 2030. To achieve this target, dengue must be acknowledged as a collective threat. Global collaborative efforts are needed to strengthen dengue preparedness, prevention, and control. Though most dengue patients do not enter the critical stage, there is uncertainty on which patients might progress to severe dengue. Identification of imminent severe dengue is crucial to allow timely management of shock and bleeding, facilitate early referrals, and reduce mortality. Availability of a predictive test for severe dengue that is simple, sensitive, and can provide rapid point of care diagnosis will avoid unnecessary hospitalization, save resources, and reduce time spent on repeated laboratory tests. To inform healthcare decisions for timely clinical management, the biomarker should be applied early upon hospital admission to patients at risk of progressing to severe dengue, especially in dengue warning sign patients. However, such a test is currently unavailable.

IS012 / #589

NURSING SYMPOSIUM 01: TB PREVENTION AND HIV UPDATES
15-11-2023 11:00 - 12:30

ADOLESCENT FRIENDLY SERVICES

Juliet Houghton
CHOC Childhood Cancer Foundation, Regional Manager, East London, South Africa

With increasing numbers of adolescents living with HIV in South Africa, we need to ensure that health services are provided in a way that acknowledges the diverse and ever-changing needs of this key population; respects and empowers them to have agency over their own health and lives in general; and that the services we offer are accessible and appropriate within the constraints of limited (and diminishing) resources. South Africa has been successfully rolling out 'adolescent and youth friendly services (AYFS)' across primary healthcare clinics for over 10 years. This presentation aims to outline the principles underpinning adolescent friendly services, the opportunities available within resource constrained settings and the threats to the health outcomes of adolescents living with HIV if we fail to retain them in treatment and care. Successes and challenges experienced through supporting this initiative will be shared to enable participants to reflect on our achievements to date and anticipate potential challenges when planning to implement AYFS in their clinical settings.

IS013 / #592

NURSING SYMPOSIUM 02: VACCINATION AND VACCINE PREVENTABLE DISEASE
15-11-2023 14:30 - 15:45

VACCINE HESITANCY

Archana Koirala

Sydney Children's Hospital Network, National Centre For Immunisation Research And Surveillance,
Sydney, Australia

Vaccine Hesitancy has been identified by the WHO as one of the 10 threats to global health in 2019. It threatens to reverse progress made in tackling vaccine-preventable diseases. Healthcare workers are trusted sources of information about vaccination. This session is aimed to be interactive. We will discuss what vaccine hesitancy is, and how it has affected global vaccination efforts but focus most of the discussion on simple tools that can be utilized by nurses to address vaccine questions and provide guidance for families and communities.



IS014 / #594

NURSING SYMPOSIUM 02: VACCINATION AND VACCINE PREVENTABLE DISEASE
15-11-2023 14:30 - 15:45

VACCINES AS A RESPONSE TO AN OUTBREAK

Emma Best^{1,2}

¹The University of Auckland, Department Of Paediatrics: Child And Youth Health, Auckland, New Zealand, ²Starship Children's Hospital, Department Of Paediatric Infectious Diseases, Auckland, New Zealand

During 2018-2019 all global regions experienced large measles outbreaks including in countries with prior measles elimination status. Aotearoa New Zealand (NZ) experienced a measles outbreak in 2019 with over 2000 confirmed cases. The outbreak disproportionately affected under-immunised young adults and young children living in high deprivation urban settings including indigenous NZers (Māori) and Pacific families. The COVID-19 pandemic has disrupted immunisation programmes worldwide; the combination of low measles immunisation rates and international travel leaves many populations vulnerable to significant measles outbreaks. Preventing outbreaks includes achieving high coverage with measles-containing vaccine, targeting immunity gaps, catch-up campaigns and outbreak response strategies. In an elimination setting outbreak response may include intensive case and cluster control with early measles vaccine (MMR0) or passive immunoprophylaxis. This talk will overview how measles vaccine programmes underpin prevention and control of measles outbreaks.

IS015 / #116

SPECIAL SESSION: SAFE HOUSING
15-11-2023 16:15 - 17:45

HOW TO PROMOTE ADEQUATE VENTILATION

Koen Vanden Driessche¹, Marianne Stranger²

¹University Hospital Antwerp, Infectious Diseases, Antwerp, Belgium, ²Flemish Institute for Technological Research (VITO), Indoor Air Quality Team, Mol, Belgium

In the pursuit of ensuring safe housing, this introductory discussion elaborates the importance of adequate ventilation and the strategies to achieve this. Our presentation is structured into two segments, each delving into critical aspects of airborne transmission control. Part I: Understanding Airborne Transmission The initial part of this lecture dissects the fundamental question of why understanding pathogen transmission is crucial. Misassumptions can have catastrophic consequences, particularly during epidemics. We begin by providing an up-to-date overview of pathogens known to be transmitted through the airborne route and how these are being classified. However, pathogens can often use multiple transmission routes and these in itself can be disease modifying. Delving deeper, we scrutinize the factors influencing the transition of pathogens to the airborne state. For instance, the mode of reaching the airborne state—whether via coughing or talking—can significantly impact the effectiveness of preventive measures, such as face masks. Part II: Ventilation as a Mitigation Strategy The second segment of our presentation delves into the practical application of ventilation to mitigate airborne pathogen transmission. We offer a comprehensive view of current ventilation standards, along with insights on achieving ventilation goals through both minimal and state-of-the-art systems. Ventilation can be energy-consuming but solutions exist. Throughout the presentation, we illustrate our points with real-world examples of ventilation interventions. Additionally, we address scenarios where traditional ventilation is not feasible, offering alternatives. Join us as we navigate the science and solutions for achieving safe, well-ventilated indoor environments to effectively manage and mitigate airborne pathogen transmission.

IS016 / #825

SPECIAL SESSION: SAFE HOUSING
15-11-2023 16:15 - 17:45

NOVEL HOUSING DESIGN TO REDUCE MALARIA RISK IN AFRICA

Lorenz Von Seidlein¹, Salum Mshamu²

¹MORU, Malaria, Bangkok, Thailand, ²CSK, Malaria, Dar es Salaam, Tanzania

The standard accommodation in rural SSA tends to be either a wattle and daub construction or one made of mud blocks that sits on an earth floor with little or no ventilation. We implemented a pilot study in Magoda, Tanzania where we found that the two-storey shade net home appears optimal, in terms of preventing mosquito entry while providing comfort due to maximized airflow and the homes were well-liked by residents and neighbours. The concept of a double-storey shade net house was developed into the “Star Home”, which is the main intervention in a cluster randomized controlled trial. The Star Home has a light-weight & durable roof, facade and openings are screened to reduce insect entry while assuring airflow, raised concrete ground floor which can be easily cleaned and reduces the risk of enteric and soil-transmitted infections, a screened indoor cooking area with a smokeless stove to reduce respiratory infections, a protected lockable storage area to reduce rodent infestations, sleeping areas are upstairs to improve airflow, a water harvesting system which allows the collection of rainwater from the roof, filtering and covered storage, an outdoor fly-proof latrine, and solar power providing electric light at night. To our knowledge, this is the first randomized controlled trial using an entirely new house design as intervention. 110 Star Homes designed to optimize health were randomly assigned to eligible households and their impact on acute falciparum malaria episodes, acute respiratory tract infections, and diarrheal diseases is being evaluated over a 3-year period. Africa is currently experiencing a rapid population expansion. More than 2.5 billion people living in Africa will need new homes before 2050. The adoption of new building concepts suggested and tested in this study can potentially provide massive health benefits for coming generations.



IS017 / #596

NURSING SYMPOSIUM 03: INFECTION CONTROL
15-11-2023 16:15 - 17:45

OUTBREAK INVESTIGATION IN NEONATAL CARE

Marina Aucamp

Mowbray Maternity Hospital, Infection Prevention And Control, Cape Town, South Africa

An outbreak among hospitalized neonates requires full investigation to determine the source, size, and potential impact of the outbreak. The investigation findings should enable clinical and hospital managers to make informed decisions about appropriate actions that will contain and end the outbreak as soon as possible. The presentation focuses on steps to conduct a comprehensive outbreak investigation. This includes drafting an outbreak case definition, the type of data to collect, how data can be displayed in line lists, timeline charts, and graphs, and how data can be analyzed to determine the extent of the outbreak and infection risk. The presentation concludes with a nudge to clinical staff to use the opportunity that an outbreak presents to bring about changes in clinical care and in the clinical environment that will have a lasting impact on IPC standards of care.

IS018 / #597

NURSING SYMPOSIUM 03: INFECTION CONTROL
15-11-2023 16:15 - 17:45

INTRAVENOUS DEVICE CARE IN PEDIATRICS

Amanda Ullman

The University of Queensland and Children's Health Queensland HHS, Centre For Children's Health,
Brisbane, Australia

Intravascular (IV) catheters are a vital component of pediatric healthcare, used to administer treatments (e.g., antibiotics, fluids), sample fluids (e.g., blood), and monitor cardiovascular performance (e.g., blood pressure). Most children admitted to hospital have one, and many have multiple IV catheters. However clinical practices surrounding how clinicians select, insert, manage and remove IV catheters can cause healthcare-associated infections, and are a major cause of morbidity and mortality among hospitalized children, especially in those who require intensive care. Additionally, poorly performing IV catheters disrupt the administration of anti-microbial therapies, further negatively impacting patient outcomes. Within this presentation we will focus on the fundamental and emerging practices that can prevent IV catheter infections and promote their performance across paediatric healthcare. This includes targeting technologies and skills at key moments in IV care: device selection; insertion; management; complication recognition; and removal.

IS019 / #599

NURSING SYMPOSIUM 03: INFECTION CONTROL
15-11-2023 16:15 - 17:45

IPC AND INFECTION CARE QUALITY IMPROVEMENT IN PEDIATRIC WARDS

Marilyn Cruickshank^{1,2}, Claire Nayda¹, Gemma Savaranos^{1,3}, Laurel Mimmo^{1,4}

¹Sydney Children's Hospitals Network, Sydney Children's Hospitals Network, Sydney, Australia, ²University of Technology Sydney, University Of Technology Sydney, Ashfield, Australia, ³University of Sydney, University Of Sydney, Sydney, Australia, ⁴Macquarie University, Macquarie University, Sydney, Australia

Patients of all ages, have the right to receive safe and high-quality health care that is free from harm. Unfortunately, infections are a leading healthcare acquired complication in adult and paediatric settings. Growing public reporting and increased awareness of healthcare associated infections have led to urgent action on specific risks, and re-evaluation of prevention strategies. The growth of antimicrobial resistance, a major threat to human health, makes the need for action more urgent as antibiotics become less reliable. Randomised controlled trials are not always feasible or ethical in the discipline of infection prevention and control (IPC) so the application of core principles underpinned by a risk-management framework is needed. Existing IPC strategies are adult-focused, so guidelines, standards, and quality indicators that benchmark improvements in health, patient, and system outcomes frequently lack a paediatric perspective. Additionally, majority of available evidence to support IPC interventions has been generated in the adult setting so building the evidence-base for paediatric-specific IPC practise is a priority for critical quality improvement initiatives such as the opportunity for paediatric institutions to benchmark. Children are at greater risk of hospital errors than are adults which arises from innate differences in development, demographics, dependency on parents and other care providers, and the epidemiology of medical conditions. This session examines potential safety and quality projects in our quest to reduce infections in this unique patient group. These include prioritising activities that are realistic, practical and impactful. We consider aspects related to; policy and guidelines, surveillance, data monitoring, family-centred care, clinical practice, and innovation. Effective governance and leadership across the health system and within the IPC team is one of the most powerful mechanisms to drive positive change. Bringing together policymakers, clinicians, researchers, and consumers leading to successful outcomes in change management programs that reduce infection in paediatric settings.

IS020 / #758

MEET THE PROFESSOR 07: WHOOPING COUGH

16-11-2023 08:00 - 08:45

EXPERT 1

Ulrich Heininger

University of Basel Children's Hospital (UKBB), Departement Of Infectious Diseases And Vaccinology, Basel, Switzerland

Pertussis (whooping cough), is a highly contagious respiratory disease caused by *Bordetella pertussis*. The disease is particularly severe and life-threatening in infants too young to be fully vaccinated. They can suffer from paroxysmal cough and vomiting, but also from apnoeic spells and hyperleukocytosis leading to pulmonary insufficiency and death. Therefore, the concept of vaccination in every (!) pregnancy (ViP) with Tdap (tetanus, diphtheria, and acellular pertussis vaccine) has been developed. The World Health Organization (WHO) and many national health authorities recommend Tdap ViP, ideally between 27 and 36 weeks of gestation, as this timing ensures optimal levels of maternal antibody transfer to the fetus, thereby providing passive protection for the child during the critical early months of life. Pertussis ViP has been increasingly accepted and integrated into antenatal care programs in many countries and has contributed to a significant reduction in pertussis-related morbidity and mortality among infants. Its effectiveness is approximately 90% and it is safe for both mother and infant. Remaining challenges are discussions around blunting of the infant's immune response to its own pertussis vaccination, unjustified concerns and hesitancy to recommend ViP amongst healthcare personnel and also pregnant women themselves, and vaccine delivery and cost issues. Increasing the awareness of the benefits and safety of ViP, providing the vaccine for free (ideally also stand-alone pertussis vaccines, see <https://pubmed.ncbi.nlm.nih.gov/29189613/>), and improving health literacy of pregnant women are key to ongoing success for the sake of prevention of pertussis in infants.



IS021 / #709

**WSPID INTERACTIVE SESSION: KEEPING KIDS SAFE: INTERACTIVE CASE STUDIES
HIGHLIGHTING THE IMPORTANCE OF IPC AND AMR IN PEDIATRICS
16-11-2023 10:45 - 12:15**

**CASE 3: SMALL PATIENTS, BIG CHALLENGES: IPC LEARNINGS FROM CONTAINMENT OF AN
UNUSUAL NEONATAL OUTBREAK**

Angela Dramowski
Stellenbosch University, Paediatrics And Child Health, Stellenbosch University, Cape Town, South Africa

In this WSPID Interactive Session entitled Keeping Kids Safe, we will present three interactive case studies that highlight the importance of Infection control and antimicrobial resistance in pediatric practice. The panel will use real life case scenarios from resource-limited settings using audience participation and engaging discussions, to illustrate key learning points and practice recommendations. The cases to be discussed include: Case 1: Thinking on Your Feet in the Middle of a Neonatal Klebsiella Outbreak
Case 2: Challenges in the Prevention and Treatment of CRE Infections in the Pediatric ICU
Case 3: Small Patients, Big Challenges: IPC Learnings from Containment of an Unusual Neonatal Outbreak.



IS022 / #826

**WSPID INTERACTIVE SESSION: KEEPING KIDS SAFE: INTERACTIVE CASE STUDIES
HIGHLIGHTING THE IMPORTANCE OF IPC AND AMR IN PEDIATRICS**

16-11-2023 10:45 - 12:15

**CASE 3: SMALL PATIENTS, BIG CHALLENGES: IPC LEARNINGS FROM CONTAINMENT OF AN
UNUSUAL NEONATAL OUTBREAK**

Marina Aucamp¹, Angela Dramowski², Susan Coffin³, Helena Rabie⁴, Jonathan Stryko⁵

¹Mowbray Maternity Hospital, Infection Prevention And Control, Cape Town, South Africa, ²Stellenbosch University, Paediatrics And Child Health, Bergvliet Cape Town, South Africa, ³The Childrens' Hospital of Philadelphia, Paediatrics, Philadelphia, United States of America, ⁴Stellenbosch University, Paediatrics And Child Health, Cape Town, South Africa, ⁵Children's Hospital of Philadelphia, Botswana-university Of Pennsylvania Partnership, Gaborone, Botswana

In this WSPID Interactive Session entitled Keeping Kids Safe, we will present three interactive case studies that highlight the importance of infection control and antimicrobial resistance in pediatric practice. The panel will use real life case scenarios from resource-limited settings using audience participation and engaging discussions, to illustrate key learning points and practice recommendations. The cases to be discussed include: Case 1: Thinking on Your Feet in the Middle of a Neonatal Klebsiella Outbreak Case 2: Challenges in the Prevention and Treatment of CRE Infections in the Pediatric ICU Case 3: Small Patients, Big Challenges: IPC Learnings from Containment of an Unusual Neonatal Outbreak.

IS023 / #126

**WSPID SYMPOSIUM 04: IMPAIRED IMMUNITY IN CHILDREN AROUND THE WORLD
16-11-2023 10:45 - 12:15**

INSIGHTS FROM THE CHAIN STUDY

James Berkley¹, Caroline Tigo¹, Moses Ngari¹, Robert Musyimi¹, Wieger Voskuil², Isabel Potani³, Robert Bandsma⁴, Hama Diallo⁵, Ezekiel Mupere⁶, Benson Singa⁷, Kirk Tickell⁸, Ali Saleem⁹, Abu Sayeem¹⁰, Mohammad Chisti¹⁰, Judd Walson⁸

¹KEMRI-Wellcome Trust Research Programme, Clinical Research, Kenya, Kenya, ²University of Amsterdam, Amsterdam Centre For Global Child Health & Emma Children's Hospital, Amsterdam, Netherlands, ³University of Malaw, Department Of Biomedical Science, Blantyre, Malawi, ⁴The Hospital for Sick Children, Gastroenterology, Toronto, Canada, ⁵University Joseph Ki-Zerbo, Public Health, Ouagadougou, Burkina Faso, ⁶Makerere University College of Health Sciences, (department Of Paediatrics And Child Health, Kampala, Uganda, ⁷Kenya Medical Research Institute, Centre For Clinical Research, Nairobi, Kenya, ⁸University of Washington, Global Health, Seattle, United States of America, ⁹Aga Khan University, Department Of Pediatrics And Child Health, Karachi, Pakistan, ¹⁰International Centre for Diarrhoeal Disease Research Bangladesh, Nutrition And Clinical Services Divisio, Dhaka, Bangladesh

The Childhood Acute Illness & Nutrition (CHAIN) Network is a collaboration of clinicians and scientists addressing the problem of why children die despite implementation of current guidelines in low- and middle-income countries. The Network includes nine hospital sites in six countries in Africa and South Asia. In a cohort of 3,101 children, CHAIN has observed that almost half of the deaths among children aged 2-23 months and admitted to hospital occur during the six months after discharge. This was consistent across sites and children's nutritional status. However, CHAIN also identified a large group of children who were admitted to hospital with very-low risk of mortality during admission, after discharge or readmission. Across sites, hospital readmission rates were strongly inversely associated with post-discharge mortality. Three scenarios are envisaged to underlie post-discharge mortality: i) an entirely new illness episode; ii) incomplete treatment during the index admission, potentially due to inadequate diagnostics or antimicrobial resistance (AMR); and iii) acquisition of pathogens and/or AMR during the index hospital admission. Structural equation modelling reveals the roles of underlying conditions and children's social situation in pathways to mortality. Machine learning methods show novel clusters defined by clinical signs and hospital laboratory measures with markedly different inpatient and post-discharge mortality risk. A nested omics systems biology analysis reveals ongoing systemic inflammation, innate immune dysfunction, abnormalities in energy metabolism at discharge and acquisition of AMR carriage during admission to be associated with mortality. Underlying biological and social vulnerabilities may underlie the null results of recent clinical trials. Combining enhanced risk stratification with targeting of key pathways, child vulnerabilities and health services delivery approaches will be necessary in upcoming clinical trials to significantly impact the increasingly recognised problem of childhood post-discharge mortality in low- and middle-income countries.

IS024 / #127

WSPID SYMPOSIUM 04: IMPAIRED IMMUNITY IN CHILDREN AROUND THE WORLD
16-11-2023 10:45 - 12:15

**ADVANCES IN DIAGNOSIS AND MANAGEMENT OF INVASIVE FUNGAL INFECTIONS IN
IMMUNOCOMPROMISED CHILDREN**

Thomas Lehrnbecher

University of Frankfurt, Department Of Pediatrics, Frankfurt, Germany

Children and adolescents receiving therapy for cancer or undergoing allogeneic hematopoietic cell transplantation have an increased susceptibility to invasive fungal diseases. In addition to differences in underlying conditions and comorbidities relative to adults, invasive fungal diseases in the pediatric population are unique in terms of their epidemiology, the validity of current diagnostic methods, the pharmacology and dosing of antifungal agents, and the absence of phase 3 clinical trials. The diagnosis of invasive fungal infections is based on culture- and non-culture based diagnostic tools as well as on imaging studies. Major advances have been made on non-culture-bases techniques such as molecular approaches, and imaging strategies have been considerably improved by new techniques such as the immuno-PET-CT which combines labelled specific antifungal antibodies and imaging. Advances have also been made in the management of invasive fungal diseases in children and adolescents. For example, there is a better characterization of patient populations which may benefit from antifungal prophylaxis, and a randomized study has demonstrated the safety and efficacy of pre-emptive therapy in pediatric cancer patients, all of which helps to limit the use of antifungals without increasing the risk for invasive fungal disease. In addition, new antifungal compounds are currently being evaluated in children, which hopefully will ultimately improve the outcome of the disease. To this end, pediatric-specific guidelines, which are based on systematic reviews, are available, which address both diagnostic tools and the management of invasive fungal diseases in this unique patient population.



IS025 / #128

**WSPID SYMPOSIUM 04: IMPAIRED IMMUNITY IN CHILDREN AROUND THE WORLD
16-11-2023 10:45 - 12:15**

CURRENT UNDERSTANDING OF MALNUTRITION IN CHILDHOOD

Wieger Voskuil^{1,2}

¹Kamuzu University for Health Sciences, Paediatrics And Child Health, Blantyre, Malawi, ²University of Amsterdam, Amsterdam Centre For Global Child Health & Emma Children's Hospital, Amsterdam, Netherlands

Malnutrition is underlying 45% of all mortality in children under the age of 5 years. Mortality in children admitted to a hospital in a Low-and-Middle-Income Country (LMIC) with an acute (infectious) illness, is between 2% and 20% and is significantly higher when the child is malnourished as well. This increased risk for mortality is often not properly recognized: at admission, during hospitalization or post-discharge. Early identification of children who are most at risk for clinical deterioration or mortality is one of the major challenges, especially in LMIC where the number of health care workers per patient volume is low, disease severity is high, and workload is therefore high. In this presentation the latest data from Africa and Asia, including data from the Childhood Acute Illness and Nutrition (CHAIN) network will be presented. The aim of the CHAIN network is to explore the epidemiology of deaths among young children with acute illness across sub-Saharan Africa and south Asia to guide the development of interventions and improved guidelines. The focus of the presentation will be on the relation between acute (infectious) illness and (moderate and severe) malnutrition and the increased risk for clinical deterioration (including mortality). Both in-patient mortality as well as post-discharge mortality in acutely ill, vulnerable children will be discussed.



IS026 / #728

SOCIETY SYMPOSIUM 03 - JOINT ANZPID- ESPID SYMPOSIUM I: PREVENTION AND TREATMENT OF INFECTIONS IN PREGNANCY

16-11-2023 10:45 - 12:15

COVID/RSV – NEONATAL EFFECTS

Archana Koirala

Sydney Children's Hospital Network, National Centre For Immunisation Research And Surveillance, Sydney, Australia

SARS-CoV-2 and RSV are respiratory viruses, one recently emerged, and the other in circulation for many years. Both are vaccine-preventable. The talk will highlight the clinical impact of SARS-CoV-2 and RSV in the neonate and discuss preventable strategies such as the role of maternal vaccination and passive immunoglobulin.

IS027 / #729

**SOCIETY SYMPOSIUM 03 - JOINT ANZPID- ESPID SYMPOSIUM I: PREVENTION AND TREATMENT
OF INFECTIONS IN PREGNANCY
16-11-2023 10:45 - 12:15**

CONGENITAL SYPHILIS

Emma Best^{1,2}

¹The University of Auckland, Department Of Paediatrics: Child And Youth Health, Auckland, New Zealand, ²Starship Children's Hospital, Department Of Paediatric Infectious Diseases, Auckland, New Zealand

Globally incidence of mother-to-child transmission of syphilis remain well above the World Health organisation elimination target. Furthermore in developed settings resurgence of infectious syphilis amongst women has seen increased cases of congenital syphilis. The consequences of syphilis in pregnancy include fetal death, prematurity and critically ill newborns. Despite antenatal care, testing and treatment programmes, perpetuated health inequities within high income countries has seen rising congenital syphilis. This talk will review current clinical and management aspects of congenital syphilis.

IS028 / #730

**SOCIETY SYMPOSIUM 03 - JOINT ANZPID- ESPID SYMPOSIUM I: PREVENTION AND TREATMENT
OF INFECTIONS IN PREGNANCY
16-11-2023 10:45 - 12:15**

CMV AND SOME OTHER TORCH

Elizabeth Grace Hermione Lyall
Imperial College Healthcare Nhs Trust, Paediatric Infectious Diseases, London, United Kingdom

There is a long list of possible congenital infections, with variable effects on the foetus, some treatable, and some preventable. Outcomes for the foetus depend on: the gestational timing of transmission, previous maternal immunity, and feto-placental immune response, as well as waves of unexpected epidemics. In general, early trimester transmission is less likely to occur, but when it does the effects are often more devastating for the foetus (eg with cytomegalovirus, herpes simplex, varicella zoster, and toxoplasma). When an infant is born with unexpected clinical signs of a congenital infection, a syndromic approach should be taken to investigation of the cause¹. A differential diagnosis should be drawn up, bearing in mind local epidemiology, travel, and other possible exposures. All appropriate test samples from mother, placenta, and infant should be considered, where possible, for direct detection by PCR / culture / microscopy, as well as paired mother-infant serology. Treatment for the new-born will depend on the infectious cause, but randomised controlled trials are few, and mostly small numbers. The following congenital infections will be considered in more detail: cytomegalovirus (CMV), herpes Simplex (HSV), and human T lymphotropic virus type-1 (HTLV-1), as there are important interventions, which may prevent vertical transmission at significant points in gestation or after delivery. ¹ Penner J, Hernstadt H, Burns JE, Randell P, Lyall H. Stop, think SCORTCH: rethinking the traditional 'TORCH' screen in an era of re-emerging syphilis. Arch Dis Child. 2021 Feb;106(2):117-124.

IS029 / #731

**SOCIETY SYMPOSIUM 03 - JOINT ANZPID- ESPID SYMPOSIUM I: PREVENTION AND TREATMENT
OF INFECTIONS IN PREGNANCY**
16-11-2023 10:45 - 12:15

PERTUSSIS

Ulrich Heininger

University of Basel Children's Hospital (UKBB), Departement Of Infectious Diseases And Vaccinology,
Basel, Switzerland

In this Meet The Professor Session, together with my co-chair, I will interactively discuss issues such as "How do you diagnose pertussis?", "How do you manage/treat pertussis?" and "How do you prevent pertussis by immunization?". This will be an interactive workshop where participants can contribute and learn from each other the facts around pertussis with a specific focus on children and adolescents. For preparation, a visit of the Global pertussis Initiative website is recommended:
https://globalpertussisinitiative.within3.com/public/sign_in



IS030 / #136

WSPID SYMPOSIUM 05: ENTERIC INFECTIONS
16-11-2023 14:15 - 15:45

UPDATE ON GLOBAL GASTROENTERITIS BURDEN AND MOST SIGNIFICANT ADVANCES

Myron Levine

University of Maryland School of Medicine, Center For Vaccine Development And Global Health,
Baltimore, United States of America

In the 1960s, when diarrheal diseases constituted the principal cause of infant mortality worldwide, with burden concentrated in developing countries, few pathogens were recognized as etiologic agents, particularly for moderate-to-severe diarrhea (MSD). From 1970-2010, advances in microbiology/diagnostics identified many new bacterial, viral, and protozoal agents as putative causes of MSD in infants/toddlers. However, there wasn't consensus on the relative importance of these new etiologic agents to allow prioritization for investments and interventions. To address this, in 2006 the Bill & Melinda Gates Foundation supported the Global Enteric Multicenter Study (GEMS) to measure population-based burden, etiology, nutritional consequences, and mortality from MSD among children aged <60 months in four sub-Saharan African and three South Asian sites. Children with MSD in three age strata (0-11, 12-23, 24-59 months) visiting health centers were enrolled along with 1-3 matched community controls in populations whose health care utilization practices were well-described from demographic surveillance. A single follow-up visit to case and control households was performed ~60 days post-enrollment to detect deaths and obtain follow-up anthropometric measurements to assess MSD impact on nutritional status. Despite utilizing diagnostic assays to detect >40 pathogens, by analyzing adjusted population-attributable fractions, most attributable MSD cases were due to just four pathogens: rotavirus, Cryptosporidium, enterotoxigenic Escherichia coli producing heat-stable enterotoxin, and Shigella; other pathogens (Aeromonas, Vibrio cholerae O1, Campylobacter jejuni) were important in individual sites. Odds of dying during follow-up were 8.5-fold higher in MSD patients than controls ($p < 0.0001$). Additional follow-on studies related to GEMS took place. Re-testing of a large sample of GEMS specimens using quantitative PCR increased the relative importance of Shigella. GEMS-1A focused on the 80% of diarrhea cases less severe than MSD (i.e., less-severe diarrhea [LSD]). Further analyses examined mortality related to syndrome (MSD, dysenteric MSD, non-dysenteric MSD, LSD). Salient results from these studies will be presented.

IS031 / #135

WSPID SYMPOSIUM 05: ENTERIC INFECTIONS
16-11-2023 14:15 - 15:45

VACCINE LANDSCAPE FOR ENTERIC PATHOGENS

Miguel O'Ryan
University of Chile, Faculty Of Medicine, Santiago, Chile

The impact of acute infectious diarrhea in childhood mortality, hospitalization, and on medical care requirements has decreased significantly in the past decades, although the potential pathogens have increased substantially, as will be discussed by Myron Levine in this symposium. The main viral pathogen, rotavirus, has been a story of success, with some novel evolutions, which will be discussed by Duncan Steele. The only relatively successful vaccine for one of the bacterial gastroenteritis pathogens, has been *Vibrio cholerae*. Nevertheless, the killed oral cholera vaccines currently available are far from optimal, especially in children, and are far from covering the needs projected for the following years. Thus, new alternatives are required, and several research strategies are being evaluated and will be briefly discussed, including new or modification of oral inactivated vaccines and live attenuated vaccines and a conjugated parenteral vaccine. Vaccine candidates for other relevant bacterial pathogens are in different stages, most remain far from potential licensure and those that seem most proximal will be briefly discussed. A second enteric virus vaccine, against Norovirus, is in advanced stage of development and will be discussed; if it proves to provide acceptable efficacy against the main genogroups, it can become an important player in the years to come.



IS032 / #134

WSPID SYMPOSIUM 05: ENTERIC INFECTIONS
16-11-2023 14:15 - 15:45

ROTAVIRUS VACCINES - PAST, PRESENT AND FUTURE

Duncan Steele

Bill & Melinda Gates Foundation, Enterics, Diagnostics, Genomics And Epidemiology (edge), Seattle, United States of America

Rotavirus is the single most significant pathogen associated with severe diarrheal disease in young children, contributing approximately 200,000 deaths globally. Recent estimates record the highest rates of rotavirus-associated deaths per 1,000 live births, to occur in Africa and notably, 8 African countries account for approximately 60% of the total global mortality. Fortunately, there are live-attenuated, orally delivered rotavirus vaccines that have been pre-qualified by WHO and are procured by Gavi, The Vaccine Alliance for use in eligible countries. Currently, over 125 countries have introduced rotavirus vaccines. Significantly, several countries have documented the impact of routine rotavirus vaccination on a reduction in rotavirus diarrheal deaths and hospitalizations within 2-3 years post-rotavirus vaccine introduction, despite the modest efficacy generated in Phase 3 clinical studies in Africa and Asia. In high mortality countries, median vaccine effectiveness against rotavirus hospitalization was 59% (IQR, 46-74%), with a median 36% (IQR, 28-46%) reduction in all-cause diarrheal mortality. In addition, rotavirus vaccines are highly cost-effective, even cost-saving, in low-, lower-middle and middle-income countries. Nevertheless, rotavirus remains identified as a substantial cause of moderate to severe diarrhea in infants and in the 1–2-year-old-age group in countries using rotavirus vaccine in their immunization programs. The modest efficacy of rotavirus vaccines is well recognized and likely due to a multitude of factors including environmental enteropathy, malnutrition and other co-morbidities and maternally derived antibody. To overcome these barriers to the live-attenuated oral vaccines, research has focused on next generation, parenterally delivered rotavirus vaccines. The lead candidate, exhibiting strong immune responses in infants, was recently evaluated in a Phase 3 efficacy study in three African countries. Unfortunately, an interim analysis indicated non-superiority to existing vaccines and the study was halted by the DSMB. New approaches are being pursued in pre-clinical studies.

IS033 / #141

WSPID SYMPOSIUM 06: UPDATE OF CHILDHOOD TB
16-11-2023 14:15 - 15:45

NOVEL TB DIAGNOSTICS

Michael Levin
Imperial College, Department Of Infectious Diseases, London, United Kingdom

Diagnosis of childhood TB remains problematic and the majority of children with TB world- wide are treated without microbiologic confirmation. The low rate of microbiological confirmation is due to the pauci- bacillary nature of childhood TB, difficulty in obtaining sputum or other samples from the sites of infection, and the slow rate of growth of M Tb. Although molecular detection methods for MTb can provide rapid and highly specific confirmation of infection, they have low sensitivity in children. There is a thus a need for alternative, non -sputum or pathogen based diagnostic approaches. In this talk progress in development of diagnostic tests based on host RNA and protein signatures which detect the immune response to infection by MtB will be discussed, and contrasted with pathogen based detection approaches. Data from the multi- national NIH funded childhood biomarker validation study will be presented .The potential to translate host RNA and protein signatures into clinically applicable diagnostic tests will be discussed.

IS034 / #143

WSPID SYMPOSIUM 07: THE CURRENT STATUS OF EMERGING AND REEMERGING OF CNS INFECTIONS

16-11-2023 14:15 - 15:45

THE MENINGITIS BELT AND BEYOND

James Stuart

University of Bristol, Population Health Sciences, Medical School, BRISTOL, United Kingdom

From Senegal to Ethiopia in sub-Saharan Africa lies the meningitis belt, an area prone to massive epidemics of meningococcal meningitis since the early twentieth century. The epidemics have been predominantly due to serogroup A and linked to climatic factors of low absolute humidity, dust and high temperatures. Introducing a serogroup A conjugate vaccine in mass campaigns in 2010 and subsequently into routine immunization has virtually eliminated serogroup A, though these countries still experience epidemics due to other meningococcal serogroups. In other parts of Africa and across the world, the relative importance of meningitis with its high impact of death and disabling sequelae on families and communities is getting more emphasis. The WHO is leading implementation of a global roadmap to defeat meningitis by 2030, focussing on the four main bacteria responsible *Neisseria meningitidis*, *Streptococcus pneumoniae*, *Haemophilus influenzae* and *Streptococcus agalactiae*. The main goals are (i) to eliminate bacterial meningitis epidemics, (ii) reduce cases and deaths from vaccine-preventable bacterial meningitis, and (iii) reduce disability and improve quality of life after meningitis due to any cause. Vaccination is key. The impact of protein polysaccharide conjugate vaccines on bacterial meningitis has been dramatic, but issues remain of affordability for many countries and continuing disease due to serogroups/types not contained in vaccines. In the meningitis belt the imminent arrival of a pentavalent conjugate meningococcal vaccine should drive meningitis incidence here to low levels, but vigilance is essential. Could the hitherto absent serogroup B meningococcus finally emerge here? Will current vaccination programmes be sufficient to prevent epidemics of pneumococcal meningitis? The COVID-19 pandemic has impacted meningitis incidence and roadmap progress globally. Maintaining and expanding vaccination programmes, introducing new vaccines, improving services for diagnosis, treatment and surveillance of meningitis as well as ensuring care of those affected are major challenges to the success of the roadmap.

IS035 / #761

MEET THE PROFESSOR 08: PEDIATRIC INFECTIOUS DISEASES SUBSPECIALTY TRAINING IN AFRICA

17-11-2023 08:00 - 08:45

EXPERT 1

Brian Eley¹, Regina Oladokun²

¹Red Cross War Memorial Children's Hospital, Department of Paediatrics and Child Health, University of Cape Town, Paediatric Infectious Diseases Unit, Cape Town, South Africa, ²College of Medicine, University of Ibadan, Paediatrics, Ibadan, Nigeria

Meet the Professor: Paediatric Infectious Diseases Subspecialty training in Africa This session will be co-convened by Professor Brian Eley (University of Cape Town & Red Cross War Memorial Children' Hospital) and Professor Ragina Oladokun (University of Ibadan & University College Hospital, Ibadan). The session will open with an overview of paediatric ID subspecialist training activities in sub-Saharan Africa, followed by a talk on the challenges of establishing a training programme in West Africa. Thereafter, there will be a general discussion on the development and strengthening of paediatric ID subspecialist training in sub-Saharan Africa.

IS036 / #764

MEET THE PROFESSOR 09: APPROACH TO IV TO ORAL ANTIBIOTIC SWITCH
17-11-2023 08:00 - 08:45

EXPERT

Brendan McMullan

The Sydney Children's Hospital, Randwick, Department Of Immunology & Infectious Diseases, Sydney, Australia

Intravenous (IV) antibiotic therapy is required for many bacterial infections but is associated with longer hospitalisation, greater costs and complications than oral therapy. Transition to oral antibiotic therapy is important but often unnecessarily delayed, with duration of IV therapy based on conventional wisdom rather than high-quality evidence. Research suggests oral antibiotics can be used more widely for the treatment of common neonatal and paediatric diseases, alongside shorter durations of total therapy. In this session I will discuss guidelines, evidence updates and practical approaches for IV to oral antibiotic switch in children.

IS037 / #767

**MEET THE PROFESSOR 10: WHAT IS NEW IN THE PREVENTION OF RSV?
17-11-2023 08:00 - 08:45**

EXPERT

Heather Zar

SA-MRC unit on Child & Adolescent Health, University Of Cape Town, Cape Town, South Africa

RSV is the major cause of LRTI and mortality in young infants in low- and middle-income countries. In these settings, the number of deaths outside hospital is 3 to 4 fold higher than inpatient deaths reflecting poor access or unaffordability of health care. RSV-LRTI has also been associated with long term impairment of lung health, including recurrent LRTI, recurrent wheezing or asthma and lung function impairment. Palivizumab, a short acting expensive monoclonal antibody (mAb) requiring monthly injection has been limited to use in high-risk infants in well resourced settings. New strategies to prevent RSV-LRTI in infants have been developed - maternal vaccination in pregnancy or infant immunization using a long-acting mAb given as a single intramuscular dose per season. The first trial in pregnant women used a nanoparticle vaccine to target the RSV post-fusion protein. Medically attended (39%) and hospitalised (44%) RSV-LRTI was reduced with no safety concerns, but the primary endpoint was not met. Two recent maternal trials targeting the RSV prefusion F-antigenic site have been done; the first was stopped early due to an imbalance of preterm births while the second showed substantial efficacy against severe RSV-LRTI at 90 (82%) and 180 (69%) days and was approved in Europe, UK and USA. Nirsevimab and clesrovimab are long acting mAbs targeting the prefusion F protein. Nirsevimab reduced RSV-LRTI by 70% and hospitalised RSV-LRTI by 78% 150 days post-dose in preterm infants. Similar efficacy for hospitalized RSV-LRTI occurred in late preterm and healthy term infants. Nirsevimab is now licensed in the EU, UK, and USA. Clesrovimab is in Phase 3 trials with promising results. Further potential benefits of prevention include reductions in all-cause LRTI, antibiotic prescribing, otitis media and wheezing illness. However, access and affordability to new interventions in LMICs is essential, where the impact will be greatest given the burden and severity.

IS038 / #771

SPECIAL SESSION: VACCINE INEQUITY
17-11-2023 09:00 - 10:30

CHALLENGES FOR GAVI TRANSITIONING COUNTRIES, THE LAO PDR EXAMPLE

Vannida Douangboupha¹, Phonethipsavanh Nouanthong², Phouvanh Vonglokhom³, Chansay Pathammavong⁴, Kongxay Phounphenghuk⁵, Bandith Soumphonphakdy⁶, Valy Keoluangkhot⁷, Khampe Phongsavath⁸, Mayfong Mayxay⁹

¹Mahosot Hospital, Pediatric Infectious Disease Ward, Pediatric Department, Vientiane Capital, Laos, ²Part-time researcher & NITAG secretariat, Institute Of Pasteur, Lao (ipl) & National Immunization Technical Advisory Group (nitag), Vientiane capital, Laos, ³Gavi focal point, Gavi, Vientiane Capital, Laos, ⁴Deputy manager, National Immunization Program (NIP), Mother & Child Health Center (mchc), Vientiane capital, Laos, ⁵Head of Vaccine Preventable Disease Division/Nationale Immunization Programs (NIP) manager, Mother & Child Health Center (mchc), Vientiane capital, Laos, ⁶Pediatric Infectious disease specialist & director general, Mother & Child Health Centre (mchc) & Commissioner Of Lao Pediatric Association (lpa), Vientiane captial, Laos, ⁷Adult Infectious Disease & Tropical Medicine, Nitag Vice President, National Immunization Technical Advisory Group (nitag), Vientiane Capital, Laos, ⁸Associate Professor in Pediatrics, NITAG President, National Immunization Technical Advisory Group (nitag), Vientiane capital, Laos, ⁹Professor in Adult Infectious Disease & Tropical Medicine,, Vice Rector, University Of Heath Science, Ministry Of Health, Vientiane Capital, Laos

The National Immunization Program (NIP) in Lao People's Democratic Republic (PDR) launched in 1979 as the "Expanded Program on Immunization (EPI)". Gavi, the Vaccine Alliance commenced support Lao PDR around 2001. Since 2011, the country has been classified as lower middle income. Despite the improvement in economic growth and stability, the biggest issues currently facing the country are rising inflation, poverty, and inequalities, and difficulties in health financing to reduce under-five mortality via improving immunization coverage, health literacy and access to health care services via universal coverage. Since being in the accelerated Gavi transition phase in 2017, Lao PDR failed to graduate in 2023, and now been postponed to 2025. Four main challenges faced Lao PDR include the EPI decision-making process; political commitment and financial sustainability for the EPI program; equitable delivery of vaccines; and access to timely and affordable supply. The former includes strengthening the National Immunization Technical Advisory Group (NITAG) through training and peer-to-peer exchange. The second challenge comprises the development of advocacy activities for financing for immunization, financing strategies and economic analyses, and resource mobilization strategy. The third challenge relates to the maintenance of existing equipment for cold chain at subnational level, supply training, development of a fully functional electronic data system and analysis, data quality monitoring, population census, the use of mass media, social mobilization, and a communication plan, together with human resources training. The last challenge involves general procurement, plus issues relating to the National Regulatory Authorities, such as market authorization, pharmacovigilance, regulatory system, lot release, and laboratory access in remote areas. For the Lao government to successfully graduate and maintain sustainability of the EPI program, it is essential to address all these issues in the Gavi transitional roadmap and ensure sustainable vaccine prices, to support the NIP in both the short and longer term.

IS041 / #818

**WSPID SYMPOSIUM 08: 'HOT' PAPERS IN THE FIELD OF PEDIATRIC INFECTIOUS DISEASES
2021-2023**

17-11-2023 09:00 - 10:30

VACCINES

Daniel Jarovsky^{1,2}, Marco Palazzi Sáfadi^{1,2}

¹Santa Casa de São Paulo, Pediatric Infectious Diseases, São Paulo, Brazil, ²Santa Casa de São Paulo School of Medical Sciences, Pediatrics, São Paulo, Brazil

Join us for a dynamic review of the latest developments in vaccinology from 2021 to 2023! This session will be an opportunity to exchange ideas, ask questions, and network with other professionals and enthusiasts working on innovative solutions to prevent infectious diseases. Don't miss this chance to stay updated on one of our time's most important and relevant topics!



IS044 / #303

**SOCIETY SYMPOSIUM 05 - AFSPID: LANDMARK STUDIES ADDRESSING TOPICS OF CONCERN
IN AFRICA**

17-11-2023 09:00 - 10:30

CARRIAGE OF ANTIMICROBIAL-RESISTANT BACTERIA IN HUMANS AND ANIMALS IN AFRICA

Mohammad Issack

Central Health Laboratory, Bacteriology, Quatre Bornes, Mauritius

Antimicrobial resistance (AMR) is a global threat and involves human, animal and environmental sectors. Surveillance is an essential component of any plan to combat AMR and data on carriage of resistant organisms in healthy people and animals in Africa can give a good indication of the extent of the problem in the community. Intestinal carriage rates of extended-spectrum beta-lactamase (ESBL)-producing Enterobacterales in healthy volunteers has ranged from 4% in Morocco (2013) to 38% in Chad (2017). Carriage rates of ESBL-producing E.coli of 22% and 34% have been reported in pregnant women from Benin (2023) and Madagascar (2018-19) respectively. In Madagascar, one carrier of carbapenemase-producing E.coli was also identified. A remarkable 67% of hotel employees in Zanzibar were carriers of colistin-resistant Enterobacterales in 2018. In the animal sector, resistance rates of E.coli in poultry of >50% to ampicillin, tetracycline and co-trimoxazole have been reported in studies from Nigeria and Tanzania, with slightly lower rates in cattle and pigs. These rates reflect the predominant use of these antibiotics in animals in Africa. Resistance to gentamicin was lower at <20%. Resistance to fluoroquinolones ranged from 2% in cattle in Nigeria to 55% in chicken in Tanzania. A high rate of ESBL-producing E.coli (57%) was found in chicken in Madagascar and may have been linked to environmental contamination as all 28 samples of river, effluent and sewage water tested were also positive for ESBL-producing E.coli. Carriers of resistant bacteria are at increased risk of developing infections caused by antibiotic-resistant organisms. Furthermore, when admitted to hospital for any reason, there is a risk of transmission of the resistant organisms to other patients. Pregnant carriers are also at risk of transmitting resistant organisms to their babies. A One Health approach is required to contain the problem of AMR.

IS045 / #304

**SOCIETY SYMPOSIUM 05 - AFSPID: LANDMARK STUDIES ADDRESSING TOPICS OF CONCERN
IN AFRICA**

17-11-2023 09:00 - 10:30

**UPDATE ON PEDIATRIC LASSA VIRUS DISEASE - RETHINKING ITS RESEARCH AND
TREATMENT**

George Akpede^{1,2}

¹Irrua Specialist Teaching Hospital, Paediatrics, Irrua, Nigeria, ²Ambrose Alli University, College Of
Medicine/department Of Pediatrics, Ekpoma, Nigeria

Lassa virus disease (LVD), which is endemic in West Africa and is the most exported viral hemorrhagic fever (VHF), has undergone expansion both in its geography and incidence in endemic areas. Within these contexts however, pediatric LVD has not been given the deserved emphasis considering that about 42-50% of the populations in endemic areas are under 18 years old. This is perhaps mainly because of extant perceptions that LVD is neither as prevalent nor as severe in children as in adults, and that pediatric LVD is similar in the main to the disease in adults. Although these perceptions are not altogether correct, one important but not surprising fallout is that there have been only a few studies/reports with a focus on pediatric LVD. Oftentimes also, only a few children are included in research endeavors on LVD including clinical trials, with the unstated hope that somehow the findings from such studies could also be expected to apply to children. This approach ignores the fundamental and foundational reality that 'children are not little, small, or miniature adults', a reality in classic bacterial sepsis that is also being borne out in the sepsis of VHF. The maxim calls for a new strategy or approach to research and treatment in addressing the public health and clinical challenge of pediatric LVD, which also has the potential for impact on the response to LVD in general. We sought to amplify this need with a review of the epidemiology, clinical manifestations, pathophysiology, and outcome of pediatric LVD. We further sought to illustrate the need through the sharing of our modest experiences of the prevalence and management of acute kidney injury in pediatric LVD.

IS047 / #172

WSPID SYMPOSIUM 10: LITTLE BABIES - BIG PROBLEMS
17-11-2023 11:00 - 12:30

MATERNAL INFECTIONS AND THEIR EFFECTS ON THE NEWBORN

Elizabeth Grace Hermione Lyall
Imperial College Healthcare Nhs Trust, Paediatric Infectious Diseases, London, United Kingdom

The WHO and partners have made a commitment to triple elimination of vertical transmission of HIV, Hepatitis B and Syphilis by 2030¹. This is a bold approach to the effective testing, diagnosis and treatment of the most important sexually transmitted infections in pregnancy, which have significant effects on women's own health, as well as that of their children. Indeed, additionally, with syphilis there is a significant risk of early pregnancy loss, stillbirth and neonatal death. Effective interventions exist to cure syphilis, suppress HIV and hepatitis, and prevent vertical transmission. However, access to testing and treatment depends on coordinated antenatal care, and an approach to sexual health, which also includes testing, education and healthcare for partners. This should also extend to effective sexual health education and protection from infection in pregnancy, including for example pre-exposure prophylaxis (PREP) for HIV. Clinical cases will be presented to illustrate epidemiology, timing and range of treatments, and consideration of both pregnancy and the breast-feeding period. Areas where data is lacking and where further studies are required will be highlighted. Successful elimination of vertical transmission of HIV, Hepatitis B and Syphilis will improve the lives of millions of infants and their mothers. ¹ <https://www.who.int/initiatives/triple-elimination-initiative-of-mother-to-child-transmission-of-hiv-syphilis-and-hepatitis-b/validation/path>

IS048 / #167

WSPID SYMPOSIUM 11: WHEEZY WHOOPS
17-11-2023 11:00 - 12:30

EARLY LIFE RSV AND CHRONIC LUNG DISEASE

Heather Zar

SA-MRC unit on Child & Adolescent Health, University Of Cape Town, Cape Town, South Africa

Early life RSV-LRTI has been associated with several long term impairments including recurrent LRTI, recurrent wheezing/ asthma and lung function impairment. The Drakenstein Child Health study (DCHS), a South African birth cohort study, found that RSV-LRTI in the first two years was associated with a 3 -fold higher risk of recurrent LRTI due to non-RSV pathogens. A study of Gambian children also reported an increased incidence of LRTI after hospitalization for RSV-LRTI. Many studies report a significant association between early-life RSV-LRTI especially severe episodes and recurrent wheezing or asthma in childhood. A meta-analysis found that RSV-LRTI was associated with a 3-4 fold increased odds of subsequent wheezing, and a 2-6 odds of asthma at six years or older. In the DCHS, RSV-LRTI was associated with a recurrent wheezing phenotype and increased airway resistance at 5 years. Randomised controlled trials (RCTs) of RSV-LRTI prevention reported conflicting findings; palivizumab in preterm infants found a 10% reduction in parentally-reported mild wheezing at six years but no difference in doctor-diagnosed asthma or lung function while a motavizumab RCT, showed no difference in recurrent wheezing in full-term Native American children at three years. A key issue is whether RSV-LRTI leads to impairment or is a marker of underlying susceptibility to illness. The association between RSV-LRTI with recurrent wheezing / asthma is reduced when controlling for genetic susceptibility. However, epidemiological studies suggest a causal role. A USA birth cohort found a 26% lower risk of non-atopic asthma at 5 years among RSV-uninfected infants, estimating that prevention of RSV infection could reduce 15% of asthma. In-vitro and animal studies have also identified possible mechanisms, as RSV affects inflammatory pathways and airway epithelial development. The developmental origins of chronic lung disease are increasingly recognized. Early lung function impairment may track for life with long term effects; RSV-LRTI, by predisposing to recurrent LRTI or reducing lung function may predispose to impairment and early mortality through adulthood.

IS049 / #168

WSPID SYMPOSIUM 11: WHEEZY WHOOPS
17-11-2023 11:00 - 12:30

CHANGING EPIDEMIOLOGY OF RESPIRATORY VIRUSES IN THE POST COVID ERA

Hannah Moore

Telethon Kids Institute, Wesfarmers Centre For Vaccines And Infectious Diseases, Perth, Australia

Public health measures, or non-pharmaceutical interventions were established worldwide to mitigate the impact of COVID-19. These measures have also disrupted viral transmission and seasonal patterns of the majority of respiratory viruses affecting young children. This “natural experiment” has afforded the opportunity to investigate the dynamics and transmission characteristics of these viruses, that typically exhibit seasonal epidemics in winter months of temperate climates. Most remarkably, detections of respiratory syncytial virus (RSV) and influenza virus were immediately suppressed following the introduction of public health measures in 2020 with resulting reductions in paediatric hospitalisations around the world. The result was a widespread immunity debt from a lack of circulating viruses. Subsequent to the suppression, viruses like RSV and human metapneumovirus (hMPV) have seen significant resurgence owing to the increased susceptible population of immune naïve children. This phenomenon has raised new questions on the source and drivers of transmission of respiratory viruses across populations. This presentation will focus on the changing patterns of common respiratory viruses affecting children, particularly with respect to RSV, influenza virus and hMPV, in the immediate aftermath of COVID-19. Specific real-world data examples will be given of the changing respiratory viral epidemiology in Australia and how this is informing new research questions to understand viral transmission dynamics. As we enter a new era of increased community awareness of respiratory viruses and increased availability of testing platforms, the altered epidemiology of respiratory viruses is critically important to understand. This is especially for RSV as we move into the era of immunisation strategies and many countries needing to make policy decisions for the implementation of new programs based on seasonal vs year-round approaches, risk groups and age characteristics.



IS050 / #780

SOCIETY SYMPOSIUM 06 - JOINT ANZPID- ESPID SYMPOSIUM II: PERINATAL AND CONGENITAL INFECTIONS - CASES AND COMMENTARY

17-11-2023 11:00 - 12:30

CONSIDER CONGENITAL TB IN UNWELL NEONATES CONCEIVED THROUGH IN VITRO FERTILISATION

Li Jun Thean¹, Vikram Vaska¹, Chris Coulter², Clare Nourse¹

¹Queensland Children's Hospital, Infection Management And Prevention, Queensland, Australia, ²Queensland Mycobacterium Reference Laboratory, Pathology Queensland, Queensland, Australia

Introduction Congenital tuberculosis (CTB) is a rare condition which carries a high risk of mortality. Timely recognition is important to initiate lifesaving appropriate treatment. While genitourinary TB is a common cause of infertility in women from populations where TB is endemic (therefore limiting cases of CTB), improved access to assisted reproductive technologies creates a new pathway for more cases of CTB to emerge. Methods A premature infant was diagnosed with CTB whilst admitted to a neonatal intensive care unit in Queensland, Australia. Along with current treatment options, we discuss the epidemiology of CTB and its emergence in high income settings with the availability of in vitro fertilisation (IVF) and increasing global migration. Results A neonate born at 31 weeks gestation, was conceived via in vitro fertilisation to a mother who emigrated from East Africa. The infant developed severe respiratory distress at week three of life. Acid fast bacilli (3+) were detected from endotracheal aspirate and Mycobacterium tuberculosis was detected on GeneXpert ULTRA Assay. Empiric treatment for CTB was commenced and the infant was subsequently discharged following clinical recovery. Maternal Quantiferon Gold was positive and pelvic MRI demonstrated evidence of disseminated reproductive organ and adrenal infection. Multiple cases of CTB following conception by IVF have been reported in high- and middle-income settings. Discussion A high index of suspicion for CTB should be held in infants with progressive and unexplained respiratory illness who are born to mothers from high prevalence settings and conceived through IVF. Tuberculosis should be considered as a differential for infertility and should be investigated for in women with infertility, who come from TB endemic settings.

IS051 / #783

SOCIETY SYMPOSIUM 06 - JOINT ANZPID- ESPID SYMPOSIUM II: PERINATAL AND CONGENITAL INFECTIONS - CASES AND COMMENTARY
17-11-2023 11:00 - 12:30

PERSISTENT FEVERS AT 2 MONTHS OF AGE

Helen Payne, Felicity Fitzgerald, Lizzy O'Mahony, Aubrey Cunnington
Imperial College London, Section Of Paediatric Infectious Disease, London, United Kingdom

This is the case of a 2-month-old baby who presented 3 times over 21 days with a total of 14 days of fever, but otherwise settled, feeding well and thriving. He was the first baby to Nigerian parents following a normal pregnancy. His mother moved to the UK 3 years before, has not travelled since, and there were no unwell contacts. Examination was unremarkable apart from fever. Microbiological cultures were all negative (blood, urine, cerebral spinal fluid), and a basic immune screen was normal including HIV. He did however have anaemia, mild thrombocytopenia, and a raised c-reactive protein despite normal white blood cells. Finally, blood film showed *Plasmodium Malariae* with parasitaemia 0.17% at all stages of the life cycle. This was confirmed at the National Malaria Reference Laboratory, and on PCR. The baby was treated with IV artesunate, became afebrile and remained well with repeat blood film and PCR negative for malarial parasites. On further history, the mother had multiple episodes of malaria throughout her life, treated with oral artemisin combination therapy. She had not had any feverish episodes in the last 3 years including during pregnancy. The mother's blood films were negative, but her PCR was positive for *Plasmodium Malariae*. *Plasmodium Malariae* can latently persist in the human host for many years, and recrudescence can be triggered by changes in host immune status. Despite the frequency of malaria in Africa, congenital malaria is uncommon likely due to maternal antibodies, fetal haemoglobin, and protective placental mechanisms. However, occasionally congenital malaria can cause severe neonatal disease with non-specific, sepsis-like manifestations, in which early treatment decreases the risk of complications. This differential diagnosis should be considered in newborns of women with a history of malaria during pregnancy or, as in this case, pregnant women who have been living in endemic malaria areas.



IS052 / #165

**NAPOLEÓN GONZÁLEZ WORLD LECTURE
17-11-2023 13:30 - 14:15**

WHAT I HAVE LEARNED IN 20 YEARS OF LEADING PIVOTAL HIV & TB TRIALS IN AFRICA & GLOBALLY

Diana Gibb
University College London, Mrc CtU, London, United Kingdom

In this talk I will reflect on African trials in paediatric HIV and tuberculosis, with a focus on late stage trials which I have been involved in with collaborators in East and southern Africa. I will start by discussing the need for paediatric trials in these two diseases and when, in general, trials are needed in children to generate evidence in a timely manner. I will discuss some of the design, implementation, nested substudies (eg pharmacokinetics), results and subsequent impact of some of the early HIV trials such as the CHAP, CHER and ARROW trials, as well as lessons learnt from the recent ODYSSEY trial of dolutegravir in HIV-infected children. I will discuss the roles of generic companies in the EDCTP-funded CHAPAS trials and why appropriate formulations and nested pharmacokinetic substudies for children are so important. Childhood tuberculosis was long neglected in the trials arena and I will talk about the African/Indian SHINE trial of treatment shortening for non severe tuberculosis in children, updating what has happened since the trial was published and WHO guidelines changed in 2022. I will then move on to pose the question 'why are results of some trials but not others implemented rapidly' and give examples of the whys and hows in the pathway from evidence generation to changes in policy and practice. I will finish by looking forward to the exciting new agenda of new methods to be applied to trials in order to make them more efficient and to ensure inclusion of both pregnant women and children.



IS053 / #175

WSPID SYMPOSIUM 12: URGENT ISSUES IN IMMUNIZATION
17-11-2023 14:30 - 16:00

VACCINE HESITANCY

Naveen Thacker^{1,2}, Nimi Thomas³, Stuti Bhatt³

¹Deep Children Hospital, Director, Deep Children Hospital, Gandhidham, India, ²International Pediatric Association, President, International Pediatric Association, Gandhidham, India, ³International Pediatric Association, Project Manager, Ipa, Gandhidham, India

Vaccine hesitancy, defined as delayed acceptance or outright refusal of vaccines despite the availability of vaccination services, is a serious hurdle to global immunization efforts. This complex, context-specific phenomenon is influenced by factors like convenience, complacency, and confidence (3C's). Vaccine hesitancy varies across countries. Vaccine acceptance encompasses a spectrum, from firm refusal to varying degrees of doubt, to full confidence. This abstract categorizes vaccine acceptance barriers into structural, behavioral, and informational. Structural barriers include knowledge gaps, financial constraints, and logistical challenges, behavioral barriers involve negative attitudes and vaccine anxiety. Informational barriers include misinformation, language, culture, and dissemination issues. Among the various models of vaccination behavior, the most recent is the 5A model, highlighting Access, Affordability, Awareness, Acceptance, and Activation. It emphasizes behavioral and social factors influencing vaccination, shaped by risk perceptions. Vaccine hesitancy biases include confirmation, anchoring, narrative, present, negativity bias, and the safety effect. The anti-vaccine sentiment is not new, as the movement has origins going back centuries, with its skepticism evident when comparing past and current arguments. Websites sharing vaccine-critical information significantly shape risk perceptions and vaccination intentions. To address vaccine hesitancy and encourage vaccinations, we must foster demand, confidence, and acceptance. Overcoming hesitation involves comprehending all aspects, especially passive acceptors who neither endorse nor reject vaccination, often due to misinformation, side effect concerns, or complacency. Strategies include reliable communication, resilient training, policy action, and improving vaccination literacy. Countering misinformation requires training healthcare professionals, and parents through school-based approaches. By implementing these, we can improve public health outcomes, and promote the importance of immunization. As vaccine supply increases, the focus shifts from confidence to demand generation. Resilient communities that adapt and self-organize are crucial in sustaining vaccination rates in the face of adversity. Understanding and addressing barriers can help boost trust, awareness, and vaccine acceptance.



IS054 / #179

WSPID SYMPOSIUM 14: BUGS & SUPER BUGS
17-11-2023 14:30 - 16:00

ANTIBIOTIC STEWARDSHIP IN FOOD-PRODUCING ANIMALS

Sameer Patel

Ann & Robert H. Lurie Children's Hospital of Chicago, Pediatrics, Chicago, United States of America

Globally, antibiotics from drug classes used in human medicine are routinely given to food-producing animals for the treatment of diagnosed illness, disease prevention, and growth promotion. Antibiotic use for disease prevention includes prevention in individual animals as well as controlling dissemination of infection within a group of animals. When used for growth promotion, antibiotics are administered at low doses for extended durations, which particularly favors selection of antibiotic resistant organisms. Extensive antibiotic use on farms (especially in concentrated animal-feed operations) drives the emergence of antibiotic-resistant organisms. Antibiotic stewardship in food-production has been associated with decreased prevalence of antibiotic resistance in animals. A similar reduction has been demonstrated in humans, particularly individuals with direct exposure to food-producing animals. The World Health Organization recommends overall reductions in medically important antimicrobials in food-producing animals, including complete restriction of use of for growth promotion and disease prevention, with exceptions if under the care of veterinary professionals. Many countries (particularly in the European Union) have successfully reduced antibiotics in food-producing animals, through national reduction targets, bans of antibiotics in animal feed, and benchmarking of antibiotic use at the farm level. Consumers remain a potent force via market pressure on grocery stores, restaurants, suppliers, and farmers. While numerous public health agencies and professional societies have called for judicious antibiotic use on farms, more direct advocacy from health care professionals is needed. A transdisciplinary approach should coordinate leaders from a range of fields including infectious diseases, veterinary medicine, population health, environmental health, farming, and consumer advocacy.



IS055 / #180

WSPID SYMPOSIUM 14: BUGS & SUPER BUGS
17-11-2023 14:30 - 16:00

ANTIMICROBIAL STEWARDSHIP IN THE HOSPITAL

Chiara Minotti, Julia Bielicki

University Children's Hospital Basel (Universitäts-Kinderspital beider Basel), Pediatric Research Center/pädiatrische Forschungszentrum, Basel, Switzerland

The inappropriate use of antimicrobials has a direct impact on antimicrobial resistance (AMR). Antimicrobial stewardship (AMS) aims to optimize clinical outcomes while minimizing unintended consequences of antimicrobials, including toxicity, the selection of pathogenic organisms, and the emergence of AMR. Healthcare costs may also decrease by promoting judicious use of antibiotics. Hospitals are encouraged to implement a multidisciplinary antimicrobial stewardship team that includes among its core members an infectious diseases physician and clinical pharmacist with specific training. General approaches must be translated into context-specific strategies when determining what interventions or activities are most appropriate locally. International networks and programs may help bring together interested stakeholders to help define feasible methods of evaluating antimicrobial prescribing and AMR patterns globally. Low- to middle-income countries, however, may have limited staffing as a common barrier to AMS programs creation. Widespread availability of over-the-counter antimicrobials, shortages and cost of medications may be other significant obstacles. Further controversial issues exist for neonates and children, who are prescribed antimicrobials frequently and present different resistance patterns compared with other patient groups. Challenges include achieving a balance between improving access to antimicrobials and reducing excess use. A large proportion of childhood mortality is associated with infections, and a rapid and direct access to AMS may be impactful. Clinical presentation spectrum, epidemiology, resistance patterns, and pharmacokinetics differ in children and information on efficacy, dosing and duration of treatments are often extrapolations from adult trials. Appropriate formulations/doses may not be available, with a risk of incorrect dosing or manipulation of extemporaneous formulations, affecting the pharmacokinetic and pharmacodynamics properties of medications in unpredictable ways. Batching may represent a solution, while reducing costs with minimum waste and prevent stockpiling. Last, new rapid point of care diagnostic approaches and non-targeted, metagenomic techniques applied to surveillance samples may help detect AMR and enable early diagnosis.

IS056 / #182

WSPID SYMPOSIUM 14: BUGS & SUPER BUGS
17-11-2023 14:30 - 16:00

OUTBREAK INVESTIGATION IN NEONATAL UNITS

Angela Dramowski
Stellenbosch University, Department Of Paediatrics And Child Health, Stellenbosch University, Cape
Town, South Africa

Infectious Disease Outbreaks in Hospitalised Neonates: Detection, Investigation, Containment and Prevention Hospitalized neonates are a vulnerable population. Neonatal exposure to infectious diseases may occur in utero or postnatally through contact with healthcare workers, parents, patients, the hospital environment and equipment. Some exposures lead to microbial colonisation only; others result in large-scale and fatal infection outbreaks. In this session, we will discuss several outbreak case studies and highlight key learning points to enhance neonatal outbreak detection, investigation, containment and prevention in resource-limited settings.

IS057 / #188

WSPID SYMPOSIUM 15: VIRAL HAEMORRHAGIC FEVER
17-11-2023 14:30 - 16:00

EBOLA

Muhammed Afolabi

London School of Hygiene & Tropical Medicine, Department Of Disease Control, London, United Kingdom

Ebola disease is a group of deadly diseases in humans and nonhuman primates (NHPs) caused by an infection with RNA viruses within the genus *Orthoebolavirus*. It was first described in 1976 near the Ebola River, Yambuku village, Democratic Republic of Congo. Ebola disease is rare (32 outbreaks, cumulative total: <40,000 cases since 1976). The largest outbreak in West Africa was in 2014-16 caused by Ebola virus (28,652 reported cases and 11,310 deaths). Trends in the underlying drivers of Ebola disease risk suggest a 1.75 to 3.2-fold increase in the endemic rate of animal-human virus spill-overs in Africa by 2070. This presentation will examine the recent updates in the nomenclatures of Ebola disease and Ebola virus disease as well as the Ebola virus ecology and transmission; history of Ebola disease outbreaks; cost of Ebola outbreaks; Ebola disease response including diagnosis, management, supportive care, prevention and control; Sudan virus disease outbreak control, ring vaccination trial in Uganda (Tokomeza Ebola); therapeutics such as Ansuvimab (Ebanga™) and REGN-EB3 (Inmazeb™); and the recently approved prophylactic vaccines by the European Medicine Agencies and World Health Organisation: rVSV-ZEBOV (Ervebo®) and Ad26-ZEBOV/MVA-Filo-BN (ZABDENO/MVABEA®). I invite all delegates to this year's WSPID conference with warmth to attend this important session on progress made in the development of Ebola disease vaccines for use in children, and how this is contributing to public health preparedness and response.



IS058 / #189

WSPID SYMPOSIUM 15: VIRAL HAEMORRHAGIC FEVER
17-11-2023 14:30 - 16:00

LASSA

Peter Okokhere

Irrua Specialist Teaching Hospital, Internal Medicine, Irrua, Nigeria

Lassa fever (LF), an acute viral hemorrhagic illness is endemic to West Africa. The Lassa virus (LASV), a BSL 4 agent causes LF, and LF is characterized by a spectrum of clinical features that may include high fever, bleeding, circulatory collapse, respiratory distress, seizures and acute kidney injuries. Acute surgical abdomen may occur. This spectrum of clinical manifestations can present in children, adults and pregnant women. All age groups are affected by LF, and it is an important cause of work-related mortality among health care workers. Modes of transmission include contact with the blood or excreta of the LASV host, the multimammate rodent, or with the body fluids of infected humans. Fetosis may be infected in utero and neonates and infants through contaminated breast milk. Long term persistence of live LASV in semen can be a potential source of continuous community infection. In areas where LF is endemic, Malaria, Typhoid fever and Shigellosis share common early symptoms with LF, causing challenges in its early recognition, which may contribute to late presentation, complications and adverse prognosis. Clinical diagnosis requires a high index of suspicion, especially in the early stages. Commonly, laboratory confirmation is with RT-PCR. The presence of proteinuria and microscopic haematuria may point to the possibility of LF in a febrile patient. Co-infection with malaria, bacteria and other viruses can occur. A dedicated treatment facility with well-trained multidisciplinary staff gives better management outcomes. Emphasis should be on providing good supportive care, prevention, early recognition and treatment of complications, and prevention of nosocomial infections. Despite recent progress, challenges in diagnosis and management still abound. Recognizing and proffering solutions to these challenges are important going forward. The development of an effective and safe LASV vaccine against the seven known lineages of the LASV will be a solution to the LASV menace.



IS059 / #190

WSPID SYMPOSIUM 15: VIRAL HAEMORRHAGIC FEVER
17-11-2023 14:30 - 16:00

CCHF

Sadegh Chinikar
Vetmeduni University of Vienna, Virology, Vienna, Austria

Crimean-Congo hemorrhagic fever (CCHF): CCHF is a Viral zoonotic disease ,this disease is a severe infectious hemorrhagic disease In humans with a mortality rate between 2 to 50%,but it is usually asymptomatic in infected livestock or may occasionally with a mild fever in infected livestock. The agent of this disease is CCHF virus (CCHFV) ,from Nairovirus genus and Bunyaviridae family an enveloped negative sense single stranded RNA virus. CCHF is seen and reported in different parts of Africa, Asia ,the Middle East, and some countries of Europe like Turkey(Türkiye), Bulgaria, Greece, Albania and Kosovo. The main routes of CCHF virus transmission are one of following ways: -infected ticks bite (mainly Ixodidae family Hyalomma genus) - contact with infected blood or tissues of livestock (slaughtering or butchering) -human to human through direct contact with blood or tissue of infected patients (nosocomial transmission in hospitals) e.g. following the surgery on infected patients. Treatment : General supportive therapy is the mainstay of patient management in CCHF. Intensive monitoring to guide volume and blood component replacement is recommended. There is no specific antiviral for it but treatment with Ribavirin can help, till now no fully effective vaccine has been developed for this disease , but some studies and efforts have been made .

Oral Abstract Presentations



O001 / #268

ORAL PRESENTATIONS 01: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL
15-11-2023 14:30 - 15:45

A CLINICALLY ORIENTED ANTIMICROBIAL RESISTANCE SURVEILLANCE NETWORK AMONG PEDIATRIC PATIENTS AT LARGE REFERRAL HOSPITAL, BLANTYRE, MALAWI

Diana Kululanga Banda¹, Samantha Lissauer¹, Nicholas Feasey², Ethwako Phiri³, Yamikani Chimalizeni³, George Chagaluka³, Effita Masoamphambe¹, Jenala Njiramadzi Maleta³, David Kulapani¹, Paul Turner⁴

¹Malawi Liverpool Wellcome Trust, Bacterial Drug Resistant Infections, Blantyre, Malawi, ²Liverpool School of Tropical Medicine, Microbiology, UK, United Kingdom, ³Queen Elizabeth Central Hospital, Paediatrics, Blantyre, Malawi, ⁴Mahidol Oxford Tropical Medicine Research Unit (MORU, Tropical Medicine, Bangkok, Thailand

Background: Antimicrobial resistance (AMR) is a major threat to health. Many Antimicrobial Stewardship (AMS) surveillance systems are passive, pathogen-focused, using laboratory data only. Surveillance data is vital to inform infection treatment guidelines, monitor trends, and assess interventions.

Aims: To implement an efficient clinically-oriented AMR surveillance system (ACORN) in hospitalised patients with suspected acute bacterial infections alongside routine clinical care.

Methods: Descriptive prospective surveillance at Queen Elizabeth Central Hospital (QECH), Paediatric Department. A qualitative data analysis synchronizing clinical data collected from inpatient files from all children started on intravenous antibiotics, and laboratory blood/CSF culture data from Laboratory Information Management System (LIMS) from July 2022 to July 2024. Interactive data visualisation through a bespoke browser-based app.

Results: 1516 participants have been recruited; 60% are under 6 months of age. The most common 3 diagnoses across all age groups are Sepsis, Pneumonia, and Central Nervous System Infection. 95.4 % of patients were discharged alive; 91% in Neonatal Unit, and 98% from other wards. The most common organisms are *Salmonella typhi*, *Staphylococcus Aureus*, *Klebsiella pneumoniae*, and *Escherichia coli*. There was no methicillin-resistant *Staphylococcus Aureus*, however, 60% of *Streptococcus Pneumonia* was penicillin resistant and there were high rates of cephalosporin resistance in invasive gram-negative pathogens. Common empiric antibiotics prescribed are Benzylpenicillin, Gentamicin, and Ceftriaxone in all wards. However, there are challenges with linking data.

Conclusions: ACORN provides a platform for linking clinical and microbiology data, a critical tool for infection management and appropriate antibiotic prescribing. However, it requires excellent data management to incorporate ACORN into routine clinical use.



O002 / #426

ORAL PRESENTATIONS 01: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL
15-11-2023 14:30 - 15:45

COLONISATION WITH RESISTANT PATHOGENS IN PRETERM NEONATES AT A TERTIARY HOSPITAL IN CAPE TOWN, SOUTH AFRICA

Sheylyn Pillay¹, Angela Dramowski², Adrie Bekker², Ilhaam Abrahams², Aaqilah Fataar², Tonya Esterhuizen³, Andrew Whitelaw¹

¹Stellenbosch University Faculty of Medicine and Health Sciences, Medical Microbiology, Cape Town, South Africa, ²Stellenbosch University, Paediatrics And Child Health, Cape Town, South Africa, ³Stellenbosch University Faculty of Medicine and Health Sciences, Epidemiology And Biostatistics, Cape Town, South Africa

Background: Bacterial sepsis is a leading cause of neonatal mortality, and antimicrobial resistance (AMR) is common. Bacterial sepsis typically follows colonization, from either the mother or hospital environment. The dynamics of colonization with AMR pathogens are poorly understood.

Aims: To describe a) the AMR profiles of Gram-negative bacilli (GNB) colonizing neonates and b) maternal and neonatal risk factors for colonization with GNB.

Methods: Eighty neonates (1000g-1500g; 1-4 days) from a South African tertiary care neonatal unit had skin, rectal and nasal swabs collected to examine the effects of chlorhexidine washing on bacterial colonization. Susceptibility testing (Vitek-2, BioMerieux) was performed on sub-cultured GNB from T1 (day 1) and T2 (day 10 or 16) post-enrolment.

Results: Thirty of the 80 neonates (37.5%) were colonized with GNB at T1. Nine (11.3%) were colonized with 3rd-generation cephalosporin or carbapenem-resistant GNB. At T2, all 68 neonates still enrolled were colonized with one or more GNB. Isolates from 5 neonates were not available for further AMR analysis; of the remaining 63, 38 (60.3%) were colonised with resistant GNB. *Klebsiella* spp was the commonest organism and had the highest resistance rates at T1 and T2. Normal vertex delivery was associated with GNB colonization at T1, compared to caesarean section (OR 6.4; 95% CI 2.2 – 18.8). Premature rupture of membranes, gestational age and birth weight showed no association.

Conclusions: Neonates become rapidly colonized with MDR-GNB. The pathogens isolated are representative of organisms causing invasive infections. Strategies to reduce transmission and colonization require investigation to evaluate the impact on neonatal healthcare-associated infection rates.



O003 / #484

ORAL PRESENTATIONS 01: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL
15-11-2023 14:30 - 15:45

THE EFFECT OF TWICE-WEEKLY CHLORHEXIDINE GLUCONATE WASHING OF HOSPITALIZED NEONATES ON WARD-LEVEL PREVALENCE OF MULTIDRUG-RESISTANT GRAM-NEGATIVE PATHOGEN COLONIZATION—GABORONE, BOTSWANA 2022-2023

Chimwemwe Viola Tembo¹, Jonathan Stryko², Boingotlo Gopolang³, Tlhalefo Ntereke², Kgomotso Kgomanyane⁴, Teresia Gatonye⁵, Kagiso Mochankana⁶, Tshiamo Zankere⁷, Neo Mogotsi⁸, Naledi Mannathoko⁹, Keatholetswe Tapoloso⁸, Carolyn Macgann¹⁰, Britt Nakstad¹¹, Susan Coffin¹², Corrado Canceda², Ebbing Lautenbach¹³

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Background: Multidrug-resistant Gram-negative bacteria (MDR-GNB) are a major cause of sepsis among hospitalized neonates globally. Pathogen decolonization with chlorhexidine gluconate (CHG) (a broad-spectrum antiseptic) is safe in neonates ≥ 1 kg, however its sustained effectiveness against colonization with Gram-negative organisms is unclear.

Aims: This pre-post analysis of data from an ongoing quality improvement initiative measured the effectiveness of twice-weekly CHG washing on ward-level prevalence of colonization with MDR-GNB at a 33-bed neonatal unit at a tertiary referral hospital in Gaborone, Botswana.

Methods: Twice-monthly point prevalence surveys screening for colonization began in October 2022. Perirectal and periumbilical samples from all inpatients were collected using flocked swabs, transported using ESwab™ media, and inoculated within 12 hours onto chromogenic culture media selective and differential for MDR-GNB (CHROMagar™ ESBL). Washing of all neonates >24 hours old and weighing ≥ 1 kg with 2% aqueous CHG was performed by caregivers (mothers) or healthcare workers. Cumulative proportions before and after CHG introduction in February 2023 were compared using Fisher's exact test

Results: Data from 15 surveys over 7 months (7 pre- and 8 post- intervention; n=914 swabs) were analyzed. The prevalence of skin (periumbilical) MDR-GNB colonization was 31% pre-intervention, and 14% post-intervention ($p < 0.01$). Perirectal MDR-GNB colonization prevalence was 62% pre-intervention, 42% post-intervention ($p < 0.01$).

Conclusions: Twice weekly CHG washing resulted in significant reductions in ward-level MDR-GNB skin and perirectal colonization. More research is needed to determine whether increased frequency of CHG bathing would lead to further reductions and to determine whether seasonality and ward crowding may confound these results



O004 / #610

ORAL PRESENTATIONS 01: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL
15-11-2023 14:30 - 15:45

OPPORTUNITIES FOR ANTIMICROBIAL STEWARDSHIP: REAL-WORLD LESSONS FROM MULTI-DISCIPLINARY TEAMS IN SOUTH AFRICAN NEONATAL UNITS

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Background: Hospitalised neonates are vulnerable to infection and have high antimicrobial utilisation rates.

Aims: We implemented the first national neonatal antimicrobial stewardship (neoAMS) intervention using multi-disciplinary teams aiming to reduce antimicrobial use.

Methods: Fourteen neonatal units (7 public, 7 private sector) in South Africa assembled multi-disciplinary teams (neonatologists, microbiologists, pharmacists and nurses) to implement a 20-week AMS intervention in 2022. The teams attended six facilitated online AMS training sessions. Pharmacists conducted weekday antimicrobial prescription reviews providing feedback to the neonatal unit teams. Anonymised data was collected from neonates' medical records as well as AMS intervention data.

Results: During the 20-week intervention, 565 neonates were enrolled (median gestational age 33 [29-37] weeks; median birth weight 1880 [1140-2675] grams). Pharmacists evaluated 700 antimicrobial use episodes; rule-out sepsis (180; 26%) and culture-negative sepsis (138; 20%) were the most frequent diagnoses. Only 50% (116/229) of empiric antimicrobial treatment was concordant with pathogen/s causing culture-confirmed neonatal infections. Pharmacists recommended 437 AMS interventions (0.6/antimicrobial use episode) with antibiotic discontinuation (42%), therapeutic drug monitoring (17%) and dose/dose frequency (15%) recommendations being most frequent. Neonatal clinician AMS recommendation acceptance rates were high (338; 77%). Length of antimicrobial therapy decreased significantly from 9 to 7 days (0.1 day decrease per intervention week; $p=0.001$). Greatest decline in duration of treatment was noted for culture-negative sepsis ($p=0.032$).

Conclusions: Antibiotic discontinuation, therapeutic drug monitoring and dosing recommendations were frequent pharmacist-recommended AMS interventions, with high rates of clinician acceptance. The neoAMS intervention significantly reduced neonatal unit antimicrobial use, particularly for culture-negative sepsis.



O005 / #210

**ORAL PRESENTATIONS 01: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL
15-11-2023 14:30 - 15:45**

ACICLOVIR USE IN INFANTS AND CHILDREN (0-18 YEARS) IN PAEDIATRIC HOSPITALS IN AUSTRALIA AND NEW ZEALAND FOR SUSPECTED HERPES SIMPLEX VIRUS INFECTION

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Background: Non-specific presentations of severe herpes simplex virus (HSV) infections and high risk of adverse outcomes have driven empiric aciclovir use.

Aims: To audit aciclovir prescribing in Australia and New Zealand for suspected HSV infection.

Methods: All children (0-18 years) prescribed intravenous (IV) aciclovir for suspected HSV infection in eight paediatric hospitals in Australia and New Zealand between 1 January 2019 and 31 December 2019 were included. Clinical data were extracted from patient records.

Results: IV aciclovir was prescribed for 1426 suspected cases, of whom 114(8%) subsequently had proven HSV infection; 0.8% severe(9 encephalitis, 3 disseminated) and 7.2%(102) non-severe. Median age of the 1426 suspected cases was 4-months(IQR 0-49, 0-223); 30% being neonates (<28 days), 17% aged 29 days-to-3 months and 53% aged >3-months. Suspected encephalitis (55%) and disseminated disease (29%) were the most common indications for prescribing aciclovir. 88% lacked risk factors and 90% had no potential identifiable source. 57% had CSF obtained, 25% and 13% had >1 surface swab and blood sent for HSV PCR testing respectively, whilst 20% had no HSV investigations. 34% were admitted to an intensive care unit. Median IV aciclovir duration was 1-day(IQR 1-2; 0-81). The median length-of-hospital stay was 4-days(IQR 2-9, 0-307), 92% were well at discharge. Non-HSV infections (47%) and seizure disorders (15%) were the most common discharge diagnoses.

Conclusions: This study suggests frequent unnecessary aciclovir use, with 8% having proven HSV infection; minority severe (0.8%) and 20% not having any HSV investigations. National algorithms are needed to better guide aciclovir use and limit unnecessary treatment.



O006 / #460

ORAL PRESENTATIONS 01: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL
15-11-2023 14:30 - 15:45

TRENDS OF ANTIBIOTIC RESISTANCE IN PAEDIATRIC BACTERAEMIA ISOLATES ACROSS AUSTRALIA, 2013-2021

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Background: Previous comparison of adult and paediatric bacteraemia in Australia suggests fewer antimicrobial resistant organisms in children compared with adults.

Aims: To investigate antimicrobial resistance trends in paediatric bacteraemia isolates between 2013 and 2021

Methods: Distinct bacteraemic episodes caused by Enterobacterales, Staphylococcus aureus, Pseudomonas, Acinetobacter, and Enterococci spp. in patients <18 years from across Australia were analysed. Time trends were assessed in three-year periods (2013-15, 2016-18, 2019-21). Data analysis and MIC interpretation per EUCAST 2022 rules were completed using the AMR R Package (v2.0).

Results: 3,266 Gram-negative, 2,107 S. aureus, and 543 enterococci isolates were reported; 18% of all isolates were from neonate. Resistance in gram-negatives increased to fluoroquinolones (15.7 to 20.8%; p: <0.01) but did not change to gentamicin/tobramycin (8.1% to 10.4%; p: 0.16) and piperacillin-tazobactam (11.6% to 11.5%; p: 0.89). Enterobacterales resistance to third-generation cephalosporins increased (8.5% to 13.1%; p: <0.01). Cefepime/ceftazidime resistance in Pseudomonas spp. remained constant (14.1% to 15.9%, p: 0.53). Methicillin resistant S. aureus (MRSA) remained steady (13.9 to 15.1%; p: 0.69). There were no changes in erythromycin or ciprofloxacin resistance, however clindamycin resistance increased (7.9% to 12.1%; p: 0.01). Resistance was more frequent in MRSA (23.2%, 16.3%, and 14.7% respectively). E. faecalis was more frequently reported (75.1%) than E. faecium (21.0%). Resistance in enterococci to ampicillin significantly increased (8.1% to 20.9%; p: <0.01), but not to vancomycin (3.4% to 5.5%; p: 0.48) or teicoplanin (0.6% to 2.5%; p: 0.19).

Conclusions: There have been specific increases in resistance in bacteraemia in children, highlighting the need for paediatric antimicrobial surveillance.



O007 / #639

ORAL PRESENTATIONS 01: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL
15-11-2023 14:30 - 15:45

STAPHYLOCOCCUS AUREUS NETWORK ADAPTIVE PLATFORM – PAEDIATRICS AND YOUTHS (SNAP-PY): A NOVEL APPROACH TO INCLUDING CHILDREN IN WHOLE OF LIFE INFECTIOUS DISEASES TRIALS.

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Background: Staphylococcus aureus bloodstream (SAB) infection is a major public health problem and globally, fewer than 300 children with SAB have ever been enrolled in a randomized clinical trial (RCT). Consequently, there is minimal RCT evidence to guide SAB treatment in children, with doctors largely relying on experience and subjective opinion. The Staphylococcus aureus Network Adaptive Platform (SNAP) trial is a global trial aiming to answer multiple SAB management questions for patients of all ages (neonates to elderly). Enrolment of children in Australia and New Zealand has commenced, with expansion planned globally including Canada, Israel, and South Africa.

Aims: The SNAP trial aims to improve the treatment for SAB through the different domains within the trial.

Methods: At present there are three active domains within the SNAP trial answering questions about the optimal backbone antibiotic, timing of oral switch, and efficacy of adjunctive clindamycin concurrently. The primary endpoint, day-90 mortality, is fixed across all ages. To inform paediatricians, specific secondary endpoints have been constructed to capture paediatric outcomes.

Results: The SNAP trial is now the largest ever SAB trial in the world with 906 randomised participants and >1000 registry participants (June 2023). The first child was recruited in August 2022 with >100 children and adolescents recruited across the SNAP registry and trial platform.

Conclusions: Inclusion of children in this all-ages, large, multi-site global trial, provides a novel proof of concept for whole of life comparative effectiveness trial in infectious diseases. The innovative SNAP will produce the highest quality evidence for SAB treatment in children.

O008 / #345

**ORAL PRESENTATIONS 02: COMMON AND NEGLECTED TROPICAL INFECTIONS AND
PARASITIC INFECTIONS**
15-11-2023 14:30 - 15:45

**BURDEN OF CHILD MORTALITY FROM MALARIA IN HIGH ENDEMIC AREAS: RESULTS FROM
THE CHAMPS NETWORK USING MINIMALLY INVASIVE TISSUE SAMPLING**

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Background: Malaria remains a significant cause of childhood mortality globally, but accurate endemic-country estimates are lacking due to the low-specificity of tools used to comprehensively investigate causes of death (CoD).

Aims: to investigate the malaria-attributable burden among CHAMPS-enrolled deaths.

Methods: Seven sites participating in the CHAMPS Network collected comprehensive postmortem data from stillbirths and children <5 years of age using minimally invasive tissue sampling (MITS). Underlying, intermediate, and immediate CoD were assigned by a DeCoDe (determining cause of death) panel utilizing sociodemographic, clinical, laboratory (including extensive microbiology, histopathology and malaria testing), and verbal autopsy data.

Results: In the 4 CHAMPS malaria-endemic sites, 2442 deaths had a MITS conducted and a CoD determined by the DeCoDe panels. No malaria-attributable deaths were documented among the 1669 stillbirths or neonatal deaths. Malaria was relevant in the causal pathway of 237/773 (30.7%) of the children aged 1-59 months. Compared to non-malaria related deaths, malaria-related deaths were older ($p < 0.001$), with 75.7% occurring among those aged 12-59 months. Of all malaria deaths, 24.9% occurred in the community, and 19.4% were medically unattended. Malaria was the sole infecting pathogen in 164 (69.2%) of the malaria-related deaths, whereas bacterial and viral co-infections were identified in the causal pathway in 24.5% and 13.1%, respectively. Malnutrition (WAZ < -3SD) was present in 30.5% of malaria deaths. Nearly all (98.7%) malaria-related deaths were considered preventable.

Conclusions: Malaria remains a significant cause of childhood mortality, accounting for 31% of post-neonatal deaths in CHAMPS malaria-endemic sites. The majority of malaria-related deaths remain preventable with readily available malaria control measures.



O009 / #392

ORAL PRESENTATIONS 02: COMMON AND NEGLECTED TROPICAL INFECTIONS AND PARASITIC INFECTIONS

15-11-2023 14:30 - 15:45

PAEDIATRIC GENITAL SYMPTOMS AND SCHISTOSOMA HAEMATOBIIUM

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Background: Paediatric genital discharge and pain warrants suspicion of sexual abuse. In adults, vaginal discharge has been found to be associated with schistosomiasis, a neglected disease, prevalent in Africa. Health care professionals are currently not trained in Female Genital Schistosomiasis in adults and children.

Aims: We sought to explore if schistosomiasis should be included in paediatric management protocols as a differential diagnosis for genital symptoms.

Methods: South African management protocols for primary health care and hospitals, including management of paediatric sexual abuse were reviewed for syndromic management advice on genital symptoms in children. Two cross-sectional studies were carried out in schistosomiasis endemic areas in KwaZulu-Natal, South Africa (2009-2013). Girls aged 10-12 years (n=1057) and adolescents 16-17 years (n=549) were tested for urinary schistosomiasis and interviewed on genital ulcers, bloody discharge, malodourous discharge, and genital itch.

Results: Schistosomiasis was not mentioned as a potential cause of genital symptoms in any of the paediatric management protocols. Urinary *Schistosoma haematobium* prevalence was 32 % for girls and 22% for adolescents. Genital symptoms were reported by 30 % of the girls. After excluding adolescents who had one or more sexually transmitted disease, the prevalence of genital symptoms was 36%. In girls, urinary schistosomiasis was highly associated with genital symptoms ($p < 0.001$). Genital symptoms were significantly associated with water contact ($p < 0.001$).

Conclusions: *Schistosoma haematobium* should be considered as differential diagnosis for genital symptoms in children and should be included in the paediatric management protocols in schistosomiasis endemic countries.

O010 / #666

ORAL PRESENTATIONS 02: COMMON AND NEGLECTED TROPICAL INFECTIONS AND PARASITIC INFECTIONS

15-11-2023 14:30 - 15:45

CHILDHOOD CUTANEOUS LEISHMANIASIS IN TUNISIA: A STUDY OF 102 CASES

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Background: Cutaneous leishmaniasis is a widespread anthroponosis which represents 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 epidemio-clinical 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 35 years (1986-2020). All medical reports of cutaneous leishmaniasis were reviewed and patients included were younger than 16 years old. A total of 102 children were included with 126 lesions of cutaneous leishmaniasis.

Results: A total of 102 children were included with 106 lesions. The mean age was 8 years ranging from 5 months to 16 years old. There was a female predominance. All our patients lived or had stayed in an endemic area. The face was the most affected site (82%). Mucosal involvement was observed in 11 children and affected mainly the lower lip. Clinical diagnosis was confirmed by the parasitologic smear or the histopathologic examination in 92% and with PCR in 8%. Sixty two patients were treated with intralesional meglumine antimoniate, 55 treated with cryotherapy and 32 patients were treated with intramuscular meglumine antimoniate with a favorable outcome.

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. The standard of therapy remains intralesional meglumine antimoniate.



O011 / #206

**ORAL PRESENTATIONS 02: COMMON AND NEGLECTED TROPICAL INFECTIONS AND
PARASITIC INFECTIONS**

15-11-2023 14:30 - 15:45

**ANTI-DENGUE ACTIVITY OF CHAVICOL COMPOUND AGAINST DENGUE VECTOR, Aedes
Aegypti AND DENGUE VIRUS, NS5 METHYLTRANSFERASE**

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Background: Insect-borne diseases continue to be a major source of sickness and death worldwide. Resistance to chemical pesticides and their risks have been regarded as a setback in mosquito vector control. Due to the presence of various phytochemical compounds in plant species, botanicals can manage and prevent vector (insect) transmitted illnesses by killing insect eggs and larvae.

Aims: The aim of this study was to evaluate the mosquitocidal potential and antiviral effect of chavicol compound against *Aedes aegypti* and dengue viral protein NS5 methyltransferase were assessed by both in-vitro and in-silico approach.

Methods: Larval and adult mortality was recorded after 24 h of exposure. Our findings showed that the chavicol compound has higher larvicidal activity (100 percent at 10 µg/mL) and adult mortality occurred 90 percent at 10 µg/mL of chavicol treatment. Chavicol have good antiviral property against dengue virus DENV2. Moreover, we perform the chavicol compound were docked against the receptor protein NS5 methyltransferase, the mol dock score was -5.08 (kcal/mol), respectively.

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Conclusions: Chavicol compound proved strong anti-dengue and mosquitocidal abilities that were effective against both the NS5 virus and dengue vector.

O012 / #396

**ORAL PRESENTATIONS 02: COMMON AND NEGLECTED TROPICAL INFECTIONS AND
PARASITIC INFECTIONS**
15-11-2023 14:30 - 15:45

**SIGNIFICANT UPREGULATION OF ANGIOPOIETIN-LIKE 4 IN A MURINE MODEL OF DENGUE AND
IN BLOOD SAMPLES FROM DENGUE PATIENTS**

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Background: Our previous studies revealed that angiopoietin-like 4 is a vascular leakage protein that is significantly upregulated in murine models of influenza and pneumococcal pneumonia, and in specimens from pneumonia patients.

Aims: To explore the involvement of ANGPTL4 in the context of dengue infection in which enhanced vascular permeability is a critical factor that contributes to disease severity.

Methods: We employed mice with type I interferon receptor deficiency mimicking a dengue virus (DENV) secondary infection, since these animals display characteristics of vascular leakage (PLoS NTD 2010; 4:e672). Mice born to DENV1-immune mothers were infected with D2Y98P strain of DENV. Post-infection, their blood samples were collected, and their organs were harvested for histopathology, immunofluorescence, and quantitative RT-PCR analyses. Uninfected and matched mice served as negative controls. An ELISA kit was employed to measure ANGPTL4 protein levels in blood samples from 50 severe dengue patients versus ~300 healthy control subjects.

Results: In the murine model, significantly upregulated levels of ANGPTL4 mRNA and protein expression were observed in mouse sera, lung, liver, kidney, spleen and small intestine samples, which correlated with vascular leakage from these organs. In human blood samples, the mean ANGPTL4 concentration in dengue patients was at least two times higher than healthy controls. From the statistical tests (parametric or non-parametric), the P-value was highly significant between the two groups of subjects.

Conclusions: Angiopoietin-like 4 is significantly upregulated in a murine model of dengue, and in blood specimens from dengue patients. This protein can potentially serve as a clinical marker of vascular leakage in dengue patients.



O013 / #843

**ORAL PRESENTATIONS 02: COMMON AND NEGLECTED TROPICAL INFECTIONS AND
PARASITIC INFECTIONS**
15-11-2023 14:30 - 15:45

**BARTONELLOSIS (CAT-SCRATCH DISEASE) IN MOSCOW: IMPORTANCE OF A PROPER
DIAGNOSIS OF AN UNDERAPPRECIATED INFECTION**

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Background: Among at least 8 known species of Bartonella with shown clinical significance, Bartonella
henselae, a causative agent of the cat-scratch disease (CSD), is the most common one transmitted by
cats and cat's fleas. Bartonellae are exposed to evolutionary changes, and new species pathogenic for
humans are being discovered (McCormic et al., 2023).

Aims: The aim of the study was the proving of the presence of the cat-scratch disease in Moscow.

Methods: Clinical methods as well as PCR testing were used in the study

Results: DNA of Bartonella spp. was detected in the blood of four patients (a female, aged 2 years and 1
month; a female, aged 1 year and 8 months; a male, aged 7 year, and a male, aged 15 year) with fever of
unknown origin admitted in Bashlyayava Children's City Clinical Hospital (Moscow) in summer 2023. The
analysis was performed using the developed PCR test system described previously (Maggi et al., 2020).
Besides fever (up to 39,7 °C), some patients had lymphadenopathy, bacillary angiomatosis, bilobar
multifocal liver lesion, spleen and kidney damage, hepatosplenomegaly, and ocular lesions.

Conclusions: Taking into account (i) the severity of the cat-scratch disease, (ii) possible severe
complications in the absence of adequate etiologic treatment, (iii) presence of atypical symptoms, and
(iv) a high prevalence of Bartonella in domestic cats (up to 23,1%) (Osikovisz et al., 2023), routine
screening for Bartonella is necessary for fevers of unknown origin, especially in children.

O014 / #512

**ORAL PRESENTATIONS 02: COMMON AND NEGLECTED TROPICAL INFECTIONS AND
PARASITIC INFECTIONS**
15-11-2023 14:30 - 15:45

**VARIABILITY OF INTESTINAL PARASITE PRESENCE IN STOOL SAMPLES SENT TO THE
PARASITOLOGY LABORATORY OF A UNIVERSITY HOSPITAL DURING A FORTY-YEAR PERIOD**

Nihal Dogan

Eskisehir Osmangazi University, Microbiology/parasitology, Eskisehir, Turkey

Background: Intestinal parasites are an important public health problem that can lead to serious consequences in children all over the world. They are more prevalent in areas with poor infrastructure and low economic conditions due to faecal-oral transmission.

Aims: We reviewed the distribution and yearly variability of intestinal parasites in children admitted to our hospital in our province where sociocultural and economic changes are experienced.

Methods: In a 40-year period, the data of paediatric patients were retrospectively reviewed and compared with similar studies conducted in rural areas of our province. In addition, the difference caused by the infrastructure and clean drinking water supply in the 90's was analysed.

Results: The first laboratory data of our faculty hospital established in the eighties belong to the years 1983-1993. This was the period when there was no sewerage system in our city and the prevalence of parasites in children was reported as 36%. The most common parasite was *Giardia lamblia* and 32% of the cases were protozoa. Helminths accounted for 3% and 1 % micro parasites were identified. The rates decreased to 3.8% in 1995-2008 with the provision of infrastructure and clean drinking water. *Giardia* and *Blastocystis* were the most common parasites. Soil-borne helminths were found to be 02%.

Conclusions: No soil-borne parasites were found in the last decade. *Blastocystis*, *Endolimax* and apathogen protozoa continue to be seen in children. The majority of the cases defined as 11% between 2000-2023 belonged to refugee children.

O015 / #439

ORAL PRESENTATIONS 03: BACTERIAL INFECTIONS
15-11-2023 14:30 - 15:45

PROSPECTIVE SURVEY OF ACUTE BACTERIAL OSTEOARTICULAR INFECTIONS: A TIME-SERIES ANALYSIS

Daniel Jarovsky^{1,2}, Daniela Rancan³, Camila Almeida Farias Helfenstein¹, Camila Ohomoto De Morais¹, Wilson Lino Junior³, Flávia Almeida^{1,2}, Marco Safadi^{1,2}

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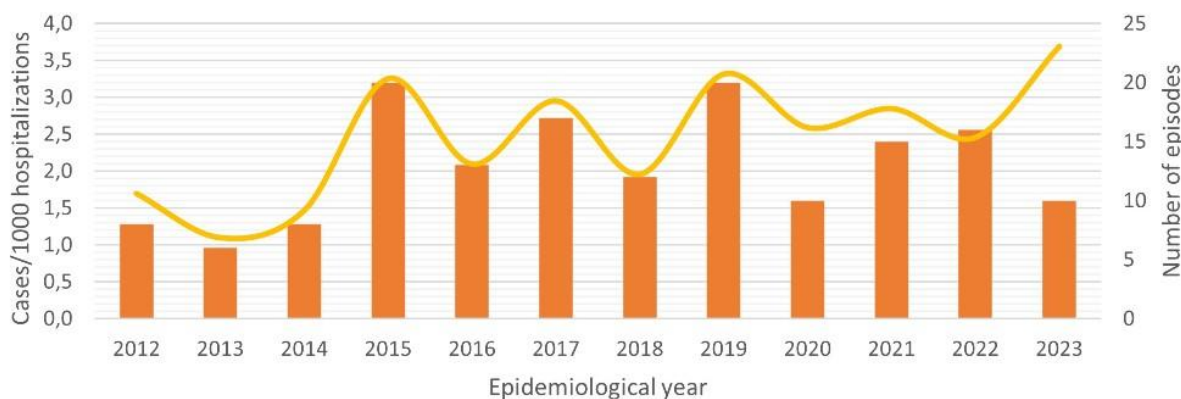
Background: Pediatric osteoarticular infections (OAI) are potentially severe and require early diagnosis and treatment. Understanding the epidemiology of OAI could improve the empirical management and eventually reduce the duration of antibacterial treatment.

Aims: To describe the trends of OAI in hospitalized children over the last 11 years in one of the largest pediatric private hospitals in Brazil.

Methods: In this hospital-based study, from January 1st, 2001, through May 31st, 2023 all cases of OAI in patients under 18 yrs. were evaluated. Demographic, clinical, and microbiological characteristics and incidence rates per 1000 general hospitalizations were analyzed.

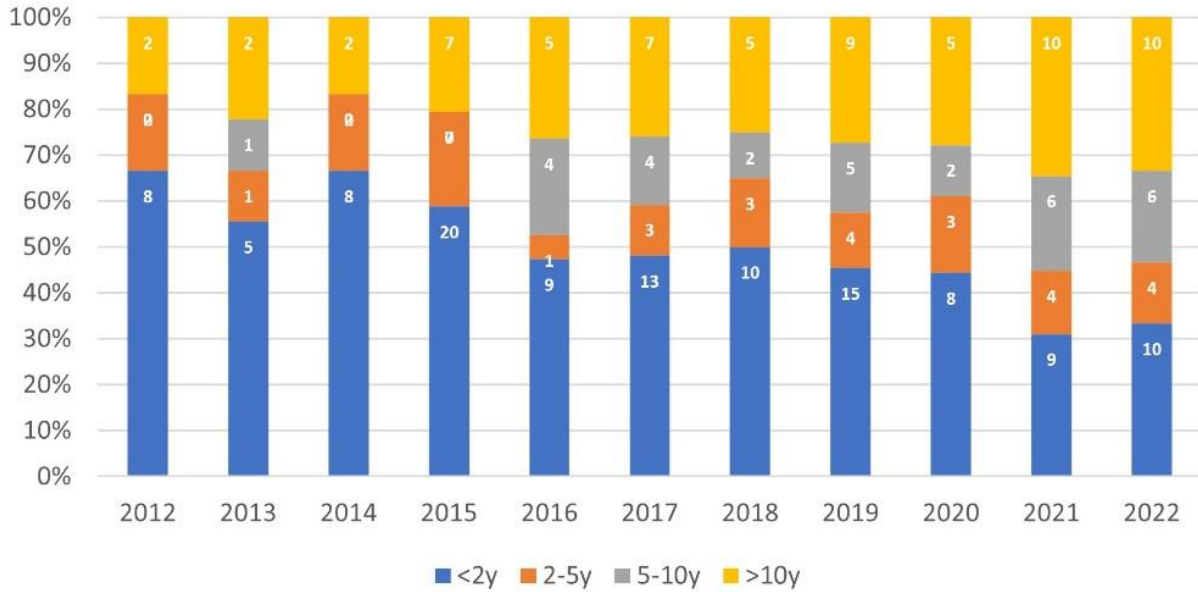
Results: A cohort of 160 patients with OAI was analyzed: 95% were healthy, 58.8% were male and the median age was 40 months. Ninety-four (59%) had osteomyelitis (OM), 23 (14%) septic arthritis (SA), 21 (13%) both OM+SA, 16 (10%) spondylodiscitis, and 6 (4%) sacroiliitis. The median duration of hospitalization was 14 days. Incidence rates increased from 2011 to 2019 (1.2 to 3.3, average 2.1), plateaued during the initial COVID-19 pandemic (average 2.7) but sharply increased occurred during the last pandemic years (average 3.1). Culture from tissue or blood was performed in 96.7% of cases (n=155), in which 73% (n=113) no causative organism was identified. Among positive cultures (n=42) MSSA was the leading pathogen (n=29), followed by MRSA (n=3) and Salmonella sp (n=2).

Incidence of osteoarticular infections per 1000 general hospitalizations at Sabará Children's Hospital, 2012-2023





Annual distribution of osteoarticular infections per age group at Sabará Children's Hospital, 2012-2023



Conclusions: POAIs are associated with substantial morbidity in children, with *S. aureus* being the major detected pathogen.



O016 / #440

ORAL PRESENTATIONS 03: BACTERIAL INFECTIONS
15-11-2023 14:30 - 15:45

A PANORAMIC VIEW OF INVASIVE PNEUMOCOCCAL DISEASE IN A SINGLE BRAZILIAN CENTER: TWO DECADES SURVEILLANCE & THE EFFECT OF VACCINATION AND COVID-19 ON PEDIATRIC CASES

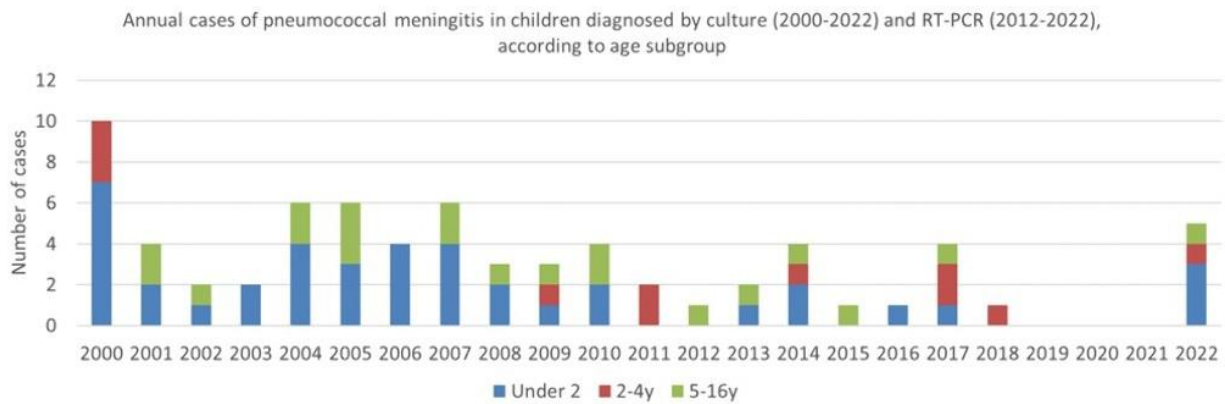
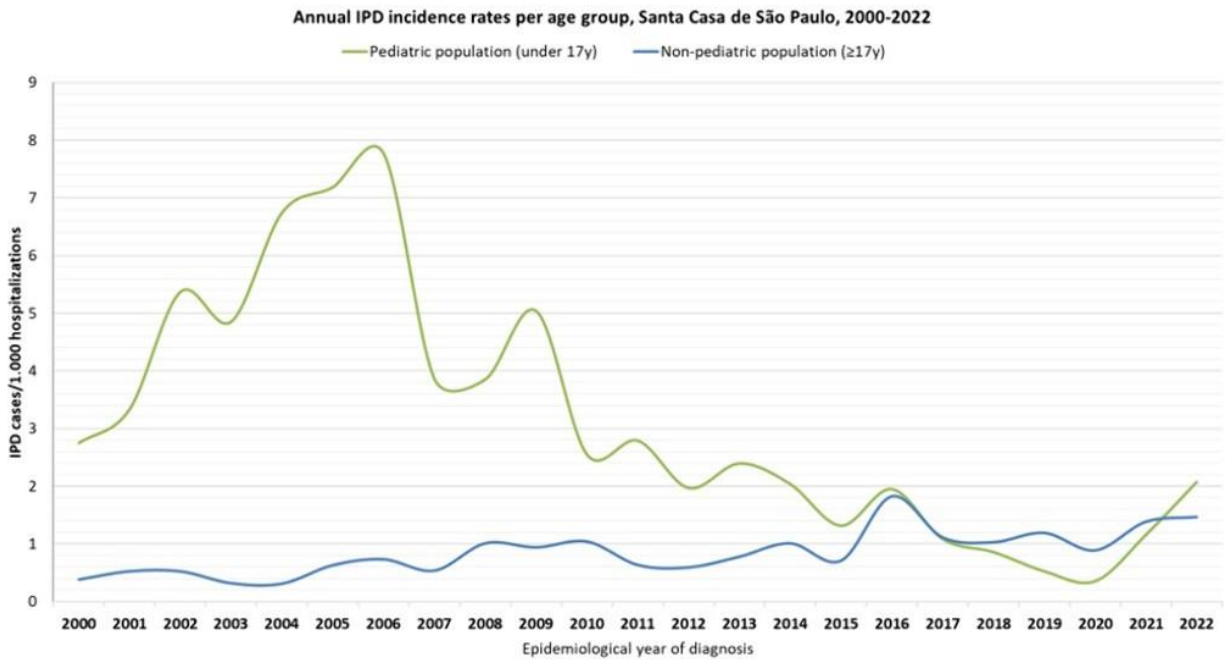
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Background: Pneumococcal conjugate vaccine (PCV10) was introduced in the Brazilian National Vaccination Program in 2010 to all children under 2 years.

Aims: To describe the effect of PCV10 vaccination and the COVID-19 pandemic on IPD over the last 22 years in a single tertiary center in Brazil.

Methods: This hospital-based study evaluated all IPD cases (*S. pneumoniae* isolated in sterile fluids) from January 1st, 2000, through December 31st, 2022. Incidence rates per 1000 hospitalizations were analyzed according to age group and pre-vaccination period (2000-2009) versus post-vaccination period (2011-2022). RT-PCR was standardized as a diagnostic tool for meningitis in 2012.

Results: A total of 736 IPD episodes were evaluated. Incidence rates dropped substantially among children after PCV10 until 2020 (2.79 to 0.4, average 1.53), but a sharp increase occurred during the 2nd and 3rd pandemic years (1.2 and 2.1, respectively). Seven years after PCV10 introduction, adult IPD exceeded the pediatric, but rates trends drastically and unusually reverted in 2022. Since PCV10, 18.1% (62/342) of IPD episodes occurred in children, while 64.5% (231/358) of cases during the pre-vaccine era were pediatric. Among 170 meningitis cases, 21 occurred in children during the post-vaccine period – numbers in 2022 reached a 15-years record following COVID-19, exceptionally and exceedingly high among children under 2. Detection rates were significantly increased using RT-PCR in CSF.



Conclusions: IPD incidence shifted towards an evident adult predominance after using PCV10, but rates drastically reverted in 2022. Pneumococcal meningitis in children unusually increased after COVID-19, with molecular assay playing a substantial role in diagnosis.



O017 / #400

ORAL PRESENTATIONS 03: BACTERIAL INFECTIONS
15-11-2023 14:30 - 15:45

**CLINICAL AND ECONOMIC BURDEN OF PNEUMOCOCCAL DISEASE DUE TO PEDIATRIC
PNEUMOCOCCAL CONJUGATE VACCINE SEROTYPES IN TAIWAN CHILDREN**

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Background: In Taiwan, the 13-valent pneumococcal conjugate vaccine (PCV13) has been introduced since 2015 and has markedly reduced pneumococcal disease. Higher-valent vaccines (PCV15 and PCV20) might be considered in the future.

Aims: To estimate clinical and economic burden of disease associated with PCV serotypes in children aged < 5 years and adults aged ≥65 years.

Methods: An Excel-based model was developed to estimate the annual total cases, deaths, and direct medical costs due to pneumococcal disease (PD) associated with serotypes covered by PCV13, PCV15 and PCV20. Epidemiology and cost data were derived from publicly available literature or sources. All costs are reported in 2023 New Taiwan Dollars (NTD).

Results: Serotypes covered by PCV20 were estimated to attribute to the greatest burden compared to serotypes covered by other vaccines. The total annual PCV20-type burden was estimated to be 7,449 cases, 1 death, and \$15 million NTD in direct costs in children, and 16,511 cases, 1,931 deaths, and \$445 million NTD in older adults, respectively (Table 1). Estimated burdens associated with PCV20 in children and old adults were 2.7 and 1.2 times higher than burdens associated with PCV13, respectively. The incremental clinical burden covered by PCV15 vs. PCV13 was almost negligible (none in children and 1.02 times in old

adults).

Table 1: Results for the annual clinical and economic burden of pneumococcal disease burden associated with PCV serotypes in children under 5 years of age and adults 65 years and older.						
Age group	BOD in Age 0-5 Years			BOD in Age 65 - 99 years		
Population size	1,165,730			4,080,892		
Serotype distribution	PCV13	PCV15	PCV20	PCV13	PCV15	PCV20
	10.90%	10.9%	29.70%	42.40%	43.6%	51.40%
<i>Cases</i>						
IPD	2	2	6	45	46	54
Inpatient CAP	162	162	441	5,647	5,807	6,846
Outpatient CAP	620	620	1,691	7,928	8,152	9,610
AOM	1,949	1,949	5,311	-	-	-
Total PD cases	2,734	2,734	7,449	13,620	14,005	16,511
<i>Deaths</i>						
IPD	0	0	0	6	6	7
Inpatient CAP	0	0	0	1,587	1,632	1,924
Total Death	0	0	1	1,593	1,638	1,931
<i>Direct Medical costs (in Million NTD)</i>						
IPD	\$ 0.23	\$ 0.23	\$ 0.64	\$ 6.91	\$ 7.11	\$ 8.38
Inpatient CAP	\$ 3.41	\$ 3.41	\$ 9.29	\$ 351.94	\$ 361.90	\$ 426.64
Outpatient CAP	\$ 0.46	\$ 0.46	\$ 1.26	\$ 8.05	\$ 8.28	\$ 9.76
AOM	\$ 1.35	\$ 1.35	\$ 3.67	-	-	-
Total direct costs	NT\$5.45	NT\$5.45	NT\$14.86	NT\$366.90	NT\$377.28	NT\$444.78
Abbreviations: PCV = pneumococcal conjugate vaccine; BOD = burden of disease; IPD = invasive pneumococcal disease; CAP = community-acquired pneumonia; AOM = acute otitis media; PD = pneumococcal disease; NTD = New Taiwan Dollars.						
* Notes: All costs were inflated to 2023 NTD.						

Conclusions: PCV20 serotypes could contribute to sizable additional clinical and economic burdens in Taiwan, whereas the burdens associated with PCV13 and PCV15 serotypes are similar. When PCV20 is available, implementing a PCV20 NIP could lead to a greater disease impact in Taiwan.

O018 / #554

ORAL PRESENTATIONS 03: BACTERIAL INFECTIONS
15-11-2023 14:30 - 15:45

CLINICAL CHARACTERISTICS ASSOCIATED WITH DEATH IN NEONATES WITH BLOOD STREAM INFECTIONS AT SIX LOWER-TIER HOSPITALS IN SOUTH AFRICA, 2019-2020.

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Background: Sustainable Development Goal 3 is to reduce neonatal mortality, particularly in Africa. Bloodstream infections (BSI) are among the top three causes of neonatal deaths, prematurity being the biggest underlying cause and infections the commonest immediate cause of death.

Aims: To determine clinical characteristics associated with death among neonates admitted with BSI in lower-tier hospitals, South Africa.

Methods: From October 2019 through September 2020, we conducted a cross-sectional study enrolling neonates (<28 days) with laboratory-confirmed BSI at six lower-tier hospitals in South Africa. Factors associated with death were analysed using multivariate logistic regression models.

Results: From 907 episodes of neonatal BSI, 31% (277/907) were classified as EOS and 69% (630/907) as hospital-associated infections (days 3-27). Median age of mothers was 27 years (IQR 22-32) and maternal HIV prevalence was 34%. Neonatal median birth weight was 1700g (IQR 1170-2700) and 70% were preterm (472/676, 231 with unknown gestation/outcome). 24% (163/676) of all neonates died (preterm (31%, 146/472) vs term (8.3%, 17/204)). Increased mortality was associated with: preterm birth (OR 4.7, 95% CI 2.8-7.8), fed only with intravenous clear fluids (OR 6.1, CI 3.8-9.8), apnoea (OR 3.6, CI 2.2-5.8), required respiratory support (OR 3.1, CI 2.2-4.4) and mothers receiving no antenatal care (OR 2.6, 95% CI 1.5-4.3).

Conclusions: Preterm neonates were at highest risk for death. Other factors associated with death were apnoea, requiring respiratory support and fed with intravenous clear fluids only. To lower neonatal mortality we need to focus on preventing preterm births and prevent infections in preterm neonates requiring prolonged hospital stays.



O019 / #364

ORAL PRESENTATIONS 03: BACTERIAL INFECTIONS
15-11-2023 14:30 - 15:45

ALARMING BURDEN OF MULTIDRUG-RESISTANT INFECTIONS CAUSING NEONATAL SEPSIS IN SOUTHEAST ASIA AND THE PACIFIC.

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Background: High levels of antimicrobial resistance (AMR) are propagating deaths due to neonatal sepsis globally. This is a particular problem in Southeast Asia, where healthcare resources are constrained and access to newer agents is limited. Despite this, there remains scant granular data on the burden of AMR in the region.

Aims: We evaluated the epidemiology of neonatal sepsis across five under-represented countries within Southeast Asia and the Pacific.

Methods: Within the NeoSEAP study, we conducted a two-year analysis of neonatal blood-culture isolates across 10 clinical sites, accompanied by a survey on infection, prevention and control (IPC) resources.

Results: 12,274 cultures were collected for suspected neonatal sepsis, of which 1,715 were positive, and 1,638 (13%) yielded clinically-significant pathogens. Most culture-positive infections were due to gram-negative pathogens (86.8%, 1421/1638), with *Klebsiella* spp. most frequently isolated (24%, n=401) followed by *Acinetobacter* spp. (16%, n=260). The prevalence of carbapenem-resistance was 70% in *Klebsiella* spp. and 84% in *Acinetobacter* spp. isolates. Among gram-positive bacteria, *S. aureus* was most common (2%, n=35) of which 66% of tested isolates were methicillin resistant. *Candida* spp. accounted for 7.5% of neonatal sepsis pathogens, with 'critically important' Fungal Priority Pathogen species predominating. Nursing ratios were limited, likely contributing to the burden of hospital-acquired infections; yet high uptake of kangaroo mother care tended to be found in sites with less MDR infections.

Conclusions: The burden of MDR neonatal infections in Southeast Asia is alarmingly high. These data reveal the urgent need for new antibiotic regimens to treat neonatal sepsis globally.



O020 / #551

ORAL PRESENTATIONS 03: BACTERIAL INFECTIONS
15-11-2023 14:30 - 15:45

**MICROBIAL ETIOLOGY OF NEONATAL DEATHS IN SUB-SAHARAN AFRICA AND SOUTH ASIA:
AN OBSERVATIONAL ANALYSIS FROM CHILD HEALTH AND MORTALITY PREVENTION
SURVEILLANCE (CHAMPS)**

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Background: The Child Health and Mortality Prevention Surveillance (CHAMPS) Network conducts mortality surveillance in children using advanced post-mortem techniques, providing a unique opportunity to investigate in-depth causes of death (COD) in children in Africa and South Asia.

Aims: To decipher the microbial etiology of neonatal deaths in sub-Saharan Africa and South Asia children enrolled in CHAMPS

Methods: CHAMPS collects comprehensive data on <5 years deaths in seven countries using minimally invasive tissue sampling (MITS), comprehensive pathogen screening using conventional and molecular methods, clinical record abstraction, and verbal autopsy. Immediate, underlying, and comorbid COD are determined by a panel of multidisciplinary specialists using ICD-10 codes, after reviewing all available data. All cases enrolled from January 2017 to May 2021 with completed were included

Results: 45% (531/1171) of neonatal deaths were attributed to infectious etiologies, and 65% of deaths occurred within the first week of life. Sepsis (61.9%), and pneumonia (23.4%) were the leading syndromes. *Klebsiella pneumoniae* (39.5%), *Acinetobacter baumannii* (33.0%), *Escherichia coli* (12.2%), *Streptococcus agalactiae* (8.3%) and *Staphylococcus aureus* (5.5%) were the leading pathogens of sepsis. Almost half (46%) of the deaths were attributed to polymicrobial infections (2-5 agents). One-fifth of the neonatal deaths in the first 24h of life were due to *K. pneumoniae* infection and high frequency of *A. baumannii* infections were observed for hospital-acquired infections

Conclusions: Gram-negative bacteria are the major infectious agents of concern for neonatal mortality. Understanding the source of these infections in the early days of life and appropriate preventive and therapeutic measures will reduce neonatal death in low- and middle-income countries.



O021 / #367

ORAL PRESENTATIONS 03: BACTERIAL INFECTIONS
15-11-2023 14:30 - 15:45

**PREVALENCE OF MULTIDRUG-RESISTANT KLEBSIELLA PNEUMONIAE IN PEDIATRIC PATIENTS
IN INDIA: A WHOLE-GENOME SEQUENCING STUDY**

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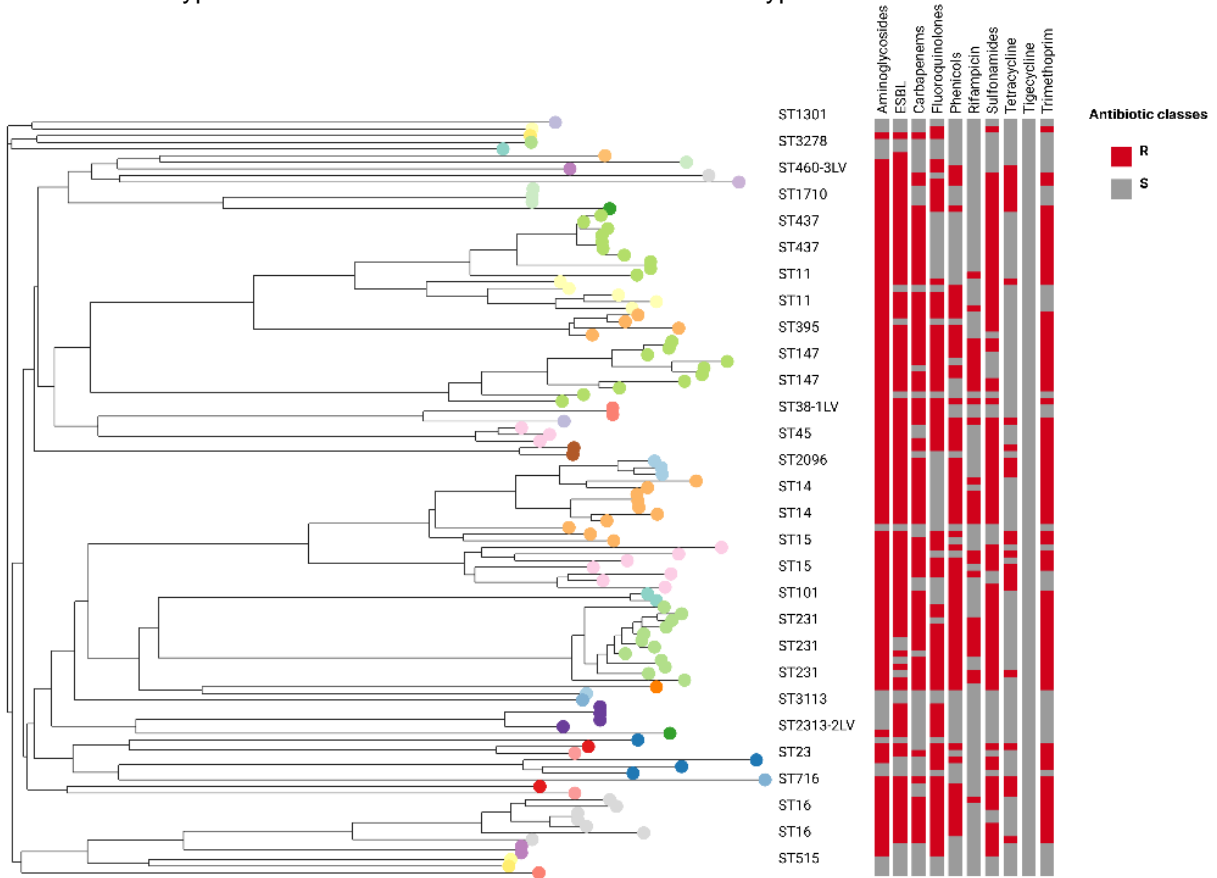
Background: The rapid development and global spread of multidrug-resistant *Klebsiella pneumoniae* (K. pneumoniae) as a major cause of nosocomial infections is remarkable. K. pneumoniae is a common cause of nosocomial infections, including pneumonia, septicemia, and urinary tract infections. It is estimated to account for 3 to 8% of all nosocomial bacterial infections.

Aims: To study the genetic diversity, antibiotic resistance patterns, and hypervirulent markers of *Klebsiella pneumoniae* isolates from the Indian pediatric population.

Methods: A retrospective study was conducted with a total of 114 isolates collected across India from 23 different hospitals from 2017 to 2021. The isolates were characterised by whole-genome sequencing and data analysis was carried out using the Kleborate tool.

Results: In a sample of 114 K. pneumoniae isolates from children, the most common ST variants were ST231, ST14, ST147, and ST437. Bacteremia was the most common infection, accounting for 40% of cases. 60% of the isolates were pan-drug-resistant and 65% were resistant to carbapenems. Extended Spectrum Beta-lactamase genes blaCTXM-15 & blaSHV were seen in 80% of the isolates. The

hypervirulent serotype KL2 was observed in 20 of the isolates with hypervirulence factor aerobactin.



Conclusions: The study found that a high percentage of *K. pneumoniae* isolates from Indian children were resistant to multiple antibiotics. This makes it difficult to treat infections caused by these bacteria. The study also found that a high percentage of the isolates had hypervirulent markers, which makes them more likely to cause severe disease.



O022 / #224

ORAL PRESENTATIONS 04: GLOBAL CHILD HEALTH
15-11-2023 14:30 - 15:45

WHY DO CAREGIVERS REFUSE OXYGEN TREATMENT FOR ACUTELY ILL CHILDREN IN NIGERIA? A QUALITATIVE EXPLORATORY STUDY

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Background: Prompt oxygen therapy can reduce mortality in children in clinical settings by up to 50%, yet access remains poor in low- and middle-income countries. The COVID-19 pandemic has led to increased investment in oxygen systems to increase oxygen availability, but it is important to also focus on ensuring acceptability amongst communities.

Aims: We aimed to explore motivations for adherence and non-adherence to recommended oxygen treatment among caregivers of acutely ill children in Nigeria to inform the development of context-specific interventions

Methods: We conducted in-depth interviews with caregivers (Jigawa State=12; Lagos State=12), health care providers (Jigawa=7; Lagos=6) and focus group discussions (FGDs) with community members (Jigawa=3; Lagos=4). Interviews were audio recorded, transcribed verbatim and analysed using reflexive thematic analysis.

Results: We identified three overarching themes: incoherence and perceived overbearing of medical oxygen, inapparent mediators and reactive emotional lability. In Jigawa and Lagos, caregivers and community members had existing assumptions of medical oxygen: symbolic perceptions as “near death state”, and life restorer; medical perceptions as a “breathing aid”, “saviour” and “gas of life”. Oxygen prescription was associated with fear and hopelessness about the child’s survival. Trust in healthcare, context of care, perceived severity of child’s clinical condition mediated caregiver’s willingness to accept oxygen treatment. In Lagos, caregivers perceived oxygen as a “money gulping” treatment, and the anticipated financial burden of medical oxygen influenced their decision.

Conclusions: To improve caregivers’ acceptance of medical oxygen treatment for sick children, we need to address the negative normative descriptions of medical oxygen by caregivers and community members and ensure affordability.



O023 / #413

ORAL PRESENTATIONS 04: GLOBAL CHILD HEALTH
15-11-2023 14:30 - 15:45

ROLE OF CYTOMEGALOVIRUS IN STILLBIRTHS AND UNDER-5 CHILDHOOD DEATHS IN LOW AND MIDDLE-INCOME COUNTRIES ASCERTAINED THROUGH USING POST-MORTEM MINIMAL INVASIVE TISSUE SAMPLING

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Background: Cytomegalovirus (CMV) is an important cause of death in immunocompromised individuals, but few data describe the CMV burden among stillbirths and childhood deaths in low and middle-income countries (LMICs).

Aims: To describe the attribution of CMV in the causal pathway to stillbirths and deaths in children <5 years of age between December 2016 and July 2022 evaluated through Child Health and Mortality Prevention Surveillance (CHAMPS).

Methods: CHAMPS methods include diagnostic investigation of stillbirths and decedents <5 years of age in seven LMICs. A determination of cause of death (DeCoDe) panel at each site assigns a causal pathway for each death. Data sources include verbal autopsy, medical records, histopathology from organ tissues, and molecular diagnostics (including identification of CMV) on samples obtained using minimal invasive tissue sampling (MITS).

Results: We evaluated 4197 deaths, with 717 (17.1%) and 127 (3.0%) having CMV-infection and disease, respectively. CMV-disease was assessed to be in the causal pathway for 1.0% of stillbirths or decedents <15 days and in 5.8%, 6.2% and 1.8% of deaths among children 15-90 days, 91 to 365 days and >12-59 months, respectively. Multivariable logistic regression analysis showed that, compared with deaths not attributed to CMV, CMV associated deaths were more likely to occur in conjunction with HIV-infection (aOR: 22.5; 95%CI: 10.7-49.0), pneumonia (aOR: 2.2; 95%CI: 1.3-3.7) or malnutrition (aOR: 2.7; 95%CI: 1.2-5.7) being in the causal pathway.

Conclusions: CMV-disease is an important contributor to child deaths, particularly in infants, and is independently associated with underlying HIV-infection and malnutrition, conditions that could be targeted for intervention.



O024 / #299

ORAL PRESENTATIONS 04: GLOBAL CHILD HEALTH
15-11-2023 14:30 - 15:45

LIFE-THREATENING RSV INFECTION AMONG YOUNG CHILDREN ADMITTED TO THE INTENSIVE CARE: A PROSPECTIVE OBSERVATIONAL STUDY IN 10 GAVI-ELIGIBLE COUNTRIES

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Background: Respiratory syncytial virus (RSV) is the leading cause of lower respiratory tract infection and mortality in young children globally. To obtain access to RSV interventions, low- and lower-middle income countries (LMICs) depend on support from Gavi, the Vaccine Alliance. Country-specific individual patient data is required to increase awareness and to estimate potential vaccine impact.

Aims: The RSV GOLD III - ICU Network study aims to describe clinical, demographic and socioeconomic characteristics of children admitted to the pediatric intensive care unit (PICU) with life-threatening RSV infection in 10 LMICs. Here we present the interim results of this prospective observational study.

Methods: Children younger than 2 years of age with respiratory symptoms fulfilling the World Health Organization "extended severe acute respiratory infection (SARI)" case definition are tested for RSV using a molecular point-of-care diagnostic device during 2 local respiratory seasons. Patient characteristics are collected through a questionnaire.

Results: Between April 2021 – May 2023, a total of 1749 children have been tested at 10 study sites (Bolivia, Cameroon, The Gambia, Ghana, Haiti, Mozambique, Nepal, Nigeria, Sudan, Tanzania). The RSV-positivity rate was 32%. Median age at testing was 3 months. Median length of stay was 7 days. In total, 2% of parents had heard about RSV before. RSV-related mortality was 4%.

Conclusions: RSV is associated with one third of respiratory-related PICU admissions in young children in LMICs. We expect that maternal vaccination and extended half-life monoclonal antibodies will have a major impact in preventing life-threatening RSV infection in LMICs.



O025 / #680

ORAL PRESENTATIONS 04: GLOBAL CHILD HEALTH
15-11-2023 14:30 - 15:45

CAN EARLIER BCG-JAPAN AND OPV VACCINATION REDUCE EARLY INFANT MORTALITY? A CLUSTER-RANDOMISED TRIAL IN GUINEA-BISSAU

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Background: Bacillus Calmette-Guérin (BCG) and oral polio vaccine (OPV) are recommended at birth in low-income countries. Both vaccines have beneficial non-specific effects and can lower mortality beyond their effects against tuberculosis and polio. However, early vaccination is not emphasised in current health policies and is not part of the WHO-recommended home visits after birth.

Aims: The objective was to assess the effect of providing BCG and OPV at an early home visit after delivery.

Methods: In Guinea-Bissau, the WHO-recommended home visits are not implemented. In this cluster-randomised trial, 92 clusters were randomised (1:1) to intervention/control arms. In both arms, newborns received a home visit within 72 hours after birth. In intervention clusters (n=46) BCG and OPV was provided at the home visit. Rates of non-accidental mortality (primary outcome) and morbidity were compared in Cox-proportional hazards models from day 1 or enrolment, until day 60 or registration of non-trial vaccines. The trial was stopped early (33 % of the planned sample size) due to lower-than-expected enrolment- and event rates.

Results: Among 2,226 newborns enrolled between July 2016 and August 2019, we registered 35 deaths (intervention: 7, control: 28). Providing BCG and OPV reduced non-accidental early infant mortality by 59% (8-82%). The intervention also reduced non-accidental hospital admissions. The intervention had little impact on growth and BCG scarring and tended to increase the risk of consultations.

Conclusions: The results support that early BCG and OPV vaccinations are beneficial and reduce early child mortality and morbidity.



O026 / #497

ORAL PRESENTATIONS 04: GLOBAL CHILD HEALTH
15-11-2023 14:30 - 15:45

CAUSES OF STILLBIRTHS AND DEATHS IN CHILDREN UNDER-5 DETERMINED THROUGH MINIMAL INVASIVE TISSUE SAMPLING

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Background: Understanding causes of death in children living in low- and middle-income countries (LMICs) is necessary for improving and monitoring child survival. Child Health and Mortality Prevention Surveillance (CHAMPS) has been ongoing since 2016 in seven LMICs to accurately determine cause of death.

Aims: To determine causes of stillbirths and deaths in children <5 years from 2016 to 2022.

Methods: Researchers collected data from medical records and verbal autopsy. Minimally invasive tissue sampling (MITS) was used to collect organ tissues and body fluids that were examined using histopathology and routine and molecular microbiology. The causal pathway was assigned by a Determination of Cause of Death (DeCoDe) panel at each site.

Results: Of 10,285 enrolled participants, 6,086 (59.2%) underwent MITS and 4,456 (43.3%) were DeCoDed. Of the 4456, 1560 (35.0%) were stillbirths, 1765 (39.6%) were neonatal deaths, and 1131 (25.4%) deaths were in children 1-59 months. The most common causes of stillbirths were intrauterine hypoxia (75%) from maternal and delivery-related causes, sepsis (9%) and congenital defects (7%). In neonates, preterm-related complications (36%), intrauterine hypoxia (31%) and sepsis (10%) were the most common causes. Hospital-acquired infections from *Klebsiella pneumoniae* and *Acinetobacter baumannii* were common among deaths in neonates surviving >72 hours. Most (73%) deaths in children 1-59 months had >1 condition in the causal pathway; leading causes were malnutrition (17%), malaria (12%) HIV-related (10%), LRTI (10%), diarrheal disease (7%) and sepsis (5%).

Conclusions: Measures focused on preventing intrauterine hypoxia, prematurity and infections are urgently warranted in LMIC to reduce child deaths.



O027 / #510

ORAL PRESENTATIONS 04: GLOBAL CHILD HEALTH
15-11-2023 14:30 - 15:45

NEUROLOGICAL SYMPTOMS IN SICK CHILDREN PRECEDING DEATH AND CORRELATION WITH POSTMORTEM DIAGNOSIS: RESULTS FROM CHAMPS MORTALITY SURVEILLANCE NETWORK

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Background: Childhood neurological manifestations are considered emergencies. In Low-Income Countries(LICs) they are often associated with infectious diseases (such as cerebral malaria or meningitis). While accounting for the highest burden of neurological diseases, LICs suffer from a scarcity of diagnostic and therapeutic resources.

Aims: We characterized the association between clinical phenotypes, diagnostic and management decisions, and final confirmed causes of death in children under 5 years old (<5s) who had neurological impairment before their death.

Methods: We analyzed data collected from 7 countries as part of the Child Health and Mortality Prevention Surveillance (CHAMPS) study (2016-2022). Deceased children under age 5 with available neurological evaluation (regardin seizures, loss of consciousness, altered mental state and meningeal signs) were included.

Results: More than half the deceased <5s presented with neurological manifestations (727/1330, 54.7%). Neonates represented the 60% of all deaths, but neurological symptoms were more frequent in infants (61.2%) and children (62.3%) than in neonates (49.9%). The most common neurological ICD-10 diagnoses were hypoxic events (308, 23.2%), meningoencephalitis (135, 10.2%) and cerebral malaria (68, 2.7%). Clinical evaluation could not discriminate a specific final cause of death. Only 16.7% of meningitis cases had a lumbar puncture performed. Almost 90% of deaths following neurological manifestations were determined to have been preventable.

Conclusions: Neurological emergencies are very common among sick children prior to death. Clinical findings are insufficient to assess the most common underlying etiologies. Low performance of LPs is especially worrying, since meningitis it is the main differential diagnosis. Better tools to assess neurological emergencies are necessary to reduce under-5 mortality



O028 / #509

ORAL PRESENTATIONS 04: GLOBAL CHILD HEALTH
15-11-2023 14:30 - 15:45

CONCORDANCE OF ANTEMORTEM AND POSTMORTEM BLOOD CULTURES FROM CHILDHOOD DEATHS IN SOUTH AFRICA, 2017-2022

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Background: Blood culture is the gold standard for determining the etiology of disease; however, the sensitivity is often limited by low blood volumes inoculums which is an especially common issue in young children.

Aims: To determine the concordance between antemortem and postmortem blood cultures for attributing the cause of childhood death.

Methods: The Child Health and Mortality Prevention Surveillance study has been ongoing since 2017 with the aim of producing accurate causes of death using minimally invasive tissue sampling and a detailed review of all antemortem and postmortem data.

Results: Of the 480 decedents with antemortem (collected <3 days before death) and postmortem blood cultures available, an organism was detected in 196 and 360 of the antemortem and postmortem cultures respectively. Further, 164 had organisms cultured on both ante and postmortem bloods, 65% (n=106/164) of which were concordant organisms. In both the antemortem and postmortem cultures, late neonatal deaths (3-28days) were most likely to have an organism cultured (72% and 91% respectively) while the infants that died within the first 24hours of life had the lowest proportion of positive blood cultures (17% and 48% respectively). The most prevalent organism detected in both antemortem and postmortem cultures was *Acinetobacter baumannii* (36%, n=71/196 and 36%, n=131/360 respectively) with 51 concordant cases.

Conclusions: There was a good concordance between antemortem and postmortem blood culture results; the postmortem cultures however showed a greater sensitivity for pathogen recovery and for determining the etiological cause of childhood deaths.

O029 / #60

CHALLENGING CASES SESSION I
15-11-2023 16:15 - 17:45

CASE REPORT 1 - A FAMILY AFFAIR

Terishia Hariram, Thirona Naicker, Melissa Lawler
University of KwaZulu-Natal, Paediatrics And Child Health, Durban, South Africa

Title of Case(s):: Inborn error of Immunity presenting as complicated TB in a family

Background:: Ataxia-telangiectasia (AT) is a rare, Inborn error of Immunity (IEI), with 12 patients diagnosed at Red Cross War Memorial Hospital, Cape Town, South Africa between 1983-2009. Ataxia is the predominant presenting sign, however this case illustrates that complicated tuberculosis (TB), can be a key presenting feature in TB endemic areas.

Case Presentation Summary:: We report the case of a 7-year old HIV-uninfected African male treated for drug-susceptible pulmonary TB at age one, and multi-drug resistant (MDR) TB at age five. He developed bronchiectasis secondary to recurrent, complicated TB by age seven. While admitted, his 5-year old sibling, also required her first hospitalisation for a pulmonary infection. She was previously treated for MDR-TB and displayed features of chronic lung disease (CLD), prompting suspicion of an inherited IEI. Further enquiry revealed a third sibling, also treated for MDR-TB, with an unsteady gait. A fourth sibling was unable to walk by age 11.



Examination of the four siblings revealed CLD, ocular telangiectasia and truncal ataxia. Elevated alpha-foetoprotein, immunoglobulin deficiencies, cerebellar hypoplasia and two pathogenic, heterozygous mutations of the ATM genes, namely, c.478_482del and c.8880G>A, confirm the diagnosis of autosomal recessive AT in this family.

Learning Points/Discussion: Bronchiectasis is not an uncommon finding in children with recurrent, complicated TB, thus thorough history and clinical examination is required for earlier diagnosis of underlying IEI. Complicated TB may be the presenting feature of AT, in areas of high TB prevalence. The ATM mutations described are not previously documented in African populations.

CHALLENGING CASES SESSION I
15-11-2023 16:15 - 17:45

CASE REPORT 2 - UNRAVELING A MEDICAL MYSTERY

Sara Farah¹, Alasdair Bamford^{1,2}, Anthony Gait³, Ashwin Pandey¹, Bairavi Indrakumar⁴, Charalampia Papadopoulou⁵, Garth Dixon⁶, Giulia Perucca⁷, Kimberly Gilmour^{8,9}, Liam Reilly⁹, Louis Grandjean^{2,10}, Samantha Levine¹¹, Winnie Ip^{2,10,12}, Yolla Yousef¹, Karyn Moshal^{2,10}

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Title of Case(s):: A CASE OF DISSEMINATED BCG INFECTION MASQUERADING AS CHRONIC NONINFECTIOUS OSTEOMYELITIS WITH MENDELIAN SUSCEPTIBILITY TO MYCOBACTERIUM DISEASE.

Background:: Mendelian Susceptibility to Mycobacterial Diseases (MSMD) is an Inborn Error of Immunity (IEI) resulting in disseminated BCG infection. Treatment often requires prolonged courses of antimycobacterial drugs.

Case Presentation Summary:: A three-year-old boy born to non-consanguineous parents of Somali ethnicity presented at two years old with multiple bony lesions involving the skull, mandible, right humerus/ulnar, left tibia and thoracic spine; he was diagnosed with Chronic Noninfectious Osteomyelitis (CNO) in Sweden and treated with adalimumab. However, his lesions worsened, and he developed fever, cervical lymphadenopathy and raised inflammatory markers. On arrival in the UK at our centre, adalimumab was stopped. Bone biopsy revealed purulent abscesses positive for mycobacterium tuberculosis (MTB), Bacillus Calmette-Guérin (BCG) vaccine strain. He was commenced on isoniazid 10 mg/kg/day, rifampicin 15mg/kg/day, ethambutol 20 mg/kg/day and moxifloxacin 15mg/kg/day. Lesions worsened after two months of treatment and were culture negative for MTB. Diagnosis of BCG Immune reconstitution Syndrome (IRIS) was made, and prednisolone 2mg/kg/day started. IEI was suspected. Cytokine studies showed reduced IFN- γ production in response to T-cell stimulation. Whole Genome Sequencing revealed a heterozygous missense mutation in STAT 1 gene [c.748 G>A p(Gly250Arg)] with a phenotype in keeping with autosomal dominant STAT1 loss of function mutation. His steroids were weaned over 12 weeks, antimycobacterial treatment continued, and he successfully recovered.

Learning Points/Discussion: It is crucial to exclude mycobacterial infection and IEI as an important differential diagnosis of CNO before initiating immunosuppressive therapy.

O031 / #574

CHALLENGING CASES SESSION I
15-11-2023 16:15 - 17:45

CASE REPORT 3 - WHEN PETS MEAN TROUBLE

Joseph John¹, Amit Satapathy², Hemanth Kaviti¹

¹AIIMS, Bhubaneswar, Pediatrics, Bhubaneswar, India, ²AIIMS Bhubaneswar, Pediatrics, Bhubaneswar, India

Title of Case(s):: WHEN PETS MEAN TROUBLE – AN UNUSUAL CA(U)SE OF PYOPNEUMOTHORAX

Background:: Pasteurella canis is a gram-negative coccobacillus belonging to the Pasteurellaceae family. Pasteurella canis infection is extremely rare in children, that too on casual exposure to pets presenting as pyopneumothorax.

Case Presentation Summary:: A 10-year-old boy, with a past history of treated pulmonary tuberculosis, at 6 years of age with unremarkable birth, developmental and family history, immunized as per age, presented with fever and cough for 2 weeks, chest pain and respiratory distress for 7 days. On examination: RR - 32/min, HR - 121/min, SpO₂ 85-90% on room air with nasal flaring and decreased chest movements on the left side, percussion showed a hyper resonant note on the left side, and auscultation revealed decreased air entry on the left side and crepitations. He was mechanically ventilated for 7 days and an intercostal drain was placed for the left pyopneumothorax. There was no clinical improvement to Ceftriaxone and Linezolid. Blood culture positive for Pasteurella canis - sensitive to Meropenem- to which he responded. He is doing well on follow-up with us. Discussion - Pasteurella causes more skin and soft tissue infections than respiratory infections unlike in our case. Literature review found only few case reports in adults with chronic lung disease causing consolidation and ground glass opacities and none in children (1,2).

Learning Points/Discussion: The present case sensitizes us to think about unusual organisms causing severe infections with complications when not responding to regular treatment. It stresses the importance of microbiological confirmation and treatment with sensitive antimicrobials.

O032 / #854

ORAL PRESENTATIONS 05: LATE-BREAKING
16-11-2023 09:00 - 10:15

**PERSISTENCE OF HEPATITIS B PROTECTIVE IMMUNITY IN FIRST YEAR HEALTH SCIENCE
STUDENTS FOLLOWING VACCINATION IN INFANCY**

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Background: Current policies recommend that health science students (HSS) complete a full 3-dose hepatitis B (HBV) vaccination prior to commencing clinical training. As HBV vaccination was introduced into the EPI program in South Africa in 1995, new HSS are expected to have received primary HBV vaccination during infancy.

Aims: Our study aimed to determine the proportion of young adults who retained seroprotection against HBV from vaccination received in infancy.

Methods: A retrospective study was performed evaluating immunity at baseline and following doses of vaccination against HBV in first year HSS at the University of Cape Town in South Africa in 2019. Serum Hepatitis B surface antibody levels of 10mIU/ml or higher were considered protective. Students with levels below this received booster doses until seroprotection was achieved on repeat serology.

Results: 354 students with a median age of 18.8 [IQR 18.4; 19.3] years were included. There were 45(12.7%) students lost to follow-up. In 169(54.7%) of 309 remaining students, baseline serum antibody levels were above 10mIU/ml. Following a single dose of HBV vaccination, 128(91.4%) of 140 with levels below 10mIU/ml, had serum antibody levels increase above 10mIU/ml. The remaining 12(3.9%), all of whom had baseline antibodies below 1mIU/ml, responded to the second dose with levels above 10mIU/ml.

Conclusions: Most students (96.1%) remained protected by infant HBV vaccine doses via persistently high antibody levels or robust anamnestic responses following a single HBV booster dose. There is a need to review current policy of HBV revaccination in health science students and healthcare workers.

O033 / #858

ORAL PRESENTATIONS 05: LATE-BREAKING
16-11-2023 09:00 - 10:15

**ACCESSIBLE TO ALL FOR MAXIMUM IMPACT -- GLOBAL DATA ON ANTIMICROBIAL
RESISTANCE IN CHILDREN**

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Background: Children are under-represented in the antimicrobial resistance (AMR) control efforts. They are very heavy consumers of antibiotics, but lack of accessible AMR surveillance data limits efforts to address the problem.

Aims: To determine global AMR trends, and develop a freely-accessible dashboard for childhood AMR.

Methods: Using the large ATLAS dataset (2004-2021, 101,661 paediatric samples) during the 2023 Vivli AMR Surveillance Open Data Re-use Challenge, we analysed WHO priority pathogen resistance trends based on WHO AWaRe antibiotic classifications (Access, Watch, Reserve). We used linear modelling to predict 10-year prevalence trajectories.

Results: Resistance in *Staphylococcus aureus* and *Streptococcus pneumoniae* has plateaued over the last decade, but this is not true for any other pathogen. Globally *Enterococcus* spp resistance to Watch antibiotics has increased significantly in every region, although Reserve antibiotics are largely preserved. For Gram negative bacteria, the situation is more dire, with resistance to Access antibiotics >25% globally in all pathogens except *Pseudomonas* spp. Over the last decade, these bacteria significantly increased resistance to Watch antibiotics, especially in low/middle-income countries. The greatest increases were in *Klebsiella* spp (150% increase) and *Acinetobacter* spp (100%). Most alarmingly, resistance to Reserve antibiotics was high and increasing in *Enterobacter* (10%), *Klebsiella* (12%) and *Serratia* (21%) spp with an estimated 10-year trajectory of 70%, 50% and 85% respectively.

Conclusions: These data are concerning and dissemination is imperative. We have therefore developed the first web-based dashboard specifically for childhood AMR. This visibility is critical to inform local guideline revisions, policy and new antibiotic access efforts.

O034 / #869

ORAL PRESENTATIONS 05: LATE-BREAKING
16-11-2023 09:00 - 10:15

**CLINICAL APPLICATION OF CYTOMEGALOVIRUS INTERFERON GAMMA RELEASE ASSAY IN
CONGENITAL CYTOMEGALOVIRUS INFECTION.**

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College Healthcare Nhs Trust, Paediatric Infectious Diseases, London, United Kingdom

Background: Congenital cytomegalovirus (cCMV) is the leading cause of neurodevelopmental and hearing impairment from in-utero infection, however early postnatal antiviral treatment can prevent and limit disease. Up to 30% of infants require treatment, however half of these infants have late-onset manifestations making it challenging for clinicians to make treatment decisions. CMV interferon-gamma release assays (IGRA) may be a prognostic tool to reflect timing of infection and the infants' ability control CMV viraemia, and has potential to guide decisions on treatment initiation.

Aims: We aimed to explore the utility of the CMV IGRA assay in infants with cCMV.

Methods: Infants with and without cCMV and at least one CMV IGRA during the first 9 months of life were included. The cellular responses to CMV antigens Immediate Early 1 (IE-1) and phosphoprotein 65 (pp65) were quantified and analysed alongside clinical data.

Results: 23 infants with cCMV and 7 without cCMV were included with median gestational age, birth weight and head circumference 39 weeks (IQR 37-40), 2950g (IQR 2388-3598) and 33cm (IQR 32-35). All infants with cCMV were symptomatic and treated with valganciclovir; 50% had growth restriction, 58.3% hearing loss, and 70.8% an abnormal brain MRI. Low-level CMV IGRA reactivity correlated with microcephaly (Figure 1), and tended to be associated with more severe cCMV disease.

Conclusions: Low-level CMV-specific immune responses seen in infants with severe cCMV might suggest immune-tolerance from first trimester cCMV, a time of high risk for neurological disease. CMV IGRA performed in newborns with cCMV might help guide clinicians to start early treatment.

O035 / #812

ORAL PRESENTATIONS 05: LATE-BREAKING
16-11-2023 09:00 - 10:15

THE ECONOMIC BURDEN OF RSV-ASSOCIATED ILLNESS IN CHILDREN

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¹University Medical Centre Utrecht, University Medical Centre Utrecht, Utrecht, Netherlands, ²Universidade Eduardo Mondlane, Universidade Eduardo Mondlane, Maputo, Mozambique, ³Ahmadu Bello University Teaching Hospital Zaria, Ahmadu Bello University Teaching Hospital Zaria, Zaria, Nigeria, ⁴PATH, Center For Vaccine Innovation And Access, Path, Seattle, United States of America, ⁵ReSViNET Foundation, Resvinet Foundation, Zeist, Netherlands

Background: Respiratory syncytial virus (RSV) imposes a substantial burden, particularly in low- and lower-middle-income countries (LMICs). Intervention strategies for RSV, such as monoclonal antibodies (mAb) and maternal immunization (MI), have shown positive results. However, economic burden data are sparse, especially in LMICs.

Aims: This study aims to provide valuable insights into the costs of managing respiratory infections, specifically RSV, in four LMICs.

Methods: In this ongoing study, data are being collected in four LMICs (Mozambique, Nigeria, Ghana and Nepal) during one RSV season. Here, we present the first results of Mozambique and Nigeria. Total outpatient and inpatient cost per illness episode, including direct medical, direct non-medical and indirect costs have been collected through caregiver interviews and through the analysis of patient charts and hospital expenditures.

Results: To date, 474 children (224 inpatient) have been enrolled in Mozambique and Nigeria, of which 33% were positive for RSV. The median age at testing was 3 months. RSV positivity was higher among inpatients (49%) compared to outpatients (18%). Based on initial data analysis, average cost incurred per patient was US\$ 141,70 (CI 95% 1.5 – 179.37 US\$) for inpatient cases and US\$ 4,20 (CI 95% 0.3 – 377.16 US\$) for outpatient cases.

Conclusions: RSV illness cause a high economic burden on the health care system as well as families in Mozambique, and Nigeria. Generating comprehensive data on health care resource use and costs associated with RSV will help to guide prevention strategies against RSV in LMICs.

O036 / #832

ORAL PRESENTATIONS 05: LATE-BREAKING
16-11-2023 09:00 - 10:15

EPIDEMIOLOGICAL CHARACTERISTICS OF MYOCARDITIS AND PERICARDITIS TEMPORALLY ASSOCIATED WITH BNT162B2 COVID-19 VACCINE IN ADOLESCENTS: KOREAN NATIONAL SURVEILLANCE

Bin Ahn¹, Seung Hwan Shin², Myeong-Eun Cheon², Myung-Jae Hwang², Hyosug Choi², Sara Na², Sangshin Park³, Young June Choe⁴, Yun Sun Yoon⁵, Kyoungsan Seo⁶, Jong Hee Kim², Hyun Mi Kang⁷

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Background: An increased risk of myocarditis and pericarditis was observed in males aged 18-25 years old after immunization with mRNA-based COVID-19 vaccines.

Aims: This study aimed to investigate the epidemiological characteristics and long-term outcomes of myocarditis and pericarditis after BNT162b2 vaccination in children ≤ 19 years old in South Korea.

Methods: This was a retrospective cohort analysis of patients diagnosed with myocarditis and pericarditis after BNT162b2 vaccine administration between March, 2021-August, 2023. All cases reported to the Korean national surveillance of COVID-19 Vaccine Adverse Reporting System (VAERS) were reviewed for clinical characteristics, interventions, and outcomes.

Results: Among 5,583,675 doses of the BNT162b2 vaccine administered to adolescents aged 12-18, 192 cases met the case definition. A total of 89.1% (n=171) were mild and 10.9% (n=21) were severe. The median time to symptom onset was 2 days (IQR, 1-3 days). Males accounted for 81.8% (n=157), and 56.8% (n=109) were reported after dose 2. Overall, troponin I (96.1%, n=146/152), CK-MB (67.6%, n=100/148), and CRP (65.1%, n=95/146) were elevated, with no differences observed between mild vs severe groups. ST segment elevation and T-wave abnormality on electrocardiography were found in 35.5% (n=54/152) and 13.8% (n=21/152), respectively. Decreased ejection fraction on echocardiogram was found in 14.6% (n=21/144). Of the 21 severe cases, 95% (n=19/21) were admitted to the intensive care unit, but none received extracorporeal membrane oxygenation therapy and no deaths were reported.

Conclusions: Overall, the incidence of myocarditis was low following the administration of multiple doses of BNT162b2. Majority of the cases were mild, however, ongoing monitoring after vaccination remains essential.

O037 / #834

ORAL PRESENTATIONS 05: LATE-BREAKING
16-11-2023 09:00 - 10:15

**TDAP VACCINATION: USING WOUND CARE AS AN OPPORTUNITY TO PROTECT AGAINST
PERTUSSIS IN THE SOUTH AFRICAN SETTING**

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Background: A significant proportion of the South African population is at risk for pertussis. The recent increasing disease burden in infants/children is shifting towards adolescents/adults. Simultaneously, adolescents/adults are underdiagnosed due to under-recognition of pertussis by healthcare professionals, further exposing vulnerable groups. Tetanus prevention post injury is also an important public health consideration in South Africa. Diphtheria-tetanus-acellular pertussis (DTaP)-containing vaccination is recommended at 6, 10, 14 weeks, and 18 months of age, and Td boosters at 6 and 12 years. There is, however, a gap in DTP vaccination coverage rates (VCRs) attributed to missed paediatric doses and absence of adult booster recommendations.

Aims: This review highlights the opportunities, scientific rationale, and potential advantages of using Tdap instead of Td/TT vaccines for wound management in South Africa.

Methods: Literature search on Tdap for wound management was conducted using PubMed/official websites from inception to July 31, 2023.

Results: Sixty-one articles were included in this review. Tdap is safe and effective in preventing pertussis and tetanus. It has demonstrated non-inferiority and comparable safety profile with licensed tetanus-toxoid-containing vaccines globally (NCT00835237/NCT01439165/NCT00928785). Several organizations have recommended Tdap for wound management instead of TT (Figure). However, no recommendations are available in South Africa for the use of Tdap for wound management. The introduction of Tdap vaccine use in wound management may impact pertussis-containing VCRs in addition to tetanus and



diphtheria.

Country	Recommendations	Reference
United States	<ul style="list-style-type: none"> • People with unknown/<3 doses of tetanus-toxoid-containing vaccine: DTaP, Tdap, or Td • People with ≥3 doses of primary tetanus schedule: Tdap or Td if ≥10 years (clean/minor wounds) or ≥5 years (all other wounds) have elapsed since last tetanus-toxoid vaccine dose • Tdap is recommended if a tetanus-toxoid-containing vaccine is indicated for a pregnant woman 	Fiona P Havers, 2020 Neil Murthy, 2023
Canadian Provinces	<ul style="list-style-type: none"> • Tetanus-toxoid-containing vaccine for those with unknown/<3 doses of vaccine series, or with ≥3 doses and >10 years since last booster dose* 	Canadian Immunization Guide
South Korea (KCDC)	<ul style="list-style-type: none"> • Tdap (instead of Td) for adolescents and adults who have not received Tdap previously 	Kyong Min Choi, 2011
Singapore	<ul style="list-style-type: none"> • Tdap in those who have received a primary series of tetanus-toxoid-containing vaccine with 5-year interval 	Society of Infectious Diseases Singapore. Clinical practice guidelines on adult vaccination in Singapore. 2 nd Edition 2018. ISBN 978-981-09-9326-9
Malaysia (MSIDC)	<ul style="list-style-type: none"> • Tdap in those who have received a primary series of tetanus-toxoid-containing vaccine with 5–10-year interval based on the wound 	Malaysian Society of Infectious Diseases and Chemotherapy (MSIDC). Guidelines for adult immunization. 3 rd Edition 2020. ISBN978-967-13054-1-6

*For wounds other than clean and minor wounds: recommended for those who received the last booster dose >5 but <10 years.
DTaP, diphtheria, tetanus, and acellular pertussis vaccine; KCDC, Korea Centers for Disease Control and Prevention; MSIDC, Malaysian Society of Infectious Diseases and Chemotherapy.

Conclusions: The use of Tdap in South Africa for tetanus prevention in wound management should help reduce the pertussis burden in adults and decrease the risk of transmission to children.

ORAL PRESENTATIONS 05: LATE-BREAKING
16-11-2023 09:00 - 10:15

**COMMUNITY PERCEPTIONS MATTER: USING LOCAL KNOWLEDGE TO DEFINE SUCCESS
FEATURES FOR A COMMUNITY INTERVENTION TO IMPROVE QUALITY OF CARE FOR CHILDREN
UNDER-FIVE IN JIGAWA, NIGERIA**

Agnese Iuliano¹, Funmilayo Shittu², Tim Colbourn¹, Julius Salako³, Damola Bakare³, Ayobami Bakare⁴, Carina King⁵, Hamish Graham⁶, Eric Mccollum⁷, Adegoke Falade³, Obioma Uchendu⁴, Ibrahim Haruna⁸, Paula Valentine⁹, Rochelle Burgess¹

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Background: Community participation in health has the potential to enhance healthcare delivery and relationships with healthcare providers. Establishing interventions to achieve such involvement is often complex.

Aims: We used the information generated by community members during an intervention design process to understand the features needed for a successful community participatory intervention to improve child health.

Methods: We conducted a concurrent mixed-methods study (November 2019-March 2020) to inform the design and evaluation of a community-facility linkage participatory intervention in Jigawa, Nigeria.

Results: We analysed qualitative data with Thematic Network Analysis and the surveys with linear regression – triangulating results in the interpretation phase. Participants identified the following areas of focus: community health education; facility infrastructure, equipment and staff improvements; raising funds to make these changes. Community involvement, cooperation and empowerment were recognized as a strategy to improve child health, and the presence of intermediate bodies (development committees) was deemed important to improve communication and solve problems between community and facility members. The survey showed functional community relations' dynamics, with high levels of internal cohesion (78%), efficacy in solving problems together (79%) and fairness of the local leaders (82%).

Conclusions: Combining our study results and critical theories on successful participation identified community-informed features for a contextually-tailored community-facility link intervention. The need to promote a more inclusive approach to future child health interventions was highlighted. In addition to health education campaigns, the relationship between community and healthcare providers needs strengthening, and development committees were identified as an essential feature for successfully linking communities and facilities for child health.



O039 / #313

ORAL PRESENTATIONS 06: ANTIBACTERIAL AND ANTIVIRAL VACCINE
16-11-2023 09:00 - 10:15

IMMUNOGENICITY AND VACCINE-SEROTYPE CARRIAGE AFTER FULL OR FRACTIONAL DOSES OF PNEUMOCOCCAL CONJUGATE VACCINES IN KENYAN INFANTS: A RANDOMISED CONTROLLED TRIAL

Katherine Gallagher^{1,2}, Ruth Lucinde¹, Christian Bottomley², Mary Kaniu¹, Badaud Suaad³, Ifedayo Adetifa², Laura Mwalekwa¹, Sara Ragab⁴, Louise Twi-Yeboah⁴, James Berkley¹, Mainga Hamaluba¹, Angela Karani¹, Jimmy Shangala¹, Mark Otiende¹, Elizabeth Gardiner¹, Daisy Mugo¹, Peter Smith², Collins Tabu⁵, Fred Were⁶, David Goldblatt⁴, J. Scott^{1,2}

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Background: At 10 USD per fully-immunised child, PCV is the most expensive component of routine immunisation in Gavi-supported countries. As countries transition from Gavi support, PCV programmes are at risk.

Aims: We aimed to assess whether immunogenicity and reduction of vaccine serotype (VT) carriage was non-inferior after fractional doses of PCV10 (GSK) or PCV13, when compared to full doses.

Methods: 2100 healthy infants were enrolled at random into seven equal-sized trial arms. Doses were delivered in the 2p+1 schedule (6, 14 weeks and 9-12 months) in six trial arms: A) Full dose PCV13, B) 40%-PCV13, C) 20%-PCV13, D) Full dose PCV10, E) 40%-PCV10, F) 20%-PCV10. The seventh trial arm received full dose PCV10 at 6, 10 and 14 weeks. Immunogenicity was assessed 4-weeks post-prime and 4-weeks post-boost, carriage was assessed at 9 and 18 months of age.

Results: 40%-PCV13 met the non-inferiority criteria for 12/13 serotypes post-prime and 13/13 serotypes post-boost. 20%-PCV13 met the criteria for 9/13 serotypes post-prime and 6/13 serotypes post-boost. 40%-PCV10 met the criteria for 8/10 serotypes post-prime and 6/10 serotypes post-boost. 20%-PCV10 met the criteria for 7/10 serotypes post-prime and 1/10 serotype post-boost. At 9 months of age there were no significant differences in VT carriage prevalence.

Conclusions: Conclusion: A 3-dose schedule of 40%-PCV13 met the non-inferiority criteria at both timepoints and would convert 4-dose vials to 10-dose vials. A 3-dose schedule of 40%-PCV13 would cost 3.7 USD and represents the most cost-effective PCV schedule option currently available. Funding: Bill & Melinda Gates Foundation and NIHR, UK.

O040 / #354

ORAL PRESENTATIONS 06: ANTIBACTERIAL AND ANTIVIRAL VACCINE
16-11-2023 09:00 - 10:15

DURABILITY OF PCV 1+1 DOSING SCHEDULE COMPARED TO 2+1 IN SOUTH AFRICAN INFANTS

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Background: Due to the high cost of the pneumococcal conjugate vaccines (PCV), transitioning from a two dose (2+1) to a single dose (1+1) primary series with a booster should be considered.

Aims: This study evaluated the immune response at 18 months of age following a 1+1 schedule (single priming dose of PCV10 or PCV13 at 6 or 14 weeks followed by booster dose at 9 months) compared to a 2+1 schedule (6 and 14 weeks and booster at 9 months).

Methods: This study was a single-center, open-label, randomized trial conducted in Soweto, South Africa, which enrolled children between 9th January and 20th September 2017 to evaluate the immunogenicity of two differing 1+1 dosing schedules compared to a 2+1 schedule for PCV10 and PCV13. 600 children were randomly assigned to the six different study arms (1:1:1:1:1:1). Non-inferiority was concluded when the lower limit of the 96% confidence interval of the ratio of geometric mean concentrations (GMCs) of the 1+1 and 2+1 dosing schedules was >0.5 for at least 10 of the PCV13 serotypes and eight of the PCV10 serotypes.

Results: GMCs at 18 months in children who received the 6w+1-PCV13 and 14w+1-PCV13 schedule were non-inferior for 11 and 10 of the PCV13 serotypes, respectively, compared to those in the 2+1-PCV13 arm. For PCV10, GMCs for both 1+1 dosing schedules were non-inferior to a 2+1 schedule for nine of the PCV10 serotypes.

Conclusions: Transitioning to a 1+1 schedule should be consider to alleviate resources for early immunization programs.

O041 / #353

ORAL PRESENTATIONS 06: ANTIBACTERIAL AND ANTIVIRAL VACCINE
16-11-2023 09:00 - 10:15

**RETURN ON INVESTMENT OF COMPARING VACCINATION WITH 10- OR 13-VALENT
PNEUMOCOCCAL CONJUGATE VACCINE IN CHILDREN UNDER 5 YEARS IN ECUADOR**

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Background: In Ecuador, 10-valent (PCV10, GSK) and 13-valent (PCV13, Pfizer) pneumococcal conjugate vaccines are available to protect against the pneumococcal disease. The benefit of vaccination is likely underestimated with typical cost effectiveness (CE) assessments.

Aims: To estimate return on investment (ROI) of PCV13 versus PCV10 vaccination in children < 5 over a 5-year time horizon.

Methods: Model inputs and vaccine effectiveness were from a recently published CE model and various publications (references). Using cost-of-illness approach, we estimated economic impact of both vaccines due to averted cases/deaths, healthcare utilization, productivity loss and direct/indirect vaccination costs. The ROI was estimated by dividing the net benefits by costs. A positive ROI indicates the return is greater due to PCV13 compared to PCV10. A sensitivity analysis was conducted assuming a lower uptake rate (60%) than the base-case assumption (90%). Simulations were performed according to deterministic probabilities considered in the model.

Results: Over 5 years, estimated incremental vaccine cost of PCV13 versus PCV10 was \$11,715,462 USD and the incremental cost saving due to averted disease cases was \$16,843,408 (Tables 1&2). The ROI was 0.50(0.40-0.59) in the base-case and was 0.82(0.70-0.94) from the sensitivity analysis.

Table 1: Incremental Vaccination Costs of PCV13 vs. PCV10

	Year 1	Year 2 - Year 5*	Total
Number of doses per child		3	
Incremental price per dose of PCV13-PCV10		\$1.65	
Wastage rate		10%	
Total targeted children < 5 years	1,600,000	1,324,000	2,924,000
Uptake rate per year	60%	90%	
Vaccinated children	960,000	1,191,600	2,151,600
Total number of doses required	3,168,000	3,932,280	7,100,280
Incremental vaccine cost (USD)	\$5,227,200	\$6,488,262	\$11,715,462

*Assumed a newborn cohort of each year is 331,000



Table 2: Incremental Economic Benefits of PCV13 vs. PCV10

Economic benefits of PCV13 vs. PCV10 due to:	Incremental cost saving of PCV13- PCV10 (in USD)
<i>Averted disease cases*</i>	
Meningitis	\$270,904
Bacteremia	\$628,741
Hospitalized pneumonia	\$95,772
Non-hospitalized pneumonia	\$2,417
Acute Otitis Media	\$11,864
<i>Averted Caregiver Cost</i>	
Meningitis	\$1,719,607
Bacteremia	\$99,609
Hospitalized pneumonia	\$8,503
Non-hospitalized pneumonia	\$3,032
Acute Otitis Media	\$6,159
<i>Averted Productivity Lost</i>	
Lifetime wage	\$13,996,799
Total	\$16,843,407

*Assumed 88.7% (Savulescu et al 2022) vaccine efficacy against IPD, 25.5% (Hansen et al, 2006), 6.0% (Black et al, 2002) and 7.8% (Black et al, 2000) of vaccine efficacy against all-cause hospitalized and non-hospitalized pneumonia, and all-cause otitis media for both vaccines (PCV13, Pfizer and PCV10, GSK).

Conclusions: Based on current pneumococcal disease burden in Ecuador, investment in a PCV13 pediatric vaccination program could have greater economic benefit over 5 years compared to investment in a PCV10 program, as every dollar invested in PCV13 could have \$0.5 more return compared to PCV10. Policy makers should consider both the cost-effectiveness and ROI when investing in a pneumococcal vaccination



program.

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O042 / #326

ORAL PRESENTATIONS 06: ANTIBACTERIAL AND ANTIVIRAL VACCINE
16-11-2023 09:00 - 10:15

SAFETY OF BNT162B2 MRNA COVID-19 VACCINE IN CHILDREN WITH CHRONIC KIDNEY DISEASE: A NATIONAL POPULATION STUDY OF SOUTH KOREA

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Background: In South Korea, COVID-19 vaccination has been recommended to children since October 2021, targeting all teenagers aged 12-15 years, with emphasis on high-risk group including chronic kidney disease (CKD) pediatric patients.

Aims: In this study, we aimed to assess the rate of adverse events following COVID-19 vaccination in children with CKD in South Korea, using national cohort data.

Methods: We retrieved the Korea Disease Control and Prevention Agency-COVID19-National Health Insurance Service (K-COV-N) cohort data linked to the National Health Insurance System (NHIS) data, to calculate the rate of adverse events in children with CKD. Following the a priori knowledge, four adverse events were chosen: immune thrombocytopenic purpura (ITP), Guillain-Barré syndrome (GBS), myocarditis and/or pericarditis, and anaphylaxis, were selected. We identified these conditions based on the corresponding ICD-10 codes. We matched vaccinated CKD children to unvaccinated control CKD children.

Results: Among the 2,078 children with CKD, 69.2% (n=1,437) had received BNT-162b2 vaccine. Guillain-Barré syndrome and anaphylaxis or anaphylactic shock did not occur during observed period. Purpura and hemorrhagic conditions were more frequent in the unvaccinated group (5/641 vs 1/1,437) while myocarditis/pericarditis was observed only in vaccinated group (0/641 vs 3/1437). The difference in the risk of any of these two events between vaccinated and unvaccinated groups was insignificant.

Conclusions: In this national cohort study of children with CKD in Korea, we found no evidence of an increased risk of adverse events following BNT162b2 vaccination. Our results provide the safety profiles of the COVID-19 vaccine for patients with CKD.

O043 / #198

ORAL PRESENTATIONS 06: ANTIBACTERIAL AND ANTIVIRAL VACCINE
16-11-2023 09:00 - 10:15

EFFECT OF INTERNAL CONFLICT ON EXPANDED PROGRAM ON IMMUNIZATION IN NORTHWEST ETHIOPIA: AN IMPLEMENTATION SCIENCE RESEARCH

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Background: Despite the rapid progress in immunization service delivery systems worldwide, populations in areas of conflict often have limited or no access to lifesaving vaccines. Hence, evidence generation and translation for context-specific strategies and tailored action would be important before, immediate and post aftermath of an acute humanitarian emergency.

Aims: To explore factors affecting immunization services in conflict area among internally displaced communities, Northwest Ethiopia.

Methods: A concurrent parallel mixed research (phenomenological study and in-depth interview) was applied to collect the lived experiences of participants in the affected areas. Transcribed and translated data were analyzed using open code software. Quantitative data were analyzed descriptively using an excel sheet to develop immunization coverage trend for tracer antigens.

Results: We found that the immunization program was seriously deteriorated. The monthly EPI service report in the affected areas showed a decline with the lowest records in December and January when the internal conflict was peak. Security problems, displacement of health workers, destruction of health infrastructures, mixing of the displaced community in the host community and poor coordination among stakeholders and partners, clients having other emergent needs and shortage of resources were important barriers for immunization services.

Conclusions: Vaccination services were highly compromised in the conflict areas. Security problems affected not only the service utilizers but service providers and the overall health care system. There must be a mandatory post conflict immunization campaign to improve vaccination status and to decrease outbreaks. Besides, establishing a post conflict recovery and rehabilitation taskforce to rebuild damaged infrastructures and health resources is imperative.

O044 / #837

ORAL PRESENTATIONS 06: ANTIBACTERIAL AND ANTIVIRAL VACCINE
16-11-2023 09:00 - 10:15

TEMPORAL TRENDS AND PATTERNS OF ANTIBIOTIC USAGE IN KOREAN CHILDREN DURING THE PRE-COVID-19 AND EARLY COVID-19 ERA (2016-2021)

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Background: The World Health Organization has presented an international action plan strongly urging countries to prepare countermeasures against the indiscriminate use and resistance of antibiotics.

Aims: This study aimed to gather data to serve as a foothold in pediatric care through quantitative evaluation of antibiotics usage in Korean children during the pre-COVID-19 and early COVID-19 era for recognizing the need for antibiotics stewardship program (ASP) development.

Methods: From 2016 to 2021, systemic antibiotics prescribed to children <18 years old were analyzed from data collected through the national public big data. Days of therapy (DOT)/1,000 inhabitants per day was analyzed.

Results: A total 257,088,265 prescriptions of antibiotics were made to 170,309,944 children <18 years old during the 6-year period. Before COVID-19 pandemic, DOT per 1,000 inhabitant-day steadily increased. After a sharp decline of DOT during the early COVID-19 era, a steady increase at the same rate as in the pre- pandemic era was observed. The highest antibiotic DOT was observed in the 1-year age group, followed by 2-4 and 0-year age group. From the 0 to 5-11 years age group, the most commonly prescribed oral antibiotics was beta-lactam/beta-lactamase inhibitor (BL/BLI). From 1 to 5-11 years age group, the most commonly prescribed intravenous antibiotics was BL/BLI with a similar proportion to 3rd generation cephalosporin. Aminoglycoside was the most commonly prescribed intravenous antibiotic class in the 12-17 years age group .

Conclusions: A sharp decline in antibiotics usage was observed in the immediate early COVID-19 period, however, the rate of increase returned similar to the pre-COVID-19 era.

O045 / #622

ORAL PRESENTATIONS 06: ANTIBACTERIAL AND ANTIVIRAL VACCINE
16-11-2023 09:00 - 10:15

**SAFETY AND IMMUNOGENICITY OF TETANUS, DIPHTHERIA AND PERTUSSIS VACCINATION
DURING PREGNANCY AMONG WOMEN LIVING WITH HIV IN SOUTH AFRICA**

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Background: Vaccination during pregnancy with tetanus-diphtheria-acellular pertussis (Tdap) vaccine is recommended to protect young infants against severe infections.

Aims: The immune response to vaccination among pregnant women living with HIV (PWLWH) and its impact in protection of their infants has not been described.

Methods: Pregnant women 18–39 years-old with documented HIV status were enrolled at 20-36 weeks-of-gestation and received Tdap vaccine (Adacel, Sanofi). Serum antibodies against vaccine antigens were measured at D0 and D28-35. Injection-site and systemic reactions were recorded for seven days post-vaccination and unsolicited AEs/serious AEs (SAEs) throughout study.

Results: Among 228 enrolled pregnant women (92 PWLWH and 136 HIV-uninfected), the only differences were PWLWH being older and less likely to be primigravida ($p < 0.001$). All PWLWH were on antiretroviral treatment and 94.6% had HIV viral loads < 40 copies/ml. Despite increased antibody levels in both groups post-vaccination, PWLWH had significantly lower concentrations for all antibodies and fewer PWLWH achieved ≥ 4 -fold increase for PT and PRN. All women achieved seroprotection for tetanus, but fewer PWLWH did for diphtheria. The most common solicited reactions were injection-site itching, tenderness, and induration as well as weakness/tiredness, with no significant differences between groups. Thirty-four SAEs were reported and only one (premature labour 2 days post-vaccination in an HIV-uninfected woman) was considered possibly related to vaccination based solely on temporal association.

Conclusions: Despite a less robust immune response among PWLWH, Tdap vaccination might still confer some protection to in-utero HIV exposed young infants, which we hope to demonstrate in the post-partum phase of this study.

O046 / #692

ORAL PRESENTATIONS 07: VIRAL INFECTIONS, HIV AND SARS-CO-V19
16-11-2023 09:00 - 10:15

HIV DRUG RESISTANCE IN ART-EXPERIENCED CHILDREN POST-DOLUTEGRAVIR ROLLOUT IN KWAZULU-NATAL, SOUTH AFRICA

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Background: Eastern and southern Africa had only 44% of children <15 years achieving viral suppression on ART, in 2021. Despite dolutegravir (DTG) rollout in South Africa in December 2019, HIV drug resistance (HIVDR) remains a major cause of concern in achieving sustainable viral suppression on ART.

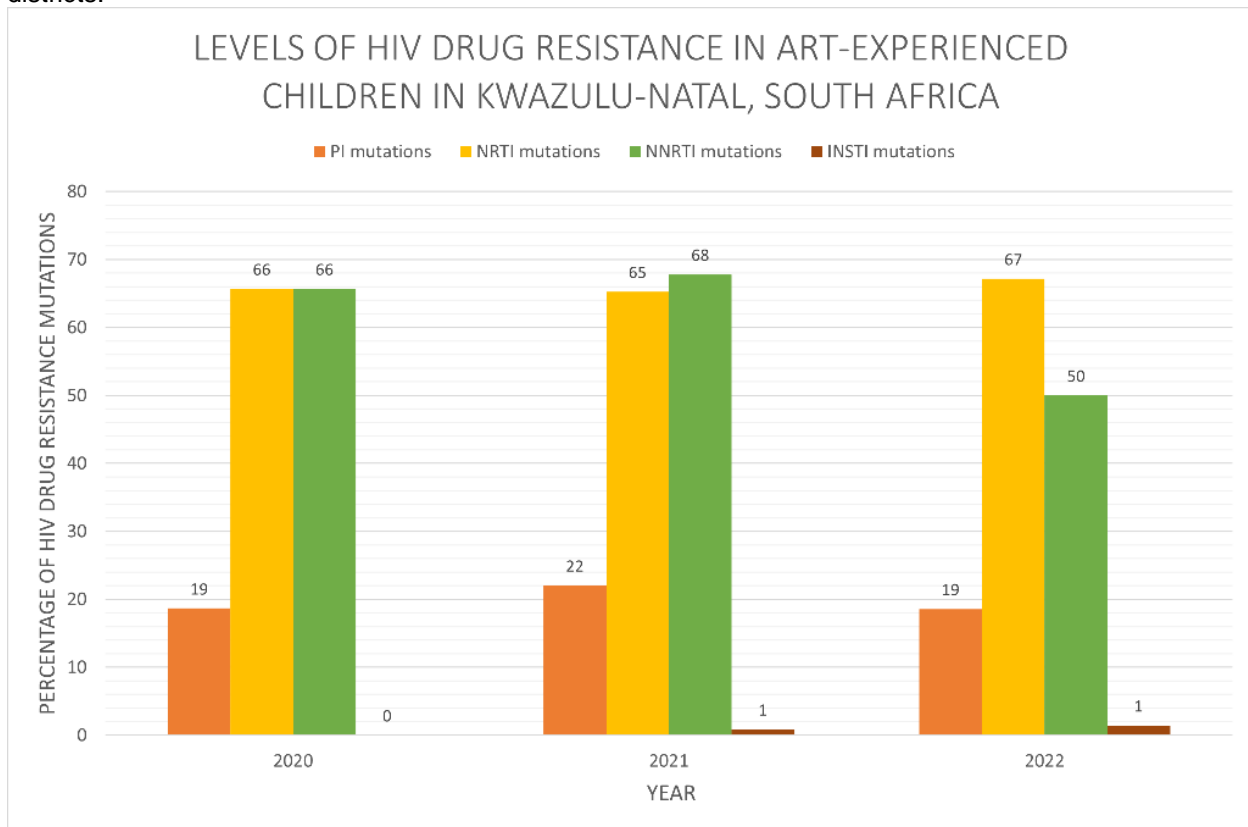
Aims: This study aimed to characterize HIVDR mutations from genotypes of ART-experienced children receiving HIV-care at public-sector healthcare facilities in KwaZulu-Natal (KZN) province, post-DTG rollout (January 2020 - June 2022) in South Africa.

Methods: We curated HIVDR genotypic data obtained from National Health Laboratory Service (NHLS), for children with virological failure, defined as consecutive viral loads $\geq 1,000$ copies/mL on ART.

Results: Of 322 genotypes curated, 277 (86%) were from children on protease inhibitor (PI)-based regimens, and 265 (82% CI 77.7–86.3) had HIVDR mutations. Most genotypes had nucleoside (212/322, 66%) and non-nucleoside reverse transcriptase inhibitor (NNRTI) resistance mutations (203/322, 63%), with only 20% (64/322) having PI-specific mutations. DTG-associated resistance was detected in <1% (2/322) of children, and 20 (6%) had any tenofovir-associated resistance mutations. Overall, rural districts in KZN had fewer HIVDR genotypes (71/322, 22%) but with similar HIVDR prevalence rates compared to densely populated peri-urban and urban



districts.



Conclusions: About four in every five genotypes had HIVDR mutations, warranting close monitoring of treatment outcomes among children on PI-based ART. Maintaining low levels of tenofovir-associated resistance is important in ensuring sustainable use of TDF in future ART regimens. These findings emphasize the need for enhanced HIVDR surveillance, especially in rural KZN, among ART-experienced children.

O047 / #675

ORAL PRESENTATIONS 07: VIRAL INFECTIONS, HIV AND SARS-CO-V19
16-11-2023 09:00 - 10:15

**INTEGRATION OF PREP FOR PREGNANT AND BREASTFEEDING WOMEN IN SOUTH AFRICA:
RESULTS FROM AN IMPLEMENTATION SCIENCE STUDY**

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Background: Postnatal HIV transmission remains disproportionately high in South Africa, with around a third due to incident infections. The national pre-exposure prophylaxis (PrEP) guidelines were recently updated to include at-risk pregnant and breastfeeding women (PBFW).

Aims: We aimed to evaluate the acceptability and feasibility of integrating PrEP in standard antenatal and postnatal services.

Methods: Between March 2022-May 2023, we collaborated with the Department of Health to integrate oral PrEP for PBFW by training and mentoring health care workers (HCW) at 8 high HIV-prevalence clinics in Cape Town. We conducted 9 in-depth interviews and 3 focus group discussions (n= 20) among providers to understand barriers and facilitators.

Results: We trained 184 HCWs in 8 facilities and mentored a subset working directly with PBFW (46 nurses and 19 HIV counsellors) to actively counsel PBFW and prescribe PrEP. Post-intervention, all 8 clinics trained were still providing PrEP to PBFW as per guidelines. In 6-months, of 14,917 HIV-negative pregnant women, 1,075 women started PrEP (7%), 388 (36 %) continued at 3-months. Of 708 HIV-negative breastfeeding women, 131 women (18%) started PrEP, 30 (23%) continued at 3-months. Facilitators of PrEP integration included: dedicated staff and good PrEP availability within the clinic. Barriers included: suboptimal postpartum HIV testing, poor integration of maternal and child care and limited number of ART-trained nurses.

Conclusions: Integrating PrEP was relatively acceptable by PBFW and relatively feasible from a provider standpoint; however, continuation was low. Urgent action is required to ensure access to PrEP by ensuring regular HIV testing and PrEP offer among postpartum women.

O048 / #499

ORAL PRESENTATIONS 07: VIRAL INFECTIONS, HIV AND SARS-CO-V19
16-11-2023 09:00 - 10:15

SARS-COV-2 AS A CAUSE OF DEATH IN CHILDREN IN SOWETO, SOUTH AFRICA

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Background: SARS-CoV-2 has a much lower reported mortality rate in children (0.1%) compared to adults (1.4% – 12.9%). The Child Health and Mortality Prevention Surveillance study has been ongoing since 2016 in seven low-to-middle-income countries, with the aim of producing accurate causes of death (COD) using advanced diagnostics.

Aims: To evaluate SARS-CoV-2 associated deaths in children in the low-to-middle-income setting of Soweto between March 2020 – December 2022.

Methods: Multidisciplinary panels determined COD by analysing all available clinical and postmortem results collected during minimally invasive tissue sampling. SARS-CoV-2 testing was done on antemortem and postmortem nasopharyngeal swabs and lung tissue samples.

Results: SARS-CoV-2 was included in the COD in 4.4% (n=30/683) of all decedents, including 4.2% (n=7/166) of stillbirths, 4.2% (n=14/336) of neonates (0–28 days-old), 4.3% (n=6/139) of infants (1–12 months) and 7.1% (n=3/42) of children (1–59 months). In the SARS-CoV-2 related stillbirths and neonatal deaths, SARS-CoV-2 was frequently (100%, n=7/7 and 78.6%, n=11/14) included in the COD as “maternal disease affecting the infant”, often resulting in premature birth (71.4%, n=5/7 and 78.6%, n=11/14). Where SARS-CoV-2 was in the causal pathway to death in children 1–59 months old, SARS-CoV-2 was the underlying or immediate COD in 33.3% (n=3/9), while most of the remaining cases (55.6%, n=5/9) also involved nosocomial sepsis with *Klebsiella pneumoniae* (n=5/9), *Escherichia coli* (n=2/9), *Staphylococcus aureus* (n=1/9) and *Enterococcus faecium* (n=1/9) co-infections.

Conclusions: A large proportion of SARS-CoV-2 related stillbirths and neonatal deaths were associated with maternal SARS-CoV-2 infections, further highlighting the importance of vaccinating pregnant women as per the World Health Organisation recommendations.

O049 / #475

ORAL PRESENTATIONS 07: VIRAL INFECTIONS, HIV AND SARS-CO-V19
16-11-2023 09:00 - 10:15

CLINICAL PHENOTYPES IN CHILDREN WITH PEDIATRIC POST-COVID CONDITION

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Background: Pediatric Post-COVID Condition (PPCC) is a heterogeneous disease, and can have a large impact on children's daily life [Lopez-Leon et al. Nature Sci Rep. 2022]. Understanding the clinical phenotypes of PPCC can help us to better characterize and possibly prevent and treat this condition.

Aims: To identify clinically meaningful clusters of phenotypes within children with PPCC.

Methods: Children with physician-diagnosed PPCC, referred to academic hospital Amsterdam UMC, the Netherlands (November 2021-February 2023), were invited to participate. Demographic factors and information on post-COVID symptoms, comorbidities, and impact on daily life were collected. Clusters were identified by means of hierarchical clustering on the Gower distance for mixed data types.



Results:

Table 1. Characteristics of three PPCC clusters

	Total (N = 112)	Cluster 1 (N = 60)	Cluster 2 (N = 33)	Cluster 3 (N = 19)	p-value
Patient characteristics					
Sex, Male	44 (39.3%)	16 (26.7%)	16 (48.5%)	12 (63.2%)	0.007
Age (median, IQR)	14.0 (11.0, 16.0)	15.0 (13.0, 16.0)	13.0 (9.0, 16.0)	11.0 (9.0, 14.0)	< 0.001
BMI (z-score)	-0.1 (-0.7, 0.9)	-0.2 (-0.7, 0.5)	0.0 (-0.4, 1.4)	-0.3 (-1.2, 0.8)	0.079
Comorbidities					
Allergy	54 (48.2%)	31 (51.7%)	20 (60.6%)	3 (15.8%)	0.005
Psychological*	23 (20.5%)	16 (26.7%)	2 (6.1%)	5 (26.3%)	0.043
Impact on daily life					
School* (average, SD)	<i>N</i> = 108	<i>N</i> = 58	<i>N</i> = 32	<i>N</i> = 19	
School* (average, SD)	2.7 ± 1.0	2.8 ± 1.1	3.1 ± 0.8	1.8 ± 0.8	< 0.001
Social contacts* (average, SD)	2.3 ± 0.9	2.4 ± 0.9	2.4 ± 1.0	1.9 ± 0.8	0.129
Exercise** (average, SD)	2.8 ± 0.9	3.0 ± 0.8	2.9 ± 0.8	1.9 ± 0.8	< 0.001
Most prevalent symptoms					
Fatigue	111 (99.1%)	60 (100.0%)	33 (100.0%)	18 (94.7%)	0.170
Exercise intolerance	89 (79.5%)	57 (95.0%)	26 (78.8%)	6 (31.6%)	< 0.001
Dyspnea	57 (51.4%)	41 (69.5%)	15 (45.5%)	1 (5.3%)	< 0.001
Sleep problems	47 (42.7%)	15 (25.4%)	29 (87.9%)	3 (16.7%)	< 0.001
Heart palpitations	34 (31.2%)	20 (33.9%)	12 (37.5%)	2 (11.1%)	0.109
Neurological symptoms					
Headache	73 (66.4%)	41 (69.5%)	26 (78.8%)	6 (33.3%)	0.005
Memory loss	63 (58.3%)	35 (60.3%)	26 (81.2%)	2 (11.1%)	< 0.001
Concentration loss	37 (33.0%)	26 (43.3%)	9 (27.3%)	2 (10.5%)	0.020
Loss of smell	26 (23.6%)	20 (33.9%)	4 (12.5%)	2 (10.5%)	0.029
Gastrointestinal symptoms					
Abdominal pain	34 (30.6%)	6 (10.2%)	20 (60.6%)	8 (42.1%)	< 0.001
Nausea	40 (36.7%)	12 (20.7%)	24 (72.7%)	4 (22.2%)	< 0.001
Decreased appetite	38 (34.9%)	16 (28.1%)	20 (60.6%)	2 (10.5%)	< 0.001
Other symptoms					
Fever	16 (14.4%)	5 (8.3%)	6 (18.2%)	5 (27.8%)	0.083

Numeric data was compared by using Kruskal-Wallis test, categorical data with Fisher's exact test.

* Psychological comorbidities include autism, ADHD and anxiety/depressive disorders.

* 1 = No impact, 2 = mild impact (not possible 1-2x a month), 3 = moderate impact (not possible 1-2x a week), 4

= severe impact (not possible 3-5x a week)

** 1 = No impact, 2 = mild impact (80% of normal), 3 = moderate impact (50% of normal), 4 = severe impact (not possible at all)

Data-

analyses of 112 children (median age 14, range 3-18) with PPCC resulted in three distinct clusters. Characteristics per cluster were (table 1):

- Cluster 1 (n=60): mainly girls (73%), median age of 15 (13-16), moderate impact on daily life, higher number of symptoms, of which most common: fatigue, exercise intolerance, dyspnea, neurological

complaints, loss of smell.

- Cluster 2 (n=33): gender evenly distributed, median age of 13 (9-16), moderate impact on daily life, most common symptoms: fatigue, headache, sleep problems, memory loss, abdominal symptoms, joint pains.
- Cluster 3 (n=19): mainly boys (63%), median age of 11 (9-14), mild impact on daily life, smaller number of symptoms, of which most common: fatigue, abdominal pain and fever.

Conclusions: Identification of clinical phenotypes of PPCC can guide us in understanding the possible underlying pathophysiological mechanisms and facilitate further research on targeted interventions.

O050 / #668

ORAL PRESENTATIONS 07: VIRAL INFECTIONS, HIV AND SARS-CO-V19
16-11-2023 09:00 - 10:15

RISK FACTORS FOR PEDIATRIC INTENSIVE CARE UNIT (PICU) ADMISSION IN INFANTS WITH ACUTE RESPIRATORY SYNCYTIAL VIRUS BRONCHIOLITIS

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Background: Approximately 80% of cases of hospitalizations due to bronchiolitis in infants are attributable to RSV. Risk factors for serious diseases involve prematurity, age, low birth weight and others.

Aims: To evaluate risk factors for PICU admission in infants from 0-24 months hospitalized with RSV bronchiolitis in a tertiary hospital in Sao Paulo, Brazil.

Methods: A hospital-based surveillance to identify risk factors associated with PICU admission among infants under 2 years of age hospitalized with LRTI due to RSV from April 2017 to December 2020 identified through direct fluorescence for RSV and RT-PCR panel for respiratory viruses (including RSV A+B).

Results: 252 infants were admitted to hospital during the study period, 60 % were male, 44% (110/252) were under 3 months of age, of which 45% required admission to the PICU and 5% needed mechanical ventilation assistance. Age less than 3 months was the major risk factor associated with hospitalization in the PICU. Most of the cases were term-babies 85% (228/252). The average length of stay (LOS) for hospitalization was higher than 7 days in more than 50% of cases (133/252). Median Age of the infants admitted was 2.6 ± 4.1 months. Only one fatality case was registered in the period. A sharp reduction of hospitalizations was observed in 2020, the 1st year of the pandemic.

Conclusions: Most children hospitalized with RSV bronchiolitis were healthy term infants, with age < 3 months identified as the major risk factor for PICU admission. These results emphasize the importance of incorporating preventive strategies against RSV to all infants.

O051 / #838

ORAL PRESENTATIONS 07: VIRAL INFECTIONS, HIV AND SARS-CO-V19
16-11-2023 09:00 - 10:15

**SEROPREVALENCE OF HEPATITIS A AMONG HIV-EXPOSED UNINFECTED AND INFECTED
PAEDIATRIC POPULATIONS IN SOUTH AFRICA**

Edina Amponsah-Dacosta¹, Lufuno Ratshisusu², Lorato Modise², Ntombifuthi Blose³, Omphile Simani², Gloria Selabe², Benjamin Kagina¹, Rudzani Muloiwa⁴

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Background: The WHO recommends routine childhood vaccination for countries like South Africa, transitioning from high to intermediate hepatitis A endemicity (seroprevalence <90% by 10 years of age). Evidence on the seroprevalence of hepatitis A among children living with or exposed to HIV is currently insufficient to guide rational vaccine decision-making.

Aims: To determine the seroprevalence of hepatitis A among HIV infected and exposed uninfected (HEU) children compared to their HIV unexposed uninfected (HUU) counterparts in the Western Cape, South Africa.

Methods: A convenient population of children (0.1 – 12 years) who received in/outpatient care for lower-respiratory tract infections between 2012–2016 were included in this study. Anti-HAV IgM and total antibody were tested using the Cobas® 6000 Analyzer. Multinomial logistic regression was performed to determine independent risk factors.

Results: Of 535 participants, 54.6% (292) were male and the median age was 0.9 years (IQR:1.9). The proportion of HIV infected, HEU and HUU sub-groups was 46.5%, 30.3%, and 19.1%, respectively. Maternal level of education and socio-economic status were highest among HUU and HEU sub-groups ($p < 0.001$). The seroprevalence of anti-HAV IgM and total antibody was 0.5% (2/374 [95% CI 0.09-2.13]) and 56.7% (207/365 [95% CI 51.4-61.8]), respectively. Overall, seroprevalence was highest among <1 year-olds (52.2% [194/374]), and in HIV (27.1% [95% CI 23.7-32.0]) and HEU (17.8% [95% CI 14.1-22.2]) compared to the HUU subgroup (8.8% [95% CI 6.16-12.2]).

Conclusions: These findings underscore the intermediate endemicity of hepatitis A in South Africa and further demonstrate relatively higher seroprevalence rates among children living with or exposed to HIV.

O052 / #321

ORAL PRESENTATIONS 08: MISCELLANEOUS

16-11-2023 09:00 - 10:15

PROSPECTIVE COHORT OF COVID-19 IN PREGNANCY: GESTATIONAL, NEONATAL AND FIRST YEAR OUTCOMES.

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Background: Previous coronavirus epidemics have been associated with higher maternal morbidity and mortality, and adverse obstetric and neonatal outcomes. The effects of intrauterine exposure to SARS-CoV-2 on child neurodevelopment are still unknown.

Aims: To determine the association between COVID-19 during pregnancy and maternal, neonatal, and child developmental outcomes.

Methods: We conducted a prospective cohort study among pregnant women with COVID-19 and their infants and a control group. Child neurodevelopment was assessed using the Child Development Monitoring Guide in the IMCI context and the Ages & Stages Questionnaire (ASQ-3). For the postpartum depression survey, the Edinburgh Postpartum Depression Scale (EPDS) was used.

Results: 84 pregnant women with mild COVID-19 and 88 without participated in the study. Participants were not vaccinated. Pregnant women with COVID-19 had a higher risk of sonographic alterations, preterm delivery and postpartum depression. 127 children were followed for one year, 69 children in the group exposed to SARS-CoV-2 (EG) and 68 in the control group (CG). Type of birth, Apgar scores, mean birth weight, head circumference, and length at birth were similar in both groups. 20.3% of the EG and 5.9% of the CG were diagnosed with a neurodevelopmental delay within 12 months of life ($p=0.013$, $RR=3.44$; 95% CI, 1.19-9.95).

Conclusions: Our findings highlight the consequences of COVID-19 during pregnancy, even in mild cases. Exposure to SARS-CoV-2 in utero was associated with impaired neurodevelopment in the first year of life and reinforces the importance of understanding the impact of the pandemic on child developmental trajectories, in order to recommend appropriate early interventions.

O053 / #693

ORAL PRESENTATIONS 08: MISCELLANEOUS
16-11-2023 09:00 - 10:15

SARS-COV-2 EPIDEMIOLOGY AND ONSITE SCHOOLING IN FIVE COUNTRIES

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¹Murdoch Children's Research Institute, Asia-pacific Health, Parkville, Australia, ²University of Melbourne, Department Of Paediatrics, Parkville, Australia

Background: School closures and remote learning were adopted to reduce the transmission of SARS-CoV-2. While school transmission occurs, schools do not seem to be a key driver of community transmission.

Aims: We describe the epidemiology of SARS-CoV-2 in the context of returning to onsite schooling during the Delta and Omicron BA.1 variant periods in five countries with good testing rates and the availability of age-specific surveillance data.

Methods: Population demographics and COVID-19 surveillance data on case trends, hospitalisations and deaths were sourced from Canadian, Danish, Finnish, English and Scottish government websites. Incidence rates were presented graphically. Data on school closures/re-openings dates were sourced from UNESCO's COVID-19 Education Response portal. The Oxford COVID-19 government response index was utilised to measure stringency of public health measures where available.

Results: Between May 2021 and June 2022, schools were open for in-person learning, except for hybrid instruction in May/June 2021 and December/January 2022. Incidence rate trends for all outcomes and age groups changed irrespective of when schools returned to onsite learning across all five countries. Waves of cases, hospitalisations, and mortality more likely reflected the emergence of new variants, immune evasion and waning or changes to public health measures.

Conclusions: The trajectory of each wave did not appear to be changed by school re-opening. More robust evidence is required to justify school closures with future pandemic planning given the major impacts school closures have on children's academic progress, social development, and physical and mental health.



O054 / #318

ORAL PRESENTATIONS 08: MISCELLANEOUS
16-11-2023 09:00 - 10:15

CLINICAL, ECONOMIC AND SOCIETAL PAEDIATRIC PNEUMOCOCCAL DISEASE BURDEN IN FIVE LATIN AMERICAN COUNTRIES DUE TO SEROTYPES CONTAINED IN LICENSED AND INVESTIGATIONAL PNEUMOCOCCAL CONJUGATE VACCINES

Sophie Warren¹, Liping Huang², Rafael Bolaños-Díaz³, Lucila Rey Ares⁴, Juan Sanchez⁵, Jose Huerta⁶, Alana Ranzi⁷, Rodrigo Alexandre⁷

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Background: Pneumococcal conjugate vaccines (PCVs) have been included in Latin American National Immunisation Programs (NIPs) since 2009 and have had significant impact on pneumococcal disease morbidity and mortality, but disease burden remains. Higher-valent PCVs are expected to be introduced to the region soon.

Aims: The objective of this analysis was to estimate the clinical, economic, and societal burden due to PCV serotypes in children under 5 in Argentina, Brazil, Chile, Colombia, and Mexico.

Methods: Epidemiologic, clinical, and cost data were derived from published sources to calculate annual number cases, deaths, and direct medical costs due to invasive and non-invasive pneumococcal disease (PD) caused by PCV10-GSK, PCV10-SII, PCV13, PCV15 and PCV20 serotypes. A human capital approach was taken to estimate indirect, non-medical costs due to PCV serotypes resulting from caregiver productivity loss.

Results: In all countries, PCV20 had the greatest serotype coverage. Annually, PCV20 serotypes caused 225,207 cases, 820 deaths, over \$62 million in direct medical costs, and over \$19 million in indirect, non-medical costs across the 5 countries, of which 36,276 cases, 98 deaths, \$9.7 million in direct medical costs, and \$3.2 million in indirect non-medical costs are due to PCV20-unique serotypes (Table



1).

Table 1. Estimated annual clinical and economic burden in 5 Latin American countries due to serotypes contained in licensed and investigational PCVs.

	Argentina	Brazil	Chile	Colombia	Mexico
<i>Serotype coverage</i>					
PCV10-GSK	18%	3%	7%	7%	4%
PCV10-SII	22%	44%	31%	59%	32%
PCV13	30%	55%	39%	70%	37%
PCV15	33%	58%	44%	70%	37%
PCV20	46%	67%	62%	73%	51%
<i>Total PD cases</i>					
PCV10-GSK	12537	3316	8592	4886	771
PCV10-SII	15406	51631	36108	32571	6702
PCV13	21020	65131	45280	38542	7716
PCV15	23023	68566	51085	38542	7716
PCV20	32150	78750	63856	39628	10823
<i>Total PD deaths</i>					
PCV10-GSK	21	20	1	29	3
PCV10-SII	25	312	3	196	29
PCV13	35	393	4	232	33
PCV15	38	414	4	232	33
PCV20	53	476	6	239	46
<i>Total direct medical costs (\$ USD)</i>					
PCV10-GSK	2,067,389	505,989	388,896	2,254,541	1,188,438
PCV10-SII	2,540,522	7,878,999	1,634,419	19,983,431	10,321,503
PCV13	3,466,217	9,939,107	2,033,828	23,775,160	11,884,380
PCV15	3,796,496	10,463,167	2,301,851	24,014,277	11,884,380
PCV20	5,301,611	12,017,282	3,258,327	25,004,908	16,670,692
<i>Total indirect, non-medical costs (\$ USD)</i>					
PCV10-GSK	400,460	366,391	604,281	274,101	47,191
PCV10-SII	492,108	5,705,226	2,539,613	2,429,529	409,846
PCV13	671,418	7,196,941	3,160,225	2,890,517	471,905
PCV15	735,395	7,576,436	3,576,689	2,919,588	471,905
PCV20	1,026,940	8,701,778	5,062,893	3,040,026	661,960

PCV10-GSK = 10-valent pneumococcal conjugate (PCV) vaccine manufactured by GlaxoSmithKline. PCV10-SII = 10-valent PCV manufactured by Serum Institute of India. PCV13 = 13-valent PCV manufactured by Pfizer, Inc. PCV15 = 15-valent PCV manufactured by Merck. PCV20 = 20-valent PCV manufactured by Pfizer, Inc. USD = United States Dollar.

Conclusions: Pneumococcal disease in children under 5 years old still contributes to significant morbidity, mortality, and costs in Argentina, Brazil, Chile, Colombia, and Mexico. Indirect, non-medical costs due to caregiver productivity loss are substantial and should be included when estimating the total

economic burden associated with PCV serotypes. Higher-valent PCVs may have significant impact in the region.

O055 / #566

ORAL PRESENTATIONS 08: MISCELLANEOUS
16-11-2023 09:00 - 10:15

**RATIONALE FOR A PENTAVALENT MENINGOCOCCAL SEROGROUP ABCWY VACCINE: A
REVIEW OF EPIDEMIOLOGIC AND CLINICAL DATA**

Jason Maguire¹, Leteris Zolotas², Beth Moughan¹, Paula Peyrani³, Paul Balmer³, Jamie Findlow⁴, William Gruber⁵, Annaliesa Anderson⁵, Johannes Beeslaar²

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Background: Invasive meningococcal disease (IMD) is dominated by serogroups A, B, C, W, and Y; currently available vaccines target serogroups ACWY or B only using different schedules.

Aims: We present the potential utility of a pentavalent MenABCWY vaccine against the challenges of the evolving IMD epidemiology.

Methods: Global IMD burden was assessed via surveillance reports/PubMed articles published during January 2010-June 2020. Data were derived from the MenABCWY clinical development program. Immunogenicity evaluations utilized hSBA against serogroup A/C/W/Y strains and 4 diverse B strains. Proportions of participants achieving seroprotective hSBA titers and those achieving ≥ 4 -fold rise from baseline (seroresponse) were determined. Safety was also evaluated.

Results: Data from 77 countries indicated a 2010-2019 IMD incidence of < 3 per 100,000 characterized by unpredictable shifts in disease-causing serogroups and sporadic outbreaks. Incidence peaked among infants and young children. Serogroups ABCWY caused the vast majority of IMD. Clinically, after 2 MenABCWY doses at 0,6-month, 93.3%–97.8% of ACWY-naïve participants achieved hSBA seroresponses for serogroups A/C/W/Y and serogroup B test strains, respectively, which were noninferior (at –10% margin) to 1 MenACWY-CRM dose and 2 MenB-FHbp doses (0,6-month) respectively. After a 4-year booster dose, 100% achieved seroprotective hSBA titers for A/C/W/Y and percentages achieving seroprotective hSBA titers for B test strains were higher than after the primary series. MenABCWY was well-tolerated. No safety concerns were identified.

Conclusions: MenABCWY was safe, well tolerated, and highly immunogenic and may address challenges in evolving IMD epidemiology and existing vaccination schedules by providing adolescents/young adults with comprehensive protection using a single vaccine. Funded by Pfizer.



O056 / #850

ORAL PRESENTATIONS 08: MISCELLANEOUS
16-11-2023 09:00 - 10:15

THE EFFECT OF MATERNAL AND CHILD BCG SCARRING ON DISEASE SEVERITY: AN OBSERVATIONAL HOSPITAL-BASED STUDY FROM GUINEA-BISSAU

Anna Toft¹, Christine Benn², Carsten Larsen³, Peter Aaby⁴, Frederik Scholtz-Buchholzer¹

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Background: The Bacillus Calmette-Guérin (BCG) vaccine against tuberculosis has beneficial non-specific effects, lowering all-cause child mortality. These effects may be amplified if the mother is BCG-vaccinated as well.

Aims: Assessing the overall and age-specific effects on in-hospital mortality if both child and mother have BCG scars ("double scar") compared with the combined group of just one scar (either child or mother), or no scars ("mono-/no scar").

Methods: Observational study conducted at the main pediatric ward in Guinea-Bissau, examining the overall and age-specific case-fatality of children aged 2 months to 5 years from 2017 - 2023. Data was analyzed in binomial logistic regression models adjusted for child, vaccination, and maternal characteristics, with the double scar group as reference.

Results: We had BCG scar data for 3,950 children (Double scar: 1,905, Mono scar: 1,565, No scar: 480) and 6.1% (241/3,950) died during admission; 7.2% (148/2,045) in the mono-/no scar group and 4.9% (93/1,905) in the double scar group. The overall aRR of dying for mono-/no scar vs. double scar was 1.23 (0.95-1.59). The age-specific aRR was 1.59 (1.08-2.35) from 2-8 months, 1.17 (0.77-1.77) from 9-23 months and 0.86 (0.49-1.50) from 2-5 years. The median duration of hospitalization was longer for children in the mono-/no scar group compared to the double scar group (5 days and 4 days respectively ($p < 0.001$)).

Conclusions: Corroborating findings from previous studies, children with mono- or no scar tended to have higher risk of in-hospital death compared to children with double scar. These findings suggest further investigation into the priming effect of maternal BCG vaccination.



O057 / #864

ORAL PRESENTATIONS 08: MISCELLANEOUS
16-11-2023 09:00 - 10:15

TRENDS IN MEASLES HOSPITALIZATION AND OUTCOMES FROM SIX TERTIARY HOSPITALS IN NORTHERN NIGERIA: A PRE-COVID-19 AND COVID-19 YEARS (2018-2022) REVIEW

Rasheedat Ibraheem¹, Olayinka Ibrahim², Taofik Ogunkunle³, Kudirat Abdulkareem⁴, Rasaki Aliu⁵, Afeez Bello⁶

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Background: COVID-19 impacted negatively on vaccination uptake due to the mitigating measures adopted during the outbreak and contributed to the upsurge of measles in Nigeria. The extent of the impact and outcome, especially among the severe cases, mostly managed at the referral centres in Nigeria, needs to be documented.

Aims: To compare the outcome of hospitalized children with measles in the pre-COVID-19 and COVID-19 years in North Nigeria.

Methods: A retrospective review of hospitalized children with measles between the 1st of January 2018 to December 2019 (pre-COVID era) and January 2020 to June 2022 (COVID-19 period) at six tertiary facilities in Northern Nigeria. We extracted the demographics, clinical presentation, complications, outcome and duration of hospital stay.

Results: There were 397 cases; 341 (85.9%) were under-fives, and 221 (55.7%) were males. Seventy-nine (19.9%) and 318(80.1%) cases were identified in the pre-COVID-19 and COVID-19 periods, respectively. The proportion of hospitalized under-five cases remained unchanged over the five years, $p=0.690$. Seventy-three (18.4%) children had up-to-date vaccination for age (16/73 pre-COVID), and 277 (69.8%) were unvaccinated.

The mortality pre-COVID-19 was 2.5% (2/79) versus 21.1% (67/318, COVID-19 years). The odds of mortality in the COVID-19 period was 10.16, 95% C.I. 2.43-42.41, $p=0.002$. Sixty-nine (17.4%) children died; 65 (19.1%) were under-fives, and four (7.1%) were five years and above. The odds of death among under-fives was 3.06, 95% CI 1.07 to 8.77, $p=0.029$.

Conclusions: The proportion of hospitalized under-five children with measles did not change. The mortality in the COVID-19 years was high, especially among under-fives.

O058 / #658

ORAL PRESENTATIONS 08: MISCELLANEOUS
16-11-2023 09:00 - 10:15

**REFLECTIONS OF MINIMALLY INVASIVE TISSUE SAMPLING FOR CAUSE OF DEATH
DETERMINATION IN SOUTH AFRICAN CHILDREN**

Jeanie Du Toit¹, Kimberleigh Storath¹, Imaan Dunn¹, Palesa Makekeng¹, Muhammed Moosa¹, Kamogelo Mothibi¹, Nadia Umuneza¹, Chris Rees², Dianna Blau³, Sana Mahtab¹, Shabir Madhi⁴, Ziyaad Dangor¹
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Background: The uncertainty of the cause of paediatric deaths impacts the determination of burden of disease and prioritization of effective public health interventions. Findings from minimally invasive tissue sampling (MITS) correlates with complete diagnostic autopsy and is more feasible in low- and middle-income countries. Through the Child Health and Mortality Surveillance (CHAMPS) study, the causal chain and cause of death has been determined for over a 1000 children under-5 and stillbirths in Soweto. The MITS procedure is costly, and therefore adapting the procedures and sampling to disease profile may be cost effective.

Aims: We aimed to devise a pragmatic approach for clinicians undertaking MITS as standard practice in child deaths and stillbirths.

Methods: Algorithms were derived from previously collected data and current experience.

Results: We developed three algorithms based on experience and results from the CHAMPS site. The stillbirth algorithm emphasizes the critical importance of histological examination of the placenta and the shows the value of a maternal medical history. The neonatal algorithm differentiates between preterm and term neonates and is strongly influenced by hospital acquired infections. In addition, many neonates die of the complications from prematurity, intrapartum hypoxia, and congenital abnormalities. The paediatric algorithm is directed by the main paediatric hospital presentations and factors in children with uncontrolled HIV or malnutrition.

Conclusions: Our data-informed pragmatic algorithms could be used as a more cost-effective and scalable MITS procedure to better determine cause of death in LMIC.

E-Poster Discussion Presentations



PD001 / #420

E-POSTER DISCUSSIONS 01: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL
15-11-2023 13:00 - 14:15

SUCCESSFUL CONTROL OF AN OUTBREAK BY PHENOTYPICALLY IDENTIFIED EXTENDED-SPECTRUM BETA-LACTAMASE-PRODUCING KLEBSIELLA PNEUMONIAE IN A NEONATAL INTENSIVE CARE UNIT

Elena Priante¹, Chiara Minotti¹, Cristina Contessa², Paola Stano³, Ettore De Canale³, Vincenzo Baldo⁴, Eugenio Baraldi¹, Daniele Donà¹

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Background: Premature newborns represent a vulnerable population, at high risk of acquiring nosocomial infections. Multidrug-resistant organisms represent the greatest concern due to their intrinsic virulence and limited therapeutic options. Resistant Enterobacterales are a growing threat for critically ill neonates, with increasing numbers of NICU outbreaks caused by extended-spectrum beta-lactamase (ESBL)-producing Enterobacterales being described.

Aims: This study reports the early detection and successful control of an outbreak caused by ESBL-producing *Klebsiella pneumoniae* (ESBL-KP) in an Italian NICU in February 2021.

Methods: This is a retrospective observational study.

Results: 13 newborns tested positive for ESBL-KP in early February 2021, of whom four (31%) had a bloodstream infection. Two were critically ill, extremely premature newborns who died because of multiple comorbidities, and two were cured after treatment with meropenem. All other patients were discharged home or moved to other hospitals/wards in good clinical condition. ESBL-KP ST45 was found in all isolates by multilocus sequence typing (MLST) analysis. An outbreak control plan was set, including regular surveillance cultures, monitoring of NICU environments and medical devices, along with the extended use of contact precautions and cohorting. The infection control plan was carried out through the reinforcement of existing measures to guarantee maximal compliance. The outbreak was successfully controlled in seven days. The source of the ESBL-KP outbreak was not identified.

Conclusions: Thanks to multidisciplinary management, the prompt recognition of the event onset, and the adoption of infection control interventions, the outbreak was successfully controlled in few days. Shared and homogeneous IPC actions are needed to prevent, promptly detect and eradicate possible outbreaks.



PD002 / #411

E-POSTER DISCUSSIONS 01: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL
15-11-2023 13:00 - 14:15

ANTIBIOTIC PRESCRIBING PRACTICES, INFECTION PREVENTION & CONTROL STRATEGIES AND ANTIBIOTIC RESISTANCE AMONG NEONATAL SEPSIS IN VIETNAM: A MULTICENTRE STUDY

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Background: Neonatal infections and antimicrobial resistance are crucial health problems in low-middle-income countries such as Vietnam.

Aims: As part of the NeoSEAP study, we aimed to evaluate the contemporaneous causes of neonatal sepsis in Vietnam across both public and private hospitals. Concurrently, antibiotic prescribing practices and infection, prevention, and control (IPC) resources were analysed to consider their relation to the epidemiology of multidrug-resistant (MDR) neonatal infections.

Methods: A point prevalence antibiotic prescribing study and a standardised IPC survey was conducted across 4 clinical settings in Vietnam in 2022. Concurrently, a two-year retrospective review of blood culture data to ascertain the causes of neonatal sepsis and prevalence of MDR infections was undertaken.

Results: Across 4 public and private hospitals incorporating 13,298 neonatal deliveries each year, 3,009 blood cultures were collected including 273 positive cultures of which 225 revealed significant pathogens. *Serratia* spp., *Klebsiella* spp. and *Candida* spp. were the most common pathogens isolated in neonatal sepsis. Among gram-negative pathogens, there were high rates of third-generation cephalosporin resistance yet carbapenems remained largely susceptible. Over 80% of antibiotics prescribed empirically were WHO Access classified, with no Reserve antibiotics prescribed. There were high rates of protective practices with Kangaroo Mother Care (KMC) practiced intensively for infants of all gestational ages, and breastfeeding.

Conclusions: Compared to other Southeast Asian nations, our study revealed lower rates of gram-negative resistance in neonatal sepsis in Vietnam. This may be associated with high rates of KMC and breastfeeding practices. Empirical antibiotic prescribing concurs with WHO guidance, yet high rates of neonatal *Candida*emia requires ongoing attention.

PD003 / #540

E-POSTER DISCUSSIONS 01: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL
15-11-2023 13:00 - 14:15

PAEDIATRIC ANTIMICROBIAL STEWARDSHIP PROGRAMMES IN LOW- AND MIDDLE-INCOME COUNTRIES: THE NIGERIAN SOCIETY FOR PAEDIATRIC INFECTIOUS DISEASES (NISPID) EXPERIENCE

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Background: Antimicrobial abuse drives antimicrobial resistance and is prevalent in low- and middle-income countries. Facility antimicrobial stewardship (AMS) programmes are essential interventions.

Aims: We describe baseline assessment in the Nigerian Society for Paediatric Infectious Diseases (NISPID) AMS programme network and interventions to strengthen/establish paediatric AMS programmes.

Methods: Baseline assessment of core elements of hospital AMS programmes was conducted with the World Health Organisation tool. Assessment report was used to strengthen/establish AMS programmes.

Results: The Network now has 17 hospitals and 82 multidisciplinary members. Thirteen hospitals completed the baseline assessment, 9 were academic hospitals. Hospitals median (range) in-patient bed capacity was 600(300-1000) beds, all had microbiology laboratories and pharmacies. Thirty-six paediatric ID specialist are involved, median (range) of two (0-6) per hospital, only two have paediatric ID sub-speciality training. Eleven hospital managements had prioritised AMS, eight had AMS committees and action plans, none had AMS budget lines. Four hospitals used standard treatment guidelines, four practised antibiotic restriction, two conducted antibiotic rounds, but none used antibiotic prescription charts. Two hospitals conducted induction rational antimicrobial use (AMU) and infection management training, and three AMS teams had been trained. Seven hospitals had conducted AMU point prevalence surveys (PPS), three conducted antimicrobial consumption audit, nine conducts AMR surveillance, only one audits AMS programme. Two hospitals share PPS and AMR surveillance reports hospital-wide, and one shared antibiogram. Centres were trained on constituting AMS committees, teams, terms of reference and roles of constituent members.

Conclusions: Resources exist for paediatric AMS programmes in Nigeria, but there is a need for training and support.



PD004 / #425

E-POSTER DISCUSSIONS 01: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL
15-11-2023 13:00 - 14:15

ANTIBIOTICS USE PRACTICES FOR HOSPITALIZED ASPHYXIATED NEONATES: A CROSS-SECTIONAL SURVEY ACROSS NIGERIAN NEWBORN UNITS

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Background: Perinatal asphyxia account for significant neonatal admissions in low-resource settings, and asphyxiated neonates could receive antibiotics owing to the presence of features that are clinically indistinguishable from those of sepsis and the limited availability of diagnostic facilities. Antibiotic usage is highly prevalent in neonatal units, often for prolonged intervals, despite being unproven. This practice could promote antibiotic resistance and increase the cost of care. There is a dearth of publications on antibiotic use among asphyxiated neonates in Nigeria hence, this study.

Aims: To determine the antibiotics use practices for asphyxiated neonates across Nigerian newborn units

Methods: It was a descriptive cross-sectional study across 23 selected neonatal units in the six Nigerian geopolitical zones, with the Neonatologists working in such units as respondents. Data collection was via a self-administered survey questionnaire using an online survey tool (Google Forms). The data obtained were exported and analyzed with SPSS version 23.

Results: Perinatal asphyxia accounted for at least 30% of admissions in 16 (69.6%) of the newborn units. Sixteen (69.6%) newborn units used prophylactic antibiotics for asphyxiated neonates. Gentamicin, Ceftazidime and Ampicillin-Sulbactam were the most frequently used prophylactic antibiotics, and the antibiotics were administered mostly (87.5%) for 4 – 7 days. Most respondents (73.9%) were unaware of a specific pathogen associated with sepsis among asphyxiated neonates.

Conclusions: Antibiotic prophylaxis for asphyxiated neonates is high and does not reflect an awareness of bacterial aetiology of sepsis among these newborns. Broad-spectrum antibiotics usage as prophylaxis and for prolonged periods are also high, which could increase the risk of the emergence of antibiotic resistance



PD005 / #454

E-POSTER DISCUSSIONS 01: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL
15-11-2023 13:00 - 14:15

USE OF ELECTRONIC DATA INTEGRATION TOOL FOR ANTIBIOTIC STEWARDSHIP IN HOSPITALISED CHILDREN AT THE UNIVERSITY COLLEGE HOSPITAL, IBADAN; INSIGHTS FROM THE ACORN-2 PROJECT

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Background: Combating high antimicrobial resistance (AMR) burden in low- and middle-income countries (LMICs) require innovative approaches to context antibiotic stewardship tools. Utilising microbiology data to inform antibiotics use and stewardship is critical

Aims: We describe experience from a pilot multi-country, multi-centre initiative; A clinically oriented antimicrobial resistance surveillance network (ACORN-2), an Electronic Medical Record (EMR) dashboard which integrates clinical and laboratory surveillance information.

Methods: The ACORN dashboard for blood culture data and antibiotics used in hospitalised children at the UCH, Ibadan is reviewed. Results of isolates from blood culture and pattern of antibiotic use pattern is summarised.

Results: From April to October 2022, 479 children were enrolled, with mean (SD) age of 3.3 (1.9) years and 233 males. The commonest empiric antibiotics used were ceftriaxone (85.9%) and amikacin (40.7%). The blood cultures yielded 69 pathogens; 32 (46%) were hospital acquired. The most common isolates were *Staphylococcus aureus* 13 (8.9%), *Klebsiella pneumoniae* 16 (11.0%), 6 (4.2%), *Salmonella* spp. 7 (4.9), *Pseudomonas aeruginosa* 4 (2.8%) and *Acinetobacter baumannii* 4 (2.8%). Among *Staphylococcus aureus* isolates, 46%; were MRSA. For Gram-negative organisms were 97%, 81% and 98% sensitive to meropenem, ciprofloxacin and amikacin respectively. Specifically, *Klebsiella pneumoniae* sensitivity to ceftriaxone was 6% but 100% to colistin. In all, 84% of patients were discharged, 14% died and 4% left against medical advice

Conclusions: Electronic capture and integration tools could be useful for antimicrobial resistance surveillance, local antibiogram formulation and improvement of the antibiotic stewardship programme.



PD006 / #462

E-POSTER DISCUSSIONS 01: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL
15-11-2023 13:00 - 14:15

GRAM NEGATIVE BACTERAEMIA IN CHILDREN FROM ACROSS AUSTRALIA, 2020-21

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Background: Gram-negative bacteraemia is associated with significant morbidity and mortality in children. Increasing rates of antimicrobial resistance (AMR) are reported globally, with bacteraemia surveillance providing a unique opportunity to assess AMR and outcomes.

Aims: To describe the microbiological and clinical characteristics of children with infections due to Enterobacterales, *Pseudomonas* spp., or *Acinetobacter* spp. bacteraemia across Australia from 1 January 2020 to 31 December 2021.

Methods: The Australian Group on Antimicrobial Resistance (AGAR) surveillance program captures clinical and microbiological data of isolates detected in blood cultures across Australia. EUCAST 2022 was used for data analysis and MIC interpretation using the AMR package in R (v2.0).

Results: There were 902 Gram-negative isolates reported from patients aged <18 years: 800 Enterobacterales isolates, 61 *Pseudomonas aeruginosa*, and 41 *Acinetobacter* spp. isolates. The median age was 1 year (0.0 – 7.0 years); 18.2% were from neonates. After 30 days from collection, 5.2% of patients had died - 27.6% of patients who died had a multi-drug resistant organism. Of the 800 Enterobacterales, 47.3% were *E. coli*, 15.3% were *Klebsiella pneumoniae* complex and 13.3% were *Enterobacter cloacae* complex. Resistance in Enterobacterales to gentamicin/tobramycin was 11.6%, to ceftazidime/ceftriaxone was 12.9%, and 13.2% to ciprofloxacin. There were 61 *P. aeruginosa* reported; 19.7% resistant to piperacillin-tazobactam, 13.1% resistant to cefepime/ceftazidime and 9.8% to ciprofloxacin. Forty-one isolates of *Acinetobacter* spp. were reported but none were resistant to carbapenems or classified as multi-drug resistant.

Conclusions: It is important to continue monitoring AMR in Gram-negative isolates in the paediatric population to provide targeted treatment in the local context.



PD007 / #498

E-POSTER DISCUSSIONS 01: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL
15-11-2023 13:00 - 14:15

CLINICAL IMPACT AND COST-EFFECTIVENESS ANTIMICROBIAL STEWARDSHIP PROGRAM IN THE NEONATAL UNIT OF KENYATTA NATIONAL HOSPITAL

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Background: Antimicrobial resistance is rapidly rising worldwide, at a rate faster than the development of new and more effective anti-microbials. Poor infection control practices and inappropriate antimicrobial use are drivers of antimicrobial resistance and may even cause outbreaks with drug resistant microbes. Antimicrobial stewardship programs can reverse trends of antimicrobial resistance even in neonatal units.

Aims: To identify core elements of ASP in place at the neonatal unit in Kenyatta National Hospital (KNH), to implement education of healthcare workers on ASP, and to evaluate the clinical impact and cost effectiveness of this intervention

Methods: A non-controlled before and after study surveying CDC core elements, antimicrobial use, hospital costs and duration of hospital stay for neonates admitted in KNH neonatal unit 6 months before and after an education intervention in the unit.

Results: The CDC core elements were implemented more comprehensively during the post-implementation phase. There was a reduction in use on benzyl penicillin and third generation cephalosporins, and increase in meropenem use. Length of stay reduced by one day ($p=0.030$) and hospital costs were halved ($p=0.001$) were reduced in the post-implementation phase. *Klebsiella* was the commonest organism isolated in the pre-implementation phase (31.6% vs 0%) $p=0.049$, while *E. coli* was the leading isolate in the post implementation phase (70.5% vs 0%) $p<0.001$

Conclusions: The weekly antibiotic rounds and education of healthcare workers in the neonatal unit were effective in reducing select antimicrobial use in the neonatal unit. In this study, it reduced hospital duration of stay and hospital costs to the patient.



PD008 / #464

E-POSTER DISCUSSIONS 02: BACTERIAL INFECTIONS
15-11-2023 13:00 - 14:15

ENTEROCOCCAL BACTERAEMIA IN PAEDIATRIC PATIENTS ACROSS AUSTRALIA, 2020-21

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Background: Enterococcal species can cause a variety of infections, including urinary tract and intra-abdominal infections, endocarditis, and meningitis. Globally, Enterococci spp. account for approximately 10% of all bacteraemia cases.

Aims: To describe the microbiological and clinical characteristics of paediatric patients with enterococcal bacteraemia across Australia from 1 January 2020 to 31 December 2021.

Methods: The Australian Group on Antimicrobial Resistance (AGAR) surveillance program captures clinical and microbiological data of isolates detected in blood cultures from across Australia. EUCAST 2022 was used for data analysis and MIC interpretation through the AMR package in R (version 2.0).

Results: There were 170 enterococcal bacteraemia episodes reported from patients <18 years; 22.3% of episodes were from neonates (n: 38). The most frequent clinical manifestation was device-related infection without metastatic focus (n: 40; 23.5%). Over half of the episodes were hospital onset (n: 98; 57.6%). Most isolates were identified as *E. faecalis* (n: 122, 71.8%); 24.1% were *E. faecium* (n:41). Eight isolates were resistant to vancomycin (4.7%), and three to teicoplanin (1.8%); all glycopeptide-resistant isolates were *E. faecium* and hospital-acquired. Less than 10% of isolates were multidrug-resistant (n: 16; 9.4%); all but one isolate was *E. faecium*. The eight vancomycin-resistant *E. faecium* isolates harboured van genes (2 vanA, 6 vanB). The most frequent *E. faecium* multilocus sequence type was ST17 (n: 9, 20.5%), and ST1421 (n: 7, 15.9%),

Conclusions: Hospital-onset infections are a key source of enterococcal infections in paediatrics, however vancomycin-resistant *E. faecium* infections are not reported as commonly as in adults.



PD009 / #287

E-POSTER DISCUSSIONS 02: BACTERIAL INFECTIONS
15-11-2023 13:00 - 14:15

CLINICAL CHARACTERISTICS AND MANAGEMENT OF CHILDREN HOSPITALIZED WITH PYOMYOSITIS IN SWITZERLAND: A RETROSPECTIVE STUDY

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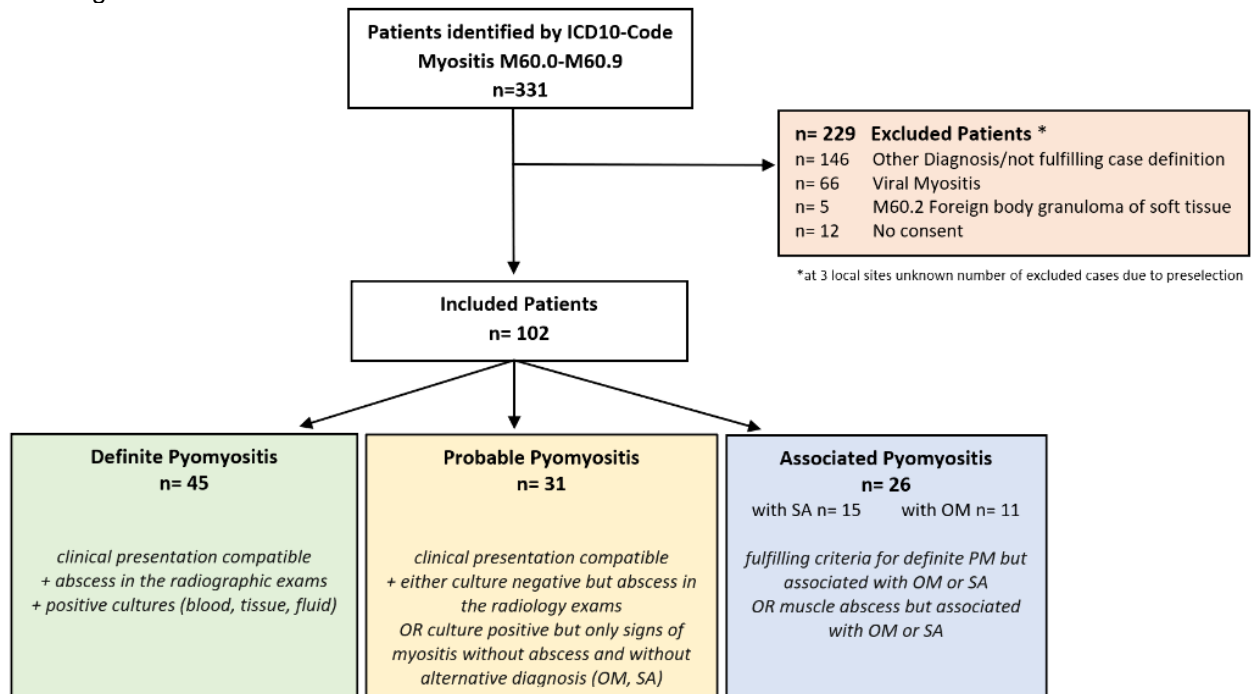
Background: Pyomyositis, a bacterial infection of the muscle, is an important differential diagnosis in children with musculoskeletal pain.

Aims: The primary objective of this study was to collect clinical characteristics with pyomyositis in hospitalized children.

Methods: Patients <18 years hospitalized with pyomyositis between 01/2010 and 06/2022 were included in this retrospective study in 9 Swiss children's hospitals. Cases were identified by ICD-10 code M60-M60.9 and classified as probable/definite/associated pyomyositis depending on clinical presentation, pathogen detection and imaging studies. Data were extracted from hospital records.

Results: Of 331 patients identified, 102 (31%) fulfilled the case definition and were included in the final analysis (Figure 1). Age at presentation ranged from 2 weeks - 17 years (median 7.95 years). The majority had no underlying illness. All patients presented with fever and pain, 98% had impaired movement, 38% had swelling at the respective localisation. Pelvic (57%) and leg (28%) muscles were mostly affected. Blood or tissue cultures were obtained in 92% and 57%, respectively. Of those, 58% blood/88% tissue cultures were positive, mainly for *S. aureus* (63.6%/37.3%) and *S. pyogenes* (21.8%/29.4%). 57% of patients required surgery and 100% received antibiotic treatment during hospitalisation with a median duration of 11 days (IQR 7-18). 93% continued antibiotic treatment for a median of 16 days (IQR 11-23) after

discharge.



Conclusions: Pyomyositis is a rare but potentially serious disease, mainly affecting lower extremities in primarily healthy children at any age. Clinical presentation is unspecific thus rendering the diagnosis challenging. Treatment duration and regimens vary highly between patients.

PD010 / #357

E-POSTER DISCUSSIONS 02: BACTERIAL INFECTIONS
15-11-2023 13:00 - 14:15

**DIAGNOSTIC UTILITY OF MICRO-ESR AS AN ALTERNATIVE TO THE WESTERGRENN METHOD IN
MANAGEMENT OF BONE, JOINT INFECTIONS IN CHILDREN AT THE UNIVERSITY COLLEGE
HOSPITAL, IBADAN**

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Background: Acute bone and joint infections (BJIs) in children may clinically occur as septic arthritis or osteomyelitis. The cost and long turn-around time of the laboratory tests for BJIs pose a challenge especially in low middle income settings. The diagnostic utility and correlation between Micro-ESR and conventional Westergren ESR method were studied in children with BJIs at the University College Hospital, Ibadan.

Aims: To determine the diagnostic utility and correlation between Micro-ESR and conventional Westergren ESR method

Methods: Consecutive patients with clinical and radiological features of BJIs were studied. Socio-demographic, clinical and laboratory information were obtained. Micro-ESR was performed using peripheral blood collected in a capillary tube. The diagnostic performance was compared with same day conventional ESR used as gold standard

Results: A total of 66 patients were studied with a median age of 5.0 (IQR 0.9 - 10.0) years. Males accounted for 32(48.5%), and 64(96.8%) were from low and middle socio-economic classes. Osteomyelitis alone accounted for 25(36.8%), 28(42.6%) had arthritis and 16(26.5%) had mixed infection. The commonest joints affected were the hip and knee; 22(46.8%) and 14(29.4%) respectively while the femur and humerus were mostly affected; 18(42.8%) and 11(26.3%) respectively. Haemoglobinopathy and trauma were significant risk factors. ESR compared with WBC showed: AUC=0.597, sensitivity=50.0%, specificity=43.8%, NPV=67.7%, PPV=27.0%, and with blood/aspirate cultures: AUC=0.642, sensitivity=54.3%, specificity=64.3%, NPV=14.5%; PPV=92.6%. The performance of ESR in osteomyelitis versus septic arthritis was similar. Micro-ESR correlated positively with conventional ESR results ($r=0.706$, $p=0.001$)

Conclusions: Micro-ESR could be adopted as cheap/reliable point-of-care biomarker in the diagnosis/monitoring of bone/ joint infections



PD011 / #399

E-POSTER DISCUSSIONS 02: BACTERIAL INFECTIONS
15-11-2023 13:00 - 14:15

A COMPUTATIONAL APPROACH TO NEONATAL SEPSIS TREATMENT: THE APPLICATION OF WEIGHTED INCIDENCE SYNDROMIC COMBINATION ANTIBIOGRAM (WISCA) IN WESTERN CAPE, SOUTH AFRICA

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Background: Neonatal sepsis disproportionately affects regions lacking the resources to prevent, detect and treat these infections with newborn death rates in Sub-Saharan Africa ten-fold that of high-income countries. Antibiotic treatment for neonatal sepsis is most often empirically prescribed without laboratory confirmation owing to difficulties accessing diagnostic microbiology services and suboptimal performance of culture-based methods. In the absence of local data on prevalence and antimicrobial resistance (AMR) patterns, empiric treatment of neonatal sepsis is based on international guidelines or antibiotic availability. With rising AMR rates in the region, there is increasing likelihood of bug-drug mismatch (discordant empiric therapy), potentially worsening neonatal sepsis mortality. Identifying effective, regionally-relevant empiric antibiotic regimens is crucial to reduce neonatal sepsis death and morbidity.

Aims: The Antibiotics for Neonatal Sepsis in Sub-Saharan Africa (ANSA) study utilizes a data-centered approach to provide tailored neonatal sepsis antibiotic recommendations by deriving Weighted Incidence Syndromic Combination AntibioGrams (WISCA).

Methods: From 2017-2018, 621 sepsis episodes (136 early-onset, 485 healthcare-associated) were analyzed from nine neonatal units in the Western Cape Province of South Africa, producing empiric antibiotic coverage estimates for ampicillin plus gentamicin (AMP-GENT), piperacillin-tazobactam plus amikacin (PIPTAZ-AMIK) and meropenem (MERO).

Results: Antibiotic coverage estimates varied markedly by hospital type and neonatal unit patient mix, highlighting key differences in pathogen and AMR profile. AMP-GENT, PIPTAZ-AMIK and MERO provided acceptable empiric coverage at district-regional hospitals (84%, 80% and 77% respectively) but sub-optimal coverage at central hospitals (55%, 67% and 60% respectively).

Conclusions: Computational science can augment neonatal sepsis data analysis to provide targeted empiric antibiotic recommendations and reduce discordance.



PD012 / #547

E-POSTER DISCUSSIONS 02: BACTERIAL INFECTIONS
15-11-2023 13:00 - 14:15

NEONATAL BLOODSTREAM INFECTION SURVEILLANCE IN LOWER-TIER SOUTH AFRICAN HOSPITALS: PATHOGEN AETIOLOGY AND RISK FACTORS FOR DEATH

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Background: Infections are among the top three causes of neonatal mortality, particularly in low- and middle-income countries. Over 50% of neonatal bloodstream infections (BSI) occur in lower-tier hospitals.

Aims: We aimed to identify neonates most at risk of death following BSI in lower-tier hospitals.

Methods: In South Africa, we conducted a cross-sectional study of culture-confirmed BSI among neonates (<28 days) at six lower-tier hospitals. Isolates and clinical data were collected from October 2019 through September 2020. Factors associated with death were analysed using multivariable logistic regression models.

Results: There were 907 episodes of neonatal BSIs reported. Most neonates were preterm (median gestation: 33 weeks, interquartile range 29-37), with 31% (277/907) of BSI classified as early- and 69% (630/907) late-onset sepsis (EOS: 0-2 and LOS: 3-27 days of life). Gram-negative pathogens dominated (63%, 573/907), particularly *Klebsiella pneumoniae* (26%, 233/907) and *Acinetobacter baumannii* (19%, 174/907). In-hospital crude mortality of neonates with BSI was 25% (231/907), contributing to 21% (231/1078) of all in-hospital neonatal deaths. On multivariable analysis, controlling for concordance between pathogen and empiric antibiotic therapy, increased in-hospital mortality was associated with: Gram-negative pathogens (versus Gram-positive, aOR 3.7, 95% CI 1.5-9.4), hospital-acquired LOS (versus EOS, aOR 2.4, 95% CI 1.1-5.3), preterm birth (aOR 5.0, 95% CI 2.2-11.6), and neonatal ICU admission (aOR 3.3, 95% CI 1.5-7.0).

Conclusions: Hospitalised, preterm neonates who develop Gram-negative BSI have a high in-hospital mortality. Many preterm neonates require prolonged hospital stays in lower-tier hospitals, therefore appropriate resources are needed to prevent infections and save lives.



PD013 / #433

E-POSTER DISCUSSIONS 02: BACTERIAL INFECTIONS
15-11-2023 13:00 - 14:15

CULTURE CONFIRMED NEONATAL BLOODSTREAM INFECTIONS IN BOTSWANA 2019-2022: A CROSS-SECTIONAL STUDY FROM A TERTIARY REFERRAL HOSPITAL IMPLEMENTING AN AUTOMATED BLOOD CULTURE SYSTEM

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Background: In resource-limited settings with high incidence of neonatal bloodstream infection (BSI), limited laboratory capacity poses a challenge for disease surveillance and outbreak detection. Automated blood culture (ABC) systems are less labor-intensive and have been shown to improve recovery of fastidious organisms.

Aims: This study aimed to capture trends in neonatal BSI before and after the introduction of an ABC system at a hospital microbiology laboratory in Botswana.

Methods: We analyzed microbiology surveillance records 1 year before and 2 years after November 2020, when this tertiary referral hospital laboratory in Gaborone, Botswana transitioned from a manual (Oxoid-signal) to ABC system (BACT/ALERT®). Neonatal BSI was defined as pathogen growth on blood cultures obtained from patients <28 days old (coagulase-negative Staphylococcus spp. and other likely contaminants excluded). Proportions were compared using Chi-squared tests.

Results: We identified 349 BSIs from 3638 neonatal blood cultures. *Klebsiella pneumoniae* was the most commonly-identified organism in both pre- and post-automation periods, accounting for 21% (72/349) of all BSIs. The majority (61%) of *K. pneumoniae* demonstrated extended-spectrum cephalosporin resistance. Blood culture utilization increased post ABC implementation, but there was no significant difference between positivity rates pre- and post-automation ($p < 0.01$). The proportion of unidentified organisms declined from 9.5% to 1.5% ($p < 0.01$) post automation.

Conclusions: Multidrug-resistant Gram-negative organisms remain the leading cause of BSI among hospitalized neonates in this setting. Introduction of the ABC system was associated with improved organism identification, but not pathogen recovery. This effect may be attributable to increased laboratory efficiency afforded by the ABC system.



PD014 / #472

E-POSTER DISCUSSIONS 02: BACTERIAL INFECTIONS
15-11-2023 13:00 - 14:15

INCIDENCE AND CLINICAL OUTCOMES OF MATERNAL AND CONGENITAL SYPHILIS AT THE COLONIAL WAR MEMORIAL HOSPITAL, FIJI

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Background: Mother to child transmission of syphilis causes substantial infant morbidity and mortality. A study in 2017 found 3.9% of Fijian women aged 15-49 years had active syphilis.

Aims: The aim of this study is to opportunistically describe the incidence and clinical outcomes of syphilis in newborns of mothers enrolled in a clinical trial of azithromycin in labour to prevent perinatal infections at Colonial War Memorial Hospital in Fiji.

Methods: Pregnant women were enrolled into the trial from 2019-2022 and screened for syphilis (TPHA/VDRL tests). Positive cases are treated with 3 doses of intramuscular crystalline-penicillin weekly. Outcomes were summarised as maternal syphilis rates based on seropositivity and percentage treated; clinical outcomes and the percentage of newborns adequately treated; and the incidence of suspected/probable congenital syphilis.

Results: From 2068 women and 2078 newborns enrolled, 1624 (79%) mothers were tested and 6% (n=98) were seropositive. 87/98 (89%) of seropositive women received some treatment. Of the 69 newborns whose mothers were treated, 54/69 (78%) of mothers had adequate treatment, and 8/69 (9%) neonates had suspected/probable congenital syphilis. Two infants died but the cause was deemed unrelated to syphilis. Of the 11 untreated seropositive women, 3 newborns were admitted for respiratory distress syndrome. Eight newborns had no testing records and their outcomes were unknown. The incidence of suspected/probable congenital syphilis was at least 5 per 1000 newborns.

Conclusions: Maternal and congenital syphilis in Fiji is very common and up to 4 times higher than rates reported in African women. Reaching elimination by 2030 will be challenging.

PD015 / #533

E-POSTER DISCUSSIONS 02: BACTERIAL INFECTIONS
15-11-2023 13:00 - 14:15

SIGNIFICANCE OF DIARRHEAL DISEASES TO UNDER-FIVE MORTALITY AND DIAGNOSTIC VALUE OF RECTAL SWABS IN CHILDREN WITH FATAL DIARRHEAL DISEASES IN AFRICA AND BANGLADESH

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Background: Diarrheal disease is second leading under-five mortality cause worldwide. To achieve the World Health Organization (WHO) sustainable development goal for child mortality of <25 deaths per 1000 live births by 2030, effective diagnosis coupled with morbidity and mortality prevention strategies are needed.

Aims: We quantified under-five mortality attributable to diarrheal disease and determined associated pathogens.

Methods: Child Health and Mortality Prevention Surveillance (CHAMPS) enrolls deaths in children 1-59 months, minimally invasive tissue sampling (MITS) conducted within 24-36 hours of death plus clinical data and verbal autopsy. Microbiological and molecular tests were performed on lung, blood, cerebrospinal fluid, nasopharyngeal swab and stool samples. Triangulating these data sources, causes of death (CoD) were determined by a multi-disciplinary panel of specialists. Analysis included deaths enrolled Dec2016-Dec2022 in six African sites (Ethiopia, Mali, Kenya, Sierra Leone, Mozambique, South Africa) and a seventh site in Bangladesh

Results: Total 1159 deaths were evaluated; 637 (55.0%) males. Diarrhea-related deaths accounted for 170 (14.7%). Among the 170 deaths attributed to diarrhea, 84 (49.4%) also had sepsis (35.3%) and lower respiratory infections (27.1%). Toxigenic *E. coli* was detected in stool samples from 35 (20.6%) children whose immediate/underlying CoD was classified as acute gastroenteritis; both *E.coli* and *Shigella* were isolated in three deaths classified as dysentery. Rotavirus A was detected in 14 children with diarrhea as underlying CoD. Forty-three deaths were co-infected with multiple diarrhea-related pathogens, 25 with two pathogens, while 18 had 3+ pathogens.

Conclusions: We confirmed diarrhea as a significant CoD in infants and children which can be effectively diagnosed using rectal swabs.



PD016 / #542

E-POSTER DISCUSSIONS 02: BACTERIAL INFECTIONS
15-11-2023 13:00 - 14:15

CARBAPENEM-RESISTANT ENTEROBACTERALES COLONIZATION IN A TERTIARY PAEDIATRIC INTENSIVE CARE UNIT IN CAPE TOWN, SOUTH AFRICA

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Background: Carbapenem-resistant Enterobacterales (CRE) are important healthcare-associated pathogens in resource-limited paediatric intensive care units (PICUs). The prevalence rates and clinical predictors of CRE colonization in South African PICUs are unknown.

Aims: To determine the CRE colonization status of children in the Tygerberg Hospital PICU, Cape Town, South Africa.

Methods: Between 1 January and 31 December 2022, we prospectively collected PICU admission and exit rectal swabs. CRE-colonized on admission (prevalent-CRE) included children with a positive rectal swab in the preceding 6 months and newly-identified CRE colonization on admission. Acquisition of CRE colonization in PICU (incident-CRE) included all children with a negative entry but a positive exit swab. Multiple admissions per child allowed.

Results: Of 638 admissions, we included 585 (median age 10 months, 53% male) with a PICU entry swab and/or known positive CRE colonization status; 228 (37.8%) had an exit swab obtained as well. Prevalent-CRE at PICU entry occurred in 10.1% (59/585) admissions, with 40/59 (68%) newly identified as CRE-colonized. Incident-CRE was identified in 21/221 (9.5%) admissions with a negative entry and positive exit CRE swab. Children with prevalent-CRE were younger than those not CRE-colonized at PICU entry (median 4 vs 11 months; $p < 0.05$). Children with incident-CRE were younger (median 2 vs 8 months; $p < 0.05$) with longer PICU stays (median 8 vs 4 days; $p < 0.05$), compared to those who remained CRE screen-negative.

Conclusions: CRE colonization is common with implications for admission space, isolation and antibiotic policies. An enhanced understanding of clinical predictors of CRE colonization will support development of appropriate CRE screening recommendations and interventions.



PD017 / #35

E-POSTER DISCUSSIONS 03: GLOBAL CHILD HEALTH
15-11-2023 13:00 - 14:15

DECENTRALIZING OXYGEN AVAILABILITY AND USE AT PRIMARY CARE LEVEL FOR CHILDREN UNDER-FIVE WITH SEVERE PNEUMONIA, AT 12 HEALTH CENTERS IN ETHIOPIA: A PRE-POST NON-EXPERIMENTAL STUDY

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Background: Pneumonia is the leading infectious cause of death in children worldwide, accounting for 15% of all deaths in children under the age of five. Hypoxemia is a major cause of death in patients suffering from pneumonia. There is strong evidence that using pulse oximetry and having reliable oxygen sources in healthcare facilities can reduce deaths due to pneumonia by one-third. Despite its importance, hypoxemia is frequently overlooked in resource-constrained settings.

Aims: The aim of this study is to assess the availability of medical oxygen devices, investigate the knowledge and skills of HCWs in diagnosing hypoxemia and provide medical oxygen therapy in 12 pilot HCs in Ethiopia

Methods: A pre-post non-experimental study conducted in 12 health centers

Results: Eighty-one percent of healthcare workers received oxygen therapy training, up from 6% at baseline. As a result of the interventions, knowledge of pulse oximetry use and oxygen therapy provision, skills such as oxygen saturation and practices of oxygen therapy have significantly improved among healthcare workers in the piloted Health Centers. In terms of availability of oxygen devices in the facilities, seven (58%) facilities did not have any at baseline, but due to the interventions, all facilities were equipped with the oxygen devices

Conclusions: Given the prevalence of pneumonia and hypoxemia, a lack of access to oxygen delivery devices, as well as a lack of knowledge and skills among healthcare workers in the administration of oxygen therapy, may represent an important and reversible barrier to improving child survival.



PD018 / #327

E-POSTER DISCUSSIONS 03: GLOBAL CHILD HEALTH
15-11-2023 13:00 - 14:15

ASSESSING THE FEASIBILITY OF SCHOOL-BASED VACCINATION SCREENING AND CATCH-UP VACCINATION IN 2 DISTRICTS IN ZAMBIA

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Background: Schools provide an opportunity to identify and vaccinate children missing critical vaccine doses. While policies to check vaccination status at schools exist, they are not routinely implemented in low resource settings.

Aims: School vaccination screening was piloted to identify and catch-up children missing routine doses in Zambia.

Methods: Caregivers of grade one students in 10 schools in 2 districts were screened from June-July 2022 to collect data on vaccination and demographic characteristics. Students missing at least one dose of oral polio (OPV), pentavalent (DTP) or measles-containing vaccine (MCV) were considered "under-vaccinated" and referred for catch-up vaccination at a school-based campaign or health facility. Those missing all doses of MCV were considered "MCV zero dose". Follow up interviews were conducted after campaigns to document catch-up status.

Results: Of those in grade one, 98% (1839) were screened with median age of 8 years and 73% had an immunization card available. Coverage for all vaccines was 90% or above except for MCV2 which was only 66%. Of those screened, 38% were under-vaccinated and 10% were MCV zero dose. Of those under-vaccinated, 69% received at least 1 catch-up dose and majority received it at a school-based campaign. Lack of time was reported as a common reason non-catch-up receipt.

Conclusions: Large proportion of grade one students were under-vaccinated and MCV zero dose. More than two-thirds of these children received catch-up in a school-based campaign. Vaccination screening and catch-up in schools is a strategy that can be used to fill immunity gaps and reduce risk of disease outbreaks.

PD019 / #236

E-POSTER DISCUSSIONS 03: GLOBAL CHILD HEALTH
15-11-2023 13:00 - 14:15

PROVIDER AND COMMUNITY PERSPECTIVES OF INTEGRATED COVID-19 AND ROUTINE CHILDHOOD IMMUNIZATION PROGRAMMES IN NIGERIA: A QUALITATIVE EXPLORATORY STUDY

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Background: In Nigeria, COVID-19 vaccines were delivered through outreach activities and an integrated approach. However, evaluations of an integrated approach are scarce.

Aims: We aimed to understand the perceived benefits and challenges of integrating the COVID-19 vaccine within routine- immunization in Nigeria and identify ways to strengthen this approach.

Methods: We conducted 30 semi-structured interviews with community members and healthcare workers in primary health care (PHC) facilities in Jigawa (n=16), Oyo (n=14) states, Nigeria in August 2022. Participants were selected purposively from PHC facilities. Healthcare worker and community interviews were analysed separately using thematic analysis.

Results: We identified three themes: mixed community dispositions to integration; coinciding barriers and benefits of integration; health system adaptations for integration. (1) Community members expressed both concern that children may be given COVID-19 vaccines instead of routine immunisations while others appreciated the integrated approach given their trust in COVID-19 vaccine efficacy, government, and healthcare providers. (2) The integrated approach was perceived by healthcare providers to improve vaccination coverage and awareness but created additional problems of workload, vaccine scarcity, and prolonged clinic visits. (3) Vaccine hesitancy, misinformation, and insufficient resources were subsisting barriers to effective integration in both States, while provider's gender was also a challenge, but only in Jigawa. Health system adaptations included providers training, incentives, and demand generation.

Conclusions: Taking an integrated approach to deliver COVID-19 vaccines was generally acceptable, but given existing vaccination programmes have persistent challenges, it is pertinent to address these barriers to enhance effectiveness of the integrated approach.



PD020 / #386

E-POSTER DISCUSSIONS 03: GLOBAL CHILD HEALTH
15-11-2023 13:00 - 14:15

HIGH BURDEN OF MYCOPLASMA GENITALIUM IN PREGNANCY, AND OTHER REPRODUCTIVE TRACT INFECTIONS, AND THEIR ASSOCIATED RISK OF ADVERSE BIRTH OUTCOMES: A PROSPECTIVE COHORT STUDY.

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Background: There is a pressing need for detailed knowledge of the range of pathogens, extent of co-infection and clinical impact of reproductive tract infections among pregnant women. Few studies have examined the impact of *Mycoplasma genitalium* on adverse pregnancy outcomes, particularly relative to other sexually tract infections (STIs), and whether *M. genitalium* is associated with changes in birthweight remains unanswered.

Aims: To examine the association between birthweight and *M. genitalium* infection, adjusting for other STIs and bacterial vaginosis (BV) in pregnancy.

Methods: Associations between STIs (*M. genitalium*, *C. trachomatis*, *N. gonorrhoea*, *T. vaginalis*), BV and birthweight were estimated using multivariable linear regression in 416 maternal-newborn pairs from a longitudinal cohort study in Papua New Guinea.

Results: Compared to uninfected women, *M. genitalium* (-166.9g, 95% CI 324.2g to 9.7g, $p = 0.038$) and *N. gonorrhoeae* (-274.7g, 95% CI 561.9g to 12.5g, $p = 0.061$) infections were each associated with substantially lower mean birthweight in adjusted analysis; the association for *C. trachomatis* was less clear. Larger effect sizes on birthweight were seen among women with co-infections of *M. genitalium*, *N. gonorrhoeae*, and/or *C. trachomatis*, but not for coinfections with *T. vaginalis* and BV.

Conclusions: Our findings suggest that *M. genitalium* infection, and especially coinfections, have a significant negative impact on newborn outcomes and highlight the need for testing of *M. genitalium* in pregnancy, in addition to other STIs. Trials that examine the impact of early diagnosis and treatment of *M. genitalium* and other STIs on birthweight and other pregnancy outcomes are urgently needed.

PD021 / #222

E-POSTER DISCUSSIONS 03: GLOBAL CHILD HEALTH
15-11-2023 13:00 - 14:15

DOES SEASONAL VARIATION IMPACT THE PREVALENCE OF DIARRHOEA AMONG INDIAN CHILDREN? AN ANALYSIS USING SPATIAL MODELLING APPROACHES

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Background: Diarrhoea is one of the leading causes of childhood mortality and morbidity and is responsible for 1.6 million annual deaths among under-five children.

Aims: This study aimed to explore the effect of seasonal variation on diarrhoea prevalence among under-five children in India.

Methods: Data were extracted from the National Family Health Survey, conducted in 2019–21 in India. Univariate Moran's I statistic was used to show the presence of spatial auto-correlation in diarrhoea prevalence across Indian districts. To fulfil the study objective, Ordinary Least Square (OLS) and Spatial (lag/error) models were applied.

Results: Moran's I (0.375) for diarrhoea indicated high spatial auto-correlation across Indian districts. The prevalence of diarrhoea is highly concentrated in north Indian states (Uttarakhand, Punjab, Haryana, Delhi, Himachal Pradesh, Uttar-Pradesh, Bihar) and the northern part of Madhya Pradesh, Jharkhand, and Chhattisgarh. The spatial error model showed that a 10% increase in the fourth and higher birth order corresponds to a 1.18% increase in the prevalence of diarrhoea in the respective district. Similarly, if open defecation and unsafe stool disposal in a district increase by 10%, then the prevalence of diarrhoea increases by 0.71% and 0.48% in the respective district. Also, if the length of the spring season increases by 10% points, the prevalence of diarrhoea increases by 0.10% points.

Conclusions: The study concluded that seasonal variation significantly impacted diarrhoea prevalence among Indian children. Identifying risk areas would undoubtedly help in designing effective interventions to reduce diarrhoea prevalence in hot-spot areas and seasons when the risk of diarrhoea is high.

PD022 / #205

E-POSTER DISCUSSIONS 03: GLOBAL CHILD HEALTH
15-11-2023 13:00 - 14:15

PREVALENCE AND CORRELATES OF DOUBLE AND TRIPLE BURDEN OF MALNUTRITION AMONG MOTHERS AND CHILDREN IN INDIA: INSIGHTS FROM 2019-21 NATIONAL FAMILY AND HEALTH SURVEY

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Background: Evidence on double and triple burdens of malnutrition at the household level among mother-child pairs is crucial for effectively addressing the issue of malnutrition. However, studies on the Double Burden of Malnutrition (DBM) and Triple Burden of Malnutrition (TBM) are scarce in the Indian context.

Aims: This study aimed to examine the coexistence of various forms of malnutrition and their association with various factors among mother-child pairs residing in the same household.

Methods: Data were drawn from the latest 2019-21 National Family and Health Survey. Information on anthropometric measurements of mothers and anthropometric measurements and haemoglobin levels of their children were collected. Bivariate and multivariable logistic regression models were used to assess the factors associated with DBM and TBM.

Results: The prevalence of DBM and TBM among mother-child pairs was 6.6% and 7.0%, respectively. In the adjusted logistic regression models, mothers with short stature, from the richest wealth quintile, aged over 35 years, and those who had achieved at least secondary education were more likely to suffer from the DBM. Similarly, mothers with short stature, from the richest wealth quintile, aged over 35 years, and those who had achieved at least secondary education were more likely to suffer from the TBM. Besides, place of residence, religion, breastfeeding and region emerged as most significant factors determining DBM and TBM.

Conclusions: Several nutrition interventions are needed to address DBM and TBM and integrated approaches through policies pertaining to enhancing food security and comprehending the essentials of optimal health outcomes for both ends of the malnutrition spectrum.

E-POSTER DISCUSSIONS 03: GLOBAL CHILD HEALTH
15-11-2023 13:00 - 14:15

ASSESSING MALARIA BURDEN IN NEONATES AND INFANTS: A COMPREHENSIVE LITERATURE REVIEW ACROSS AFRICA, ASIA, AND LATIN AMERICA

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Background: Malaria continues to be a significant global health challenge and remains underreported in neonates/infants. Understanding the burden of malaria, specifically in this subpopulation, is therefore essential for targeted interventions and improving treatment strategies.

Aims: To assess the burden of Plasmodium falciparum (PF) malaria in neonates/infants (<5 kg or ≤3 months) and treatment patterns in Africa, Asia, and Latin America.

Methods: MEDLINE and EMBASE were searched for published literature between 2010 and 2022 using comprehensive search terms to identify literature focused on neonates/infants. Additionally, data from the Institute of Health Metrics and Evaluation/Global Burden of Disease (IHME/GBD) 2019 was employed to evaluate the incidence rate among neonates (0–27 days) in Africa.

Results: 1,748 articles were identified and 29 observational studies (Africa: 22; Outside Africa: 7 and 3 meta-analyses) were included. Studies identified were either cross-sectional or retrospective in design. Overall prevalence of PF malaria ranged between 0% and 58% in Africa and 0% and 14.4% outside Africa. Ten studies reported symptomatic cases of PF, and prevalence ranged from 0.08%–21%. Only 6 studies reported treatment in neonates/infants, which included artemether-lumefantrine, artesunate, quinine, amodiaquine, and dihydroartemisinin-piperaquine. From IHME/GBD data, absolute number of malaria cases was highest in Nigeria (n=153,134), while incidence rate in countries with >10,000 cases was highest in Benin (4,746/10,000).

Conclusions: There is evidence indicating a burden of PF in neonates/infants although the prevalence estimates observed in Africa, Asia, and Latin America are variable. Further studies are needed to better elucidate malaria disease burden and treatment strategies among neonates/infants globally.

E-POSTER DISCUSSIONS 03: GLOBAL CHILD HEALTH
15-11-2023 13:00 - 14:15

ASSOCIATION OF ZINC NUTRITION WITH GROUP B STREPTOCOCCUS NEW ACQUISITION IN PREGNANT WOMEN

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Background: Maternal colonisation by Group B Streptococcus (GBS) is a major risk factor for early onset invasive GBS disease among newborns. Zinc micronutrient plays a critical role in several biological processes that are essential to prevent bacterial colonisation and/or invasion.

Aims: To determine the association of serum zinc levels with new acquisition and clearance of GBS rectovaginal colonization in pregnant women.

Methods: This was a retrospective study that utilized serum samples from pregnant women enrolled during 2010-2011 in South Africa. Vaginal and rectal GBS colonisation was determined at 20–25 weeks (visit 1), followed by 3 subsequent visits at 5–6 weeks intervals, until 37–40 weeks gestation (visit 4). Serum was collected at visit 1 and visit 4 (n=464). Serum zinc was estimated by inductively coupled plasma mass spectrometry.

Results: Higher zinc level was associated with lower odds of GBS rectovaginal acquisition. The zinc geometric mean concentration (GMC) at Visit 1 was higher among women who remained uncolonised through the study compared to those who had GBS new acquisition in one of the follow up visits (20.18 $\mu\text{mol/L}$; 95%CI 17.99-22.64 vs 13.68 $\mu\text{mol/L}$; 95%CI 12.59-14.87, $p=0.025$). The lowest zinc threshold significantly associated with reduced odds of new acquisition was $\geq 15 \mu\text{mol/L}$ (27.1% in new acquisition vs 40.5% in uncolonised (Odds ratio 0.54; 95% CI (0.31- 0.95); $p=0.03$).

Conclusions: Adequate level of zinc nutrition during pregnancy could protect against new acquisition of GBS colonisation.

PD025 / #501

E-POSTER DISCUSSIONS 03: GLOBAL CHILD HEALTH
15-11-2023 13:00 - 14:15

PREVALENCE AND RISK FACTORS OF PNEUMONIA AND DIARRHEA AMONG UNDER-5 CHILDREN IN DEVELOPING COUNTRIES: IMPLICATIONS FOR THE GLOBAL ACTION PLAN

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Background: The integrated Global Action Plan for the Prevention and Control of Pneumonia and Diarrhea (GAPPD) was implemented by WHO/UNICEF in 2013 with the goal of ending preventable childhood deaths due to pneumonia and diarrhea by 2025. However, these two diseases continue to be the leading causes of child mortality worldwide.

Aims: Therefore, this study aims to estimate the prevalence of pneumonia and diarrhea among under-5 children in developing countries and investigate the demographic and socioeconomic risk factors associated with these diseases.

Methods: For this study, a total of 571,672 surviving under-5 children were analyzed. The data was collected from the latest round of Demographic and Health Surveys conducted in 56 developing countries. The presence of acute respiratory infection (ARI) and diarrhea in the two weeks prior to the survey was determined based on the mothers' responses, which were dichotomized.

Results: The findings reveal that approximately 6% of children suffered from ARI, while 15% experienced diarrhea. The prevalence of these diseases varied significantly across countries and geographical regions. The highest prevalence of ARI was observed in Pakistan, followed by Haiti, Egypt, Afghanistan, and Yemen. Yemen had the highest prevalence of diarrhea, followed by Afghanistan, Chad, Pakistan, and Burundi. Logistic regression analysis identified several socio-demographic and economic factors that significantly influenced both diseases. The most important risk factors included low child birth weight, low maternal education, and residence in Latin American and Caribbean countries.

Conclusions: To achieve the GAPPD target for 2025, it is essential to implement country-specific interventions that address the identified risk factors.

PD026 / #417

E-POSTER DISCUSSIONS 03: GLOBAL CHILD HEALTH
15-11-2023 13:00 - 14:15

MEASLES AND RUBELLA SEROPREVALENCE AND VACCINATION STATUS AMONG CHILDREN ATTENDING A SUPPLEMENTAL IMMUNIZATION CAMPAIGN IN CHOMA AND NDOLA DISTRICTS IN ZAMBIA

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Background: Measles and rubella (MR) supplemental immunization activities (SIA) may provide additional doses to under-immunized children. Post-coverage evaluation surveys estimate SIA coverage but cannot provide information about how effective SIA was in reaching children who do not have antibody protection.

Aims: To measure the proportion of children vaccinated during the November 2020 MR SIA who were seronegative to MR IgG antibodies at time of SIA.

Methods: Cross-sectional serosurveys were conducted at 15 SIA sites in Choma and Ndola. Dry blood spots were collected and questionnaire administered to caregivers. Samples were tested for measles and rubella virus-specific IgG antibodies by enzyme immunoassay and MR coverage and seroprevalence calculated.

Results: Eighty-two percent (2,400) of children 9 - 59 months approached were enrolled. 92% received at least one dose of MR vaccine before the SIA. 30% of children 1 year and older received their second MR dose through the SIA but 65% had received at least two routine doses before the SIA. Measles and rubella seroprevalence were 87% and 90%, respectively before the SIA. Measles seroprevalence was 58% (< 1 year), 89% (1 - 2 years) and 89% (> 2 years). Children with more than 2 siblings <5 years were more likely to be seronegative.

Conclusions: Although most children had already received at least one routine dose of MR vaccine, the overall seropositivity of 87% for measles was below the herd immunity threshold (95%) required to interrupt measles virus transmission. The findings provide critical insight into how efficient and effective the SIA was in addressing population immunity gaps.



PD027 / #529

E-POSTER DISCUSSIONS 04: VIRAL INFECTIONS
15-11-2023 13:00 - 14:15

WHOLE GENOME SEQUENCING AND MOLECULAR SURVEILLANCE OF INFLUENZA IN SOUTH AFRICAN CHILDREN.

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Background: Annually, seasonal influenza epidemics result in five million cases of severe disease and 300,000 fatalities globally. Children in low-to-middle-income countries (LMIC) are disproportionately affected by influenza-related lower respiratory tract infections (LRTI). Hemagglutinin and neuraminidase are key targets for influenza vaccine development due to the immune response elicited during viral entry and release of progeny virions, respectively. Ongoing surveillance is needed to ensure continued vaccine effectiveness.

Aims: In order to investigate the molecular epidemiology of influenza in South African children, an all-cause LRTI surveillance study was conducted in a tertiary public hospital in South Africa between 2021 and 2022.

Methods: Nasopharyngeal swabs collected from participants were tested for common respiratory pathogens including influenza A and B using a total nucleic acid amplification test. Influenza-positive samples were sequenced and phylogenetically analysed.

Results: Three percent (n=224/6744) of the participants tested positive for influenza – influenza A accounted for 78% (n=175/224) and influenza B for 21% (n=49/224). Whole genome sequencing of 107 influenza-positive samples revealed the presence of three influenza viruses: H3N2 (n=25/107, 23%), H1N1pdm09 (n=60/107, 56%), and B-Victoria (n=22/107, 21%). Further, six clades of the hemagglutinin region were identified, and a single Tamiflu-resistant mutation was detected in the neuraminidase region.

Conclusions: This study enhances the understanding of the molecular epidemiology of influenza, emphasizing the importance of surveillance in informing vaccine development. Insights into the genetic characteristics and diversity of influenza strains aid in pandemic preparedness, reducing the public health burden of influenza-related morbidity and mortality on vulnerable populations such as children in LMIC.



PD028 / #657

E-POSTER DISCUSSIONS 04: VIRAL INFECTIONS
15-11-2023 13:00 - 14:15

RESPIRATORY SYNCYTIAL VIRUS AND SARS-COV-2 CO-INFECTION IN CHILDREN UNDER-5 YEARS HOSPITALISED IN JOHANNESBURG, SOUTH AFRICA

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Background: Viral pathogens are the most common cause of lower respiratory tract infections (LRTI), with respiratory syncytial virus (RSV) the leading causative pathogen, accounting for a third of cases. Since March 2020, with the World Health Organisation declaration of a pandemic due to severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), there have been over 640 million coronavirus disease 2019 (COVID-19) cases and 6.6 million deaths worldwide. RSV and SARS-CoV-2 co-infection may have important implications on the outcomes of paediatric patients.

Aims: The aim of this study was to compare characteristics and outcomes between RSV-only, SARS-CoV-2 only, and RSV and SARS-CoV-2 (RSV/SARS-CoV-2) co-infections in hospitalised children.

Methods: A retrospective descriptive study in hospitalised children under-5 years at Chris Hani Baragwanath Academic Hospital (CHBAH), Johannesburg, South Africa between January 2020 and September 2022.

Results: 1316 children had both RSV and SARS-CoV-2 swab results available, of which 314 (23.9%) were SARS-CoV-2 positive only, 911 (69.2%) RSV positive only, and 43 (3.3%) with RSV/SARS-CoV-2 co-infection. There was no difference in age, gender and outcomes between the groups. The RSV only and RSV/SARS-CoV-2 groups were more likely to be diagnosed with a respiratory disease, especially bronchiolitis ($p < 0.0001$), while children with SARS-CoV-2 mono-detection were more likely to be diagnosed with diarrhoeal illness or an unspecified bacterial infection ($p < 0.0001$).

Conclusions: There was no difference in mortality between SARS-CoV-2 or RSV only and RSV/SARS-CoV-2 co-infection in hospitalised children, however those with RSV with or without SARS-CoV-2 co-infection, were more likely to be diagnosed with a respiratory illness, especially bronchiolitis.



PD029 / #55

E-POSTER DISCUSSIONS 04: VIRAL INFECTIONS
15-11-2023 13:00 - 14:15

CIRCULATORY BIOMARKERS FOR EARLY DETECTION OF DENGUE IN PEDIATRIC POPULATION

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Background: Dengue infection caused by dengue virus affects the lungs other organs of the infected person. In 2009, WHO classified dengue into three categories i.e., DWS, DWWS, and SW. 230 million cases of dengue were reported annually across the globe with a mortality rate of 1-5% and the situation in south Asia is very worse.

Aims: To identify the exosomal protein alteration in the different dengue categories to find biomarkers for early prediction of dengue severity.

Methods: Exosomes isolation of 6 samples from each dengue category and age-matched healthy control were taken. After isolation and characterization of exosomes through DLS, NTA and western blot technique. Trypsin digested and reduced proteins were run on Orbitrap Exploris mass spectrometer and data was analysed by using sequest and AMANDA.

Results: For After data analysis, we found a total of 670 proteins and compared the significant proteins having a log 2-fold change with respect to control. A total of 14 downregulated proteins and 3 upregulated proteins in comparison to control were found. In silico analysis of these differentially altered proteins were performed by using Gene Ontology. In KEGG enrichment pathway analysis, the complement and coagulation cascade pathway were found significantly enriched. Also, the Protein–protein interaction (PPI) network analysis was performed by STRING database. After in silico analysis 3 genes (INCENP, F2, and APOM) were found to have a significant role in dengue severity.

Conclusions: The present study suggested that the identified proteins could be used as potential molecular biomarkers for early prediction of dengue categories in the pediatric population.



PD030 / #397

E-POSTER DISCUSSIONS 04: VIRAL INFECTIONS
15-11-2023 13:00 - 14:15

NASOPHARYGEAL CARRIAGE OF RESPIRATORY VIRUSES AMONG CHILDREN ADMITTED WITH CLINICAL PNEUMONIA IN A TERTIARY CARE HOSPITAL, NEPAL

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Background: Respiratory viruses are common causes of pneumonia in children. Many lower-middle income countries lack the point of care diagnostic facilities to identify viral pathogens causing pneumonia.

Aims: This study aimed to look at the presence of respiratory viruses in the nasopharynx of admitted children with pneumonia, suggesting the likely viral etiology for pneumonia in these children.

Methods: Children aged 6 months to 14 years admitted to Patan Hospital, Nepal, between 2014 and 2017 with a clinical diagnosis of pneumonia had nasopharyngeal (NP) samples taken and tested for viral PCR using the NxTAG Respiratory Pathogen Panel.

Results: Of the total 1338 admitted children with pneumonia, 973 (72%) were PCR positive for one or more respiratory viruses in the NP swab; 757 were positive for a single virus, 216 were positive for more than one virus. The median age of the children with PCR positive for any respiratory virus was lower (1.18 years, Interquartile range-IQR 0.594-2.39 years) than those who were negative for viral PCR (2.2 years, IQR 0.87-4.37 years). RSV PCR was positive in 285 (21%) children, influenza in 89 (6.65%) and parainfluenza in 98 (7.3%) children. The median ages of children with positive PCR for RSV, influenza or parainfluenza were 0.76 (IQR, 0.34-1.52), 2.1 (IQR, 0.80-3.73) and 1.1 (IQR, 0.64-1.97) years respectively..

Conclusions: Almost three quarters of the admitted children with clinical pneumonia had presence of one or more respiratory viruses in the NP swab. Younger children were more likely to have presence of any respiratory virus or RSV in their NP swabs.

PD031 / #701

E-POSTER DISCUSSIONS 04: VIRAL INFECTIONS

15-11-2023 13:00 - 14:15

ASSOCIATIONS OF HUMAN PAPILLOMAVIRUS (HPV) GENOTYPES AND RELATED RISK FACTORS IN A COHORT OF WOMEN LIVING WITH HIV IN A BRAZILIAN COUNTRYSIDE CITY

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Background: There are few data in Brazil considering the prevalence of Human papillomaviruses (HPVs) in people living with HIV/AIDS. Considering that HPV infection in this population is more related to immunosuppression, implementation of HPV vaccination is an important intervention. Campos dos Goytacazes was the first county in Brazil to offer in 2011 the quadrivalent HPV vaccine (4vHPV) for women living with HIV (WLWH) aged from nine to 45 years

Aims: We aimed to characterize the prevalence and genomic diversity of HPV infection in WLWH and risk variables associated through a prospective cohort study

Methods: After the consent form was received, a questionnaire was applied and an endocervical sample was collected. For genotyping, a microarray HPV technique was performed. Two intervention moments were performed: T1, the initial moment, with collection and vaccination; T2 moment, 2 years after T1. Univariate and multivariate analyses were performed.

Results: T1 moment cohort was formed by 146 women, 107 belonging to Group 1 (HPV-negative) and 39 to Group 2 (HPV-positive). The variables age, marital status, number of children, number of sexual partners, and CD4 count were protective against HPV. The variables number of sexual partners, marital status, and the number of children lost significance in multivariate analysis. Concerning T2 moment, 42 patients were followed with three positive cases.

Conclusions: HPV infection is public health concern especially for WLWH given the profile of multiple infections, unusual viral types and high prevalence between 30-45 years. The use of 4vHPV is beneficial for WLWH and should be recommended at an age of up to 45 years inside the public vaccination program.

E-POSTER DISCUSSIONS 04: VIRAL INFECTIONS

15-11-2023 13:00 - 14:15

IMMUNOGENICITY OF ROTAVIRUS VACCINES: SYSTEMATIC LITERATURE REVIEW

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Background: Worldwide, four rotavirus vaccines have been pre-qualified by the World Health Organization (WHO). Several reviews have focused on vaccine efficacy and effectiveness, while assessment of immunogenicity is limited.

Aims: A systematic literature review was conducted to identify and compare immunogenicity of WHO pre-qualified rotavirus vaccines (RotaTeq, Merck & Co., Inc.; Rotarix, GlaxoSmithKline; Rotavac, Bharat Biotech; Rotasiil, Serum Institute).

Methods: Embase[®], Medline[®], Cochrane, select conferences, clinicaltrials.gov, EudraCT, International Clinical Trials Registry Platform and Clinical Trials Registry-India were searched for studies reporting immunogenicity with these four vaccines. No restriction on study design, publication timeframe and geography was used. Studies not reporting vaccine trade name were excluded.

Results: Search results were obtained as of August 2022. Of 3,492 records screened, 103 studies were included with majority being randomized controlled trials (n=88 studies; Phase ≤ II=23, Phase III=49, Phase IV=16). There were few studies for Rotavac and Rotasiil (n=9), and they were only conducted in low-middle income countries (Rotavac, n=5 studies: India [4], Vietnam [1]; Rotasiil, n=4 studies: India [3], Niger [1]). Few studies (n=3) directly compared Rotavac or Rotasiil, the most recently pre-qualified vaccines, with RotaTeq or Rotarix. Geometric Mean Concentration (n=54) or Geometric Mean Titers (n=27) were the most reported outcomes. Seroconversion (n=61) and seropositive rate (n=26) were also assessed, but definitions were inconsistent.

Conclusions: The review identified limited head-to-head studies of WHO pre-qualified vaccines, and outcome measures varied across studies. Comparisons across vaccines are limited by the heterogeneous nature of the evidence, showing the importance of the few head-to-head studies for vaccine comparisons.

PD033 / #644

E-POSTER DISCUSSIONS 04: VIRAL INFECTIONS

15-11-2023 13:00 - 14:15

CLINICAL SPECTRUM OF DISEASE IN CHILDREN WITH SARS-COV-2 INFECTION AND TUBERCULOSIS OR HUMAN IMMUNODEFICIENCY VIRUS IN SOUTH AFRICA.

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Background: Tuberculosis (TB) and human immunodeficiency virus (HIV) infection have been identified as potential risk factors for more severe COVID-19 disease in adults, with limited data available in children.

Aims: To describe clinical findings and severity of disease in children admitted with SARS-CoV-2 and co-infection with HIV and TB.

Methods: Routine care data from a prospective cohort of children 0-13 years, admitted to Tygerberg Hospital in Cape Town, South Africa with a positive SARS-CoV-2 test between April 2020 - July 2022, was analysed. Clinical presentation and severity of disease was described in the relation to TB and HIV co-infection.

Results: In the 361 admitted children with SARS-CoV-2 infection, 42 (11.6%) were co-infected with tuberculosis and 18 (4.8%) were living with HIV. Children with tuberculosis were older (median age 33.8 months vs 13.1 months, $p < 0.01$) and more often HIV exposed or infected than children without TB. There were 25 (59.5%) children diagnosed with tuberculosis at admission. Chest X-ray readings of children with tuberculosis showed 35.9% typical radiological features of tuberculosis and 71.4% with severe disease. Sixty-eight (19%) SARS-COV-2 infected children were admitted to the paediatric intensive care unit (PICU) and 134 (37%) required oxygen; there were no significant difference in PICU admission in children with TB or HIV than those without. TB co-infected children had longer admission stays than those without (9.5 (IQR 3-15.3) days vs 6 (IQR 2-12) (p -value =0.02)).

Conclusions: There is some evidence of more severe COVID-19 disease in children co-infected with TB/HIV. Data on long-term outcomes are needed.

PD034 / #250

E-POSTER DISCUSSIONS 05: PUBLIC HEALTH AND EPIDEMIOLOGY
16-11-2023 12:45 - 14:00

**EXPLORING THE CURRENT STATE OF HPV VACCINE ACCESS AND UTILISATION IN
INDEPENDENT PHARMACIES IN SOUTH AFRICA FOR YOUNG GIRLS AGED 10 TO 18YRS OLD.**

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Background: Cervical cancer persist as a critical healthcare challenge in South Africa. This abstract delves into the potential of improving access to the HPV vaccine using an online web pre-payment and appointment platform, as a viable solution to address the gaps and improve access to cervical cancer vaccination in girls aged 10 to 18 years old

Aims: The HPV vaccine is widely available in South Africa, access to the vaccine remains a challenge for many individuals, particularly in rural and low-income areas. Despite these challenges, there are opportunities to improve access to HPV vaccination using digital health solutions.

Methods: The research was conducted across 135 independent community pharmacies, focused on assessing the benefits a web-based HPV vaccine administration and appointment platform, including user-friendliness, accessibility, and potential to reach underserved populations

Results: All the pharmacies that participated in the survey were willing to accept payments in advance for HPV vaccines. Across the provinces surveyed, over 80% of the pharmacists confirmed that they do indeed offer HPV vaccination services in their pharmacy clinics. Pharmacies indicating that they did offer HPV vaccines, Gardasil represented over 70% of the market share in SA. Currently only 40% of pharmacies administer vaccines based on appointments, most of the pharmacies prefer walk-ins.

Conclusions: Our research findings indicates that there is strong support for improving access to the vaccine using an online web pre-payment and appointment platform. Utilising online platforms for pre-payment and appointment scheduling could be the strategy to improve access to the vaccine and increase vaccination rates, particularly in underserved areas.

E-POSTER DISCUSSIONS 05: PUBLIC HEALTH AND EPIDEMIOLOGY
16-11-2023 12:45 - 14:00

A GEOSPATIAL ANALYSIS OF THE PREVALENCE OF DIARRHOEA AMONG UNDER-FIVE CHILDREN AND ITS CONTEXTUAL DETERMINANTS IN INDIAN DISTRICTS

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Background: Diarrheal disease is one of the leading reasons behind mortality and morbidity worldwide, is more threatening for infants and young children. Childhood diarrhoea is becoming an increasingly prevalent disease in developing countries, like India. It is a major cause of malnutrition that contributes towards the third major cause of under-five deaths, which has raised several concerns in the domain of public health.

Aims: The present study aimed to identify the spatial prevalence and clustering of diarrhoea in Indian districts and tries to investigate the associations between socio-economic and demographic factors with the prevalence of diarrheal disease among under-five children

Methods: Data were extracted from the National Family Health Survey, conducted in 2019–21. The study used spatial software (ArcGIS 10.8 and GeoDa 1.18) and applied Moran's index and logistics regression to show the spatial prevalence and auto-correlation of diarrhoea among neighbourhood districts and their contextual determinants.

Results: The results identified that a total of 93 districts belonging to hot spot areas are mostly from the central and eastern coastal parts of India. Analysis of socio-economic determinants showed the prevalence of diarrhoea among under-five children is higher in rural areas, among children not staying in Pacca houses, living with unimproved sanitation facilities, belonging to underprivileged communities (highest among OBC followed by SC/STs), young mothers (<25 years) and "poor" households considering the wealth index.

Conclusions: The findings of this study can help policymakers in formulating and implementing policy-level effective programmatic interventions to reduce the prevalence of childhood diarrhoea, especially in high-risk hot-spot districts in India.

PD036 / #289

E-POSTER DISCUSSIONS 05: PUBLIC HEALTH AND EPIDEMIOLOGY
16-11-2023 12:45 - 14:00

SARS-COV-2 EPIDEMIOLOGY IN THE CONTEXT OF RETURNING TO ONSITE LEARNING IN AUSTRALIAN SCHOOLS.

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Background: To reduce SARS-CoV-2 transmission, school closures were adopted in Australian states with community transmission. Observational data suggests onsite learning is not a key driver of community case rates.

Aims: In this study, we describe COVID-19 case, hospitalisation, and mortality rates in the 4-week period after resuming onsite learning, stratified by primary and secondary school ages in Victoria and New South Wales (NSW) during Delta; and in Queensland, Australian Capital Territory (ACT), NSW and Tasmania during Omicron BA.1.

Methods: Surveillance data were extracted from government websites. COVID-19 case, hospitalisation and mortality incidence rates were graphically presented for the 2021 Delta period for NSW and Victoria in Oct-Nov; and during 2022 Omicron (BA.1) in ACT, NSW, Queensland, Tasmania, and Victoria in Jan-May. The Oxford government response index was utilised to indicate stringency of public health measures.

Results: During Delta: all outcomes declined in all age groups following school re-opening. During BA.1: no patterns related to schools reopening; cases reflected community waves. There were higher case rates in school children vs community in most jurisdictions. Hospitalisations remained stable across all periods (NSW, ACT & Tas) for under 50y. Majority of hospitalisations were in 65+y. Case incidence varied up to 3-fold between jurisdictions, but hospitalisation rates were similar.

Conclusions: Re-opening schools did not seem to change the trajectory of Delta or BA.1 case waves. Case rate differences between jurisdictions are likely due to school-based testing differences. Waves of cases, hospitalisations and mortality were likely influenced by new variants, immune escape and waning, testing regimens/compliance and public health measures



PD037 / #273

E-POSTER DISCUSSIONS 05: PUBLIC HEALTH AND EPIDEMIOLOGY
16-11-2023 12:45 - 14:00

IMPROVING ORAL PREP INITIATION AND CONTINUATION USING EPOA AND PRE-APPOINTMENT REMINDERS FOR FEMALE SEX WORKERS IN BUSIA -EAST CENTRAL UGANDA

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Background: Oral PreP is one of the highly effective bio-medical prevention interventions approved by WHO for people Most at Risk for acquiring HIV. Female sex workers (FSWs) are 13.5 times more at risk of new HIV infections. By 2020, only 31000-32000 of the targeted 90,000 persons in Uganda were enrolled on Oral PreP and received their refills.

Aims: Improving Oral PreP initiation and continuation using EPOA and Pre-appointment reminders for Female Sex workers in Busia -East Central Uganda

Methods: Databases (National Key Population Combination Prevention Tracker) were searched retrospectively up to October 2022 and did a root cause analysis for low uptake of Oral PreP. We identified causes of low Oral PreP Initiation (PreP_New) and Continuation (PreP_CT) as stigma and discrimination at service delivery points, frequent mobility of FSWs, failure to keep appointments and ineffective linkage and referral mechanisms. The following interventions were initiated: Performance based incentive per FSW enrolled on Oral PreP program (EPOA), and pre- appointment reminders for PreP refill. We initiated bi-weekly meetings to review performance and address challenges.

Results: Oral PreP Initiation and continuation increased from 14% (24/171) and 70% (80/115) respectively in October 2022 to 81% (138/171) and 87% (100/115) respectively by March 2023.

Conclusions: Combining EPOA and pre-appointment reminders approach is effective in improving Oral PreP initiation and continuation among Female sex workers. This approach is critical for improving Oral PreP initiation and continuation in stigmatized and legally challenged sub-populations.



PD038 / #508

E-POSTER DISCUSSIONS 05: PUBLIC HEALTH AND EPIDEMIOLOGY
16-11-2023 12:45 - 14:00

POST-VIRAL CONDITIONS IN CHILDHOOD. HOW DOES POST-COVID-19 CONDITION DIFFER FROM OTHERS? A SYSTEMATIC REVIEW

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Background: Post-COVID-19 condition and other post-viral infection syndromes present an overlap of pathogenesis, onset, progression, symptom profile.

Aims: The aim is the systematic description of studies on post-viral conditions and determining the entity of Long-Covid compared to other post-viral conditions in children.

Methods: We conducted a systematic search of the EMBASE, Cochrane Library and GoogleScholar databases (January 1946 to October 10, 2022), according to PRISMA guidelines. Main outcomes were differences in condition duration, symptom type, and development of chronic symptoms.

Results: 25/4757 non-randomized studies were included. Most focused on Long-Covid (17 studies), followed by six papers on respiratory viruses (especially RSV and Rhinovirus). Two studies were respectively on EBV and gastrointestinal viruses. Studies on Long-Covid mostly reported data on children >10 years/adolescents, describing long-lasting symptoms of all areas, mostly neurologic, cardiorespiratory (persistent cough and dyspnea), musculoskeletal, general (mostly fatigue, with lost days of school/difficulty in everyday tasks), gastrointestinal and ENT symptoms, for a maximum of 6-8 months, with development of chronic symptoms in 22-66% of cases. The study on EBV reported persistent fatigue in adolescents for a similar duration (6 months, 46% chronic). Studies on respiratory viruses were mostly on children younger than 3 years, with cardiorespiratory symptoms development (recurrent wheezing, duration 5-7 months).

Conclusions: Post-viral fatigue syndrome was a shared feature between Long-Covid and post-EBV condition in adolescents. The disproportion in the numerosity of studies on COVID-19 vs other viruses and their non-randomized nature do now allow further assumptions. The healthcare burden and socio-economic consequences for children and their families deserve further study.



PD039 / #446

E-POSTER DISCUSSIONS 05: PUBLIC HEALTH AND EPIDEMIOLOGY
16-11-2023 12:45 - 14:00

A SNAPSHOT RECORD REVIEW OF COMMON INFECTIONS IN INFANTS DIAGNOSED WITH CLASSICAL GALACTOSEMIA IN A SEMI-RURAL REGIONAL HOSPITAL IN SUB-SAHARAN AFRICA

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Background: Classical galactosemia is a treatable autosomal recessive metabolic condition with deficiency in the galactose 1-phosphate uridylyltransferase enzyme, required for the processing of the galactose sugar to glucose in the liver. Consequently, galactose and its alternate metabolites accumulate in the liver and several organs including the urinary tract, increasing the risk for infection. Literature has described the organism *Escherichia coli* as the common infective agent in children with galactosemia, with limited data from low resource settings.

Aims: The study aimed to describe the clinical presentation and organisms isolated in infants diagnosed with galactosemia at a semi-rural regional hospital in South Africa

Methods: A pilot records review from the gastrointestinal clinic, of all infants aged 0 to 2 years, diagnosed with classical galactosemia from October 2021 to May 2023, at a semi-rural regional hospital in KwaZulu-Natal, South Africa. Demographic details were captured, including the clinical presentation and all infectious aetiologies.

Results: A total number of thirteen children were included, 62 % (n=8) were less than three months old at diagnosis. The common clinical presentations were chronic diarrhoea, failure to thrive, abnormal liver enzymes, jaundice and urinary tract infection. The common isolates identified in urine were *Enterococcus faecalis*, *Escherichia coli* and *Klebsiella pneumoniae*.

Conclusions: Early recognition of this treatable condition in low resource settings would certainly lead to a reduction in neonatal morbidity and mortality. This calls for increased index of suspicion among neonates with this clinical syndrome to improve treatment outcome.



PD040 / #700

E-POSTER DISCUSSIONS 05: PUBLIC HEALTH AND EPIDEMIOLOGY
16-11-2023 12:45 - 14:00

EPIDEMIOLOGY OF LONGCOVID CONDITION AT 3 AND 6 MONTHS AFTER COVID-19 IN THAILAND

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Background: Longcovid condition has been introduced as a diverse set of symptoms after a minimum of 4 weeks from the onset of a diagnosed COVID-19 infection.

Aims: This study aimed to determine the 3 & 6 month-prevalence, clinical characteristics and epidemiology of longcovid condition in Thailand.

Methods: All COVID-19 individuals, aged 8-24 years, at Thammasat University Hospital during October, 2021 to July, 2022 were recruited. All individuals were followed for symptoms of longcovid condition at 3 and 6 months by telephone interview using the structured questionnaire. A random sampling of 100 cases were performed to obtain convalescent serum for measuring anti-S-RBD IgG level, analyzed at National Center for Genetic Engineering and Biotechnology (BIOTEC) by enzyme-linked immunosorbent assay (ELISA).

Results: Of 1,384 eligible COVID-19 cases enrolled in the study, there were 1,129 and 932 cases completed the interview at 3 and 6 months after the infection respectively. There were 431 cases and 314 cases having at least one persist symptom defined as longcovid condition. The point prevalence of longcovid condition at 3 months and 6 months after the infection were 38.2 % (95% confidence interval: 35.3% to 41.1%) and 33.7 % (95% confidence interval: 30.7% to 36.7%) respectively. The median convalescent anti-S-RBD-IgG levels were 297 BAU/mL and 390 BAU/mL for cases with longcovid and without longcovid condition respectively. By multivariable logistic regression model, independent risk factors of the longcovid condition included female, diseases severity, and symptomatic acute infection.

Conclusions: Longcovid condition after 3 and 6 months of COVID-19 is common in Thailand.



PD041 / #470

E-POSTER DISCUSSIONS 05: PUBLIC HEALTH AND EPIDEMIOLOGY
16-11-2023 12:45 - 14:00

STAPHYLOCOCCUS AUREUS BACTERAEMIA IN PAEDIATRIC PATIENTS ACROSS AUSTRALIA, 2020-21

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Background: Staphylococcus aureus bacteraemia (SAB) is associated with significant morbidity and mortality, frequently affecting neonates, Indigenous children and children admitted to hospital. SAB can result in bone and joint infections, complicated skin and soft tissue infection, lower respiratory tract infections, and metastatic complications.

Aims: To describe the microbiological and clinical characteristics of paediatric patients with SAB across Australia in 2020 and 2021.

Methods: The Australian Group on Antimicrobial Resistance (AGAR) surveillance program captures clinical and microbiological data of isolates detected in blood cultures across Australia. EUCAST 2022 was used for data analysis and MIC interpretation using the AMR package in R (v2.0).

Results: There were 607 *S. aureus* isolates reported from patients aged <18 years; 13.2% were methicillin-resistant (MRSA). The median age was 6.0 years (1.0-11.5), and 8.4% of reports were from neonates. The majority of SAB episodes were community-onset (n: 478, 78.7%). In children <1 year the most frequent clinical manifestation were device-related infections without metastatic focus (n:30/148, 20.3%), whereas in children 1-17 years osteomyelitis/septic arthritis infections were more frequent (n: 235/459, 51.2%). Overall, 13.2% of *S. aureus* were resistant to erythromycin, 12.4% to clindamycin, and 5.3% to ciprofloxacin, with resistance to these antibiotics higher in MRSA isolates than methicillin-susceptible isolates (22.5%, 18.8%, and 16.3% respectively). The most frequently isolated MRSA strain was the Panton-Valentine leucocidin-positive ST93-IV clone. Overall, 5.6% of all *S. aureus* isolates were MDR (n=34)

Conclusions: The epidemiology of *S. aureus* in paediatrics were similar to the Australian adult population, however the epidemiology and risk factors appear different.



PD042 / #402

E-POSTER DISCUSSIONS 05: PUBLIC HEALTH AND EPIDEMIOLOGY
16-11-2023 12:45 - 14:00

CYSTIC ECHINOCOCCOSIS(CE) IN CHILDREN; REVIEW OF OWN CASES, EPIDEMIOLOGICAL FINDINGS IN TURKEY AND IN THE WORLD

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Background: Echinococcosis (CE), also known as hydatid disease, is caused by the larvae of *Echinococcus granulosus* in dogs and intermediate hosts that pass through the drink.

Aims: In recent years a significant sequence of the ages of the children they live with and come from is being seen. Here we review the 12-year CE results of paediatric patients of our hospital in Turkey together with seroepidemiological investigations from here onwards.

Methods: The test results of paediatric patients who underwent CE serology tests in the Microbiology laboratory of ESOGU Hospital between 2010 and 2023 were analysed according to year, age, gender and sociodemographic characteristics. Various databases were searched with appropriate keywords and Turkish and prospective paediatric CE content reviews were reviewed. In order to distinguish the differences in epidemiological sections, the last year and previous studies were evaluated together.

Results: Of the positive cases, 59 per cent were male and the mean age was 137 years. 58 per cent of the children were from rural areas and 46 per cent had livestock. According to the place of residence, 42% of the positive cases had screening, 32% had disseminated, 24% had both regions and 2% had other organ involvement. Turkey shows our data together with our results. Incidence has been observed in many parts of Europe and North America with control programmes implemented for many years. However, in the Asian plateaus and rural Africa, CE continues to increase rapidly from within.

Conclusions: Childhood CE is increasing in our country and in certain parts of the world.



PD043 / #245

E-POSTER DISCUSSIONS 06: ANTIMICROBIAL AGENTS AND INFECTIONS IN THE IMMUNOCOMPROMISED HOST

16-11-2023 12:45 - 14:00

INFECTIONS IN CHILDREN WITH GENETICALLY PROVEN INBORN ERRORS OF IMMUNITY (IEIS) FROM NEPAL

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Background: Inborn errors of immunity (IEIs) are increasingly being diagnosed in various regions of the world. Recurrent infections are valuable pointers for IEIs.

Aims: To describe the profile of infections in patients diagnosed with IEIs in Nepal during 2020-2023

Methods: Records of all infections in patients with patients of IEIs who were diagnosed and treated at our tertiary care centre in Nepal from August 2020 to April 2023 were analysed. Lead author (DB) has examined and diagnosed all cases. IEIs were diagnosed based on standard guidelines including genetics.

Results: Forty-four patients with genetically diagnosed IEI (25 boys; 19 girls) and 492 children with autoimmune disorders were diagnosed. Diagnostic profile of the patients included various innate, cell-mediated, humoral, or combined immunodeficiencies. ARPC1B deficiency, MECOM deficiency, RIPK1 deficiency, STAT1GOF mutations, deficiency of ADA2, C1QA defect, haploinsufficiency of A20 are few peculiar IEI among them. Recurrent infections were valuable pointers for suspecting various IEIs. Infectious episodes included respiratory infections (29.8%), skin infections (25.9%), sepsis (8.6%), lymphadenitis (7.6%), arthritis (7%), abscesses in internal organs (4.8%), colitis (3.8%), meningitis (1.9%), encephalitis (1.9%), osteomyelitis (1.9%), and others (6.8%). Various bacterial, viral, fungal, helminthic, and parasitic were isolated. Characteristic infections with Burkholderia, Enterovirus, Cryptosporidium were supportive pointers for suspicion of IEIs.

Conclusions: This is the first report of genetically proven IEIs in Nepal. Logistic constraints coupled with a lack of awareness of IEIs among laity and pediatrician accounted for missed diagnoses, late diagnoses, and poor outcomes in resource-limited settings. Antimicrobial prophylaxis reduced the incidence of breakthrough infections.

PD044 / #562

E-POSTER DISCUSSIONS 06: ANTIMICROBIAL AGENTS AND INFECTIONS IN THE IMMUNOCOMPROMISED HOST

16-11-2023 12:45 - 14:00

MULTIDRUG RESISTANT BACTERIA CAUSING INFECTIONS IN CHILDREN ADMITTED TO VAIOLA HOSPITAL, TONGA- INCIDENCE AND OUTCOMES OVER A FIVE-YEAR PERIOD (2018-2022)

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Background: The rise of multi-drug resistant bacteria (MDRB) threatens human health. The epidemiology with clinical details of these infections are lacking in children, particularly so in Oceania.

Aims: To describe the epidemiology and outcomes of illnesses caused by MDRB among hospitalized children in Tonga.

Methods: A retrospective review of children aged 0-13 years with a culture positive for a MDRB during their hospital admission from January-2018 to December-2022. The incidence of MDRB infections, and the patient characteristics, infection details and deaths described.

Results: 141 hospitalized children had infections caused by MDRB, with 171/623 (27%) positive culture specimens from 2018-2022 being MDRB. The proportion of specimens that were MDRB by year ranged from 18-28% in 2018-2021, increasing to 39% in 2022. The incidence per 100 admissions of MDRB infections were 1.4, 2.2, 1.0, 2.0 and 3.4 from 2018-2022 respectively. The most common MDRB was Methicillin-resistant *Staphylococcus aureus* (51%), followed by *Klebsiella pneumoniae* (25%) and *Escherichia coli* (13%). Extended spectrum beta lactamase-producing Enterobacteriaceae increased fourfold from 2018-2022. Skin abscesses (27%) were the commonest clinical illnesses followed by bloodstream infections (23%). Antibiotic exposure within the preceding 3 months occurred in 66% of hospitalized children. Four (3%) children died during admission.

Conclusions: The incidence of MDRB infections in hospitalized children in Tonga increased from 2018-2022. A large proportion of these children were exposed to antibiotics within 3 months of the MDRB infection. The mortality rate was low. Considering the global burden of MDRB infections, urgent measures are needed to combat this threat with particular attention to improving antibiotic stewardship.

PD045 / #620

E-POSTER DISCUSSIONS 06: ANTIMICROBIAL AGENTS AND INFECTIONS IN THE IMMUNOCOMPROMISED HOST

16-11-2023 12:45 - 14:00

THE PREVALENCE OF ISONIAZID RESISTANCE: IMPLICATIONS FROM THE 2018-2019 NATIONAL DRUG RESISTANCE SURVEY OF MALAWI.

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Background: Tuberculosis preventive therapy plays a crucial role in the prevention of susceptible populations like children and people with HIV/AIDS from progressing to TB disease in the event of exposure and latent TB infection.

Aims: To determine the prevalence of isoniazid resistance in the general population and to elucidate its implications on TB preventive therapy.

Methods: This was conducted between July 2018 and July 2019. It employed a cross sectional design using WHO's drug resistance survey guideline which was used in sample size estimation. All 365 TB registration sites were enrolled. It was done in two phases across the country.

Results: A total of 2701 patients were enrolled and 67.0% were new and 32.7% were previously treated. 40.4% of patients were HIV positive and 58.9% were HIV negative.

Isoniazid- resistance prevalence was higher amongst previously treated [13.0%(95%CI:0.38-2.5)] than new TB patients [8.2%(95%CI:6.8-9.27)]. The prevalence of Isoniazid resistant TB for new cases was at [11.4%[95%CI:8.6-14.1]] amongst HIV positive patients compared to [6.5% (95%CI: 4.9- 8.0)] amongst HIV negatives study participants. Similarly, the prevalence of all INH resistance for previously treated TB patients was [14.4(95%CI: 8.1-17.6)] amongst HIV positive patients compared to [11.5% (95%CI: 10.1-18.8)] amongst HIV negative study participants.

Conclusions: The findings from this survey implies that there is a need to enhance and strengthen screening to make sure that TPT is being given to deserving and eligible individuals like children and people living with HIV/AIDS to avoid administering TPT to those with active TB which might lead to partial treatment and subsequent development of resistance.

PD046 / #24

E-POSTER DISCUSSIONS 06: ANTIMICROBIAL AGENTS AND INFECTIONS IN THE IMMUNOCOMPROMISED HOST

16-11-2023 12:45 - 14:00

COMPARATIVE EFFECT OF FOUR ANTIMALARIAL TREATMENTS ON HAEMATOCRIT IN CHILDREN IN SOUTHWEST OF NIGERIA

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Background: Anaemia in malaria has both central (dyserythropoiesis) and peripheral causes (phagocytosis of both infected and uninfected erythrocytes and haemolysis). Some antimalarial drugs also cause intravascular hemolysis leading to anemia. However, it is often difficult to disentangle the anemia effect of malaria from its treatments.

Aims: The aim of this study was carried out to compare the change in hematocrit following four antimalarial treatments.

Methods: Data were extracted from 313 case record forms of children that met the eligibility criteria aged 3-119 months enrolled in antimalarial clinical trials in Southwest Nigeria between 1998 and 2014. Change in haematocrit level from baseline through 28 days follow up period were compared among children treated with artemether-lumefantrine (82), artovaquone-proguanil (41), artesunate-amodiaquine (156) and chloroquine (34). Repeated measures analysis was done by fitting a general linear model (GLM).

Results: The median age of the study population was 25 months and 54% were males. The mean differences (95% CI) in haematocrit from baseline were 4.7 (95% CI = 3.6, 5.8), 4.4 (95% CI = 2.7, 6.0), 3.8 (95% CI = 3.0, 4.7) and 2.4 (95% CI = 0.5, 4.4) for artemether-lumefantrine, artovaquone-proguanil and artesunate-amodiaquine and chloroquine, respectively. Using the general linear model, repeated measure analysis showed that there were significant differences in the mean haematocrit level over the 28-day follow-up among the four treatment groups ($p < 0.05$).

Conclusions: All children experienced increases in haematocrit after treatment, artemether-lumefantrine appearing to result in a greater increase in haematocrit than other antimalarial drugs. Patients at the risk of malaria associated anaemia may benefit more from artemether-lumefantrine than the other three antimalarials.



PD047 / #534

E-POSTER DISCUSSIONS 06: ANTIMICROBIAL AGENTS AND INFECTIONS IN THE IMMUNOCOMPROMISED HOST

16-11-2023 12:45 - 14:00

THE PREVALENCE AND BURDEN OF EPSTEIN-BARR VIRAL CO-INFECTION IN UK YOUTH LIVING WITH PERINATALLY ACQUIRED HIV

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Background: Epstein-Barr virus (EBV) is considered a driver of B-cell lymphoproliferation in a proportion of people with HIV. Yet, the prevalence and burden of EBV in youth with perinatally-acquired HIV (YLWPaHIV) is not described, despite their increased risk of lymphoma.

Aims: To explore the immunological impact of co-infection with EBV in YLWPaHIV potentially leading to malignancy.

Methods: EBV co-infection was determined in virally HIV-suppressed YLWPaHIV by quantifying EBNA1 IgG in plasma (ELISA), and EBV-DNA in saliva (PCR), and PBMCs (ddPCR) at a single time point. Seropositivity was explored alongside clinical data, including, CD4⁺ and CD8⁺ T-cell counts, histories of HIV-suppression, and duration ART treatment. Flow cytometric and LUMINEX assays measured immune activation and inflammation associated with lymphoma development.

Results: In this cohort of 48 individuals (male 60%, black ethnicity 82%, median and [IQR]: age 23 [20-28] years, CD4⁺ count 652 cells/mL [540-848], age of ART initiation 7 [2-12] years, lifetime HIV-suppressed 69% [48-88%]), EBV seropositivity was 92%, with salivary EBV-DNA detected in 42%. Participants with detectable cell-associated EBV-DNA [30%] had shorter durations of lifetime HIV-suppressed [****P=0.0065**] and reduced CD4⁺:CD8⁺ ratios [****P=0.0049**], compared to those with undetectable cell-associated EBV-DNA. Higher measurements of EBNA1 IgG and cell-associated EBV-DNA correlated with earlier ART initiation during childhood [***P=0.0107**, $r=-0.3854$; ***P=0.0148**, $r=-0.6947$; respectively].

Conclusions: This is an initial phase of exploratory work in an immunologically vulnerable population. EBV infection is associated with smaller proportion of lifetime HIV-suppressed and lower CD4/8 ratio. Further work is critical to understand risk factors that predispose certain individuals to malignancy.

PD048 / #441

E-POSTER DISCUSSIONS 06: ANTIMICROBIAL AGENTS AND INFECTIONS IN THE IMMUNOCOMPROMISED HOST

16-11-2023 12:45 - 14:00

GENOMIC CHARACTERIZATION OF KLEBSIELLA PNEUMONIAE ISOLATES CAUSING INVASIVE BACTERIAL DISEASE IN SOUTH AFRICAN INFANTS \leq 90 DAYS-OF-AGE

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Background: *Klebsiella pneumoniae* (Kpn) is a leading cause of neonatal culture-confirmed sepsis in South Africa and is strongly associated with prematurity and prolonged hospital stays, albeit with a scarcity of genotypic characterization.

Aims: The study aimed to sequence the whole genomes of Kpn isolates associated with sepsis in hospitalized South African neonates.

Methods: A sero-epidemiology study of neonatal sepsis across six hospitals was undertaken from March 2019 to February 2021. Infants from pregnant women enrolled either antenatally, during the early stages of labour; or immediately postpartum were followed up to 90 days of age for all-cause hospitalization and death. Blood culture was done on neonates with suspected serious bacterial infection and Kpn strains were sequenced. Additional invasive Kpn strains isolated from a normally sterile site (blood, CSF) identified through daily surveillance of the National Health Laboratory Services laboratories were also sequenced.

Results: Of the 3042 infants admitted, 633 were diagnosed with culture-confirmed sepsis. The incidence of invasive Kpn disease was 5.3 per 1000 live births. Of the 98 non-identical Kpn isolates sequenced, genomic analyses showed sequence type (ST) 39 (23%) to predominate, followed by ST307(18%), and ST17(16%). The dominant K-antigens were KL149(29%), KL25(23%), and KL102(20%), while the dominant O serotypes were O1(47%), O2afg(23%), and O5(17%). All strains were multidrug-resistant with >80% positive for different aminoglycoside and cephalosporins antimicrobial resistance genes.

Conclusions: The study identified previously unreported strains of multidrug-resistant Kpn associated with neonatal sepsis. Continued genomic surveillance is important to identify circulating strains within hospital settings to improve infection control and antibiotic stewardship.



PD049 / #573

E-POSTER DISCUSSIONS 06: ANTIMICROBIAL AGENTS AND INFECTIONS IN THE IMMUNOCOMPROMISED HOST

16-11-2023 12:45 - 14:00

NASOPHARYNGEAL CARRIAGE AND ANTIBIOGRAM OF PNEUMOCOCCAL AND OTHER BACTERIAL PATHOGENS FROM CHILDREN WITH SICKLE CELL DISEASE IN TANZANIA

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Background: Bacterial infections contribute significantly to morbidity and mortality in sickle cell disease (SCD) patients, particularly children under five years of age. In Tanzania, prophylaxis against pneumococcal infection among children with SCD advocates the use of both oral penicillin V and pneumococcal vaccines.

Aims: This study aimed to investigate nasopharyngeal carriage and antibiogram of Streptococcal pneumonia and Staphylococcus aureus in children with SCD in Tanzania.

Methods: This cross-sectional study was undertaken at the two Sickle Pan-African Research Consortium study sites in Dar es salaam, Tanzania. The study was conducted for six months and enrolled children with SCD between the ages of 6 to 59-months. A semi-structured questionnaire was used to collect patient data. Nasopharyngeal swabs were collected from all participants and cultured for Streptococcal pneumoniae and other bacterial isolates. Antimicrobial susceptibility tests of the isolates were done using the disc diffusion method.

Results: Out of 204 participants, the overall prevalence of bacterial carriage was 53.4%, with *S. aureus* (23.5%), coagulase-negative Staphylococci (CoNS) (23%), and *S. pneumoniae* (7.8%). In antibiotic susceptibility testing, *S. aureus* isolates were most resistant to penicillin (81.8%), whereas 81.3% of *S. pneumoniae* isolates were resistant to co-trimoxazole. The proportion of multi-drug resistance (MDR) was 66.7% for *S. aureus* isolates and 25% for *S. pneumoniae* isolates.

Conclusions: There are substantially high nasopharyngeal carriage pathogenic bacteria in children with SCD in Dar es Salaam, Tanzania. The presence of MDR strains to the commonly used antibiotics suggests the need to reconsider optimizing antimicrobial prophylaxis in children with SCD and advocacy on pneumococcal vaccines.

PD050 / #474

**E-POSTER DISCUSSIONS 06: ANTIMICROBIAL AGENTS AND INFECTIONS IN THE
IMMUNOCOMPROMISED HOST**
16-11-2023 12:45 - 14:00

**OUTBREAK OF MULTIDRUG RESISTANT SERRATIA MARCESCENS IN NEONATAL AND
PEDIATRIC WARD- REPORT FROM A TERTIARY CARDIAC CARE CENTRE**

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Background: INTRODUCTION: *Serratia marcescens* is a well-recognized cause of outbreaks of pediatric nosocomial infections. These outbreaks have usually been linked to poor environmental disinfection and breach in infection prevention practices.

Aims: OBJECTIVE: To identify the sources of a nosocomial outbreak of *Serratia marcescens* in pediatric ward, NICVD Karachi

Methods: METHODS: Laboratory surveillance revealed a sudden increase in Carbapenem resistant *Serratia* species bloodstream infections in September 2022. A case definition was finalized, data was collected and line listing was developed.

Results: RESULTS: A total of 20 HA-associated blood stream infections with CRE *Serratia* were identified from September- December 2022 from the Pediatric ward, of which 4 patients died. Outbreak investigation comprising of detailed infection prevention rounds, audits, environmental cultures, revealed breach in practices of hand hygiene and environmental cleaning, reuse of open medication vials, improper storage of medicines, overcrowding and bed sharing, overuse of antibiotics etc. A multidisciplinary approach was employed to overcome the outbreak consisting of multiple bedside teaching sessions to improve infection prevention practices and environmental cleaning and disinfection, early discharges of patients when possible, increasing number of isolation rooms, implementing visitor control policy, minimizing bed sharing, frequent and thorough terminal cleaning of ward, ensuring availability of hand hygiene products and environmental cleaning supplies, exploring OPAT services for discharged patients. With execution of all above mentioned interventions, the outbreak is at a standstill since December and no new case has been reported since then.

Conclusions: CONCLUSION: Improving best practices and adhering to infection control principles proved effective in terminating the outbreak



PD051 / #485

E-POSTER DISCUSSIONS 07: RESPIRATORY TRACT INFECTIONS & VACCINATIONS
16-11-2023 12:45 - 14:00

SERO-EPIDEMOLOGY OF MEASLES IGG ANTIBODIES AMONG NEWBORNS AT BIRTH AND THEIR SUSCEPTIBILITY TO MEASLES IN SOUTH EAST ASIA AND SUB-SAHARAN AFRICA: A MULTICENTRE STUDY

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Background: Infection with Measles virus (MV) is endemic in low and middle-income countries (LMICs). Even with a safe and effective MV vaccine, the burden of infected infants continues to rise, especially among those below the currently recommended age for vaccination.

Aims: To investigate trans-placentally transferred maternal measles-IgG antibodies in newborns at delivery and their susceptibility to MV infection

Methods: This study was conducted in nine countries (Bangladesh, Bhutan, India, Ethiopia, Mozambique, Kenya, Nigeria, Mali, and South Africa), and used stored samples from GBS-MCS. Umbilical cord blood (323/site) was randomly selected and tested for measles-IgG in true duplicate using an enzyme link immunosorbent assay

Results: A total of 2907 cord sera were analyzed in true duplicates. The overall seroprevalence of Measles IgG in newborns at birth was 50.1% (1456/2907, [95% CI: 48.3% - 51.9%]). Highest measles-IgG seropositivity was observed in newborns from Nigeria (253/323, 78.3% [95% CI: 73.5% - 82.5%]), followed by Ethiopia (226/323, 70% [95% CI: 64.7%-74.7%]), and lowest was from Kenya (113/323, 35% [95% CI: 29.9%-40.4%]) and Bhutan (86/323, 26.6% [95% CI: 22.1%-31.7%]). The risk of Measles-IgG seronegativity in newborns was significantly higher when their mothers were young ($p < 0.001$), high school educated ($p < 0.001$), from a rural settlement ($p = 0.000$), and gravidity of > 1 ($p = 0.05$). The overall predicted GMT antibody decay among measles IgG seropositive newborns at birth, would reach complete seronegativity at 120 days (4 months) at all nine sites

Conclusions: The study describes a low seropositivity rate of measles IgG at birth in South Asia and sub-Saharan Africa, associated with a rapid antibody decay.

PD052 / #240

E-POSTER DISCUSSIONS 07: RESPIRATORY TRACT INFECTIONS & VACCINATIONS
16-11-2023 12:45 - 14:00

**A RANDOMIZED CONTROLLED TRIAL ASSESSING COMMUNITY MOBILIZATION AND
COMMUNITY INCENTIVIZATION (COMIC) STRATEGY FOR CHILDHOOD DIARRHEA AND
PNEUMONIA IN A RURAL SETTING OF PAKISTAN**

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Background: Despite the decline in under-five mortality by over 60% in the last three decades, majority of the child mortality is still attributable to infectious diseases that are preventable.

Aims: The aim of this RCT is to evaluate the impact of a participatory community engagement and innovative community incentivization strategy for improving the coverage of child immunizations and sanitation and hygiene practices in rural Pakistan.

Methods: The interventions were formally evaluated prospectively in a three-arm cluster randomized controlled trial to: community mobilization and Incentivization(CMI); community mobilization only(CM); and control group. The conditional collective community-based incentives (C3I) were an innovative strategy as these were conditioned on serial incremental targets of collective improvement in coverage of a composite indicator of fully immunized children(FIC), and sanitation index(SI) and incentives were given to clusters which met the pre-defined targets and were non-cash and structural decided by the community groups. The evaluation was done by an independent data collection/analysis team.

Results: At the end of the two-year intervention, 59.16% children were fully immunized in the CMI group, 43.7% in the CM, and 46.57% in the control group; SI in the CMI group was a mean of 10.15(95%CI:9.73-10.57), followed by CM group 9.32(8.91-9.73) and the control group 8.93(8.47-9.38); The multivariate results suggest that there was a significant improvement in the CMI group for FIC (relativerisk(RR):1.27,95%confidenceinterval(CI):1.02-1.58), total SI (β :0.99,95%CI:0.13-1.85), exclusive-breastfeeding (RR:1.79,95%CI:1.39-2.29), and a significant decrease in prevalence of diarrhea (RR:0.65:95%CI:0.46-0.94).

Conclusions: C3I was effective in increasing the coverage of essential interventions and can be an effective strategy for behavior change at a broader scale.

PD053 / #539

E-POSTER DISCUSSIONS 07: RESPIRATORY TRACT INFECTIONS & VACCINATIONS
16-11-2023 12:45 - 14:00

EVALUATION OF INDUCED SPUTUM AGAINST GASTRIC JUICE ASPIRATE IN THE DIAGNOSIS OF TUBERCULOSIS IN CHILDREN

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Background: Gastric juice aspiration has been the preferred method of sampling for the diagnosis of pulmonary TB in children. However induced sputum collection is less invasive, does not require in-patient admission, causes less discomfort and does not require overnight fasting.

Aims: To evaluate induced sputum collection against gastric juice aspiration in the diagnosis of Tuberculosis using XpertMTB/RIF and MGIT(culture) in children between 2 to 15 years.

Methods: This is a cross-sectional, prospective study including both in-patients and out-patients who were suspected cases of Tuberculosis between 2 and 15 years of age. Sequential samples of gastric juice and induced sputum were collected and both were sent for XpertMTB/RIF and MGIT.

Results: We recruited 138 children for the study who were suspected to have Tuberculosis. Pulmonary TB accounted for 13 cases (9.4%). The diagnostic yield by GJ aspiration(GA) was 12/138 ie. 8.6%(5-14.5%), while that for Induced sputum(IS) was 10/138 ie. 7.2% (3.9-12.8%). Above 10 years of age, there were 10 cases detected by IS and 9 cases by GA. Less than 10 years, 3 cases were detected by GA and none by IS. Using the Wong-Baker visual analogue scale GA had a median score of 8 while IS had a median score of 2, suggesting that IS was associated with significantly lower levels of discomfort compared to GJ aspiration. (p value <0.0001)

Conclusions: In children less than 10 years, gastric juice aspiration should be used for the diagnosis of TB. However, in children aged 10 years and above induced sputum should be done owing to better yield and tolerability.



PD054 / #388

E-POSTER DISCUSSIONS 07: RESPIRATORY TRACT INFECTIONS & VACCINATIONS
16-11-2023 12:45 - 14:00

PNEUMOCOCCAL CARRIAGE AND SEROTYPE DISTRIBUTION IN HEALTHY URBAN CHILDREN 5 YEARS POST INTRODUCTION OF PNEUMOCOCCAL CONJUGATE VACCINE (PCV) IN NEPAL

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Background: In 2015, the 10-valent pneumococcal vaccine (PCV10) was introduced in Nepal for all infants given at 6, 10 weeks and 9-months (2+1 schedule). Pneumococcal carriage-prevalence in healthy Nepalese children has been studied since 2015, was interrupted by the COVID pandemic in 2020 and we present data from 2021.

Aims: To evaluate the serotype-specific pneumococcal carriage among healthy Nepalese children.

Methods: Healthy children aged 6-60 months were recruited after informed consent at Patan Hospital, Kathmandu, Nepal. Nasopharyngeal swabs were collected, processed according to WHO guidelines, and serotype was determined by the Quellung method.

Results: Between April 2021 and December 2021, 548 healthy children were enrolled in the study. The overall prevalence of pneumococcal carriage was 35.40% (194/548). This compares to previous assessments of pneumococcal carriage prevalence: a) prior to any vaccine introduction (2014-2015) of 63.40% (1209/1907, $p < 0.0001$)¹ and b) in the first years after vaccine introduction (2016-2019) of 60.50% (3149/5205, $p < 0.0001$). PCV10 serotype carriage prevalence was 1.46% (8/548). This compares to carriage prevalence pre-vaccine introduction (2014-2015) of 19.09% (364/1907, $p < 0.0001$)¹ and in the first years after vaccine introduction (2016-2019) of 9.18% (478/5205, $p < 0.0001$).

Conclusions: There is a decrease in overall prevalence of pneumococcal carriage and carriage of PCV10 serotypes five years after PCV10 vaccine introduction. To assess the long-term impact of immunization and potential serotype replacement, surveillance of pneumococcal carriage prevalence is necessary. It is important to note that this data was collected during the post-pandemic years, thus, there might be other confounding factors influencing the results.

PD055 / #543

E-POSTER DISCUSSIONS 07: RESPIRATORY TRACT INFECTIONS & VACCINATIONS
16-11-2023 12:45 - 14:00

USING BREATH TO DIAGNOSE TUBERCULOSIS IN CHILDREN: AN EMERGING APPROACH

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Background: TB is a leading killer of children, with an estimated 1 million case and 250, 000 deaths expected each year. The translation of molecular diagnostics in adults to diagnose TB in children is flummoxed by the non-specific clinical symptoms, lack of sputum, and the poor sensitivity of the tests in this population. Overall, it is estimated that 70% of childhood Tb cases go undiagnosed. Volatile molecules from adults with TB disease show promise for use as a triage test.

Aims: (A) To generate putative TB disease biomarkers from the breath of children. (B) To track breath volatiles of pediatric subjects during 6 months of treatment.

Methods: One liter of breath was collected from ethics-approved subjects and concentrated onto thermal desorption tubes, then capped, and stored at 4oC until analysis. Breath analysis was conducted via GCxGCtofMS. Chromatographic data were aligned and compounds were assigned putative names based on spectral library match. Putative biomarker discovery (using a variety of machine learning tools) as well as statistical analyses, were performed in R.

Results: From an initial cohort of 31 subjects, four breath biomarkers specific to children were evaluated (sensitivity of 80% and specificity of 100%). These biomarkers and others molecules were tracked over time (1 month, 3 months, 6 months) for the initial and another pediatric population.

Conclusions: Breath provides a rich source of diagnostic information for TB disease in children. During successful treatment, breath biomarkers for TB disease appear to revert to a less inflammatory breathprint.



PD056 / #569

E-POSTER DISCUSSIONS 07: RESPIRATORY TRACT INFECTIONS & VACCINATIONS
16-11-2023 12:45 - 14:00

SEX- SPECIFIC BLOOD DERIVED RNA BIOMARKERS FOR CHILDHOOD TUBERCULOSIS

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Background: Confirmatory diagnosis of childhood tuberculosis (TB) remains a challenge mainly due to the dependence on sputum samples and the paucibacillary nature of the disease. Thus, only ~30% of children are diagnosed. Understanding the host molecular changes and identifying blood-based transcriptomes has shown promise as diagnostic biomarkers. Sex and geography may contribute to disease heterogeneity and therefore diagnosis, which is the goal of this current work.

Aims: The overall objective of this study was to identify sex-specific blood-based mRNA biomarkers for childhood TB.

Methods: We wrangled transcriptional data from GSE39939, GSE39940, GSE41055, and PRJNA588242 from NIH GEO; a cohort of 370 subjects (146 active TB; the balance were other diseases that present similarly) from Kenya, South Africa, and Malawi. Biomarkers of disease were short-listed by the Boruta algorithm and Random Forest and a risk score based on a geometric average. The gene sets were partially validated using data from an additional seven studies.

Results: Approximately, only 10% of genes were common between sexes, across all countries. Further, we observed that unique biomarker signature for males (five genes) and females (four genes) achieved sensitivity (0.85) and specificity (0.7) closer to the WHO recommended target product profile for a triage test.

Conclusions: Blood tests using a small number of genes could have use in determining TB disease in pediatric subjects. Sex-specific transcriptional profiles have different sensitivity and specificities. Geography, and all that it encumbers, may play a role in transcriptional profile.



PD057 / #436

E-POSTER DISCUSSIONS 07: RESPIRATORY TRACT INFECTIONS & VACCINATIONS
16-11-2023 12:45 - 14:00

SEROTYPE COVERAGE RATES OF THE NEWLY AVAILABLE PNEUMOCOCCAL CONJUGATE VACCINES OF STREPTOCOCCUS PNEUMONIAE CAUSING INVASIVE DISEASES IN CENTRAL THAILAND, 2017-2023

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Background: Broader access to newly available pneumococcal conjugate vaccines (PCVs) and sustainability of the pneumococcal immunization program will save countless lives in countries with limited resources.

Aims: To evaluate serotype coverage rates of PCVs and the newly available PCVs including PCV10 conjugated to proteinD of non-typeable *Haemophilus influenzae* (PCV10-NTHi, Synflorix), PCV10 conjugated to non-toxic diphtheria CRM197 (PCV10-CRM197, Pneumosil), PCV13 conjugated to tetanus toxoid (PCV13-TT, Weuphoria), PCV13 conjugated to CRM197 (PCV13-CRM197, Pevnar13), PCV15 (Vaxneuvance), and PCV20 (Pevnar20) of pneumococcal isolates causing invasive diseases (IPD) in Thailand.

Methods: Pneumococcal isolates from sterile specimens of patients within a collaborative hospital network in central Thailand between 2017-May 2023, when PCV coverage was 12% in children < 5 years nationwide, were studied. The pneumococcal serotypes were identified by multiplex PCR. Serotype coverage rates were calculated without considering potential serogroup cross-protection.

Results: Of 283 pneumococcal isolates, 91 (32.2%) were from children aged ≤ 5 years. Thirty eight percent of patients with available data received the pneumococcal vaccine prior to the onset of the IPD. The most common vaccine serotypes were 19A (11.3%), 14 (9.9%), 23F (9.9%), and 3 (9.9%). Non-PCV20 serotypes were detected in 22.6%. The serotype coverage rates of PCV10-NTHi, PCV10-CRM197, PCV13-CRM197, PCV13-TT, PCV15, and PCV20 were 40.6%, 50.2%, 63.6%, 63.6%, 64.3%, and 77.4% across all ages, and 41.8%, 58.2%, 62.6%, 62.6%, 62.6%, and 75.8% among children aged ≤ 5 years, respectively. A 23-valent polysaccharide vaccine covered 73.6% of IPD isolates among patients aged > 2 years.

Conclusions: Majority of pneumococcus causing IPD in central Thailand were included in the currently available PCVs. PCV10-CRM197 provided higher coverage rate than that of PCV10-NTHi. PCV13 provided similar coverage rates to that of PCV15, but less than PCV20 and PPSV23.



PD058 / #429

E-POSTER DISCUSSIONS 07: RESPIRATORY TRACT INFECTIONS & VACCINATIONS 16-11-2023 12:45 - 14:00

MAPPING ZERO-DOSE AND MISSING-DOSE CHILDREN IDENTIFIED THROUGH SCHOOL ENTRY CHECKS IN ZAMBIA

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Background: Identifying areas with a high prevalence of zero-dose and under-vaccinated children is essential for targeting immunization efforts among marginalized populations. These missed communities are at increased risk of outbreaks of vaccine preventable diseases and suffer from other social inequalities. In low- and middle-income countries that lack vaccination registries and street addresses, innovative methods are needed to identify these vulnerable populations.

Aims: This study investigates whether zero dose and under-vaccinated children identified through school vaccination screening can point towards missed communities.

Methods: Using a pilot school vaccination screening program in Ndola, Zambia, we conducted a cross sectional survey among grade one students between April and July 2023. Data on the vaccination status and key landmarks in the area were collected and plotted on a health center catchment area map. During study interviews, parents of children enrolled in the school vaccination project used map or were asked questions about key landmarks to identify which zone they live in.

Results: Of the 380 enrolled students currently enrolled as of June 5, 23% (88) of students were under-vaccinated, defined as missing at least one dose of oral polio (OPV), pentavalent (DTP) or measles containing vaccine (MCV). At school A, 66% (133) of the students lived in the same catchment zone, and 26% (34) of these students were under-vaccinated. While 12% (24) lived in another zone, 63% (15) of these students were under-vaccinated.

Conclusions: These findings suggest that school vaccination screening can identify under-vaccinated individuals within a school system and provide information on the geospatial distribution of missed communities.

PD059 / #348

E-POSTER DISCUSSIONS 07: RESPIRATORY TRACT INFECTIONS & VACCINATIONS
16-11-2023 12:45 - 14:00

MODULAR BREATH SAMPLER: USING EXHALED BREATH FOR THE MOLECULAR DIAGNOSIS OF PATHOGENS IN THE RESPIRATORY TRACT OF CF PATIENTS

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Background: Children with cystic fibrosis (CF) suffer from recurrent respiratory tract infections with opportunistic bacteria such as *Staphylococcus aureus* (SA) and *Pseudomonas aeruginosa* (PA). These infections, especially with PA, are associated with accelerated decline of lung function and worse prognosis. To ensure early detection of these bacteria, patients are monitored by microbiological cultures. Literature suggests that early detection can be achieved by sampling of exhaled breath. The Modular Breath Sampler (MBS, new name: Aerocep) is a newly developed two-way non-rebreathing sampling device that collects aerosols from exhaled breath in a liquid which can be analyzed using a panel of targeted polymerase chain reactions (PCRs) to detect pathogenic bacteria.

Aims: To investigate the diagnostic yield of a PCR panel of pathogenic bacteria using exhaled breath samples collected with Aerocep in children with CF during symptom-free periods and exacerbations.

Methods: 99 Aerocep samples were collected from pediatric CF patients during outpatient visits. Multiple samples per patient were allowed. During these visits microbiological samples were taken as part of routine care. 32 Aerocep samples were collected in pediatric asthma patients serving as a control group. No cultures were taken in this group.

Results: CF patients had significantly more positive Aerocep samples versus controls. *Staphylococcus aureus* was found more often in microbiological samples whereas *Pseudomonas aeruginosa* was found more often in Aerocep samples. Results suggest that Aerocep samples have a higher sensitivity for PA than conventional diagnostics.

Conclusions: Analyzing exhaled breath using Aerocep could be of added value in the detection of pathogenic bacteria in children with CF.

PD060 / #808

E-POSTER DISCUSSIONS 08: LATE-BREAKING
16-11-2023 12:45 - 14:00

PEDIATRIC CAUSES OF DEATH AT AN URBAN WEST AFRICAN HOSPITAL: A DESCRIPTIVE STUDY FROM GUINEA-BISSAU

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Background: Knowledge on disease burdens and fluctuations for children at African hospitals is important for focusing future interventions where they are most needed and helpful.

Aims: To assess the incidence in consultations, hospitalizations, and in-hospital deaths over time in children < 5 years of age presenting at a pediatric hospital ward in urban West Africa.

Methods: Descriptive study based on continuously collected data from the pediatric triage room and the pediatric ward of the National hospital in Bissau, Guinea-Bissau. 104,606 contacts were registered from December 2017 to November 2022. Outcomes were assessed overall, by age category (neonates (0-28 days), infants (1-11 month), children (1-4 years)), by sex and by month, quarter, and season (dry season (December-May), rainy season (June-November)).

Results: The risk of admission among children that presented for consultation was 20.5% (21,412/104,606). The in-hospital case-fatality was 16.4% (3,507/21,412). Neonates accounted for 40% (8,520/21,412) of admissions and 69% (2,403/3,507) of deaths. The most common admission causes were sepsis/meningitis for neonates, respiratory infection for infants and diverse, mostly preventable diseases for children. There were more contacts in the rainy season where respiratory infections were more common. The male/female ratio was 1.18 for consultations, 1.39 for admissions, and 1.35 for in-hospital deaths. The total number of contacts was lower during the covid-19 pandemic.

Conclusions: Almost 1/6 of admitted children died during admission and neonates accounted for 2/3 of all in-hospital deaths. Disease burdens were season-specific and age-specific variations in disease burdens. These findings may be used for focusing interventions and improving hospital triage systems.

PD061 / #814

E-POSTER DISCUSSIONS 08: LATE-BREAKING
16-11-2023 12:45 - 14:00

BARRIERS TO ACCESSING AND UTILISING UNDER-FIVE PRIMARY HEALTHCARE SERVICES: AN INTERPRETATIVE PHENOMENOLOGY STUDY

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Background: Sub-Saharan Africa continues to be the region with the highest under-five mortality rate globally, with 74 deaths per 1000 live births. Even though under five child primary healthcare services are free in South Africa, accessing such services remains challenging. Children under five years reportedly die from common illnesses such as pneumonia, diarrhoea, and malaria, which are treatable in primary healthcare facilities.

Aims: The study explored the barriers to accessing and utilising under-five primary healthcare services in the Vhembe district as perceived by guardians.

Methods: An interpretative phenomenology design was followed using a semi-structured individual interview guide. The study was conducted in the primary healthcare facilities of Vhembe district among guardians of children under five years. Purposive sampling of participants was done to select guardians who met the inclusion criteria for the study. Sixteen participants were interviewed, and audio recorded between 27th June 2022 and 31st August 2022. Data analysis was done following Colaizzi's steps of data analysis. Trustworthiness, as well as ethical principles, were ensured throughout the study.

Results: Four themes emerged from the data: health system barriers, health personnel-related behaviours, health facility infrastructure barriers and guardians-related barriers. Nine themes emerged: distance from the facility, lack of resources, long waiting times; poor time management, lack of commitment and work devotion, insufficient waiting space; challenges with water and sanitation, guardians' healthcare beliefs and the urgency of the illness.

Conclusions: It is imperative that an enabling professional and friendly environment is created to facilitate better access to primary health care services for children under five years.



PD062 / #816

E-POSTER DISCUSSIONS 08: LATE-BREAKING
16-11-2023 12:45 - 14:00

PREVALENCE OF INBORN ERRORS OF IMMUNITY IN CRITICALLY ILL CHILDREN ADMITTED TO PICU FOR SEPSIS: A MOROCCAN COHORT STUDY

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Background: Occurrence of pediatric sepsis with organ failure in the course of infection suggests underlying immunodeficiency. However, the implication of inborn errors of immunity (IEI) in susceptibility to sepsis is still to be identified and their prevalence amongst children with sepsis is undetermined.

Aims: To assess prevalence of IEI amongst children admitted to PICU for sepsis.

Methods: Children admitted to PICU for sepsis were listed. Were excluded known primary or secondary immunodeficiencies, trauma, surgery or burn related sepsis. Sepsis was defined as organ dysfunction associated to infection. Severity was assessed using pSOFA score. Screening for IEI included lymphocytes sub-populations, immunoglobulins and complement dosing. Whole exome sequencing (WES) was performed after obtention of parents' written consent.

Results: Thirty cases of children with sepsis were admitted. Mean age was 46 months (1month-15years). Microorganisms were identified in 20 cases (67%). Bacterial sepsis in 8 cases (26%), viral sepsis in 6 cases (20%), fungal sepsis in 2 cases (6%) and tuberculosis related sepsis in 4 cases (13%). Consanguinity was identified in 5 cases (16%). Anterior PICU admission for sepsis was listed in 9 cases (30%). Mean pSOFA was six. Lymphopenia was noted in 10 cases (33%), thrombocytopenia in 12 cases (40%). IEI were diagnosed in 12/30 cases (40%) including 4 cases of hemophagocytic lymphohistiocytosis. WES identified IEI in 6/30 cases (20%).

Conclusions: Our study establishes a link between IEI and susceptibility to sepsis. Systematic screening of IEI amongst children admitted to PICU for sepsis may increase our comprehension of sepsis phenotypes and improve outcomes in this group of critically ill children

PD063 / #840

E-POSTER DISCUSSIONS 08: LATE-BREAKING
16-11-2023 12:45 - 14:00

**SAFETY OF INTERCHANGING THE LIVE ATTENUATED MAV/06 STRAIN AND OKA STRAIN
VARICELLA VACCINES IN CHILDREN**

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Background: Two live attenuated varicella vaccine (VZV) strains have been mainly used across the globe: MAV/06 and OKA.

Aims: We aimed to explore the safety of interchanging the two strains administered for primary and booster immunizations.

Methods: South Korea's vaccine adverse event reporting system (VAERS) was accessed and searched to find filed reports of all adverse events (AEs) following the second administered dose. The electronic medical records were also reviewed for all visits to the hospital following the second dose.

Results: Of the total 406 participants, 27.5% (n = 112) were in the MAV/06–MAV/06 group, 30.3% (n = 123) in the MAV/06–OKA, 17.5% (n = 71) in the OKA–MAV/06 group, and 24.6% (n = 100) in the OKA–OKA group. Mean age at immunization with the first dose was 1.10 (standard deviation [SD] ±0.34) years old, and second dose was 4.77 (SD ± 1.13) (p = 0.772 and 0.933, respectively). There were no filed reports of AEs following the second dose in the national VAERS. Hospital visit records showed a total of 10.3% (95% confidence interval [CI], 7.6–13.7) (n = 42) had recorded AEs following the 2nd administered dose; however, only 0.7% (95% CI, 0.2–2.4) (n = 3) were regarded as possibly vaccine related. Two patients in the MAV/06–OKA group were diagnosed with Henoch-Schonlein purpura after the second dose; however, both had also received the MMR vaccine on the same day.

Conclusions: No safety signals associated with interchanging the MAV/06 and OKA strain live attenuated varicella vaccines were observed in this patient cohort of healthy children.



PD064 / #861

E-POSTER DISCUSSIONS 08: LATE-BREAKING
16-11-2023 12:45 - 14:00

IMPACT OF USE OF ORAL NUTRITIONAL SUPPLEMENT ON PHYSICAL AND IMMUNE HEALTH IN GROWING CHILDREN AT RISK OF UNDERNUTRITION: 6-MONTHS INTERIM ANALYSIS

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Background: Undernutrition, one of the major public health problems in India in under-five children, increases risk of infection, morbidity and mortality.

Aims: This is an ongoing prospective, multicenter, single-arm, open-label, 12-month study to assess impact of oral nutritional supplement (ONS) on growth parameters, immunity, nutritional status and tolerance in children at risk of undernutrition. This data presents pre-planned interim analysis at 6-months.

Methods: Hundred-and-ten healthy children aged 2-6 years at risk of undernutrition (children between <-1 and -2 standard deviations of the WHO Child Growth Standards Median for weight-for-age) were enrolled. ONS was administered as per protocol. Weight-for-Age (WAZ), Height-for-Age (HAZ) and Weight-for-Height (WHZ) Z-scores were evaluated using WHO and India-specific synthetic-growth reference charts. Episodes of infection and incidence of adverse-events(AEs) were recorded.

Results: According to WHO growth-reference chart, significant mean change from baseline WAZ (-1.58+/-0.59 to -1.05+/-0.87;p<0.001) and WHZ(-1.26+/-0.71 to -0.83+/-0.85;p<0.002) at 6-months was observed with no significant change in HAZ (-1.090+/-0.85 to -0.98+/-1.03; p=0.999). According to synthetic growth-reference charts, WAZ showed significant change (-1.43+/-0.68 to -0.68+/-0.89;p<0.001) and no significant change in HAZ (-1.09+/-0.85 to -0.98+/-1.03;p=0.862) was observed. ONS consumption led to increased intake of energy, carbohydrates, fat and proteins (p <0.001) with significant decrease [4.57+/-1.44 to 1.22+/-0.42;p<0.001) in episodes of infection in 6-months post-supplement intake compared to 1-year preceding supplementation. Of the 19 AEs, 18 were mild and 16 were not-related to ONS. Good to very-good tolerance to ONS was reported by 93.26% participants.

Conclusions: Significant improvement in growth parameters and immune status with reduced risk of infection was observed following ONS administration.

PD065 / #867

E-POSTER DISCUSSIONS 08: LATE-BREAKING
16-11-2023 12:45 - 14:00

**THE EFFECT OF NEONATAL ORAL POLIO VACCINATION ON PEDIATRIC ADMISSIONS: A
RANDOMIZED STUDY FROM GUINEA-BISSAU**

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Background: A randomized controlled trial (RCT) from Guinea-Bissau with 6,961 infants found a reduced all-cause mortality of receiving Oral Polio Vaccine (OPV) vs. no-OPV. All received BCG vaccine at birth.

Aims: Within the RCT cohort, we investigated whether OPV vs. no-OPV affected the risk of hospitalization, admission causes, and in-hospital case-fatality.

Methods: We cross-linked the RCT database with the pediatric ward database at the national hospital in Guinea-Bissau. A Cox model was used to estimate hospitalization risks as incidence rate ratios (IRRs). In-hospital case-fatality were estimated as risk ratios (RRs). Outcomes were assessed after 42 days (before other vaccines) and by 1 year of age, overall, by major disease-group, and separately by sex.

Results: Among the 6,961 infants, a total of 2,183 consultations were registered at the pediatric hospital leading to 860 (39.4%) admissions: 427 (49.7%) in OPV and 433 (50.3%) in no-OPV (IRR=0.97 [0.84-1.11]; males=0.91 [0.76-1.10]; females=1.06 [0.85-1.33]). Among hospitalized infants 52 (6.0%) died: 17 (4.0%) in OPV and 35 (8.1%) in no-OPV (RR=0.48 [0.26-0.84]; males=0.33 [0.13-0.74]; females = 0.71 [0.30-1.58]). 227 admissions were due to respiratory infections: 115 in OPV and 112 in no-OPV (IRR=1.01 [0.78-1.32]); among these, there were 12 (5.3%) deaths: 2 (1.7%) in OPV and 10 (8.9%) in no-OPV (RR=0.20 [0.03-0.75]).

Conclusions: In this RCT, OPV at birth was not associated with the risk of hospitalization, but with a significant reduction in the risk of in-hospital death during infancy. As in previous studies, the effects tended to be strongest for respiratory infections and for males.

E-Poster Viewing and Poster Rounds



EP001 / #625

Topic: AS01 Antibiotic Stewardship and Infection Control

URINARY TRACT INFECTIONS IN PEDIATRIC AGE: AN EPIDEMIOLOGICAL STUDY

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Background: Urinary tract infection (UTI) is one of the most common bacterial infections of childhood. Local data are crucial to guide antibiotic treatment.

Aims: Characterize pediatric patients diagnosed with UTI, etiological agents, and resistance patterns.

Methods: Retrospective study of positive urine cultures (UC), collected through aseptic methods, in our pediatric population throughout 2022. Statistical analysis was performed using SPSS and considering p-values <0,05 statistically significant.

Results: A total of 398 positive UC were identified, 67,3% of which were from females. Median age was 17 months and lower in males ($p < 0,001$). Febrile UTIs accounted for 68,3% of cases, presenting in a lower median age ($p < 0,001$). Infection was caused by *Escherichia coli* in 79,4%, by *Proteus mirabilis* in 11,3% and by *Klebsiella pneumoniae* in 4,0%. Cefuroxime was the preferred empirical antibiotic in 61,1% of cases, followed by amoxicillin/clavulanic acid (AMX/CLV) in 26,9%. The most common resistance was to ampicillin (39,7%), followed by AMX/CLV (27,4%). Resistance to cefuroxime was 3,3%. *Escherichia coli* showed a higher than expected resistance to AMX/CLV ($p = 0,038$). Most patients were treated at home (90,5%). Among those requiring hospitalization, 71,0% were under 3 months old ($p < 0,001$).

Conclusions: As described in the literature, *Escherichia coli* was the most common agent. This agent showed a higher than expected resistance to AMX/CLV, the second most commonly used antibiotic. The most used antibiotic, cefuroxime, had a low resistance rate. The hospital acted in accordance with the local epidemiology and, as such, should maintain its practices.

Topic: AS01 Antibiotic Stewardship and Infection Control

ANTIMICROBIAL STEWARDSHIP IN NIGERIA: CURRENT CAPACITIES AND OPPORTUNITIES FOR STRENGTHENING A FUNCTIONAL PROGRAM

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Background: We evaluated capacity and opportunities for functional antimicrobial stewardship program in health facilities in Nigeria.

Aims: AMR Surveillance strengthening

Methods: As part of a national AMR surveillance strengthening program, we assessed AMS capacity in selected hospitals between May – December 2021, using an adaptation of the Core Elements of WHO Health Facility AMS.

Results: General description Nine federal tertiary hospitals were assessed, with average in-patient capacity of 460 bedspaces and average daily out-patient attendance of 792 persons. Leadership None of the hospitals had formal commitment to AMS by their hospital management with no provision of dedicated funds for AMS. Accountability In 3/9 hospitals, there was a pre-existing AMS Committee (AMSC). Meetings of the AMSC in all 3 hospitals had been infrequent and a clearly-written Terms of Reference was available in only one hospital. AMS Actions A hospital-approved AMS Action Plan, was unavailable in all hospitals. Antibiotic treatment guidelines, available in only 2 hospitals, were yet to be circulated to all clinical staff. Training None of the hospitals offered regular training on clinical application of AST results or training on antibiotic use to all clinical staff. Monitoring Regular monitoring of AMS interventions was not done in any of the nine hospitals. In only 2 hospitals, audits on antibiotic use had been conducted, albeit irregularly. Feedback Regular feedback to the Clinicians on antibiotic use data was not being done in any of the nine hospitals.

Conclusions: Despite the gaps in capacity, we identified existing structures that could be strengthened to support functional AMS programs in Nigeria.



EP003 / #323

Topic: AS01 Antibiotic Stewardship and Infection Control

MORE THAN A DECADE OF CONTINUAL INAPPROPRIATE ANTIBIOTIC USE IN AMMAN, JORDAN (2010–2023)

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Background: Antimicrobial resistance contributes to substantial morbidity and mortality. Lack of point-of-care testing to discern viral from bacterial infections complicates appropriate management in low-resource settings.

Aims: This study examines antibiotic prescription practices in Amman, Jordan.

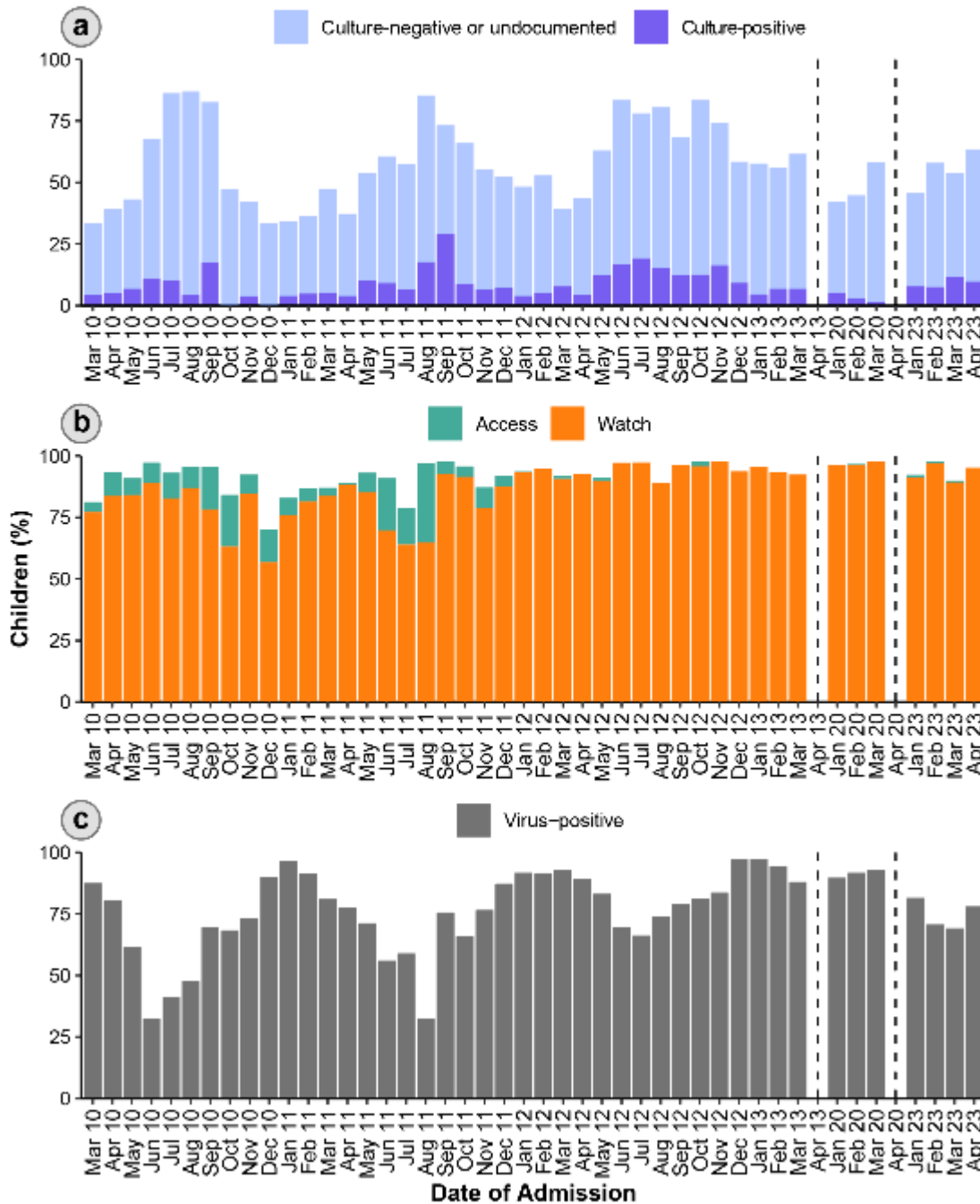
Methods: Data from three prospective viral surveillance studies conducted at Amman's largest public hospital in 2010–2013, 2020, and 2023 were analyzed. We included children <2 years old hospitalized with fever and/or respiratory symptoms, had nasal and/or throat swabs tested by research for respiratory viruses using RT-PCR, and whose antibiotic history was available. Demographic and clinical data, antibiotic usage, and urine, blood, and cerebrospinal fluid culture results were collected through parental interviews and chart abstractions. The 2022 World Health Organization AWaRe (Access, Watch, Reserve) antibiotic classification system was used.

Results: Of 4,201 children enrolled, we included 4,102 (97.6%). The median age was 3.6 months (IQR, 1.6–8.6 months), and 59.3% (n=2,491) were male. Culture status was recorded for 4,090 children (99.7%); at least one culture was performed in 2,167 (53.0%), with 295/2,167 (13.6%) testing positive (Figure 1a). During hospitalization, 3,794/4,102 children (92.5%) received at least one antibiotic, with 3,673/3,794 (96.8%) receiving at least one antibiotic from the Watch category (Figure 1b). Overall, 3,418/4,102 children (83.3%) were virus-positive (Figure 1c). Despite seasonal variation, prescription and



testing practices were consistent across study

Figure 1. Antibiotic use and pathogen detection in children admitted with fever or respiratory symptoms in Amman, Jordan. **(a)** Bar plot of performed cultures (blood, urine, or cerebrospinal fluid) and positive results. **(b)** Bar plot showing antibiotic prescription distribution according to the AWARe categories*. **(c)** Bar plot indicating the proportion of children with at least one positive respiratory virus. *The Watch category comprises antibiotics used when first-line treatments (Access) are not effective or appropriate



years.

Conclusions: Inappropriate antibiotic use remains a significant healthcare concern in Jordan. Incorporating point-of-care viral testing for suspected respiratory infections and improving diagnostic



testing for bacterial infections is crucial. Strict guidelines and antimicrobial stewardship programs are needed to guide antibiotic prescriptions.

Topic: AS01 Antibiotic Stewardship and Infection Control

PATHOBIOM PREFORMATION CAN BE A REASON OF NEWBORN LUNG PATHOLOGY

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Background: Newborns become infected after passing through the mother's birth canal or after coming into contact with organisms in nursery. The maternal pathobiome may serve as a source of infection too. *Klebsiella pneumoniae* and *Staphylococcus aureus* are the commonest causative organisms for newborn pneumonia. They are the usual participants of pathobiome, their translocation lead to the forming of the foci of infectious inflammation.

Aims: The aim was to investigated the bacteriological and morphological changes of lungs in offspring of mice Balb/C with previously formed antibiotic–induced pathobiome.

Methods: The pathobiome formation in adult mice realized by injection together with oral use of cephalosporin during 3 days. After 21 day the pathobiome status was bacteriologically confirmed. Pregnancy of mice was achieved by the standard method. After the birth all mice and their offspring were euthanized. The parts of the lungs were used for bacterial investigation and morphological study.

Results: In the samples of lungs Gram-positive cocci, later identified as *St.aureus* and Gram-negative sticks, identified as *Klebsiella pneumoniae* were found. The other members of typical mice microbiome were detected in lungs too. Morphologically the inflammatory changes, specific for interstitial pneumonia were found in lungs of the offspring.

Conclusions: The presence of antibiotic–induced gut pathobiome increase the translocation of opportunistic bacteria into the lungs of fetus and can be the reason of early lung infection pathology in newborn. The use of drugs affecting the microbiom and gut barrier should be considered as a risk factor of bacterial persistence in newborn.



EP005 / #282

Topic: AS01 Antibiotic Stewardship and Infection Control

CLINICAL SCORE AND RAPID ANTIGEN DETECTION TESTS FOR GROUP A STREPTOCOCCUS TO GUIDE ANTIBIOTIC PRESCRIPTION IN A PRIMARY CARE CENTER IN PORTUGAL – OBSERVATIONAL STUDY

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Background: Acute pharyngitis is a common diagnosis in primary care (PC) and a leading cause of antibiotic prescription. The bacterial species most frequently identified is group A streptococcus (GAS), and although viruses are the most common etiology, antibiotics are frequently prescribed. Rapid antigen detection tests (RADT) for GAS, either alone or in combination with validated clinical scoring systems [e.g., Centor Criteria(CC)], are useful to guide antibiotic prescription, reducing its use.

Aims: This study aims to assess the efficacy and safety of RADT to guide antibiotic prescription and evaluate the correlation between CC and its value predicting GAS presence.

Methods: Between June-November/2022, pediatric patients (<18y) diagnosed with pharyngitis/tonsillitis or sore throat at a PC facility in Viseu-Portugal, were eligible for this study. Children who had already received antibiotics prior to the consult were excluded.

Results: In our study, 93 patients were observed, mean age 8,9 years, 55,9% female. In 60,2% RADT was performed, being positive in only 17,9%. Regarding the CC, the presence of fever OR 1,29 (CI95% 1,10;1,50) and the absence of cough OR 3,33 (CI95% 0,63;17,51) were the characteristics most associated with GAS. Risk age had the highest statistical significance ($p=0.095$), given that there was no record of GAS in children without risk age. In our population, CC showed good sensitivity, with no GAS detection for $CC \leq 2$ but it may not be very specific since 50% with $CC=5$ reported negative RADT.

Conclusions: This study showed that RADT in association with CC are an easy to implement tool in PC, contributing to an appropriate antibiotic prescription.

Topic: AS01 Antibiotic Stewardship and Infection Control

ACCESS, USE, AND DISPOSAL OF ANTIBIOTICS BY CAREGIVERS OF CHILDREN WITH SUSPECTED INFECTIONS: A POINT PREVALENCE SURVEY FROM A TERTIARY HOSPITAL COMMUNITY

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Background: Antibiotic resistance has become a significant concern globally, and there is a paucity of new antibiotics being developed. Furthermore, unrestricted access to and use of antimicrobials has increased to epidemic proportions.

Aims: The purpose of this study was to characterise the access, use and disposal of antibiotics within the Komfo Anokye Teaching Hospital (KATH) ecosystem.

Methods: After ethics committee approval, a 29-item point prevalence survey was administered at KATH in May 2023 to any consenting adult ≥ 18 years who cared for a sick child in the prior six months.

Results: A total of 308 participants were enrolled. Most were women, 71.4%(220) living in an urban area, 75%(231). The participants included caregivers of hospitalised children 45.5%(140), health workers 26%(80), ambulatory patients 18.2%(56), and others 10.3%(32). The sick children who received antibiotics had a mean age of 7.3 years (sd 4.1) and were mostly girls, 53.6%(165). The first points of call for a sick child were pharmacy shops 41.3%(127) and hospitals 57.4%(176). Participants obtained antibiotics over-the-counter 35.1%(108), got a prescription 59.3%(183), and used leftover medication 5.6%(17). Fifty (16.2%) of the participants reported not adhering to the full course of treatment. Most 89.6%(276) disposed of leftover medication in the waste bins.

Conclusions: Easy access to antibiotics at pharmacy shops, especially without examination and investigation, and improper disposal of leftover medication, are major concerns. More education on dispensing/procurement of antimicrobials, their appropriate use and disposal coupled with rapid point-of-care diagnostics are needed in resource-limited settings to help curtail the rise of antimicrobial resistance.



EP007 / #862

Topic: AS01 Antibiotic Stewardship and Infection Control

VANCOMYCIN PRESCRIPTION PRACTICES IN NEONATES ADMITTED TO A CHILDREN'S HOSPITAL IN CAPE TOWN

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Background: Vancomycin dosing schedules for neonates are complex and little is known about neonatal prescribing practices outside of dedicated neonatal units.

Aims: To describe prescribing practices and monitoring of intravenous vancomycin in neonates treated during a 12-month period at Red Cross War Memorial Children's Hospital.

Methods: A retrospective audit of clinical and laboratory records for the year 2019.

Results: We included 54 prescriptions for 48 neonates, all younger than 44 weeks corrected gestational age (CGA), 26 (54%) with prematurity. Overall vancomycin usage was 22 days of therapy/1000 patient days (IQR 14 – 30). The median starting dose was 45 mg/kg/day (IQR 41 – 42). According to the CGA, the initial dosing frequency of vancomycin was inappropriate in 17 (32%) prescriptions. There was no difference in the median treatment duration between empiric (six days) and directed (seven days) treatment groups ($p=0.39$). Serum trough concentrations were performed in 28 (52%) episodes where vancomycin treatment exceeded three days, with only 5 (18%) of these samples obtained before the fourth dose. Twenty (37%) cultures were positive, with vancomycin the appropriate antibiotic in nine (45%) episodes. Vancomycin treatment of 14 days or more was not associated with Gram-positive bacteria on culture (OR 1.1, 95% CI 0.18–6.68). Ten (21%) neonates died while on vancomycin therapy, but this was not associated with the duration (OR 0.84, 95% CI 0.68–1.05) or daily dose (OR 0.99, 95% CI 0.94–1.04) of vancomycin.

Conclusions: Inappropriate initial dosing, monitoring, and prolonged empiric treatment were problems associated with vancomycin prescriptions.



EP008 / #431

Topic: AS01 Antibiotic Stewardship and Infection Control

UTILITY OF PROCALCITONIN IN THE DIAGNOSIS OF BACTEREMIA AMONG UNDER-FIVE CHILDREN WITH ACUTE UNDIFFERENTIATED FEVER IN MALARIA-ENDEMIC SETTING

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Background: Children in resource-poor settings with acute undifferentiated fever often receive empirical antibiotics due to their limited capacity for bacterial culture. Procalcitonin (PCT) has been shown reliably diagnose bacteraemia, but increased levels have also been noted in malaria infections and could, therefore, confound its usefulness in malarial-endemic areas. Fewer studies have evaluated the utility of PCT for bacteraemia in the context of malaria co-infection and hence, this study

Aims: Evaluation of the diagnostic utility of procalcitonin for bacteremia among under five with acute undifferentiated fever

Methods: A cross-sectional study involving 140 under-five children with acute undifferentiated fever. Bacterial isolation was automated, PCT was assayed with the ELISA method and malarial was diagnosed with microscopy. Subjects were classified as 'bacteraemia only', 'malaria only', 'bacteraemia and malaria' and 'neither bacteraemia nor malaria'. The four groups were compared using ANOVA while the diagnostic performance of PCT for bacteraemia was investigated by ROC curve and the p-value was set at < 0.05

Results: The mean serum PCT of subjects with bacteraemia alone (224.4 ± 39.8 pg/ml) was significantly higher than those with malaria only (154.1 ± 31.6 pg/ml; $p = 0.001$) and neither (133.7 ± 31.6 pg/ml; $p = 0.001$) but was, similar to those with co-infection (205.5 ± 31.6 pg/ml). Procalcitonin is a good predictor of bacteraemia (AUC: 0.832; $p = 0.001$) only in the absence of malaria co-infection

Conclusions: Procalcitonin assay is a useful test in the initial evaluation of undifferentiated febrile illnesses in under-five children to predict bacteremia only in the absence of malaria co-infection



EP009 / #669

Topic: AS02 Antimicrobial Agents: Resistance, pharmacology, pharmacogenetics, PK/PD analysis, TDM

SURVEILLANCE OF MOLECULAR RESISTANCE MECHANISMS IN CARBAPENEM-RESISTANT ENTEROBACTERIALES IN A MEXICAN TERTIARY PEDIATRIC HOSPITAL

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Background: Carbapenem-resistant Enterobacteriaceae (CRE) infections complicate the choice of antimicrobial treatment, increase mortality and prolong hospital stay of pediatric patients.

Aims: The aim was to describe the frequency of CRE, carbapenemases involved in this phenotype, treatment and evolution of the patients.

Methods: Through a surveillance program carried out from 2018 to 2020, 41 non-repeat CRE were collected, identified by MALDI-TOF MS; the susceptibility profile was obtained by a semi-automated microbial system and carbapenemases production was determined according to the Clinical & Laboratory Standards Institute. Carbapenemases genes were amplified and sequenced. Clinical information was recorded.

Results: The species were distributed as follows: *Escherichia coli* (48.3%, n=12), *Klebsiella pneumoniae* and *Enterobacter cloacae* (26.8%, n=11 each); *Citrobacter freundii* and *Klebsiella oxytoca* (7.3%, n=3 each) and *Providencia rettgeri* (2.4% n=1). Twenty nine isolates (71%) were carbapenemases producers; the most frequent was NDM (48%, n=14); followed by OXA-48 (24%, n=7); KPC-2 (17%, n=5); VIM-2 (7%, n=2), in an *E. coli* isolate OXA-48 and NDM (3%, n=1) were detected. Thirty-five patients received empiric treatment, 21 in monotherapy and, carbapenems were the most frequent (71.4%); about definitive treatment, 17 patients received combined therapy; 94% of them had a carbapenem with fluoroquinolone, aminoglycoside, colistin or fosfomycin. Sixty-one percent of the patients had a complication associated with infection; 44% of the patients died.

Conclusions: The most important mechanism of resistance among CRE was the carbapenemases production; however, it is necessary to explore other mechanisms in those that did not carry these enzymes.



EP010 / #238

Topic: AS02 Antimicrobial Agents: Resistance, pharmacology, pharmacogenetics, PK/PD analysis, TDM

MULTIRESISTANT BACTERIA IN NEONATAL CHILDREN

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Background: The problem of neonatal mortality from bacterial infections is exacerbated by the growing resistance to antimicrobials reported throughout the world. In our country, the problem of antimicrobial resistance, especially in children under 5 years old, is one of the most urgent.

Aims: The aim of this study was to investigate the antibiotic resistance of bacterial isolates isolated from urine(6), blood(4), faeces(2), sputum(1) and bronchoalveolar lavage(1) of 14 children aged 1 week to 6 years. The study was conducted from December 2022 to February at Liv Bonadea Hospital.

Methods: The pathogen was detected using an analyzer Vitek2 and Vitek MS.

Results: Resistant bacteria to all tested antibiotics were found in 3 neonatal children. These were *S.marcescens* in blood, *K.pneumonia* in blood, *A.baumannii* in bronchoalveolar lavage. *E.coli*(4) and *Kl.pneumonia* (3) resistant to cephalosporins of the 2nd and 3rd generations were found in 7 children aged 2 months to 4 years. *E.faecalis* and *E.coli* sensitive to all used antibiotics were found in children 4 and 6 years old who did not have a history of long-term hospital stay.

Conclusions: Infants of early neonatal age can become infected with resistant strains of bacteria from mothers during or immediately after birth or in medical hospital. The multiresistant strains of bacteria identified in this study in neonatal children require the development of an antimicrobial management strategy, including regular audit and revision of local antimicrobial prescriptions, antibiotic dosing accuracy taking into account the physiological processes of the child's development, rapid and accurate determination of antimicrobial susceptibility to prevent spread of AMR and timely selection of an adequate antimicrobial drug.

EP011 / #467

Topic: AS02 Antimicrobial Agents: Resistance, pharmacology, pharmacogenetics, PK/PD analysis, TDM

IN-SILICO IDENTIFICATION OF NOVEL INHIBITORS TARGETING ENOYL-ACP REDUCTASE ENZYME IN MULTIDRUG RESISTANCE ACINETOBACTER BAUMANNII PATHOGEN

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Background: Acinetobacter baumannii is a Gram-negative multidrug resistance opportunistic pathogen that is often associated with hospital-acquired infections, especially in Sub-Saharan Africa where the burden of disease is high. By 2050, it is estimated that A. baumannii infections will result in more than 10 million deaths annually. The World Health Organisation has identified A. baumannii as a priority pathogen for the development of new antimicrobials. The study thus aimed to identify novel antimicrobial agents against A. baumannii.

Aims: Develop novel antimicrobial inhibitors against A. baumannii infections.

Methods: Computer-integrated drug discovery approaches including pharmacophore modelling, molecular docking, and molecular dynamics simulation were used to screen for potential inhibitors against the enoyl-acyl carrier protein reductase (FabI) protein of A. baumannii.

Results: The screened inhibitors were analysed using various structural parameters with RMSD, Rg, RMSF, SASA analysis. Principal Component Analysis was used to analyse the positive and negative correlation of amino acid residues. The top three potential inhibitors: 21272541 > 89795992 > 89792657 showed favourable delta energies including coulombic energy, van der Waals energy, polar, and non-polar energies. All three complexes were extremely stable and compact with reduced fluctuations during the simulations period.

Conclusions: All three inhibitors are promising targets for novel antimicrobial drugs that can potentially be used to treat A. baumannii infections. Inhibitor 21272541 exhibited the highest binding affinity against FabI protein. This is similar to our recent report, which also identified 21272541 as the lead inhibitor against Klebsiella pneumoniae infections. Future clinical studies evaluating drug effectiveness should thus prioritise inhibitor 21272541 in treating K. pneumoniae and A. baumannii infections.

EP012 / #550

Topic: AS02 Antimicrobial Agents: Resistance, pharmacology, pharmacogenetics, PK/PD analysis, TDM

OPTIMIZING BETA-LACTAM THERAPY IN THE PEDIATRIC POPULATION

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Background: In response to escalating antimicrobial resistance, defined as a loss of in vitro potency, a variety of therapeutic strategies have emerged. While the development of new therapies continues to be a priority, the pharmacodynamic optimization of currently available antimicrobials appears to provide a more rapid response to this challenge. The beta-lactams have long been viewed as the backbone of treatment for serious infection due to their spectrum of activity, proven efficacy & good safety profile. As a result of this safety profile, this class of parenteral compounds provides great flexibility in dose, dosing frequency and duration of administration. While the utility of dose escalation combined with altering the infusion time [continuous (24h) or prolonged (2-4h)] is frequently leveraged in the adult population, data are sparse in pediatric patients.

Aims: To review currently available data on the use of pharmacodynamic optimization strategies for beta-lactams in the pediatric population.

Methods: Previous conducted analysis in our Center as well as literature search of PubMed database.

Results: Previous pharmacodynamic assessments in the pediatric population have shown that dose & infusion alterations have resulted in markedly higher exposures of the beta-lactams which are required to optimize clinical outcomes.

Conclusions: A review and summation of available data in the pediatric population has been undertaken. While pharmacodynamic optimization appears to be underutilized in the pediatric setting, this strategy provides a safe & viable approach to improved outcomes in the face of increasing resistance.



EP013 / #235

Topic: AS02 Antimicrobial Agents: Resistance, pharmacology, pharmacogenetics, PK/PD analysis, TDM

LIVER ENZYMES DURING AND AFTER ANTIMALARIAL THERAPY WITH ARTEMETHER-LUMEFANTRINE IN NIGERIAN CHILDREN WITH UNCOMPLICATED PLASMODIUM FALCIPARUM INFECTION.

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Background: Derangement of liver enzymes could occur during antimalarial treatment according to literature and this has been attributed to drug-induced liver toxicity. However, it remains unclear whether these changes in liver enzyme levels persist following the completion of antimalarial therapy.

Aims: To determine the effect of artemether-lumefantrine on plasma levels of four liver enzymes, namely; alanine aminotransferase [ALT], aspartate aminotransferase [AST], alkaline phosphatase [ALP] and gamma glutamyl transpeptidase [GGT] in children with uncomplicated Plasmodium falciparum infection.

Methods: We reviewed the records of all children who participated in a clinical trial of antimalarial drugs in Ibadan, Nigeria. A sample of 102 children with microscopically-proven Plasmodium falciparum infection; who met eligibility criteria were treated with 6-dose artemether-lumefantrine at recommended age-specific doses for 3 days. Study participants were followed up on days 0 to 3, 7, 14, 21 and 28 according to the WHO recommendation for treatment of malaria therapeutic efficacy studies. Inclusion criteria included symptoms compatible with acute uncomplicated malaria, including parasite density of at least 1000/μL and absence of chronic illness or danger signs of severe malaria. The results of ALT (U/L), AST (U/L), ALP (U/L) and GGT (U/L) at baseline (day 0), on day 3 and day 28 post-treatment were extracted and compared using Friedman tests.

Results: The median age of participants was 25 months (range = 3 to 119) and 49% were male. The mean values of ALT and AST did not change significantly over the course of the 28-day follow-up from baseline (25.8 – 19.1 U/L $p = 0.0984$ and 50.4 – 52.2 U/L $p = 0.1943$ respectively). GGT decreased substantially between baseline 17.0 U/L (11.0 - 22.5) and day 28 15.0 U/L (10.5-21.5) $p = 0.0010$ while ALP increased over time (baseline: 305.0 U/L (216.0 – 403.5) day 28: 345.0 U/L (241.0 – 492.5) $p = 0.0303$). Elevated ALT, AST, ALP and GGT were observed in 8.5%, 20.0%, 20.9%, and 14.8% of participants, respectively.

Conclusions: Considerable rise in plasma levels occurred in ALP which could be indicative of liver injury occurring during antimalarial treatment among Nigerian children.



EP014 / #253

Topic: AS02 Antimicrobial Agents: Resistance, pharmacology, pharmacogenetics, PK/PD analysis, TDM

TRANSCRIPTIONAL ANALYSIS OF EXTENDED SPECTRUM BETA-LACTAMASE GENES UNDER ANTIBIOTIC STRESS

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Background: Infection caused by resistant organisms is a major public health problem in the developing countries. Extended-spectrum beta-lactamases (ESBLs), are remarkably diversified due to their continuous mutation.

Aims: The present study was undertaken to study the molecular mechanisms of ESBL resistance, possibly their role in diarrheal infections in children and to analyze comprehensively the changing paradigm of antibiotic resistance in this aspect of the disease.

Methods: In the present study, transcription analysis of ESBL genes (TEM, SHV, CTX-M, and OXA) was carried out in resistant and sensitive isolates in compared to healthy controls (n=15). Total RNA was isolated from 2 ml fresh overnight LB broth culture from stool samples of children under five and converted into c-DNA. m-RNA expression of TEM, SHV, CTX-M and OXA in resistant (cefotaxime) (n=15) and sensitive isolates (n=15) in compared to healthy controls (n=15) was seen by Real-Time PCR. 16S rRNA was used as internal control. Relative quantification was calculated using $N\text{-fold} = 2^{-\Delta\Delta Ct}$.

Results: We found a high variance in the gene expression in resistant and sensitive isolates with lots of heterogeneity. The level of expression of TEM gene showed a range of 0.87–20.73-fold expression levels when compared to the control group, for SHV (1.43-18.03), CTX-M (1.42-14.99) and OXA (1.41-14.99).

Conclusions: In our study, high expression levels of beta-lactamase genes were observed for resistant isolates found which makes this drug resistance gene an important molecular marker. Relative transcript levels of these genes would help us gain a better understanding of the role these functional genes.

EP015 / #451

Topic: AS03 *Bacterial Infections: / AS03a Bacteremia and endocarditis*

STAPHYLOCOCCUS AUREUS NETWORK; ULTRASOUND FOR DIAGNOSIS OF ENDOVASCULAR DISEASE IN PAEDIATRICS AND YOUTH: A PILOT STUDY

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Background: Children with Staphylococcus aureus bacteraemia (SAB) associated thrombosis in veins or arteries have worse outcomes including longer hospitalisations and poor morbidity. Thrombosis can be quickly and painlessly detected through doppler ultrasound imaging. Unfortunately, current guidelines for SAB management do not include ultrasound imaging for the detection of blood clots. This limits our understanding of how many children encounter this critical issue and opportunities for timely treatment.

Aims: This study aims to examine the proportion of children with SAB who have thrombosis and investigate the feasibility of conducting whole-body doppler ultrasound to detect thrombosis among paediatric SAB patients

Methods: Whole-body doppler ultrasound is performed by sonographers or radiology registrars/consultants on all children enrolled in this study. Whole-body doppler ultrasound is performed in order of priority anatomical sites based on likelihood of thrombus occurrence. Demographic, clinical progress and patient outcome data is collected, and analysis will be performed using RStudio.

Results: The rationale and protocol for the study will be presented.

Conclusions: This study will address current gaps in knowledge including the proportion of thrombosis and the feasibility of whole-body doppler ultrasound in paediatric SAB. If a high proportion of thrombosis is reported, further research to understand risk factors, identify biomarkers for thrombosis and define the role of thrombo-prophylaxis will be prioritised.

EP016 / #372

Topic: AS03 Bacterial Infections: / AS03b Bone and joint, skin and soft tissue infections

NEONATAL OSTEOARTICULAR INFECTIONS: DIAGNOSTIC CHALLENGES AND TREATMENT IMPORTANCE

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Title of Case(s):: Neonatal Osteoarticular Infections: Diagnostic Challenges and Treatment Importance

Background:: Although acute osteomyelitis is rare in neonates, it might result in severe sequelae such as joint destruction and growth failure so rapid diagnosis and treatment is crucial.

Case Presentation Summary:: We present a 24-day-old female newborn admitted in the special care newborn unit after being admitted in the ER for irritability associated with manipulation of the right lower limb and limb flexion posture with one week of evolution. The mother reported right knee oedema since the previous day. No other symptoms, including fever, were described. At our observation she presented with an antalgic position of the right lower limb with oedema and warmth of the right knee. At the screening tests performed, the CBC and WBC were normal. C-reactive protein was 28 mg/L. X-ray of the lower limb was unremarkable. Given the suspicion of osteoarticular infection, treatment with flucloxacillin and cefotaxime was instituted. Blood culture was negative. On D5 of hospitalization she underwent MRI of the right lower limb which revealed alterations compatible with osteomyelitis. The patient had progressive clinical improvement and was asymptomatic by D7. She was discharged to orthopaedics and neonatology consultations after 4 weeks of treatment.

Learning Points/Discussion: Osteoarticular infection is a diagnostic challenge in neonatal period due to subtle clinical signs, unavailability of timely MRI and lack of experienced physicians interpreting such exams at this age group. There must be high clinical suspicion in the presence of altered mobility of a limb or inflammatory signs.

Topic: AS03 Bacterial Infections: / AS03b Bone and joint, skin and soft tissue infections

DIAGNOSTIC PROFILE OF CHILDREN ADMITTED WITH OSTEOARTICULAR INFECTIONS: A SINGLE CENTRE RETROSPECTIVE OBSERVATIONAL STUDY

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Background: Bone and joint infections in children are one of the most difficult-to-treat diseases. Despite availability of new generation antibiotics and modern diagnostic modalities, diagnosing Osteoarticular infections remains challenging.

Aims: To study the etiology , pattern of microbiological, biochemical and hematological investigations. in children with bone and joint infections

Methods: A retrospective audit was performed on 100 children aged 0 to 18 years, admitted to Manipal Hospital, Bangalore, between January 2010 and December 2019 with Osteoarticular infection. We reviewed the microbiological, biochemical and hematological investigations.

Results: In current study, 42% had pus culture positive and 6% had blood culture positive Osteoarticular infection, and 58% had negative pus culture% and genexpert-TB was positive in 3 cases of osteomyelitis .Out of 42 subjects having culture positive Osteoarticular infections, 31% of them had history of exposure to antibiotics prior to admission whereas 69% had no exposure to antibiotics prior to admission. Predominant organism identified in culture was staphylococcus aureus (52.4%), followed by Methicillin resistant staphylococcus aureus (31.1%).Other organisms identified were, pseudomonas aeruginosa (4.7%), enterococcus (4.7%), enterobacter species (2.4%), Klebsiella pneumonia (2.4%) and proteus vulgaris (2.3%). Mean total count was 13806.13 cells/cumm, mean CRP was 63.27mg/L and mean ESR was 39.74 mm per hour.

Conclusions: Leukocytosis, elevated CRP is early diagnostic clues for Osteoarticular infections. Prior usage of antibiotics affects the yield of blood and pus culture. It is very crucial to send required cultures before starting antibiotics as it aids in identification of the causative organisms and also rational use of antibiotics. Common organism identified remains staphylococcus aureus (MSSA).

EP018 / #305

Topic: AS03 Bacterial Infections: / AS03b Bone and joint, skin and soft tissue infections

INVASIVE STREPTOCOCCAL PYOGENES INFECTIONS IN CHILDREN

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Background: An increasing trend in invasive group A Streptococcus infection (iGAS) has been reported among children from fall of 2022 from different countries around world. It has been suggested that the increase in iGAS infections is due to the lifting of the isolation measures applied in the pandemic.

Aims: We aimed to report the clinical presentations and outcomes of six patients with iGAS infection in our clinics.

Methods: We analyzed retrospectively the demographic and clinical characteristics of 6 patients with iGAS infection who were hospitalized between 2022-2023 in Hacettepe University Children's Hospital.

Results: A total of six patients with iGAS were diagnosed. The median age was 9.4 years (range= 4-15) and two of the patients were male. Patients were followed up with different diagnosis as toxic shock syndrome plus necrotizing fasciitis (n=1), necrotizing pneumonia plus bacteremia (n=1), pyomyositis (n=1), submental abscess (n=1), post streptococcal arthritis (n=1) and finger abscess (n=1). Three of patients were admitted to pediatric intensive care unit. Three of six patients underwent surgical drainage. The combination of betalactam group antibiotics and clindamycin were used in the treatment. The patient with toxic shock syndrome plus necrotizing fasciitis who was referred to our hospital 3 days after the



onset of symptoms



died.



Conclusions: Early diagnosis and treatment are important in preventing deaths due to iGAS infection.. In the post-COVID-19 period, iGAS infections reemerged and continue to pose a threat with the change in the epidemiology of most viral and bacterial infections.

Topic: AS03 Bacterial Infections: / AS03b Bone and joint, skin and soft tissue infections

**LEFT KNEE SEPTIC MONARTHRTIS IN A PEDIATRIC PATIENT DUE TO SHEWANELLA
PUTREFACIENS: CASE REPORT IN COLOMBIA**

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Title of Case(s):: Left Knee Septic Monarthrititis in a Pediatric Patient due to Shewanella Putrefaciens: Case Report in Colombia

Background:: Shewanella spp is a gram-negative bacterium that is rarely pathogenic, living in marine environments, although it can also thrive and survive in dairy products, oil, and carcasses. Responsible for unusual infections in humans; considering itself an opportunistic germ in many patients. With varied symptoms in the literature, generating a significant impact on human health with a total of 260 cases described in the literature in the last 40 years, predominantly in men over 60 years in 61.7%, of this 35.16% were infections by S. algae, 28.94% infection by S. putrefaciens and 0.7%.

Case Presentation Summary:: We present the case of a previously healthy 15-year-old male patient, who presented with a sharp wound and septic monoarthritis of the left knee due to Shewanella putrefaciens resistant to ertapenem and cefepime, therefore management guided by antibiogram was made.

Learning Points/Discussion: Shewanella putrefaciens appears to invade human hosts opportunistically in a limited number of cases and is therefore a rare cause of bacteremia. However, soft tissue infections present various clinical manifestations. The greatest difficulty present when typing the germ in secretion cultures is the isolation of oxidase-positive non-fermenting gram-negative. However, Shewanella spp presents a different innate resistance pattern; resulting in the inappropriate use of antibiotics. Therefore, these resistance patterns must be taken into account when managing these patients to avoid the induction of intrinsic antimicrobial resistance.



EP020 / #444

Topic: AS03 Bacterial Infections: / AS03c Community-acquired bacterial infections (non-respiratory)

DRAMATIC INCREASE IN PNEUMOCOCCAL HAEMOLYTIC URAEMIC SYNDROME IN NEW ZEALAND ASSOCIATED WITH RISING INVASIVE PNEUMOCOCCAL DISEASE DRIVEN BY SEROTYPE 19A

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Title of Case(s):: DRAMATIC INCREASE IN PNEUMOCOCCAL HAEMOLYTIC URAEMIC SYNDROME IN NEW ZEALAND ASSOCIATED WITH RISING INVASIVE PNEUMOCOCCAL DISEASE DRIVEN BY SEROTYPE 19A

Background:: Streptococcus pneumoniae-associated haemolytic uraemic syndrome (SpHUS) is a recognised complication of invasive pneumococcal disease (IPD) with significant morbidity and mortality. New Zealand (NZ) has observed a recent increase of IPD and SpHUS in young children, driven by serotype 19A. During this period NZ's national immunisation infant schedule included pneumococcal conjugate vaccine (PCV) 10.

Case Presentation Summary:: A total of 19 paediatric SpHUS cases were seen between 2020 and 2022, 14 aged <2years. SpHUS incidence in children <5years rose from 0.66/ 100,000 in 2020 to 3.9/100,000 in 2022 and complicated 11% of all IPD cases (a notifiable disease) in children <5 years in 2022. Māori (indigenous NZ) children were over-represented accounting for 11/19 (58%) of cases. 15/19 had received at least 2 doses of PCV (10 or 13). Infection source was pulmonary in 18/19 with two cases of meningitis, 17/19 required surgical source control. All known serotypes (16) were 19A. Intensive care was required in 18/19 cases and 15/19 required acute dialysis (median 13 days). There were two deaths and two cases of neurological manifestations of HUS managed with eculizumab. Long-term outcomes thus far include renal transplant and chronic kidney disease.

Learning Points/Discussion: We describe a strong association of pneumococcal IPD due to 19A and HUS. The serotype 19A increase in young children occurred in the context of multiple factors including declining immunisation coverage amongst NZ's underserved indigenous community and use of PCV10.



EP021 / #264

Topic: AS03 Bacterial Infections: / AS03c Community-acquired bacterial infections (non-respiratory)

PROFILE AND ANTIBIOTIC SUSCEPTIBILITY PATTERN OF STAPHYLOCOCCAL INFECTIONS IN HOSPITALIZED CHILDREN AT A TERTIARY LEVEL HOSPITAL OF NORTH INDIA

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Background: Staphylococcus infections are associated with significant morbidity and mortality in children especially in low income countries. In the community Staphylococcus aureus can cause serious invasive infection in normal hosts as well as those with debilitating illnesses.

Aims: To describe the clinical profile and antibiotic resistance pattern in children hospitalized with Staphylococcal infections.

Methods: A retrospective observational study conducted in the department of Pediatrics of a tertiary care hospital from May, 2019 to March, 2023. We included hospitalized children till 18 years in whom Staphylococcus aureus was isolated in cultures of blood, pus or any other body fluid.

Results: 83 patients were included in the study. Nearly one-fifth (19.2 %) of the patients were infants and 7 (8.4 %) were less than 6 months. Seventy four (89%) children were having fever at presentation. Pain was one of the complaints in 38 (45.7%) patients. Swelling was on one of the main presenting features in more than half (57.8 %) of the patients. Pus culture was positive in 46 (55.4%) patients and blood culture in 35 (42.1%) of the patients. Out of a total of 83 blood cultures 36 (43.4%) had MRSA and 4 (4.8%) had MSSA. Out of a 52 pus cultures 41 (78.8%) had MRSA and only one MSSA. All cultures except two patients were sensitive to vancomycin and similarly except in one patient all the cultures were sensitive to linezolid.

Conclusions: Community acquired MRSA (CA-MRSA) infections are increasingly being seen in children from developing country like India. Emergence of CA-MRSA is a cause for concern for associated worse clinical outcome and need of costly antimicrobials .

Topic: AS03 Bacterial Infections: / AS03c Community-acquired bacterial infections (non-respiratory)

CLINICAL CHARACTERISTICS OF INVASIVE VIRIDANS STREPTOCOCCI IN JAPANESE TERTIARY MEDICAL INSTITUTIONS

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Background: Viridans Streptococci are important causative pathogenic bacteria in pediatric infectious diseases. This Gram-positive bacteria cause fatal disease such as sepsis and peritonitis. However, there are not many clinical microbiological reports of these bacteria in invasive infections.

Aims: In this study, we investigated invasive viridans Streptococci infections in pediatric patients in Japan.

Methods: Thirty-five pediatric patients from tertiary medical institutions in Japan were included. Viridans streptococci were isolated from sterile sites of pediatric patients. Clinical records accompanying the bacteriological tests were used. Pathogenic bacteria were examined using standard laboratory methods and 16s rRNA gene sequencing. This study was approved by the institutional ethics committee.

Results: The gender of the patients was 15 male and 20 female. Ten patients were less than 1 year old, 12 were between 1 and 3 years old, 5 were between 4 and 6 years old, and 8 were between 7 and 12 years old. The most common viridans Streptococcus species isolated were Streptococcus mitis (16), Streptococcus sanguinis (5), Streptococcus intermedius, and Streptococcus parasanguinis (3), respectively.

Conclusions: Our study showed a somewhat higher number of females and a higher number of younger infected patients. Our results strongly suggest the need for continued attention to invasive viridans streptococcal disease in the field of pediatrics.



EP023 / #192

Topic: AS03 Bacterial Infections: / AS03c Community-acquired bacterial infections (non-respiratory)

CLINICAL TRENDS OF INVASIVE BETA-HEMOLYTIC STREPTOCOCCI AT TERTIARY MEDICAL FACILITIES IN JAPAN

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Background: Beta-hemolytic streptococci are Gram-positive bacteria that possess a variety of pathogenic factors. Although there have been many studies on invasive group B streptococcal infections, clinical microbiological studies on beta-hemolytic streptococci have not been reported.

Aims: In this study, we investigated pediatric invasive beta-hemolytic streptococcal infections in Japan.

Methods: Twenty-two pediatric patients at a tertiary medical facility in Japan were included. beta-hemolytic streptococci were isolated from sterile sites of pediatric patients. Clinical records accompanying the bacteriological tests were used. Pathogenic bacteria were examined using standard laboratory methods and 16S rRNA gene sequencing. This study was approved by the institutional ethics committee.

Results: The gender of the patients was male in 10 and female in 11. Fifteen patients were less than 1 year old, two were between 1 and 3 years old, four were between 4 and 7 years old, and one was between 7 and 12 years old. The type of beta-hemolytic streptococci isolated were group A streptococci in 6 cases and group B streptococci in 16 cases.

Conclusions: Our study demonstrated that the majority of cases were under 1 year of age, although there was no gender difference, and the proportion of group A streptococci accounted for about 30% of the cases. Our results strongly suggest the need for continued observation of invasive beta-hemolytic streptococcal disease in the field of pediatrics.

Topic: AS03 Bacterial Infections: / AS03c Community-acquired bacterial infections (non-respiratory)

TRENDS IN ANTIMICROBIAL RESISTANCE OF INVASIVE STREPTOCOCCUS IN PEDIATRIC INFECTIONS

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Background: Streptococcus is an important causative pathogenic bacterium in pediatric infections. However, drug susceptibility patterns of Streptococcus spp. in invasive infections have not been well documented except for Streptococcus pneumoniae.

Aims: In this study, we investigated drug susceptibility trends among pediatric invasive streptococcal infections in Japan.

Methods: Fifty-seven pediatric patients from a tertiary care facility at Nagoya in Japan were included. Streptococci were isolated from sterile sites of pediatric patients. Clinical records accompanying the bacteriological tests were used. Pathogenic bacteria were examined using standard laboratory methods. Micro liquid dilution methods were used for drug susceptibility testing. This study was approved by the institutional ethics committee.

Results: Overall, 16, 10, 16, 5, 3, and 3 bacterial isolates of Streptococcus agalactiae, Streptococcus pyogenes, Streptococcus mitis, Streptococcus sanguinis, Streptococcus parasanguinis, and Streptococcus intermedius were conformed in the study. Penicillin-resistant Streptococcus mitis, Streptococcus sanguinis, and Streptococcus parasanguinis were found in 50%, 60%, and 100%. Macrolide-resistant Streptococcus mitis, Streptococcus sanguinis, Streptococcus parasanguinis, and Streptococcus intermedius showed 56%, 80%, 100%, and 66%, respectively. Minomycin resistance was observed in 63% of Streptococcus agalactiae.

Conclusions: Our results strongly suggest that the rate of drug resistance is progressing in pediatric patients with invasive streptococci other than Streptococcus pneumoniae, and that continuous investigation of drug susceptibility is needed in the future.



EP025 / #310

Topic: AS03 Bacterial Infections: / AS03c Community-acquired bacterial infections (non-respiratory)

MORAXELLA CATARRHALIS - A RARE BUG FOR THE BLOOD

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Title of Case(s):: MORAXELLA CATARRHALIS - A RARE BUG FOR THE BLOOD

Background:: Invasive *Moraxella catarrhalis* infection is historically rare in children. However, *M. catarrhalis* colonization and infection rates are rising as widespread pneumococcal vaccination has altered the respiratory tract microbiome. Data on risk factors for invasive *M. catarrhalis* infection is scarce.

Case Presentation Summary:: 2-year-old fully vaccinated male with history of wheezing, eustachian tube dysfunction, and recent tympanostomy 3 months prior presented to the emergency room with 3 days of rhinorrhea, nasal congestion, vomiting, and fever. He also had one day of diarrhea. Physical exam was significant for lethargy, nasal congestion, scant eye crusting bilaterally, and dry mucus membranes. Rapid multiplex PCR testing was positive for adenovirus and rhinovirus/enterovirus from the nasopharynx, and norovirus and sapovirus from the stool. He was admitted for dehydration and received intravenous fluids and antipyretics. The blood culture drawn at admission grew *M. catarrhalis* on day 2 of hospitalization, for which he received IV ceftriaxone for 2 days and then was discharged home on high-dose amoxicillin-clavulanate to complete a 7-day course.

Learning Points/Discussion: *M. catarrhalis* is a common cause of respiratory tract infections but rarely causes invasive disease. Compared to *S. pneumoniae* and *H. influenzae*, *M. catarrhalis* bacteremia is reported to be a risk in patients with conditions requiring trans-nasal devices, like nasogastric tubes. Risk with tympanostomy has not been previously reported.



EP026 / #51

Topic: AS03 Bacterial Infections: / AS03d Community-acquired bacterial infections (respiratory)

MYCOPLASMA PNEUMONIAE INFECTIONS IN PEDIATRIC PATIENTS IN OMAN: 2-YEAR EXPERIENCE AT A TERTIARY HEALTH CENTER

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Background: Mycoplasma pneumoniae is a common atypical pathogen causing Respiratory illnesses in children. Little information is published about this pathogen in the Middle eastern setting.

Aims: This study aims to provide a detailed description of Mycoplasma pneumoniae infections in pediatric patients admitted to Sultan Qaboos University Hospital (SQUH).

Methods: Retrospectively, the clinical records of patients between January, 2018 to January, 2020 with positive PCR for M. pneumoniae were reviewed. clinical data were collected systematically and screened for errors. Comparisons within subgroups of patients infected with M. pneumoniae, as well as comparisons to other respiratory pathogens were made.

Results: 76 patients with M. pneumoniae infection were identified, accounting for 3.6% of all positive respiratory pathogen screens during the study period. 33 patients (43%) were younger than 4 years of age. Infections occurred year-round, with peak incidence occurring in the spring. More than 80% of patients had a cough and 67% had fever. Viral co-infections were strongly associated with young age ($P > 0.001$). 84% of patients were treated with antibiotics, mainly azithromycin. Compared to RSV, M. pneumoniae tended to affect older children with milder clinical course. Rash and diagnosis of pneumonia were more common with M. pneumoniae.

Conclusions: In our setting, M. pneumoniae commonly affects children before starting school, with viral co-infection being detected among the majority of these cases. Sickle cell disease is the most common underlying condition in children presenting to tertiary care with M. pneumoniae infection, and these patients show stronger evidence of inflammation. Hospital-acquired infection is possible in some cases, especially among the immunocompromised.



EP027 / #261

Topic: AS03 Bacterial Infections: / AS03d Community-acquired bacterial infections (respiratory)

A RETROSPECTIVE CHART REVIEW OF PEDIATRIC COMPLICATED COMMUNITY-ACQUIRED PNEUMONIA: TWO YEARS' EXPERIENCE IN AL QASSIMI WOMEN AND CHILDREN HOSPITAL

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Background: Community-acquired pneumonia (CAP) is one of the most common global health issues. Even with recent vaccination and new diagnostic tools still has a higher mortality rate, especially in children less than five years. Complicated community-acquired pneumonia (CCAP) in a previously healthy child is a severe disease characterized by a combination of local complications and systemic complications.

Aims: The present retrospective study aims to review the cases of complicated CAP among children hospitalized at the AQWCH over a selected time period and to describe the demographic features, clinical presentation, epidemiology, etiology, management, and outcome of patients.

Methods: This study is a retrospective chart review. We used a timeframe sample and utilized de-identified medical record data of all complicated CAP patients admitted between January 01, 2018, to December 31, 2020. All selected patients are minors; however, all data were unidentified, anonymous, and stored on password-protected computers accessed by PI only. Ethical approval was obtained from MOHAP REC.

Results: A total of 195 patients were diagnosed with CAP; from these patients, 30 (15.3%) were diagnosed with CCAP. Of these, NP was 14 (46.6%), PPE 8 (26.7%), and EMP was 8 (26.7%). The median age of patients was 2.5 years, with 13 (43%) male and 17 (57%) female. The most common findings were consolidation and pleural effusion.

Conclusions: This study described the demographic features, clinical presentation, management, and outcome of patients diagnosed with CCAP at AQWCH.

Topic: AS03 Bacterial Infections: / AS03d Community-acquired bacterial infections (respiratory)

MOLECULAR DETECTION OF RIFAMPICIN RESISTANT MYCOBACTERIUM TUBERCULOSIS IN TUBERCULOSIS PATIENTS USING GENEXPERT METHODS IN DEBRE TABOR COMPRESSIVE HOSPITAL

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Background: Multidrug-resistant tuberculosis (MDR-TB) has continued to be a challenge for tuberculosis (TB) control globally. It is highly prevalent in developing countries where Ethiopia is also found. Ethiopia ranked 15th with new cases of MDR-TB each year and is one of the 27 countries with high MDR-TB burden. Tuberculosis can be effectively treated with first line drugs (isoniazid, rifampicin, ethambutol and pyrazinamide) for six months. But when this first line drugs are not properly used leads to Multidrug-resistant Tuberculosis (MDR TB).

Aims: To determine the prevalence and associated factors of Multi-Drug Resistance Tuberculosis in Debre Tabor Hospital, Debre Tabor, Ethiopia, 2022

Methods: A retrospective cross-sectional study design was conducted by reviewing the MDR-TB logbook at Debre Tabor General Hospital from March 20 2022- March 20, 2022. Data were processed scientifically and, the analysis was done using the statically software SPSS version 20.

Results: Result and Discussion – Of the total of 438 TB patients enrolled to Debre tabor general hospital TB laboratory from January 2017- February 2022, and 36(8.2%) of the patients developed MDR-TB. Having HIV status was the most significant factor associated with MDR-TB..

Conclusions: This study showed that the prevalence of MDR-TB is high which is 36(8.2%). Therefore early detection of drug resistant MTB should be strengthen for the management of TB patients. The present study revealed that HIV status, history of prior TB treatment, smear result, registration group, treatment outcome and started treatment at were significantly associated with the prevalence of MDR

EP029 / #244

Topic: AS03 Bacterial Infections: / AS03d Community-acquired bacterial infections (respiratory)

MARKERS OF INFLAMMATORY RESPONSE AND METABOLIC ADAPTATION IN CHILDREN WITH RESPIRATORY PATHOLOGY

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Background: Acute inflammations of the mucous membrane and lymphoid structures of the oropharynx are usually self-limiting diseases in healthy children,. Due to an insufficiently developed immune system, children primarily suffer from acute respiratory disease (ARI) with the development of complications, including bronchitis, pneumonia, sinusitis, otitis.

Aims: To investigate and analyze the state of markers of metabolic adaptation in the children with respiratory pathology

Methods: The study group included school-age children (10-14 years old) with a diagnosis of ARI as a general group of inflammatory diseases of the respiratory tract with respiratory tract local inflammatory lesions and presented acute pharyngitis (60.0%), acute bronchitis (20.0%), acute tonsillitis (22.0%) and a control group (n=25), identical in age and sex.

Results: The indicators of inflammatory response of child's organism presented an valid increasing in levels of cytokines: IL-1 increased in 2 times, IL-4- in 10 times, IL-6- in 1.5 times, γ -IFN - in 3 times, TNF- α - in 25 times, Neopterin – in 9 times. An increasing in level of IgM (3.85 ± 1.89 g/l, $p < 0.01$) in 2 times, level of IgG increased in 10 times ($147, 35 \pm 56.12$ g/l, $p < 0.01$) were revealed. There were significant differences in levels of Leptin ($p < 0.01$), C-Peptide ($p < 0.01$), TSH ($p < 0.01$), Free thyroxine ($p = 0.002$). Predominance of reliable correlations of pro-inflammatory cytokines II 1,4,6 in various degrees ($r = 0.34-0.45$), IgG with Free Triiodothyronine ($r = 0.45$, $p = 0.004$), IgE with Thyroid Peroxidase Antibody are observed ($r = -0.45$, $p = 0.004$).

Conclusions: The researched material indicates need to consider metabolic adaptation of children's organism systems during inflammatory process



EP030 / #58

Topic: AS03 Bacterial Infections: / AS03d Community-acquired bacterial infections (respiratory)

THE RISING THREAT OF MULTIDRUG-RESISTANT NON-VACCINE SEROTYPES OF STREPTOCOCCUS PNEUMONIAE IN INDIAN CHILDREN WITH INVASIVE PNEUMOCOCCAL DISEASE

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Background: Pneumonia is responsible for substantial morbidity and mortality globally, especially in children <5 y of age. The use of Pneumococcal Conjugate Vaccine (PCV) resulted in a decrease of vaccine serotypes (VTs) and the emergence of non-vaccine types (NVTs). The objective of this study was to determine the diversity of serotypes and Antimicrobial resistance of pediatric invasive pneumococcal isolates.

Aims: The aim of this study was to determine the diversity of non-vaccine serotypes and antimicrobial resistance patterns of pediatric invasive pneumococcal isolates in India.

Methods: 140 invasive pneumococcal isolates from children collected across the country were analyzed. WGS was performed with Illumina Platform. Serotyping was done using the SeroBA. The resistance pattern was identified using ARIBA software.

Results: Overall, 97/140 (69.2%) were Vaccine serotypes and 43/140 (30.7%) were non-vaccine types (NVTs) with PCV 13. The observed prevalent vaccine serotype distribution was 19F(n=23), 1(n=12), 19A(n=11), 14(n=10), 5(n=9), 6A(n=8), 6B(n=8), 18C(n=5), 7F(n=4), 3(n=2), 7F(n=4) and 15B(n=15), 24(n=8), 8(n=7), 10A, 34(n=6), 16F, 11A (n= 5), 17F (n=2) , 35A respectively. Among 97 vaccine serotypes 47(48%) were Multidrug resistant for vaccine serotype and 12 out of 43(28.5%) were for non-vaccine types. Multidrug resistance was found among 19F(N=20), 19A(n=10), 14(n=8), 6B(n=6), 15B(n=5), 16F(n=4), 9V(n=3). 10A, 11A, 17F(n=2). High-level resistance was found in Tetracycline (75/140, 53.5%), and Erythromycin (63/140, 45%).

Conclusions: In our study non-vaccine serotypes accounts for 30.7% of invasive isolates among the children. For greater coverage, there is a need to include other serotypes. Serotypes 15B and serogroup 24 were the most common non-vaccine types in this study. Emerging and spreading NVTs can be regarded as the focus for future serotypes epidemiological survey and vaccine optimization.

Topic: AS03 Bacterial Infections: / AS03d Community-acquired bacterial infections (respiratory)

INTERPRETATION OF TRACE-POSITIVE XPERT MTB/RIF ULTRA RESULTS IN CHILDREN IN A HIGH TB-BURDEN SETTING

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Background: . Mycobacterium tuberculosis complex trace-positive, rifampicin susceptibility unsuccessful on Xpert MTB/RIF Ultra is a common finding in of children investigated for tuberculosis.

Aims: The study-aim was to determine its interpretation regarding TB disease.

Methods: . Xpert Ultra and mycobacterial culture is routinely done on the same/similar specimens for TB in children (<13 years) at the National Health Laboratory Service laboratory, Tygerberg Hospital, Cape Town. We retrospectively evaluated microbiological results for TB in the context of their clinical picture from March 2019-February 2023 to determine the diagnostic value of a trace-positive, rifampicin-unsuccessful Xpert Ultra result.

Results: . Of 746 children, median age 35 (IQR 13.5-69) months, 378 (50.7%) males, with microbiological result positive for M.tuberculosis, 282 (37.8%) had an initial Xpert-trace (trace-positive M.tuberculosis complex), rifampicin-unsuccessful result. Of these, 63 (22.3%) had a subsequent Xpert-positive result (with rifampicin-susceptibility result). Cultures were positive in 98 (34.8%; 43 with both trace and Xpert-positive and 55 Xpert-trace results). In 7 (2.5%) no cultures were done (all CSF-specimens) and in 5 (1.8%), cultures were contaminated, leaving 152 (53.9%) with only Xpert-trace, culture-negative results (152/746 [20.4%] microbiological-positive children). Of 164 children with Xpert-trace results only (including contaminated/cultures not done), 91 (55.5%) had PTB, 16 (9.8%) EPTB and 31 (18.9%) had both, while 26 (15.9%) were evaluated as M.tuberculosis-infected only. Thirty-seven (22%) received previous/current TB treatment >1 week.

Conclusions: Conclusion. Although about 16% of Xpert MTB/RIF Ultra trace results in children likely present M.tuberculosis infection only, children in high TB-burden settings with Xpert Ultra trace-results should be treated as TB disease.

Topic: AS03 Bacterial Infections: / AS03d Community-acquired bacterial infections (respiratory)

RESURGENCE OF DIPHTHERIA IN A DEVELOPING COUNTRY; DEMOGRAPHIC FEATURES AND OUTCOMES, A RETROSPECTIVE ANALYSIS

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Background: Diphtheria has been re-emerging since long and a spurt was seen in 2017; consequently, an increased number of cases was seen in Pakistan also. Pakistan is a developing country with a well-established expanded program of immunization. Despite this, we have noticed a resurgence of diphtheria infections in the country in the past few years.

Aims: We aim to describe the demographics and outcomes of patients with diphtheria admitted to our center since June 2022 till May 2023

Methods: We performed a retrospective analysis by going through the medical record and observed the demographic data, complications and outcomes of patients who were admitted with clinical diagnosis of diphtheria. All cases were reported to the district health surveillance team.

Results: Of the 49 admitted patients, 43% (n=21) were male and 57% (n=28) were female. The most common age group was 5-9 years (43%, n=21). Most common signs and symptoms were fever (89.8%), membrane in mouth (83.7%), sore throat (77.6%) and swollen neck (65.3%). 38.8% patients (n=19) expired, 46.9% (n=23) were discharged after improvement, 6.1% (n=3) were transferred and the rest (8.2%, n=4) left against medical advice. Factors significantly associated with disease progression and case fatality (p value <0.05) were swollen neck, pseudo-membrane and renal involvement on admission, and development of myocarditis, conduction blocks and AKI during hospital stay.

Conclusions: Since diphtheria is a preventable disease, it is possible that its reemergence may be pointing towards continuous assessment and relevant change in current vaccine programs to prevent further outbreaks, morbidity, and mortality.



EP033 / #370

Topic: AS03 Bacterial Infections: / AS03d Community-acquired bacterial infections (respiratory)

CULTURE POSITIVITY AND ANTIMICROBIAL SUSCEPTIBILITY PROFILE IN CLINICALLY DIAGNOSED CASES OF DIPHTHERIA; A QUICK SCAN FROM KARACHI, PAKISTAN

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Background: Diphtheria is a vaccine preventable serious illness which has reemerged in the recent past in resource limited countries. Treatment with antibiotics and antitoxin may not always result in resolution of illness.

Aims: We aim to analyze the culture positivity in clinically diagnosed cases of diphtheria and antibiotic sensitivity pattern of the culture positive cases in our center and compare the results with the outcome of these patients.

Methods: We performed a retrospective analysis on cases admitted to the hospital from June 2022 to May 2023. Culture tests were outsourced to another laboratory. Sensitivity patterns and empiric therapy were seen and association of mortality with culture positivity was assessed.

Results: Of 49 cases, culture was sent in 40 (81.6) cases. Growth of *C. diphtheriae* was observed in 7 (14%) cases. Of these, 1 (14%) was sensitive to erythromycin, 1 (14%) to penicillin, 6 (100% not tested in one case) to vancomycin, 5 (71%) to ciprofloxacin and 6 (86%) to tetracycline. Toxin was detected in 2 (28%) cases. Mortality was not significantly associated with culture positivity or antibiotic resistance, despite all cases being treated with erythromycin or azithromycin.

Conclusions: Larger studies are needed to generalize the results of culture and sensitivity; however future studies may open doors for re-evaluation of antibiotic cutoffs for *C. diphtheriae* as our resistance pattern does not correlate with mortality.

EP034 / #546

Topic: AS03 Bacterial Infections: / AS03e Gastrointestinal tract infections

MANAGEMENT OF CLOSTRIDIUM DIFFICILE COLITIS IN 4-YEARS OLD CHILD IN UKRAINE: A CASE REPORT

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Title of Case(s):: Management of Clostridium difficile colitis in 4-years old child in Ukraine: a case report

Background:: Nowadays the incidence of Cl. difficile infection (CDI) in pediatric patients, caused by toxigenic strains, in Ukraine rises. CDI usually manifests with typical sign as diarrhoea, colitis, pseudomembranous colitis, fulminant colitis. That's why It's important to understand principle of management of CDI in pediatrics.

Case Presentation Summary:: 4-years old boy was hospitalised with bloody diarrhoea during 2 months, anemia. These signs appeared after viral infection. He was tested on infectious-induced diarrhoea agents by PCR (Salmonella spp., Shigella spp., E. coli spp., Campylobacter spp., Adenovirus, Rotavirus, Astrovirus – negative; Cl.difficile tox-A – positive). The initial treatment regime was oral metronidazole (OM) 30mg/kg/d every 6 hours, 10 days. After finishing of this course – episode of bloody diarrhoea repeated. Course of OM was administered for 10 days. On 7-day of 2nd course of OM intake, bloody feces appeared. Oral vancomycin (OV) 40mg/kg/day t.i.d. with S.boulardi 750mg/day administered for 14 days. After 14days of OV intake bloody diarrhoea appeared again. The boy was discharged from the hospital with recommendation to take OM 30mg/kg/day every 6 hours up to 21 days in recommended scheme with S. boulardi 750mg/day (patients should take OM for 3 days 30mg/kg/day every 6 hours, then – 3 days of break, then – should take OM again, etc.). CDI episode was resolved in this patient.

Learning Points/Discussion: Management of CDI should be performed according to individual approach, which was based on evidence-based recommendations, to reduce the risk of severe course of CDI.

Topic: AS03 Bacterial Infections: / AS03f Meningitis

INVESTIGATING THE ETIOLOGY OF BACTERIAL MENINGITIS IN UNDER-FIVE CHILDREN IN INDIA: INSIGHTS FROM MOLECULAR METHODOLOGY

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Background: Bacterial meningitis is a severe and potentially fatal condition, particularly among children under the age of five. Understanding the etiology of this disease is crucial for effective prevention and treatment strategies. Meningitis epidemiology and illness burden in India are not well understood

Aims: This study aimed to determine the causative agents of probable bacterial meningitis in under-five children in India using advanced molecular methods.

Methods: A total of 425 eligible children between the ages of one and 59 months, presenting with probable meningitis according to WHO criteria, were enrolled in the study. Cerebrospinal fluid samples were collected from multiple centers across the country between 2019 and 2022. These samples underwent biochemical analysis, including white blood cell count, cerebrospinal fluid glucose, and protein levels. Additionally, molecular techniques, such as PCR analysis and 16sRDNA, were employed to identify and detect the presence of pathogens. Serotyping of *Streptococcus pneumoniae* was performed using a sequential quadriplex Real-time PCR assay.

Results: Among the study subjects, *Streptococcus pneumoniae* was the most identified pathogen, accounting for 11.52% of cases, followed by *Haemophilus influenzae* at 2.1%. No cases of *Neisseria meningitidis* were detected. Other significant organisms identified included *Acinetobacter baumannii* (n=15), *Pseudomonas aeruginosa* (n=12), and various *Staphylococcus* species (n=8). The predominant serotypes of *Streptococcus pneumoniae* were 19F (n=10), 6A/B (n=7), 19A (n=4), and 4 (n=4).

Conclusions: This prospective study aimed to comprehend and analyse the true burden of infection and serotype distribution using molecular techniques which is essential to investigate outbreaks, for case-contact management and reasoned public health actions.



EP036 / #552

Topic: AS03 Bacterial Infections: / AS03f Meningitis

LATE ONSET LISTERIOSIS IN A NEONATE HOSPITALISED IN A SECONDARY HOSPITAL IN CENTRAL GREECE

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Title of Case(s):: LATE ONSET LISTERIOSIS IN A NEONATE HOSPITALISED IN A SECONDARY HOSPITAL IN CENTRAL GREECE

Background:: *Listeria Monocytogenes* bacillus, the causative agent of listeriosis, is considered a serious foodborne infection with an incidence of 8 cases per 100.000 live births. It is manifested either as an early onset neonatal infection with a risk up to 10% for neurodevelopmental disorders and high mortality rate (20-60%), or as a late onset infection, with a better prognosis.

Case Presentation Summary:: On her 15-day of life a baby girl was admitted to our pediatric clinic due to respiratory distress, accompanied by a 48h history of fussiness. She was born full term via normal spontaneous vaginal delivery. Her mother was primigravida with no medical complications during pregnancy. On admission, she had low satO₂, was febrile, tachycardic and irritable. Blood, urine and cerebrospinal fluid (CSF) obtained by lumbar puncture were collected prior to administration of antimicrobials (ampicilline, gentamycin) and submitted for culture and laboratory studies. Her initial CSF was hemorrhagic. Tests for various viruses were negative. Cerebrospinal fluid and urine cultures were negative. Blood culture was positive for: *Staphylococcus haemolyticus* and *Enterococcus faecalis*. Blood PCR were negative for bacteria and viruses, while PCR in CSF was positive for *Listeria Monocytogenes*. She continued antimicrobial therapy for 10 days and then was transferred to a tertiary hospital for further tests (brain MRI, ABR test) and completion of therapy.

Learning Points/Discussion: Although late onset listeriosis is rare, it should always be in the differential diagnosis of neonatal infection. A definitive diagnosis is imperative for appropriate optimization of antimicrobial therapy. Laboratory diagnosis of listeriosis by conventional culture approaches can be limited. The advent of novel molecular assays may increase the detection of *L. monocytogenes* and directly impact patient management.



EP037 / #603

Topic: AS03 Bacterial Infections: / AS03f Meningitis

EPIDEMIOLOGICAL CHARACTERISTICS AND DISEASE BURDEN OF BACTERIAL MENINGITIS IN HOSPITALIZED CHILDREN IN CHINA: A 6-YEAR NATIONWIDE RETROSPECTIVE STUDY

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Background: Bacterial meningitis is a severe infectious disease threaten the health of children in China and globally. Surveillance of bacterial meningitis in children is important.

Aims: Our study aim to represent a large nation-wide, longitudinal study of bacterial meningitis of China.

Methods: We analyzed nationwide surveillance data of hospitalized bacterial meningitis received by the discharged Face Sheet of Medical Records from 30 children's hospitals 2016 to 2021 in China, including characterization of demographics, predisposing conditions, causative pathogen, complications and outcome. We compared patients with at least one complication and patients without complication.

Results: We analyzed 16566 episodes, of which 13614 episodes (82.18%) occurred in <5 y children. Overall, The proportion of hospitalization for bacterial meningitis to all inpatients decreased from 0.24% to 0.16% between 2016–2019 and 2020–2021 ($\chi^2=524.3$, $P<.0001$). Among 1179 episodes (7.1%) had available data on pathogen, 620 episodes (52.59%) caused by Streptococcus species, within 306 episodes (25.95%) were Streptococcus pneumoniae. The risk of at least one complication was 26.45 % (4382/16566). Hydrocephalus (2351, 14.19%), subdural effusions or empyema (1438, 8.68%), seizures (794, 4.79%) were three common complications. Patients age below 5 years old (29.05% vs. 14.46%, $\chi^2=265.300$, $P<.0001$), living in rural areas (28.35% vs. 25.04%, $\chi^2=22.839$, $P<.0001$), who dead (83.52% vs. 26.14%, $\chi^2=153.159$, $P<.0001$) had higher complication rate. Median length of stay and inpatient expenditures for children with bacterial meningitis were 16 d and 2,697.38 USD.

Conclusions: This study will help understand the clinical epidemiology of hospitalized children with bacterial meningitis in China



EP038 / #334

Topic: AS03 Bacterial Infections: / AS03f Meningitis

MAGNITUDE OF BACTERIAL MENINGITIS PROGRESS AMONG TOGOLESE CHILDREN YOUNGER THAN 5 YEARS OF AGE IN RELATION WITH CONJUGATE VACCINES INTRODUCTION INTO EPI

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Background: Prior to availability of conjugate vaccines, bacterial meningitis represented an enormous burden on mortality and morbidity of children younger than 5 years of age worldwide. Vaccine against Haemophilus influenzae b (Hib), introduced in July 2008; and 13 valences pneumococcal conjugate vaccine (PCV13), introduced in June 2014 are in Togolese immunization schedule several years ago.

Aims: We report year-to-year progress in the magnitude of the disease among Togolese children from 2010 to 2022.

Methods: Sentinel surveillance for vaccine-preventable diseases started in Togo in 2005 at Sylvanus Olympio Teaching Hospital (Lome). We used WHO's generic protocol for data collection. The diagnosis of meningitis was confirmed at the sentinel laboratory by CSF culture. We are receiving assistance from the regional microbiology laboratory of The Gambia for PCR performing since 2010. Epi Info was used for data analysis.

Results: The median annual number of hospitalizations associated to suspect meningitis cases has been reduced from 627 cases before pneumococcal vaccine introduction to 308 cases after the vaccine introduction; with a significant annual median reduction of 51% (Table 1). A non-significant reduction of death associated to invasive bacterial diseases (11%) was also observed in PVC13 post-vaccine period. Confirmed meningitis cases are becoming increasingly rare; with significant reduction of the overall case fatality rate (45%) associated. But case fatality rate associated to the rare observed pneumococcal meningitis cases was very high Table 2).



	Year	Suspect case	Number LP	Probable meningitis case	Confirmed case			
					Spn	Hi	Nm	Total
Pre-PCV₁₃	2010	518	477	15	6	8	1	15
	2011	631	626	21	17	1	0	18
	2012	770	760	51	7	4	0	11
	2013	623	616	27	6	1	0	7
	2014	535	530	44	7	7	2	16
	Annual median		623	616	27	7	4	0
Post-PCV₁₃	2015	308	306	22	2	8	0	10
	2016	375	373	28	2	4	7	13
	2017	309	304	22	0	0	1	1
	2018	407	404	38	1	0	0	1
	2019	270	258	32	0	0	1	0
	2020	279	271	30	0	0	0	0
	2021	309	304	23	0	0	0	0
	2022	281	277	25	1	0	0	1
	Annual median		308	304	26	1	2	4

LP = lumbar puncture, Spn = *Streptococcus pneumoniae*, Hi = *Haemophilus influenzae*, Nm = *Neisseria meningitidis*



Item	Pre-PCV ₁₃ period			Post-PCV ₁₃ period		
	Case	Death	%	Case	Death	%
Clinical diagnosis at discharge of suspect meningitis cases						
Meningitis	343	65	19.0	419	66	15.7
Pneumonia	115	0	-	45	0	-
Sepsis	16	7	43.7	17	7	41.1
Others	1,119	86	7.7	1844	133	7.2
Total	1,593	158	9.9	2,325	206	8.8
Bacterial pathogen associated to confirmed meningitis cases						
<i>Haemophilus influenzae</i> *	8	3	37.5	12	0	-
Pneumococcus	38	12	31.6	5	3	60.0
Meningococcus	3	0	-	7	1	14.3
Total	49	15	30.6	24	4	16.7

* only 3% of confirmed *Haemophilus influenzae* cases were serotype b

Conclusions: Conjugate vaccines have changed the magnitude of invasive bacterial diseases among Togolese children. Acknowledgements: surveillance participants, GAVI, Regional laboratory of The Gambia, WHO/AFRO, Togo's Ministry of Health.

EP039 / #414

Topic: AS03 Bacterial Infections: / AS03f Meningitis

GRANULICATELLA ADIACENS IN THE CEREBROSPINAL FLUID OF A 3-YEAR-OLD FEMALE

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Title of Case(s):: Granulicatella adiacens in the cerebrospinal fluid of a 3-year-old female

Background:: Granulicatella spp., previously known as nutritionally variant Streptococcus spp., belong to the normal flora of the oral cavity, genitourinary tract, and intestinal tract. However, the literature on management of central nervous system infection with Granulicatella spp. is limited.

Case Presentation Summary:: A 3-year-old, previously healthy, female presented to hospital with a 4-week history of headache and vomiting. Magnetic resonance imaging (MRI) of her head showed posterior fossa mass centered in the cerebellar parenchyma. Patient subsequently had sub-occipital craniotomy for resection of tumor, and insertion of external ventricular drain. Post-operative MRI showed interval mild increase in the sub-occipital fluid collection and cerebrospinal fluid spaces. On post-operative day 7, CSF was collected from her removed ventricular drain, which showed elevated total nucleated cells and later Granulicatella adiacens. On the same day, patient's body temperature spiked to 38C. Granulicatella adiacens was found again in a new CSF specimen collected on day 8. The minimum inhibitory concentrations (MIC) of G.adiacens showed penicillin 4 mcg/ml (resistant), ceftriaxone 2 mcg/ml (intermediate), meropenem 0.5 mcg/ml (sensitive), and vancomycin 1 mcg/ml (sensitive). The empiric therapy of intravenous penicillin and gentamicin (post-operative day 8-15) was changed to intravenous meropenem (post-operative day 15-33), but patient experienced neutropenia. Her therapy was changed to intravenous vancomycin (post-operative day 33-41) before she was deemed to be safe to be discharged with no antibiotics.

Learning Points/Discussion: If patients deteriorate with Granulicatella CNS infection despite empiric antimicrobials, clinicians should request susceptibility testing of the Granulicatella species found in CSF.

Topic: AS03 Bacterial Infections: / AS03g Neonatal infections

EARLY-ONSET NEONATAL SEPSIS IN NEONATES BORN >_ 30 WEEKS GESTATION: A PROSPECTIVE STUDY OF PREDICTORS AND OUTCOME FROM NORTHERN INDIA

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Background: Early Onset sepsis (EOS) remains a leading cause of morbidity and mortality among neonates in developing countries.

Aims: To determine the predictors of EOS (culture positive and culture negative sepsis) and mortality among neonates.

Methods: A prospective observational study (February 2020 – July 2021) was conducted at a tertiary care center in ≥ 30 weeks gestation and/ or birth-weight ≥ 1200 gm, having perinatal risk factors (maternal/ intrapartum) or with clinical symptoms & signs of sepsis within seven days of birth or three days in case of very low birth weight.

Results: 380 neonates were enrolled; 304(80%) fulfilled the criteria for EOS [culture positive-153(40.3%), culture negative-151(39.7%)] and 76(20%) were non-EOS. The mean age of admission and very low birth-weight neonates was more in EOS than non-EOS group(9.33 ± 21.45 vs. 2.41 ± 9.67 hours; $p=0.006$) and (20.1% vs. 7.9%; $p=0.04$). Prematurity, prolonged rupture of membranes, breathing difficulty, lethargy, and admission within 24 hours of birth were independent predictors for EOS on univariate analysis, while predominant breastfeeding was an independent predictor in preventing EOS. Similarly, pre-labor rupture of membrane, preterm pre-labor rupture of membrane, need for resuscitation beyond the initial steps, feeding difficulty, bleeding, and N-SOFA score >2 at admission and 24 hours predicted higher mortality in EOS group.

Conclusions: Prematurity, prolonged rupture of membranes, breathing difficulty, lethargy, and admission within 24-hour of birth were independent risk factors for EOS. However, pre-labor rupture of membrane, preterm pre-labor rupture of membranes, need for resuscitation beyond the initial steps, feeding difficulty, bleeding, N-SOFA score >2 at admission and 24- hour were significant risk factors for mortality.



EP041 / #356

Topic: AS03 Bacterial Infections: / AS03g Neonatal infections

MOLECULAR CHARACTERIZATION AND DRUG SUSCEPTIBILITY OF ACINETOBACTER BAUMANNII INFECTIONS IN NEONATES FROM A THIRD-LEVEL HOSPITAL

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Background: *Acinetobacter baumannii* (*A. baumannii*) it's a healthcare threat in neonates due to the high prevalence of multidrug-resistant strains, severity of the disease, increased morbidity and mortality, and limited therapeutic possibilities compared to adults. There is limited information on the clinical and molecular features of carbapenem-resistant *A. baumannii* (CRAB) infections in neonates.

Aims: To describe the clinical and molecular characteristics of CRAB infections among neonates at a tertiary-level hospital in Mexico.

Methods: Consecutive cases of *A. baumannii* infections were recorded between 2017-2022. Clinical and demographic data were collected from clinical records. Bacterial isolate identification was confirmed by biochemical testing and antibiotic sensitivity was then assessed. PCR amplification and automated sequencing were carried out to detect the presence of carbapenemase-encoding resistance genes.

Results: 13 neonates were included. Eight (61.5%) had a diagnosis of ventilator-associated pneumonia, 5 (38.5%) had sepsis, and 2 (15.4%) had central venous catheter-related infection. The median hospital length of stay was 64 (30-90) days. Seven (53.8%) isolates were classified as extensively-drug resistant, 5 (38.5%) as multi-drug resistant, and 1 (7.7%) as sensitive. The most frequent resistance of the isolates was against carbapenems (92.3%). All strains were susceptible to colistin. Most of CRAB strains carried *bla*_{OXA-51} and *bla*_{OXA-24} genes. *bla*_{IMP} genes were detected in only six (46.2%) of the strains. The mortality was 38.5%.

Conclusions: Conclusion: A high incidence of CRAB infections, prevalence of antibiotic resistance and frequency of isolates expressing the *bla*_{OXA-24} and *bla*_{IMP} genes in neonates was demonstrated. Therefore, CRAB poses a significant threat in this population.



EP042 / #613

Topic: AS03 Bacterial Infections: / AS03g Neonatal infections

PREDICTORS, AETIOLOGY AND OUTCOME OF EARLY-ONSET NEONATAL BLOODSTREAM INFECTION: A CASE-CONTROL STUDY

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Background: Difficulty in identifying neonates at highest risk of early-onset blood-stream infection (EO-BSI) leads to high rates of empiric antibiotic use.

Aims: To identify maternal and neonatal predictors, pathogen profile and outcomes of culture-confirmed EO-BSI (< 72 hours of life) at a large neonatal unit in Cape Town, South Africa (1 January 2019 – 31 December 2021).

Methods: In this retrospective case-control study, cases (neonates with culture-confirmed BSI) were matched 1:3 with randomly selected controls ('at risk' neonates with negative blood cultures, CRP < 10mg/L). Factors associated with EO-BSI were identified using multivariable logistic regression.

Results: Of 248 neonates included, 62 were cases and 186 were controls. Six factors independently predicted EO-BSI: ≥ 2 maternal risk factors; birth weight >2500g; hypo/hyperglycaemia; abnormal perfusion; seizures and invasive respiratory support. Group B streptococcus and Escherichia coli predominated on birth blood cultures (25/44; 56.8%), whereas K. pneumoniae predominated from 24-72 hours of life (13/20; 65%). Ampicillin plus gentamicin was the most frequently prescribed empiric antibiotic regimen (82% in cases, 100% in controls), followed by regimens targeting healthcare-associated pathogens ≥ 24 hours of life. Cases were nearly 6 times more likely to demise than controls (RR 5.8, 95%CI = 2.7-12.5; case fatality rate 32.5%). Mortality was strongly associated with gram-negative pathogens, discordant antibiotic treatment and gestational age < 32 weeks.

Conclusions: The development of a clinical score to evaluate neonatal sepsis risk may reduce empiric antibiotic use for suspected EO-BSI. Beyond 24 hours of life, empiric antibiotic regimens should provide coverage for healthcare-associated pathogens in this setting.

EP043 / #561

Topic: AS03 Bacterial Infections: / AS03g Neonatal infections

PATTERNS OF INTRAPARTUM ANTIBIOTIC CHEMOPROPHYLAXIS AND EFFICACY IN PREVENTING GBS VERTICAL TRANSMISSION – A SCOPING MINI-REVIEW

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Background: Intrapartum antibiotic prophylaxis (IAP) is considered most effective if administered at least 4 hours before delivery. However, exposure to 2 or more hours of antibiotics may reduce maternal GBS vaginal colony counts and decrease the incidence of EOD.

Aims: The aim of this work is the systematic description of evidence on the efficacy of different patterns of IAP in preventing GBS vertical transmission.

Methods: A systematic mini-review of the literature was led, according to the PRISMA guidelines. The Embase and MEDLINE databases were searched on 14th February 2023. Outcomes were differences in neonatal GBS colonization and EOD.

Results: 10/123 articles were included, reporting data on more than 2900 mother-newborn (≥ 34 weeks) dyads. There were no RCTs. Four studies (40%) concluded a direct correlation between the duration of IAP of 4 or fewer hours and neonatal illness and a decreased risk for any form of intrapartum antibiotic given more than 4 hours before delivery. Two studies (20%) reported a reduced vertical transmission of GBS when the time between the start of antibiotics and delivery was at least 2 hours. Four studies (40%) concluded that the rate of vertical transmission was independent of the duration of IAP before delivery. Three studies provided pharmacokinetic data, stating that short durations of prophylaxis achieved levels significantly above the MIC.

Conclusions: 60% of the retrieved studies either reported that IAP started at least 2 hours before delivery could be successful in reducing vertical transmission, or that vertical transmission was not influenced by IAP duration. Further studies are needed to confirm this hypothesis.

Topic: AS03 Bacterial Infections: / AS03g Neonatal infections

EPIDEMIOLOGY, ANTIMICROBIAL RESISTANCE AND VIRULOME OF INVASIVE GROUP B STREPTOCOCCUS ISOLATES IN HUNTER REGION, AUSTRALIA.

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Background: Group B Streptococcus (GBS) is the most common cause of invasive neonatal infection, but can also cause disease in adults.

Aims: This study aims to understand the local molecular epidemiology of invasive GBS isolates and evaluate their virulome and antimicrobial resistance patterns.

Methods: A total of 98 invasive GBS isolates (blood, CSF and fluid) from 20 paediatric and 78 adult patients were sequenced using the Illumina Miseq platform. We used the CLC Microbial Genomics workbench for analysing MLST, AMR genes, in-silico capsular serotyping, and virulome.

Results: We identified 8 serotypes Ia, Ib, II, III, IV, V, VI and VIII. The most common MLSTs were ST1 (35%), ST17 (11%) and ST23 (11%). Previously reported hyper-virulent, III-ST17 was most pervasive in our neonatal isolates (47.3%), followed by II-ST12 (10.5%) and Ib-ST8 (10.5%). In our adult cohort (> 80 years old), ST1 (V and VI) predominated (53.6%). Eighty two percent of our isolates harboured tetracycline resistance genes, predominantly tetM (80%) and tetO (20%). Conversely, only 39% of isolates carried one or more macrolide resistance genes: ermA (45%), ermB (50%), ermT (8%) and mef (15%). Thirty one percent of III-ST17 isolates harboured multi-drug resistance genes. Pili Island (PI) expression differed between the two age groups. In neonates, majority (64%) had PI-1 plus PI-2b and 36% of the isolates had PI-2b only. In contrast, V-ST1 and VI-ST1, seen in the elderly cohort, possessed a combination of PI-1 and PI-2a (99%).

Conclusions: The relative distribution of serotypes and virulence factors differed significantly between extremes of age, favouring expansion of specific clones.



EP045 / #673

Topic: AS03 Bacterial Infections: / AS03g Neonatal infections

GENOMIC CHARACTERIZATION OF ACINETOBACTER BAUMANNII ASSOCIATED WITH NEONATAL SEPSIS AND STILLBIRTHS IN A SOUTH AFRICAN POPULATION

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Background: Multi-drug-resistant *A. baumannii* poses a global health concern, particularly in hospitals and among vulnerable populations in low-middle-income countries, with significantly high neonatal mortality rates. There is limited understanding of the genomic characterisation and strains causing these infections. This study utilised whole genome sequencing (WGS) to investigate *A. baumannii* pathogenicity in South African stillbirths and children under five.

Aims: Use WGS of *A. baumannii* isolates associated with neonatal invasive disease and stillbirths to delineate the potential role of antimicrobial resistance genes, sequencing type (ST), and virulence genes.

Methods: *A. baumannii* was identified through bacterial culturing, DNA extraction, and sequencing. The analysis involved comprehensive bioinformatics approaches for quality control, read assembly, determination of ST, antibiotic resistance profiling, insertion sequences (IS), and virulence genotyping.

Results: ST2 was the most prevalent ST across all age groups and birth weights. ST1 was prevalent in gestational age. All isolates were MDR, conferring resistance to β -lactams, aminoglycosides, and streptomycin. Phylogenetic analysis revealed a diverse accessory genome with unique genes, indicating high genomic diversity. The presence of multiple ISs in *A. baumannii* isolates highlights the dynamic nature of its genome. Isolates of the same ST clustered together, and multiple virulence factor genes, including *ompA*, *adeFGH*, and *PbpG*, were identified, contributing to the pathogenesis of *A. baumannii*.

Conclusions: This study improves our understanding of MRD *A. baumannii*-related fatalities in low-middle-income countries using WGS. Provides valuable insights into the genetic factors contributing to stillbirths and paediatric cases, enhancing our knowledge of *A. baumannii*'s pathogenesis in South African children aged ≤ 5 years and their mortality.

EP046 / #468

Topic: AS03 Bacterial Infections: / AS03g Neonatal infections

MOLECULAR EPIDEMIOLOGY OF ESCHERICHIA COLI ASSOCIATED MORTALITY IN SOUTH AFRICAN NEONATES AND STILLBIRTHS.

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Background: Escherichia coli (E. coli) remains a leading cause of both neonatal deaths and stillbirths, especially in Sub-Saharan Africa where the burden of HIV infection is high. Despite this, the virulence factors (VF) and clonal groups associated with pathogenicity remain unclear.

Aims: The study aimed to characterize the VF and clonal groups of E. coli strains associated with stillbirths and neonatal deaths in a South African population.

Methods: Archived E. coli isolates from 35 stillbirths and 24 neonatal deaths collected between June 2015 and October 2016 were phylotyped using the Clermont Phylotyping method and tested for 27 VF using multiplex qPCR. Where E. coli was isolated across multiple sites (i.e., blood, CSF, and lungs), all isolates were tested (n=114).

Results: B2 was the dominant phylogroup identified in neonates (57.7%) across all sites, followed by group A and C (both 7.7%). In stillbirths, phylogroup B2 (38%) was only dominant in the lung isolates, while clade 2 (50%) was the dominant phylogroup identified in blood isolates. The dominant VF identified in stillbirths were fimH (92%) and FeoB (89%), while FuyA (83%) and fimH (83%) were dominant in neonates, irrespective of the isolation site.

Conclusions: This study provides valuable insights into the molecular epidemiology of E. coli-associated mortality in South African neonates and stillbirths. The dominance of specific clonal groups and virulence factors highlights potential targets for vaccine development. Future work should focus on understanding the mechanisms underlying pathogenicity and developing preventive strategies to reduce the burden of E. coli-related morbidity and mortality in this vulnerable population.

EP047 / #412

Topic: AS03 Bacterial Infections: / AS03g Neonatal infections

SHOULD WE RESCIND PROPHYLAXIS FOR NEONATAL OPHTHALMIA AS PER THE CANADIAN PAEDIATRIC SOCIETY?

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Background: Administration of ophthalmic erythromycin had been mandatory for prophylaxis for neonatal ophthalmia in Ontario, Canada. Beginning in 2019, parents may opt-out of this prophylaxis. In their 2021 position statement, the Canadian Pediatrics Society advised physicians caring for newborns should advocate rescinding ocular prophylaxis regulations in jurisdictions where this prophylaxis is legally mandated. Parents and clinicians may not be well informed of the limitations of this statement and microorganism causes of neonatal ophthalmia in local areas.

Aims: Our regional microbiology laboratory, affiliated with 16 hospitals, provided the local incidence of isolated microorganisms from neonates' eye swabs.

Methods: All cases of culture-positive *Neisseria gonorrhoeae* conjunctivitis were identified from children and adults who had eye swabs sent to our regional laboratory from October 2, 2018 to October 2, 2019. A total of 52 eye swabs were collected from neonates (age < 28 days) in 16 affiliated hospitals in the same period.

Results: One of the five *N.gonorrhoeae* conjunctivitis cases was a neonate. Among the 52 eye swabs collected from neonates, the most common microorganism was coagulase-negative staphylococci (52%). About 42% of the swabs had more than one type of microorganisms identified. Other microorganisms identified included *Streptococcus* species (33%), *Staphylococcus aureus* (6%), *Haemophilus* species (10%), and other gram-negative bacilli (13%). *Chlamydia trochomatis* was not identified, but that could be due to clinicians not ordering *Chlamydia* culture swabs.

Conclusions: The data collected will help clinicians and parents to make an informed decision on administration of preventative ophthalmic erythromycin for neonates.

EP048 / #805

Topic: AS03 Bacterial Infections: / AS03h Other bacterial infections

BLOODSTREAM INFECTIONS IN CHILDREN ATTENDING A TERTIARY HOSPITAL IN SOUTH AFRICA

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Background: Bloodstream infections (BSI) are a major cause of morbidity and mortality in children. Bloodstream infections are treated with empiric antibiotics based on a number of factors including infection source and antibiotic susceptibilities. Antimicrobial resistance is currently posing a threat worldwide to the effective treatment of BSI. There is hence the need to look at the pathogens and susceptibility patterns in our locality to assist in reviewing current antibiotic protocols for effective patient care.

Aims: Aim To document the epidemiology of paediatric BSI at Tygerberg Hospital and revise empiric antibiotic treatment recommendations.

Methods: Study site will be Tygerberg Hospital and will be a retrospective cohort study involving positive blood cultures of paediatric patients admitted with the exception of those in neonatal service. Data will be extracted from TBH National Health Laboratory System (NHLS) laboratory information system (TrakCare, InterSystems, Massachusetts, USA) .The Enterprise Content Management (ECM) and Electronic Continuity of Care Record (ECCR) systems will be used to extract demographic information, review dates of admission and discharge, and assess patient outcomes. Data will be analyzed in STATA Corp version 17. A mathematical model, the weighted incidence syndromic antibiogram (WISCA) will be used to estimate the impact of various alternative antibiotic regimens on pathogens

Results: Data available include pathogens and antimicrobial resistance profile from 1 January 2017 to 31 December 2022.



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Conclusions: This abstract is a protocol and hence no conclusion included. Submitted for consideration for the WSPID research



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EP049 / #517

Topic: AS03 Bacterial Infections: / AS03h Other bacterial infections

ANALYSIS OF THE ATTRIBUTION OF STAPHYLOCOCCUS AUREUS IN THE CAUSAL PATHWAY TO DEATH IN STILLBIRTHS AND CHILDREN UNDER 5 YEARS FROM 2017 TO 2022, SOWETO.

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Background: The Child Health and Mortality Prevention Surveillance (CHAMPS) platform aims to investigate causes of death in stillbirths and children <5 years in low- and middle-income countries using post-mortem minimally invasive tissue sampling (MITS).

Aims: To describe the attribution of Staphylococcus aureus in the causal pathway to death in stillbirths and children <5 years from January 2017 to December 2022 in Soweto, South Africa.

Methods: Data was obtained from medical records, histopathology, culture, and molecular diagnostics from different organ tissues. The causal pathway was assigned by a Determination of Cause of Death (DeCoDe) panel.

Results: Staphylococcus aureus was identified in 53 (5.2%) of the 1021 deaths; three of 398 (0.8 %) stillbirths, six of 211 (2.8%) early (1-6 days) neonatal deaths, 13 of 133 (9.8%) late neonatal deaths, 22 of 189 (11.6%) infant deaths and nine of 90 (1%) child deaths. The median hospital duration was 5 (IQR 1 – 25) days. Twenty (38%) cases were HIV-exposed and of the live births, six (12%) cases were HIV-infected. Of the 19 neonatal deaths, 13 (68.4%) were low birth weight, of which, five (26.3%) were extremely low birth weight. Of the 50 live births, 11 (22%) had sepsis only, 11 (22%) had pneumonia only, 1 (2%) had meningitis only, and 27 (54%) had pneumonia and sepsis in the causal pathway. Most cases (n=44; 88%) had at least one other organism identified.

Conclusions: Staphylococcus aureus was attributed to only a small number of deaths. In most cases, Staphylococcus aureus was one of multiple organisms and resulted in disseminated disease.

Topic: AS03 Bacterial Infections: / AS03h Other bacterial infections

PREVALENCE OF ASYMPTOMATIC NASOPHARYNGEAL CARRIAGE, ANTIBIOTIC RESISTANCE PATTERNS, AND SEROTYPE DISTRIBUTION OF STREPTOCOCCUS PNEUMONIAE IN CHILDREN UNDER 5 AT A HEALTHCARE FACILITY IN INDIA

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Background: Streptococcus pneumoniae is a major cause of childhood morbidity and mortality worldwide with increasing antimicrobial resistance. Low-income nations often report greater rates of S. pneumoniae carriage among healthy children under the age of five, with prevalence rates ranging from 20.0% to 93.4%. Data on pneumococci is limited in India and antimicrobial resistance pattern of Streptococcus pneumoniae is not regularly monitored.

Aims: This study aimed to assess nasopharyngeal carriage, antibiotic susceptibility pattern, and serotype distribution using conventional and molecular methods.

Methods: A cross-sectional study was conducted from October to December 2022. 154 children aged ≤ 5 years were included in the study using a systematic random sampling technique. Nasopharyngeal swab was collected using sterile cotton swab and cultured on blood agar supplemented with 5% gentamicin. Antimicrobial susceptibility testing was performed using Vitek 2 compact, serotyping by Quellung and confirmed by sequencing. Presence of macrolide resistance genes were evaluated from the sequencing data.

Results: The carriage rate of Streptococcus pneumoniae was 40/154 (25.9%) . The most common serotypes isolated were 19F (n=8), followed by 6A (n=6) and 14 (n=3). Other serotypes isolated were 35B, 15B, 11A, 10B, 13. High antimicrobial resistance against Tetracycline (45%) and Trimethoprim/sulfamethoxazole (52.5%) was observed. 47.5% of the isolates were macrolide resistant with the presence of erm(B) genes in 11 isolates and mef (A) in 19 isolates.

Conclusions: The nasopharyngeal carriage rate of S.pneumoniae in asymptomatic cases is considerably high. Continuous monitoring of prevalent serotypes and drug resistance pattern is necessary to understand the carriage pattern and the importance of vaccination in children.



EP051 / #452

Topic: AS03 Bacterial Infections: / AS03h Other bacterial infections

PNEUMONIA IN CHILDREN WITH INFLUENZA A IN DA NANG CITY, VIETNAM

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Background: Adults infected with influenza A often have symptoms such as sudden and continuous high fever; headache; limbs aching; cough; sore throat; tiredness, and loss of appetite. However, for children with similar conditions, symptoms can be different depending on their age.

Aims: This study aimed to investigate the individual and clinical characteristics and the usage of antibiotics in hospitalized children with pneumonia infected with influenza A.

Methods: The study monitored all hospitalized children with influenza A infection from January to March 2023 at a private hospital in Da Nang City, Vietnam.

Results: A total of 192 children with influenza A hospitalized during the study period. Their mean age was 6.91(\pm 3,263) years old, and the age that most infected with influenza A was above 5 years old (60.42%). There was no difference between genders. 38 children were diagnosed with pneumonia after influenza A infection, accounting for 19.8%. Regarding the time of diagnosis with pneumonia, 65.79% were diagnosed 5-7 days after the time of fever while 26.31% were diagnosed after 3-5 days of fever. All cases of pneumonia after influenza A infection were treated with oral antibiotics for 5 days; in particular, 68.42% used Azithromycin, 21.05% used Augmentin, and 10.52% used a combination of Augmentin and Azithromycin; no antiviral was used.

Conclusions: Pneumonia in patients with influenza A occurs 5-7 days after fever, accounting for 65.79%; such a period of fever usually disappears in the context of influenza A. The treatment method is similar to bacterial pneumonia and it is not necessary to use antiviral.



EP052 / #427

Topic: AS03 Bacterial Infections: / AS03i Pertussis

PERTUSSIS SEROPREVALENCE IN PERSONS OVER 50 YEARS OF AGE IN THE MOSCOW REGION AND MOSCOW

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Background: Pertussis infection is a deadly disease for children under the age of 1 year. Vaccination against pertussis under the National Immunization Schedule is limited to three doses of vaccination for children under one year of age and one revaccination at the age of one and a half years. Meanwhile, the epidemiological significance of the age cohort of persons over 50 years of age, which may be a potential source of pertussis infection for young children, remains poorly understood.

Aims: Assess seroprevalence for pertussis in individuals aged 50 years and older.

Methods: 144 blood sera of persons aged 50 years and older were studied. The study was conducted using the Savyon Diagnostics SeroPertussis™ IgG test system, as part of the surveillance.

Results: Our studies showed that out of 144 examined individuals, $59,7 \pm 4,1\%$ (86 people) were found to have specific immunity to pertussis. The presence of immunity to pertussis in more than half of the examined individuals indicates acquired post-infectious immunity to pertussis and active circulation of the infectious agent among residents of the Russian Federation. A high proportion of seronegative individuals of $40,3 \pm 4,1\%$ (58 people) indicates that in the future they can become a source of infection for children under one year old.

Conclusions: Thus, the recommendation for revaccination against pertussis of adults, regardless of their age, in families with newborns and unvaccinated children under 1 year of age, is reasonable and will help reduce the incidence of pertussis in the main risk group.

Topic: AS03 Bacterial Infections: / AS03i Pertussis

PREVALENCE OF BORDETELLA PERTUSSIS IN SOUTH AFRICAN CHILDREN, 2015-2023

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Background: Bordetella pertussis is a highly infectious bacterium responsible for causing whooping cough. Despite primary immunisation programs, B.pertussis continues to cause a significant burden of childhood disease in low-middle income countries.

Aims: Determine the prevalence of B.pertussis in South African children from 2015-2023.

Methods: Nasopharyngeal swabs from hospitalised paediatric patients living in South Africa were collected and screened for respiratory pathogens including B.pertussis.

Results: There was an outbreak of B.pertussis infections from January 2015 to December 2019 with an annual prevalence of 1.9% (n=39/2077) in 2015, 0.6% (n=12/2023) in 2016, 0.7% (n=18/2550) in 2017, 2.3% (n=51/2184) in 2018 and 0.7% (n=17/2379) in 2019. From 2020–2021 no B.pertussis was detected. Another outbreak of B.pertussis infections was observed from June 2022 with an average prevalence of 1.4% (n=22/1579) rapidly increasing to 3.5% (n=72/2064) for January-June 2023. For the 2022/2023 period, 56.7% (n=51/90) of patients were <2 months of age and an additional 30% (n=27/90) were <4 months of age.

Conclusions: The most recent spike in B.pertussis infections is noticeably greater than previous peaks with the majority of the cases detected during the 2022/2023 peak occurring in young infants. The primary immunisation schedule (administered at 6, 10 and 14 weeks, with a booster dose at 18 months) would not be capable of protecting these young infants. Alternative strategies including maternal pertussis immunisation (currently recommended by the World Health Organisation) need to be priorities in these at risk populations if we are to curb the substantial burden of pertussis disease.

Topic: AS03 Bacterial Infections: / AS03j Sepsis

RETROSPECTIVE INVESTIGATION OF SERRATIA SPECIES INFECTION IN A TERTIARY CARE CHILDREN'S HOSPITAL

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Background: The Serratia species belong to the family of Enterobacteriaceae and are one of the most important causes of invasive nosocomial infections.

Aims: The aim of our study is to contribute to the determination of ideal management by examining the clinical data and resistance patterns of children with Serratia spp. infection.

Methods: In this retrospective cohort study, we analyzed the demographic and clinical characteristics of pediatric inpatients with Serratia spp. infection (bacteremia or meningitis), who were admitted to Hacettepe University Hospitals between January 2008 to January 2021.

Results: The median age was 9 months (minimum-maximum=0-210). Half of the patients were under 12 months old. Serratia marcescens (n=51, 86.4%) was the most commonly detected type of Serratia species whereas non-marcescens species were detected more rarely (n=8, 13.5%). Among our patients, Serratia spp. bacteremia (57.6%) was the most common type of infection. The combination therapy with meropenem and amikacin (44.1%) was the most frequently used treatment option. Infection-related mortality was not seen in any of the patients.

Conclusions: The main findings of the present study were that Serratia spp. infections were commonly seen as nosocomial infections, caused bacteremia and the most commonly isolated agent was S. marcescens. In addition, this clinical study reveals that combined antibiotic therapy compatible with antibiogram improves clinical success and reduces mortality.



EP055 / #217

Topic: AS03 Bacterial Infections: / AS03j Sepsis

FEATURES OF SIRS IN NEWBORN WISTAR RATS OF DIFFERENT SEXES

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Background: SIRS is a clinical syndrome characterized by systemic inflammation.

Aims: The aim of our research was the estimation of morphological and immunological manifestation of SIRS in newborn Wistar rats

Methods: SIRS was modeled by intraperitoneal injection of LPS. 15 mg/kg were injected into male and female 2-day old Wistar rats (10-12 g). One day after the LPS injections we estimated the level of estradiol in the blood serum by ELISA. LPS level in the serum was estimated by a LAL-test. We studied the concentration of IL-2, IL-4, TNF- β , IFN- γ in the culture fluid of splenic cells. In the histological slices of the lungs the number of neutrophils in the intraalveolar septum was counted. The severity of pathological changes in the liver was estimated semiquantitatively in points. In order to estimate the severity of pathological liver changes we determined the activity of AST and ALT.

Results: Morphofunctional and immunological manifestations of SIRS in newborn rats varied depending on their sex. In males the number of neutrophils in the lungs was higher than that in females. The inflammatory response was more severe in the male lungs. But females have a more pronounced increase of endotoxin level than males. As for males, there is a marked reduction of estradiol levels in the serum.

Conclusions: According to the analysis of the newborn rats' cytokine profile, female Wistar rats have reduced levels of IL-2, IFN- γ , TNF- α , while males – increased IL-2 and TNF- α secretion. This indicates that the immune response of neonatal males and females with SIRS is multidirectional.

EP056 / #428

Topic: AS03 Bacterial Infections: / AS03j Sepsis

STAPHYLOCOCCUS AUREUS BLOODSTREAM INFECTION AT RED CROSS WAR MEMORIAL CHILDREN'S HOSPITAL (RCWMCH), CAPE TOWN, SOUTH AFRICA

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Red Cross Children's Hospital, Cape Town, Paediatric Infectious Diseases, Cape Town, South Africa

Background: Studies describing Staphylococcus aureus bloodstream infection (BSI) in children in Africa have reported variations in disease spectrum and trends over time.

Aims: To describe the clinical features and microbiology of S. aureus BSI at RCWMCH between 2018 and 2022 and compare key findings with a similar study conducted at RCWMCH between 2007 and 2011.

Methods: This retrospective study analysed data of children with S. aureus BSI using descriptive and inferential statistical methods. This abstract describes results for three years of the current study (2020-2022) and compares these findings with the previous study.

Results:

	2020-2022
Total number of episodes	141
Male:Female	82(68%):38(32%)
Median age (IQR) in months	21(5.2-88)
Weight-for-age z-score <-2	37/120(31%)
HIV status	
Infected	3/120(2.5%)
Exposed uninfected	19/120(15.8%)
Unexposed uninfected	78/120(65.0%)
Unknown	20/120(16.7%)
S. aureus BSI classification	
Community-acquired infection	85/120(70.8%)
Healthcare-associated infection	35/120(29.2%)
MSSA:MRSA	115(95.8%):5(4.2%)
Community-acquired MRSA	2/85(2.4%)
Healthcare-associated MRSA	3/35(8.6%)
Frequent primary diagnoses	
BSI without focus	27/120(22.5%)
Skin and soft tissue infection	26/120(21.7%)
Bone and joint infection	20/120(16.7%)
Pneumonia	17/120(14.2%)
Outcome	
28-day mortality	10/120(8.3%)
28-day mortality associated with MRSA	0/5(0%)

MSSA, methicillin-susceptible *Staphylococcus aureus*; MRSA, methicillin-resistant *Staphylococcus aureus*

Conclusions: The interim results suggest that there have been significant changes over time to the profile of *S. aureus* BSI at RCWMCH. These changes will be verified after the complete dataset is analysed.



EP057 / #256

Topic: AS03 Bacterial Infections: / AS03I Urinary tract infections

ANTIBIOTIC RESISTANCE PROFILE OF PATHOGEN ESCHERICHIA COLI IN CHILDREN WITH URINARY TRACT INFECTION

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Background: Urinary tract infection (UTI) in children is a serious condition that should be treated promptly and properly to prevent further complications. The most common causative agent of UTI is Escherichia coli (E.coli). However, studies regarding the E.coli resistance patterns have not been comprehensive, and further research is required.

Aims: This study aims to investigate the resistance profile of E.coli in pediatric cases of UTI.

Methods: In this cross-sectional study, the positive cultures for E.coli in patients admitted to the Dr. Sheikh Children's Hospital of Mashhad, Iran from Feb 2020 to Feb 2021 were assessed. The demographic factors including age and sex were excluded. The antibiogram was consulted to assess the sensitivity and resistance to different antibiotics.

Results: Of 160 children, 20 males and 140 females with a mean age of 24.00 ± 26.06 months, urinalysis showed that 22.5% were in the mild bacteriuria category, 21.3% in moderate bacteriuria, and 56.3% in the many bacteriuria categories. Regarding resistance, 4.5% of the patients were resistant to Amikacin, 6.5% to Nitrofurantoin, 20% to Ofloxacin, 35.1% to Ciprofloxacin, 50% to Gentamycin, 52.6% to Cefixime, 59.5% to Cefazolin, and 76.1% to Trimethoprim. Besides, the age and sex distribution, the number of bacteria, and WBC count in urinalysis had no significant difference between the susceptible and resistant cases.

Conclusions: The highest E.coli resistance was to Trimethoprim, Cefazolin, Cefixime, Gentamycin, and Ciprofloxacin. The lowest resistance was to Amikacin and nitrofurantoin. There was no significant difference in age and gender and also different severities of pyuria and bacteriuria between the susceptible and resistant cases.

Topic: *AS04 Common and neglected tropical Infections and parasitic infections*

INTEGRATED COMMUNITY BASED INTERVENTIONS FOR THE PREVENTION AND CONTROL OF NTDs: SYSTEMATIC REVIEW

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Background: Neglected tropical diseases (NTDs) disproportionately affect the poorest populations of the world

Aims: The objective was to analyze community-based interventions targeting the 14 major neglected tropical diseases

Methods: PRISMA methodology was followed, search, extractions, analysis, risk of bias assessment was done by two authors. Meta-analysis was conducted using Revman software. Integrated interventions were defined to include: co-implementation of two interventions (e.g. education and insecticide); incorporation of several activities into a single community campaign; incorporation of community-based campaigns into primary care.

Results: For trachoma, both integrated and non-integrated strategies were equally effective in reducing the incidence of active trachoma and chlamydia trachomatis in all ages. Similarly for chagas, both integrated and non-integrated strategies are equally effective against all outcomes except serology rates, which improved significantly through non-integrated interventions. For leprosy, non-integrated strategies significantly reduced the incidence [RR: 0.56, 95% CI: 0.40-0.78], while the changes were insignificant for integrated strategies. Both integrated [RR: 0.57, 95% CI: 0.47-0.71] and non-integrated interventions [RR: 0.42, 95% CI: 0.19-0.92] have shown significant reduction in house index and positive serostatus (integrated [RR: 0.34, 95% CI: 0.14-0.80], non-integrated [RR: 0.24, 95% CI: 0.18-0.33] for Dengue. Non-integrated interventions showed significant reduction in ovitrap index [RR: 0.63, 95% CI: 0.46-0.87] as compared to integrated interventions.

Conclusions: Community based interventions were effective against NTDs compared to routine care. There is lack of data for a few NTDs, which included buruli ulcer, human African trypanosomiasis, dracunculiasis, lymphatic filariasis and Onchocerciasis. A



EP059 / #487

Topic: *AS04 Common and neglected tropical Infections and parasitic infections*

BLASTOCYSTIS PREVALENCE IN CHILDREN: A REVIEW OF CASES IN TURKEY AND THE WORLD

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Background: Blastocystis is a globally distributed parasite with varying incidence in different geographical areas. The pleomorphic nature of the protozoan, due to its numerous subspecies, leads to a lack of understanding of its possible pathogenesis and confusion about its clinical significance.

Aims: Blastocystis incidence and subspecies relationship in children admitted to our hospital with gastrointestinal complaints were compared with epidemiological data from Turkey and the world.

Methods: All specimens received in the Parasitology laboratory of ESOGU Medical Faculty Hospital . During a 149-month period, the computer data of paediatric patients were retrospectively reviewed and evaluated comparatively with the epidemiological data of Blastocystis sp. and subspecies in paediatric patients in different geographies of Turkey and the world.

Results: Between 2010 and 2023, a total of 12,780 stool samples sent from the Department of Paediatrics for gastrointestinal complaints were examined in the Parasitology Laboratory of ESOGU Medical Faculty Hospital. The presence of Blastocystis hominis was microscopically identified in 632 samples (5.7%). The presence of Blastocystis was determined as 371 (2.9%) in males , 361 (2.8%) in females. The most frequently detected subtypes in positive cases were ST1, ST2 and ST3, respectively. Our findings are similar to epidemiological data from Turkey and different geographical regions of the world. The highest incidence in children was reported from Asian and Australian countries (3-54%).

Conclusions: Although some of the literatures describe the presence of Blastocystis as microbiota enrichment, there is also a dominant view that the presence of the parasite causes various autoimmune diseases and gastrointestinal complaints.

Topic: *AS04 Common and neglected tropical Infections and parasitic infections*

BUILDING AWARENESS ABOUT DENGUE FEVER THROUGH ACTIVITY-BASED LEARNING AMONGST SCHOOL CHILDREN

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Background: In 2022, young children were significantly affected by Dengue Fever in Karachi, Pakistan¹. We implemented activity-based learning amongst schoolchildren from low-resource settings to facilitate a foundational learning of the causes, symptoms and preventive measures of Dengue Fever. ¹"Dengue Outbreak in Pakistan 2022."Quality Medical andDental Education for better healthcare.<https://pami.org.pk/dengue-outbreak-in-pakistan-2022>

Aims: The primary aims were to increase awareness about Dengue Fever, test the effectiveness of activity-based learning and build capacity for health promotion amongst schoolchildren.

Methods: Between September-October 2022, we engaged 168 schoolchildren (ages 10-15 years) from 4 districts of Karachi. Interactive engagement was conducted through myth-busting activities, charades and discussion circles. Participants were encouraged to drive health-related behavioral change and wellness by embodying preventive measures for Dengue Fever, and disseminating their knowledge amongst families and communities. The effectiveness was measured through pre- and post-tests, and take-home activity forms.

Results: Of the 168 participants, 42% were girls, who scored higher on both pre and post-tests. On average, scores on the post-tests improved by 1.7 on a scale of 10 points, with an average score of 7.3 on the pre-test and 9 on the post-test. A paired t-test showed statistically significant difference between the pre and post-tests (p -value: <0.001). 76% participants indicated conducting health promotion to 19 individuals on average. A 2.7x increase in the fundamental understanding of the causes of Dengue was also



recorded.

	n	Pre-Test	Post-Test
Males	98	7.04	8.8
Females	70	7.5	9.3
Total	168	7.3	9
t(167)			14.5
p-value			<0.001
1) Average scores on pre and post tests, disaggregated by gender 2) Results of Paired t-test, indicating significant statistical difference			

Conclusions: Activity-based learning can be effective in increasing knowledge and awareness amongst children. Our findings suggest that such initiatives encourage children to effectively apply and disseminate their learnings amongst communities, driving overall wellbeing.

Topic: AS04 Common and neglected tropical Infections and parasitic infections

DIAGNOSTIC ACCURACY OF SIMPLE CLINICAL PARAMETERS PREDICTING NON SEVERE MALARIA IN PEDIATRIC PATIENTS

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Background: Pakistan is among the countries where malaria is prevalent and continues to be a major public health problem. The progression from simple fever to serious complications may occur very rapidly, so patient must be assessed and treated rapidly, with careful observations for early signs of systemic complications.

Aims: In this study we aim to determine the diagnostic accuracy of clinical parameters in order to establish the local perspective as there is paucity of local data. It will explore the sensitivity, specificity, positive and negative predictive value of common clinical parameters used for diagnosing malaria. Thereby, it would help in formulating an effective management plan.

Methods: This cross sectional study was conducted at Department of Paediatrics, Abbasi Shaheed Hospital, Karachi, from February 2018-August 2018 using Non probability consecutive sampling.

Results: Mean age in our study was 6.19 ± 3.82 years. 109 (51.7%) were male and 102 (48.3%) were female. Moreover out of 211 patients, sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of clinical parameters for diagnosing non-severe malaria by taking malarial parasite as gold standard was found to be 85.48%, 82.75%, 87.60%, 80% and 84.36% respectively.

Conclusions: Assessment of clinical parameters in the initial diagnostic workup of patients presenting with febrile illness, particularly those presenting with suspicion of malaria, is highly accurate in its exclusion and can provide reassurance to patients and physicians.



EP062 / #339

Topic: AS04 Common and neglected tropical Infections and parasitic infections

CASE REPORT: TOXOCARIASIS, INFECTION BY ADENOVIRUS 40/41 AND SARS COV-2

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Title of Case(s):: Toxocariasis, infection by adenovirus 40/41 and Sars Cov-2

Background:: Toxocariasis is caused by *Toxocara* species. Clinical presentation ranges from asymptomatic to severe organ injury, with two major manifestations, the visceral and the ocular, and mostly affects children aged 2-7 years. Humans become infected by ingesting soil containing parasitic eggs, from the feces of dogs and cats.

Case Presentation Summary:: The clinical case of a 4-year-old boy, who was admitted for acute diffuse abdominal pain, diarrhea, a whole-body rash with urticaria and fever, is presented. He was diagnosed with Covid-19 infection on admission. Because of abdominal distention and pain, radiography was performed which revealed incomplete ileus and adenovirus 40/41 was isolated by fecal film array. Laboratory examination revealed severe eosinophilia (# 8100), target organs were checked, with normal cardiac and abdominal ultrasound and funduscopy. Positive *Toxocara* antibodies were detected, so the boy began treatment consisting of albendazole. After 5 days of treatment, the eosinophil count was still elevated, so he took prednisolone for 4 days after which the eosinophils decreased. One month later, he was reexamined, the rash persisted and the eosinophil count was high, so he received albendazole for 5 days. The absolute count of eosinophils gradually normalized within 7 months.





Learning Points/Discussion: The importance of this clinical case is to suspect toxocariasis as a cause of severe persistent eosinophilia and the presence of symptoms in the skin and gastrointestinal tract.

Topic: AS04 Common and neglected tropical Infections and parasitic infections

REPURPOSED NITROXILINE AS A TREATMENT OF BALAMUTHIA MANDRILLARIS

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Title of Case(s):: Repurposed Nitroxiline as a Treatment of Balamuthia mandrillaris

Background:: Treatment protocols for Balamuthia amoebic encephalitis (BAE) are not uniform and mortality remains above 90%. Recently Nitroxoline was identified as having high in vitro amebicidal activity against Balamuthia mandrillaris.

Case Presentation Summary:: A 6-year-old male child presented with progressive leg weakness, paraesthesias, and urinary retention. MRI scanning demonstrated an isolated T11-L1 intramedullary spinal cord lesion. Surgical resection of the lesion was undertaken. Intraoperatively a well-delineated intramedullary mass was identified and resected in-toto. Histology demonstrated non-caseating granulomas. Real-time polymerase chain reaction confirmed Balamuthia mandrillaris. Following initial post-operative neurological improvement the child developed a progressive right sided hemiparesis. An MRI was repeated revealing new rim enhancing lesions in the pons and periventricular white matter. He was started on a regime of miltefosine, fluconazole, albendazole, co-trimoxazole, azithromycin and flucytosine. Following approval for use by the South African Health Products Regulatory Authority Nitroxoline was also started. Within 4 weeks of commencing the Nitroxoline the child displayed remarkable clinical recovery, with complete resolution of the hemiplegia and a significant improvement in lower limb power. Early follow MRI revealed partial resolution of the intracranial lesions. The child will undergo continued MRI surveillance for several months.

Learning Points/Discussion: In-vitro amebicidal activity of Nitroxoline was recently demonstrated and the first case report of its successful clinical use for BAE was published in 2023. Our case represents the second published report of survival following the use of Nitroxoline. The addition of Nitroxoline should be considered for the treatment of BAE.

EP064 / #230

Topic: AS04 Common and neglected tropical Infections and parasitic infections

AN UNCOMMON CAUSE OF EPILEPSY IN DEVELOPED COUNTRIES: NEUROCYSTICERCOSIS - A CASE REPORT

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Title of Case(s):: An uncommon cause of epilepsy in developed countries: neurocysticercosis - a case report

Background:: Neurocysticercosis (NCC), the most common parasitic disease of the human central nervous system, is caused by the larval stage of the pig tapeworm, *Taenia solium*. Endemic in most developing countries, represents an important cause of seizures in children in those countries, being the most common cause of epilepsy. In developed countries, the incidence of the disease has been increasing, probably related with the growing number of travelers and populations immigrating from endemic areas. This case report describes a rare cause of seizures in a child who lives in a developed country, the treatment of which remains a challenge for European health professionals, as they have little contact and thereby few experience in managing the disease.

Case Presentation Summary:: 7-year-old child, from Angola, who presented to the emergency department in post-seizure status. The diagnosis was NCC confirmed by MRI. Treatment with albendazole, praziquantel and prednisolone, complying with antiparasitic therapy for 14 days, subsequently weaning from corticosteroids, maintaining antiepileptic therapy. Evaluation at 12 months, with no impact on learning skills, maintaining antiepileptic therapy, with regular monitoring.

Learning Points/Discussion: This case highlights the need to consider a parasitic infection of the central nervous system, especially NCC, in a child that presents with afebrile seizures or with an onset of epilepsy especially if he had long-term stay in endemic regions, or he emigrated from an endemic area, although not recently. In case of relevant suspicion of NCC it needs neuroimaging examinations and immunological testing.

Topic: AS05 Diagnostic Microbiology: Molecular diagnostics, molecular imaging, point of care techniques

PILOT STUDY TO ASSESS FEASIBILITY OF GENEXPERT MTB/RIF PROFICIENCY TESTING FOR PEDIATRIC AND ADULT MTB SAMPLES: A CASE OF MALAWI

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Background: National Tuberculosis Reference laboratory (NTRL) in Malawi championed for the implementation of local proficiency testing (PT) for the first time after participating in several rounds of PT schemes with CDC and Supra National Reference Laboratory (SNRL), Uganda.

Aims: To assess the feasibility of full –scale implementation of PT schemes for the entire TB network across the country for external quality assessment purposes.

Methods: Firstly, we cultured TB isolates (H37RV strains, mono-resistant strains and non-tuberculous strains) using MGIT 960 machine. Then heat inactivation of the cultured isolates followed by viability analysis. Thereafter, pre-test and validation analysis were done to check if the test passed the quality controls (QC). Isolates which passed the QC were processed into DTS PT materials, prepacked with all the needed instructions and distributed to the participating laboratories. There were 35 sites that participated in pilot study.

Results: The validation of the PT panels passed with a mean CT value of 19.6 (CT range: 16-22) and an SD of +/-0.88 (recommended ≤ 3) with a CV of 4.5. Out of the 35 sites, 30 sites were eligible for the PT. Out of the 30 eligible facilities, 23 facilities passed with satisfactory scores (100%) while 7 facilities failed with an average unsatisfactory score of 47%. This resulted in 77% success rate.

Conclusions: The findings from this study have revealed that DTS PT materials that were prepared passed QC measures. This is a recommendable effort in a bid to improve the reliability of TB geneXpert testing for pediatric and adult sub populations in Malawi.

Topic: AS05 Diagnostic Microbiology: Molecular diagnostics, molecular imaging, point of care techniques

BREATH TESTS: CLINICAL APPLICATION IN RESPIRATORY TRACT INFECTIONS

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Background: Lower respiratory tract infections (LRTI) are responsible for more than 800.000 deaths per year in children younger than 5 years worldwide. Methods to diagnose the etiology of LRTI are limited. Metabolomic analysis of volatile organic compounds (VOCs) in exhaled breath is a promising non-invasive alternative to current methods to diagnose etiology of LRTI. In LRTI, different causative pathogens and host-pathogen interactions can change the composition of the VOCs found in exhaled breath, which provides a potential target for diagnosis.

Aims: To summarize the different breath analysis techniques available, the different infectious pulmonary conditions in which exhaled breath was analyzed and the challenges that come with breath research in children.

Methods: This study was set up as a systematic review, following the PRISMA statement for authors of systematic reviews. A literature search was conducted in PubMed, EMBASE and the Cochrane Library.

Results: Different breath analysis techniques have been investigated and applied in children and adults varying from eNose to mass spectrometry techniques. Various pathogens and pulmonary infectious conditions have been studied: *Pseudomonas aeruginosa*, pulmonary tuberculosis (PTB), ventilator-associated pneumonia, *Aspergillus fumigatus*, SARS-CoV-2 and viral versus bacterial infections. For PTB there is sufficient evidence to support the use of eNose as a screening tool with sensitivities and specificities ranging from 77-99% and 42-99% respectively. Results for the other conditions mentioned are also promising.

Conclusions: Breath research shows promise in diagnosing various infectious pulmonary conditions. It can be of value as a screening tool and time seems to be ready for larger scale validation studies.



EP067 / #866

Topic: AS06 *Emerging and Zoonotic Infections*

ASSESSMENT OF PRIMARY HEALTHCARE WORKERS LEVEL OF AWARENESS, KNOWLEDGE, AND RISK PERCEPTION OF MPOX DISEASE IN NIGERIA: A CROSS-SECTIONAL STUDY

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Background: Studies on mpox among primary healthcare workers are scarce in Nigeria despite increasing incidence of mpox disease between 2017-2022.

Aims: This study aimed to assess primary healthcare workers knowledge and perception of mpox in Nigeria.

Methods: We conducted a cross-sectional study among 305 eligible primary healthcare workers across Oyo, Lagos and Jigawa states in Nigeria. Knowledge of mpox was assessed across four domains: general knowledge; transmission; signs and symptoms; and prevention and treatment. A score of 1 was assigned for each correct response. Multivariate regression was used to explore factors associated with knowledge of mpox at 5% level of significance. Perception of mpox was assessed across 5 constructs from the health belief model, using 3-point Likert scales. Where applicable, Kruskal-Wallis and Mann-Whitney-U tests were used to assess factors associated with each construct

Results: Overall, 239 healthcare workers (78.4%) reported they were aware of mpox. The major source of information was radio/television (43.5%). Overall, healthcare workers had limited knowledge of mpox transmission, with <50% knowing that mpox can be transmitted through sharing of utensils with an infected person and 65.3% knew mpox transmission can occur through contact with an infected animal. The mean of overall knowledge scores was lower in Lagos ($p<0.001$). Perceived severity of mpox ($p<0.001$) and perceived barriers to adherence to its preventive strategies ($p<0.001$) were higher in Jigawa state.

Conclusions: Primary healthcare workers in the three states had lower knowledge of mpox transmission, and their perception of mpox varied by state – in line with the health system capacity and socioeconomic characteristics of their contexts.

Topic: AS06 *Emerging and Zoonotic Infections*

EPIDEMIOLOGICAL STUDY OF BRAZILIAN SPOTTED FEVER IN BRAZIL

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Background: Brazilian Spotted Fever is an infectious pathology caused by the bite of the star tick contaminated with the bacterium *Rickettsia rickettsii* that occurs throughout Brazil. It is a common disease in places that have infestations of ticks, the vector of the disease, such as in forested regions and that have wild or domestic animals that are the reservoirs of the disease cycle

Aims: The research is to observe the epidemiological characteristics of the disease in children up to 14 years in Brazil, sociodemographic characteristics, diagnostic methods and evolution.

Methods: The data obtained in the research came from the Notifiable Diseases Information System (SINAN). The survey was carried out between the years 2007 to 2020 by the cases reported throughout Brazil.

Results: The results generated until the year 2020, there were 375 reported cases in children of Brazilian Spotted Fever throughout Brazil. Among the analyzed regions, the most affected was the Southeast (84.26%), South (12.26%), Northeast (1.60%), Midwest (1.60%) and North (0.26%). Diagnostic criteria were 13 ignored, 313 laboratory and 49 clinical-epidemiological. The most affected ages 5 to 9 years (36.26%), the sex was male (60.53%) and the race was white (47.20%). The evolution of cases were cured (58.40%), deaths due to aggravation of the disease (32.80%), deaths from other causes (0.53%) and ignored (8.26%).

Conclusions: Among the sociodemographic characteristics, the most notified age was children aged 5 to 9 years, with men being the most affected and the brown race. Clinical-epidemiological diagnosis and prevention are the most effective ways to combat the disease.



EP069 / #695

Topic: AS06 Emerging and Zoonotic Infections

PEDIATRIC EPIDEMIOLOGICAL PROFILE OF ZIKA VIRUS IN BRAZIL

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Background: Zika is a disease caused by the bite of the *Aedes aegypti* mosquito. Occurs in tropical and subtropical regions, where the climate and environment are favorable for the mosquito.

Aims: The study analyzes epidemiology zika in children up to 14 years in Brazil, sociodemographic characteristics, diagnostic criteria and evolution.

Methods: The information provided for this research came from the Notifiable Diseases Information System (SINAN) and tabulated in a spreadsheet (excel). Among the variables analyzed were the distribution of cases notified by year, regions of Brazil, diagnostic methods and sociodemographic characteristics involving age, sex, race and the evolution of the disease. The analysis involves the years 2016 to 2021 under all cases reported in Brazil.

Results: Until 2021, 73,009 cases of zika in children were reported in Brazil. The most affected region Northeast (40.73%), Southeast (28.10%), Midwest (16.25%), North (12.67%) and South (2.22%). The diagnostic criteria, 21,284 ignored, 12,507 laboratory and 39,218 clinical-epidemiological. The most affected ages 10 to 14 years (32.26%), gender female (51.85%) and race brown (41.98%). The evolution cured (63.33%), deaths due to aggravation of the disease (0.050%), deaths from other causes (0.25%) and ignored (36.36%).

Conclusions: It was possible to conclude that the Northeast region of Brazil is most affected. Most affected children the ages of 10 to 14 years, women were the most affected and people of brown race. The diagnostic criteria clinical-epidemiological diagnosis continue to be more effective than laboratory ones, probably due to lack of investments and planning for public health in Brazil.



EP070 / #696

Topic: AS06 Emerging and Zoonotic Infections

EPIDEMIOLOGICAL PROFILE OF PEDIATRIC LEPTOSPIROSIS IN BRAZIL

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Background: Leptospirosis is an acute febrile infectious disease caused by the bacteria *Leptospira*. Places with poor basic sanitation are the most favorable for the disease cycle, as the main vector is the rat.

Aims: The study analyzes epidemiology of leptospirosis in Brazil in children up to 14 years old, sociodemographic characteristics, diagnostic criteria and evolution of cases.

Methods: The data obtained for the research were from the Notifiable Diseases Information System (SINAN). Among the determining variables are the year-by-year distribution of cases, regions of Brazil, sociodemographic characteristics such as age, sex and most proven race, diagnostic methods and case evolution. The years analyzed in the survey were from 2007 to 2022.

Results: Until 2022 4,918 notifications of leptospirosis in children in Brazil. The region predominance was the North (30.90%), South (25.57%), Southeast (24.19%), Northeast (18.30%) and Midwest (1.01%). The most affected ages 10 to 14 years (61.63%), men with (73.09%) and the race was brown (48.31%). The diagnostic methods 67 ignored cases, 4,126 laboratory and 725 clinical-epidemiological. The evolution of cases cured (87.90%), (3.21%) were deaths due to aggravation of the disease, deaths from other causes (0.52%) and ignored (8.35%).

Conclusions: It is concluded that the region with the most cases in children is the North. Children aged 10 to 14 years were the most affected, men being more affected and brown people. Diagnostic criteria generate more laboratory results. The evolution of reported cases, the vast majority evolved to cure, but leptospirosis can be fatal if not treated early.



EP071 / #698

Topic: AS06 *Emerging and Zoonotic Infections*

PEDIATRIC EPIDEMIOLOGICAL PROFILE OF DENGUE IN BRAZIL

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Background: Dengue is an arbovirus transmitted by the *Aedes aegypti* mosquito. Being common in tropical and subtropical regions that favor the proliferation of the mosquito.

Aims: The study analyzes epidemiology of dengue in Brazil, the most affected children, the diagnostic methods and evolution of the disease.

Methods: The data obtained for this research were obtained through the Notifiable Diseases Information System (SINAN) and tabulated in a spreadsheet (excel). The variables analyzed were the distribution of cases, regions of the country, diagnostic methods and sociodemographic characteristics and the evolution of the disease. All cases already notified in Brazil until 2022 were analyzed.

Results: Until 2022, 1,429,476 cases of dengue in children reported in Brazil. The region with the most number of cases was the Southeast with (43.89%), Northeast (24.53%), Midwest (18.62%), South (8.15%), North (4.79%). The diagnostic criteria, 281,288 ignored, 444,597 laboratory diagnoses, 678,752 clinical-epidemiological and 24,839 in investigation. The most affected ages 10 to 14 years (43,49%). Men with (52.20%). The race brown (35.89%). The evolution of cases cured (72.85%), deaths due to aggravation of the disease (0.030%), deaths from another cause (0.007%), deaths under investigation (0.010%) and ignored (27.09%).

Conclusions: It is concluded that the highest prevalence of dengue cases mainly in the Southeast region. Most affected children the ages of 10 to 14 years, brown race and men were more affected. The results of laboratory diagnoses are still less efficient than the clinical-epidemiological ones, and this is a reflection of low investments and mismanagement of Brazilian public health.

EP072 / #458

Topic: AS06 Emerging and Zoonotic Infections

CAT SCRATCH DISEASE (CSD) IN CHILDREN: A 27 MONTHS EXPERIENCE IN A SECONDARY HOSPITAL OF CENTRAL GREECE

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Title of Case(s):: CAT SCRATCH DISEASE (CSD) IN CHILDREN: A 27 MONTHS EXPERIENCE IN A SECONDARY HOSPITAL OF CENTRAL GREECE

Background:: Cat scratch disease (CSD), a common cause of regional lymphadenitis, has been linked to *Bartonella henselae* infection. Although rare, dissemination with hepatic, splenic and bone involvement has been documented. Infection of humans is caused via a cat scratch, bite or lick by cat and often by kittens. Although usually a self-limiting and benign disease, 10% of patients require hospitalization.

Case Presentation Summary:: We retrospectively analyzed the medical records of all patients with confirmed diagnosis of CSD from 1/1/2021-31/3/2023. 4 children were retrieved (3 girls, 1 boy) with a mean age of 10 years. Major complaints in admission: ¾ lymphadenopathy, ¼ fever. All patients reported a cat scratch or contact with kittens during the weeks prior to onset of illness. 4/4 had lymphadenitis: 50% submandibular, 25% inguinal, 25% auxiliary while 50% presented with a scar or papule and 25% with accompanying hepatosplenomegaly. Laboratory tests showed: mild elevations of inflammatory markers, normal transaminases, negative blood cultures, tuberculin test and tests for various viruses. Diagnosis established with indirect fluorescence assay (IFA): 25% had positive serology for IgG and IgM titer > 1/320 for *Bartonella Henselae* and 75% only IgG with high titer > 1/256 and increased titers in serial samples. 2/4 had systematic disease with low density lesions in liver or/and spleen and ¼ had osteolytic lesions of the vertebrae and ophthalmic manifestations (atrophy of retina, pale exudates), while none had cardiac or CNS manifestations. All patients took therapy (mean duration 5 weeks) with different schemes depending on the infected system. The clinical outcome was excellent in all patients.

Learning Points/Discussion: The clinician must have a high index of suspicion for the disease, obtain the correct history and look for the appropriate clinical clues to make a timely presumptive diagnosis of CSD. Treatment should be tailored individually.



EP073 / #623

Topic: AS06 Emerging and Zoonotic Infections

ANTIBODY RESPONSE TO SARS-COV-2 ORF8 DURING COVID-19 OUTBREAK IN THAILAND

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Background: Orf8 is one of the accessory proteins of SARS-CoV-2. Anti-Orf8 antibody might be an accurate serological marker of SARS-CoV-2 infection.

Aims: We aimed to characterize antibody response to SARS-CoV-2 Orf8 among patients during Delta and Omicron wave in Thailand.

Methods: A total of 62 and 329 convalescent sera of patients with SARS-CoV-2 infection (cases), diagnosed by positive nasopharyngeal RT-PCR test during July 2021 to October 2021 (Delta wave) and January 2022 to May 2022 (Omicron wave) at Thammasat University hospital were collected. A total 640 control sera were collected from patients of other diseases with negative RT-PCR tests, matched by the period of recruitment. Antibody response to the Orf8 of SARS-CoV-2 in all serum samples was determined by indirect ELISA. The OD values of all samples were compared to those of the calibrator and expressed as a ratio of sample to calibrator (S/C) signal. ROC curve analysis was used to determine the cut-off S/C value.

Results: IgG antibody levels to SARS-CoV-2 Orf8 from COVID-19 sera were not significantly differ from control sera ($p=0.275$). By ROC curve, the optimal S/C cut-off was at 0.101. By the cut-off S/C value, the sensitivity and specificity of the anti-Orf8 IgG ELISA for COVID-19 samples was 56.1% (95% CI: 49.2% to 62.8%) and 50.7% (95% CI: 46.8% to 54.6%), respectively. The mean of S/C between cases and controls was not significantly different ($p=0.427$).

Conclusions: The potential utility of anti-Orf8 IgG antibody testing is limited. It cannot distinguish between COVID-19 patients and controls during Delta and Omicron wave in Thailand.



EP074 / #646

Topic: AS08 Global Child Health

ACCEPTABILITY AND FEASIBILITY OF TUBERCULOSIS DIAGNOSTIC SAMPLE COLLECTION IN YOUNG CHILDREN PRESENTING WITH PRESUMPTIVE TUBERCULOSIS IN CAPE TOWN, SOUTH AFRICA

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Background: Due to diagnostic challenges in childhood tuberculosis (TB), the World Health Organization has recommended the use of non-sputum-based samples, including stool.

Aims: The study aimed to describe the feasibility and acceptability of TB diagnostic samples.

Methods: Design/Methods: In a prospective observational cohort study, we collected clinical data from children presenting with presumptive pulmonary tuberculosis (PTB). At enrolment, collection of TB diagnostics samples included respiratory samples, blood, urine and stool. Questionnaires on the acceptability and feasibility were collected from caregivers and healthcare workers. A social scientist observed the collection of samples and performed qualitative interviews with HCWs.

Results: We conducted 59 diagnostic and acceptability questionnaires. Sample collection was successful in 59% for urine, 36% for stool, 74% for blood and 72% for any respiratory sample. Overall, more than half of the caregivers felt that stool (86%), urine (75%), blood samples (67%) and respiratory samples (57%) were convenient for their children. We observed sample collection in 32 children. HCWs had specific challenges with collecting urine samples. Children of all ages were resistant when collecting respiratory samples. Children aged 7-12 years, HCWs faced difficulties with collecting stool samples. These children felt embarrassed providing stool samples due to increased self-awareness. HCWs found blood samples easiest to collect. Though blood sample collection was observed to cause more discomfort and pain.

Conclusions: Although urine and stool samples seem a good non-invasive alternative sample for TB diagnosis in children, remaining challenges hamper the feasibility and acceptability of these specimens, which will need to be considered for future studies.

EP075 / #300

Topic: AS08 Global Child Health

BURDEN OF PARATYPHOID FEVER IN THE CHILDREN OF A DEVELOPING COUNTRY:A RETROSPECTIVE ANALYSIS FROM THE YEARS 2012-2022

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Background:

Salmonella Typhi and Salmonella Paratyphi are human-adapted pathogens that cause enteric fever. A significant proportion of paratyphoid fever is also important as we don't have any vaccine yet for its prevention

Aims: Because of their eating habits, Punjabi people are more fond of eating street food outside their homes, hence are at more risk of developing enteric infections including paratyphoid fever.

Methods: Medical records of all children treated at Dayanand Medical College and Hospital, Ludhiana, Punjab between the years 2012 and 2022 who were diagnosed as paratyphoid fever based on their blood culture reports were reviewed. We studied their demographic data, clinical features, laboratory findings, treatment, vaccination status and outcome.

Results: Out of 42 children with blood cultures positive for salmonella paratyphi, 24 were boys and 18 girls with a ratio of 1.3:1. The youngest was 16 months of age. Majority of patients were in the age group of 5-10 years. Fever (100%), Vomiting (30.9%) and pain abdomen (21.4%) were the common symptoms. Hepatomegaly (85.7%), splenomegaly (57.1%), anemia (61.9%) were the common examination findings. The common laboratory abnormalities were thrombocytopenia (26.2%), raised liver enzymes (38.1%), raised lactate dehydrogenase (96.5%), elevated C-reactive proteins (82.3%). Widal test was done in 25 children, 10 (40%) showed a significantly raised titre. Among drug resistance patterns, 27 (64.3%) isolates were resistant to ciprofloxacin, all (100%) were resistant to aminoglycosides. All isolates of salmonella paratyphi A were sensitive to ceftriaxone, azithromycin, cefixime.

Conclusions: Our study shows that increasing cases of paratyphoid fever are contributing to the burden of enteric infections requiring hospitalization. We already have different vaccines for typhoid fever, it is time now to focus on developing a vaccine for paratyphoid fever also.



EP076 / #493

Topic: AS08 Global Child Health

MORTALITY ASSOCIATED WITH TUBERCULOSIS IN CHILDREN AGED 2 TO 59 MONTHS ADMITTED WITH SEVERE ACUTE MALNUTRITION AT TERTIARY HOSPITALS IN UGANDA AND ZAMBIA

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Background: Tuberculosis (TB) is frequent in children with severe acute malnutrition (SAM), and mortality tends to increase when the two illnesses co-occur.

Aims: We assessed mortality determinants associated with TB in children hospitalised with SAM.

Methods: From November 2019 to December 2021, we enrolled children aged <60 months hospitalized with SAM in Uganda and Zambia. They underwent clinical assessment, CRP, HIV testing, abdominal ultrasound, chest X-ray, Xpert MTB/RIF Ultra, and culture (respiratory and stool samples) for TB diagnosis and were followed-up for 6 months. Tuberculosis was defined using the 2015 standard case definition for childhood intra-thoracic TB. They received routine therapeutic feeding and IV antibiotics and TB treatment if diagnosed with TB. We assessed overall mortality and associated factors in children diagnosed with TB using Cox proportional hazard models.

Results: Of the 603 children enrolled, median age 15 months, 345 (57%) male, 65 (11%) HIV positive, 95 (20%) CRP >11.9mg/dl. 108 (18%) children were classified with TB including 51 (47.2%) with confirmed TB and of them 90 (83%) initiated TB treatment. Overall, 80 (13%) children died including 22 (28%) with a TB diagnosis (Log rank P-value=0.0140). Median time to death was 13 (IQR 3-31) days. In a multivariate analysis, the presence of respiratory distress at admission (hazard ratio 3.55; 95% CI 1.37– 9.14) was independently associated with mortality in children with TB.

Conclusions: Mortality was high in children hospitalized with SAM, especially when they had TB, supporting systematic and rapid TB detection in hospitalized children with SAM.



EP077 / #853

Topic: AS08 Global Child Health

MULTIDISCIPLINARY APPROACHES TO IMPROVE MATERNAL AND CHILD HEALTH IN LAMBARÉNÉ, GABON CENTRE DE SANTÉ MATERNELLE ET INFANTILE DE LAMBARÉNÉ (CENSAMATIL)

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Background: Gabon still has a high maternal and child mortality and up to 50% of pregnant women suffer from neglected tropical diseases (NTD), especially from helminth infections. Clinical studies usually lead to important results but implementing them in a country's cultural context can be challenging. Thus, there is a need to develop multidisciplinary concepts and studies that specifically aimed at effective implementation.

Aims: In order to improve the health of pregnant women, young mothers and their infants in Gabon, Central Africa, we built a multidisciplinary team, consisting of physicians and immunologists, but also working with scientists who have psychological and social-scientific background. We aim to analyze risk factors, risk behavior, public acceptance and to develop learning programs for the prevention of diseases in the area.

Methods: To this end, the CENSAMTIL platform was developed in January 2021 with the aim to evaluate scientific studies, implementing them in the cultural context, and developing long-term studies and programs that sustainably improve the health of mothers and children on site. This includes questionnaires as well as educational flyers to assess and improve knowledge concerning infectious diseases and the importance of vaccination among pregnant women visiting antenatal consultations (ANC).

Results: Additionally, we developed a program to digitally register and enroll pregnant women visiting the ANC to analyze all ANC visits and thereby possibly improving perinatal care and later post-partum follow-up care.

Conclusions: Various data and insights gained through these activities are important for building a robust platform for the future. This project is funded by Else Kröner-Fresenius-Stiftung (EKFS, 2019_HA.177)



EP078 / #232

Topic: AS08 Global Child Health

THE EFFECT OF SMS REMINDER ON IMPROVING ROUTINE CHILDHOOD IMMUNIZATION COVERAGE AND TIMELINESS: A CASE OF GURAGE ZONE, SNNPR, ETHIOPIA, A RANDOMIZED CONTROLLED TRIAL STUDY

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Background: The vaccination coverage in Ethiopia is still below the required level, contributing to measles outbreaks and deaths from vaccine-preventable illnesses. So, this necessitates developing a new and cost-effective strategy which effectively utilized to achieve better compliance with children's immunization schedules which ultimately enhances vaccination uptake and coverage.

Aims: The aim of this study was to assess the effect of SMS reminders on improving routine childhood immunization coverage and timeliness in Gurage zone, Ethiopia.

Methods: A two-arm, parallel, randomized controlled trial study was employed among 408 mother-infant pairs. mother-infant pairs were allocated to either the intervention group or the control group. Data were cleaned, coded, and entered into EpiData version 4.1 and exported to STATA statistical software for analysis. A two-sample proportion and log-binomial regression analysis test were used to compare the outcomes between the study groups. The statistical significance of variables was declared if the p-value ≤ 0.05

Results: 400 study participants were recruited, 200 for the intervention group and 200 for the control group. We have found that a higher proportion of infants in the intervention group received penta1 199 (99.5%) vs 191(95.5%), Penta 2, 192(96%) vs. 157 (78.5%), and Penta 3, 172(86%) vs 133 (66.5%) compared with the control group. At 14 weeks, 172 (86%) and 133 (66.5 %) risk ratio (RR) 1.29, 95% CI (1.15-1.45; $p < 0.001$) in the intervention and control groups received penta 3 vaccines.

Conclusions: Our study showed that use of SMS reminder system can improve immunization coverage, timeliness and strengthen the quality and effectiveness of an immunization program

EP079 / #688

Topic: AS08 Global Child Health

EARLY INFANT FEEDING PATTERNS IN CHILDREN PRESENTING WITH PRESUMPTIVE TB IN CAPE TOWN, SOUTH AFRICA

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Background: The World Health Organization(WHO)recommends exclusive breastfeeding for the first 6-months of life and continuing up to 2-years,with solids introduced at 6-months.Breastmilk is known to be associated with reduction in diarrhoeal and respiratory tract illnesses and reducing the risk of chronic diseases.

Aims: This study aimed to describe early feeding practices in a group of children presenting with presumptive pulmonary tuberculosis(PTB).

Methods: Data collection was nested in a prospective observational cohort study of children routinely presenting to a public hospital with respiratory symptoms presumptive PTB(Umoya study).SPSS software was used for analysis and descriptive analysis was used.

Results: From the first 100 children enrolled,43 were females with 76-children being <5 years.7-infants were HIV-positive,and 58 children were started on TB treatment (Table 1).Early feeding practices showed that 40(40%)were exclusively breastfed and 50 mixed fed(50%)(see table 2).Solids were started after 6-months in 58(58%)infants.In the HIV-positive group no mixed feeding occurred;breastfeeding stopped once solids were introduced.

Demographic variables	Variables	Frequency(n=100)
Gender	Male Female	57 43
Age-group	<1 year 1-2 years 3-5 years >5 years	23 38 15 24
HIV-status	Negative Positive	93 7



TB Cases(started treatment)		58
Unlikely TB		42

Feeding type variables	Frequency(n=100)
Exclusive Breastfeeding	69
Exclusive Bottle-feeding	12
Mixed-feeding	15
Unknown	4
Introduction of solids < 6-months >6-months Unknown	32 58 10

Conclusions: The findings indicate that caregivers in this population have been exposed to the WHO infant feeding guidelines, with infants living with HIV exclusively breastfeeding. Further investigations with larger sample should be studied to investigate the role of early feeding in growth and risk for TB.

Topic: AS08 Global Child Health

HEALTH BELIEFS AND HEALTH SEEKING BEHAVIOUR AMONG FAMILIES OF CHILDREN WITH A RESPIRATORY ILLNESS IN CAPE TOWN, SOUTH AFRICA: LESSONS LEARNT FROM THE COVID-19 PANDEMIC

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Background: Initial strategies to curb the COVID-19 pandemic resulted initially in a hard lockdown in South Africa, including restrictions in health care services and social interactions. Although children are less affected by severe COVID-19 disease, we speculate health seeking behaviour was affected.

Aims: This study aimed to describe the health beliefs and health seeking behaviour of families of a child with respiratory symptoms in the context of COVID-19.

Methods: Children 0-13-years presenting at Tygerberg Hospital, June 2020-November 2020, with respiratory symptoms(COVID-19 symptoms)were eligible for recruitment. Survey containing 12-questions covering perceptions of COVID-19,COVID-19 preventative practices and health seeking behaviour during the COVID-19 pandemic. A sub-sample was selected for in-depth interviews.

Results: Caregivers of 62 children were enrolled in study;median age of children was 7-months and 27(44%)female.A total of 15 families had a SARS-CoV-2 positive child& 47 families had a child with another respiratory illness.45 caregivers(73%)reported media was the most trustworthy source of information regarding COVID-19,with >80% being able to correctly identify non-pharmaceutical preventative measures.Caregivers opted to seek healthcare from a private doctor, some caregivers initially decided not to seek care, because either they felt child was not sick at all, 16(26%)or they felt child was not sick enough,11(17%).Only one caregiver reported being afraid of contracting COVID-19 at the health facility.In-depth-interviews were done with 20 caregivers.Knowledge changed preventative behaviours.Past experiences was listed as the reasons for selecting specific healthcare provider.Religious beliefs affected health seeking behaviours.

Conclusions: Healthcare seeking behaviour was affected by restrictions. For future pandemics it is important to consider these aspects when restrictions need to be implemented.



EP081 / #259

Topic: *AS09 Host-Pathogen Interactions*

MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN ADMITTED IN STEVE BIKO ACADEMIC HOSPITAL, PRETORIA, GAUTENG – A DESCRIPTIVE STUDY

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Background: MIS-C is a novel condition that emerged following the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS CoV-2) pandemic which began in December 2019. There is a paucity of literature on the epidemiology of this disease in South Africa.

Aims: This paper describes the presentation, clinical features, investigations, interventions, management plans and outcomes of children with MIS-C at Steve Biko Academic Hospital (SBAH).

Methods: It is an observational, cross sectional, descriptive analysis of patients admitted to SBAH with MIS-C from June 2020 to December 2021.

Results: Seven patients were excluded and 39 were included. Ages ranged from 36 days to 13 years old; of whom majority were male and African. HIV was the commonest comorbidity and fever was the commonest symptom; followed by diarrhoea and vomiting. Ninety percent of patients received echocardiograms of whom 1/3rd had coronary artery abnormalities. Neutrophilia was prevalent as was renal impairment. Lactate dehydrogenase (LDH) was markedly elevated, as were CRP and Ferritin values. All patients were swabbed for SARS-CoV-2; of whom 38.5% were positive. Only 25.6% were tested for SARS-CoV-2 antibodies of whom 40% were positive. Most patients required nasal prong oxygen support, however over a quarter of patients required ventilation. Antibiotics were almost universally prescribed followed by intravenous immunoglobulins and methylprednisolone.

Conclusions: MIS-C is a disease with potentially serious multisystemic effects however early detection and treatment is associated with improved outcomes. No single inflammatory marker is linked to a definitive diagnosis but raised LDH, ferritin, and inflammatory markers should raise clinical suspicion.



EP082 / #45

Topic: AS09 Host-Pathogen Interactions

CO-INFESTATION OF MALARIA AND INTESTINAL PARASITES AND ITS ASSOCIATION WITH ANAEMIA IN CHILDREN (0–10 YEARS) IN TIKO SUB-DIVISION, CAMEROON

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Background: Concomitant infections with malaria and intestinal parasitic infections (IPIs) is associated with anaemia in children (0-10years).

Aims: This study aimed at determining the prevalence of co-infestation with malaria and intestinal parasitic infections and also to determine its association with anemia in children 0-10years in Tiko, Cameroon.

Methods: A hospital based cross-sectional study was carried out whereby blood and stool samples were collected from 377 febrile children after their parents or guardian gave consent. Venous blood and stool samples were collected from all participants for the study. Blood was used to perform full blood count. Thick and thin blood films were prepared and stained with Giemsa for malaria parasite visualisation. The formal ether concentration technique was used to analyse stools. Pearson's Chi-square, Student T-test and other statistical analysis were performed. P-values less than 0.05 were considered significant.

Results: Of the 377 participants, 139(36.9%) were positive for malaria, 21(5.6%) had intestinal helminths, 8(2%) had coinfection and 79(21.0%) were anaemic. Malaria and anaemia were prevalent among the children and was significantly associated ($P = 0.025$). However, children in the different age groups showed no statistical significant difference ($p > 0.05$). Females were more infected with malaria 69 (37.3%) while males were more infected with IPIs 13 (7.0%) but there was no statistical association for both malaria and IPIs for both sexes ($p > 0.05$). There was a significant association between anaemia and parasitic co-infection children ($p < 0.001$).

Conclusions: Malaria and IPIs are prevalent in Tiko, Cameroon. They play a great role in anaemia condition especially in co-infection cases. More sensitisation and awareness campaigns are necessary in this area..

Topic: *AS10 Infections in the Immunocompromised Host and Transplant Patients*

THE HIGHS AND THE LOWS! MOTHER'S OWN MILK AND POSTNATAL CMV INFECTION IN VERY PRETERM INFANTS: A PROSPECTIVE COHORT STUDY FROM INDIA

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Background: Dynamics of infectious diseases are specific to socio-cultural-demographic circumstances. Selective reactivation of breast CMV-secretion during lactation is known. Very-preterm infants are essentially "immunocompromised", and at risk of acquiring symptomatic postnatal-CMV. Implications of CMV secretion in Mothers'-own-milk(MOM) and postnatal-CMV illness need to be studied in loco-regional settings.

Aims: The study was planned to analyse proportion of ≤ 32 weeks' gestation mothers who secrete CMV in breastmilk; in a low-middle-income-country.

Methods: This prospective cohort study was designed to analyse CMV-secretion in fresh MOM of ≤ 32 weeks. MOM was tested using quantitative-PCR. Fresh MOM was continued irrespective of results, given numerous benefits of breastmilk. Babies of those mothers who tested as CMV-secretors were tested at 4-6 weeks of postnatal-life by quantitative-PCR. Proportion of mothers who secreted CMV in MOM; clinical relevant infant details were studied.

Results: MOM of 60 mothers were analysed; 35(58.3%) were CMV-secretors in breastmilk. Thirty-two infants were tested at 4-6 weeks of life, 6(18.7%) tested CMV-positive. These infants consumed higher volumes of MOM before testing. Retinopathy Of Prematurity-requiring treatment, Broncho Pulmonary Dysplasia were significantly more in CMV-positive babies, they required longer durations of respiratory care and hospital stay. (Figures)



Table 1: Baseline characteristics (N=60)

Characteristic	Measure
Gestational age in weeks	29(26-30)
Median (IQR)	Range 23-32
Birth weight in grams	1100(870-1450)
Median(IQR)	Range (550-2010)
Female gender n(%)	30(50.9%)
GDM	29(50.9%)
Antenatal Steroid received n(%)	49(81.7%)
Magnesium sulfate antenatal n(%)	36(62.1%)
Chorioamnionitis n(%)	15(26.8)
Required extensive resuscitation at birth(%)	1(1.7)

Table 2: Clinical details of included infants

Clinical outcomes	Measure n(%)
Mortality	1(1.8)
Surfactant required	18(50)
IVH grade 3 or more	1(1.7)
PVL grade 2 or more	3(5.4)
ROP requiring therapy	6(10.9)
BPD	7(12.7)
NNEC stage 2 or more	4(7.2)
Sepsis like syndrome (culture negative)	9(15.5)
Culture positive sepsis	6(10.3)
Hepatitis	0
Unexplained thrombocytopenia	3(5.2%)
Unexplained neutropenia	3(5.3%)
Blood transfusion (RBC ^T) received	7(12.1)
Days of invasive ventilation	1(0,3)* Range 0-30
Days of non invasive ventilation	4(1,20)
Total days of respiratory supports	5.5(2-28)* Range 0-124)
Length of hospital stay in days	42(29-63)*

*Median (IQR)

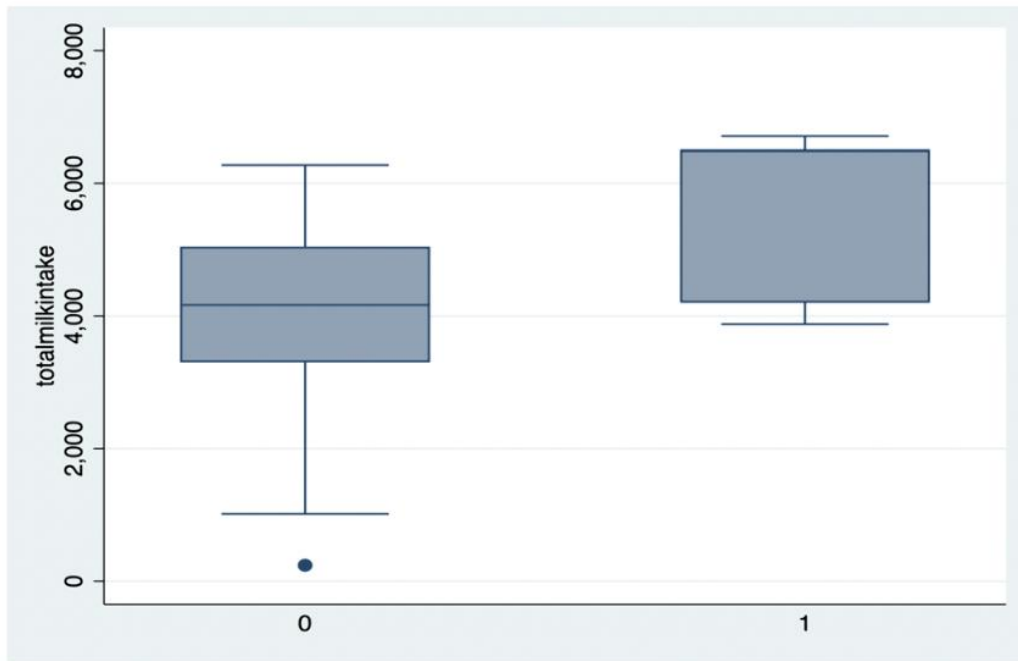


Figure 2: Box whisker plot: comparison of total MOM intake before testing;
0: CMV negative infants; 1: CMV positive infants

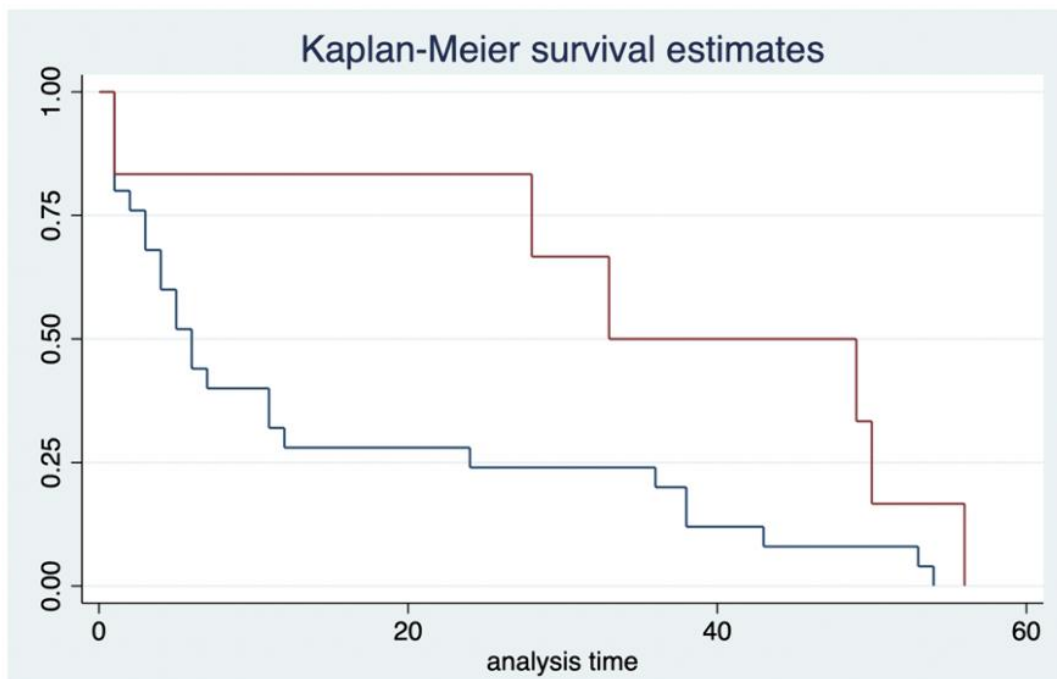


Figure 1: Time to event analysis: comparison of days of respiratory support. Red line: CMV positive infants; Blue line: CMV negative infants



Table 4: Comparison of clinical details and outcomes: CMV positive versus CMV negative infants

Clinical detail/outcome	CMV positive baby N=4	CMV negative baby N=32	RR (95% CI)	P value
Gestational age in weeks	26(26-26)*	29(27-30)	-	0.02
Birth weight in grams	825(770-940)*	1155(960-1450)	-	<0.002
MOM (breast milk) CMV level Copies/ml	4345(642-67660)*	2500(642-21670)	-	0.64
Volume of MOM consumed before testing in ml/kg	7140(5700-7830)*	3400(2700-3780)	-	0.0009
Total MOM consumed before testing in ml	6498(4200-6498)*	4165(3300-5046)	-	0.04
Total days of respiratory support	41(28-50)*	5.5(2-24)	-	0.05
Days of invasive respiratory support	4(1-7)*	0.5(0-2)	-	0.03
Length of hospital stay in days	80(80-90)*	44(30-61.5)	-	0.002
BPD	4	2	8.6(2.04-36.8)	0.005
Culture positive sepsis	1	3	1.4(0.18-11.5)	0.73
Sepsis like syndrome	3	1	13(1.6-104.2)	0.002
Blood transfusion need (RBCT)	2	1	8.6(0.93-80.6)	0.02
PVL grade 2 or more	1	0		0.03
NNEC stage 2 or more	1	1	4.1(0.31-57.5)	0.25
ROP requiring therapy	3	1	12(1.5-95.9)	0.003
Unexplained thrombocytopenia	1	0		0.03

*Median (IQR)

Conclusions: More than half of mothers who delivered very-preterm, secreted CMV in breastmilk. Transmission to infants were noted in 18.7%, much lesser than in other international reports. CMV-positive babies were at higher risk of clinically significant short term morbidities. Infants of MOM-CMV-secretors can have better surveillance for symptomatic illnesses. Information can guide healthcare-professionals to take precautions to prevent horizontal spread, contact precautions for pregnant staff in NICU can be instituted.

Topic: *AS10 Infections in the Immunocompromised Host and Transplant Patients*

MANAGEMENT OF MALIGNANT VARICELLA COMPLICATED BY ARDS IN A CHILD WITH ACUTE LEUKEMIA IN PICU

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Background: Pediatric ARDS, initially unclear, urged the use of adult criteria. PALICC's adaptation for children improved outcomes. We present a successful management of a child with T-cell leukemia and severe varicella-related ARDS following PALICC2 guidelines.

Aims: We aim to describe ARDS management in immunocompromised children

Methods: We present a case of malignant varicella related ARDS.

Results: A 7-year-old patient with a history of T-cell acute lymphoblastic leukemia, currently undergoing chemotherapy, had recent exposure to the Varicella Zoster Virus (VZV). She was admitted to the intensive care unit due to severe varicella infection, pronounced hepatic cytolysis, respiratory problems leading to Acute Respiratory Distress Syndrome (ARDS), and neurological deterioration. On admission, the patient appeared conscious but with unstable breathing status; polypnea and oxygen saturation of 84% and intercostal and suprasternal retractions, fever (102.6°F), and crusty lesions. Thoracic CT-scans confirmed infectious pleuropneumopathy, while arterial blood gas analysis revealed acidosis and hypoxia, consistent with moderate ARDS due to varicella pneumonia. Treatment involved intubation with specific ventilation settings, deep sedation, 48 hours of NMB, and 30 hours of prone positioning over 3 days. Goals included maintaining oxygen levels, pH, and allowing permissive hypercapnia. She also received immunoglobulins for 5 days; and Aciclovir for 21 days The patient improved, regained consciousness upon sedation cessation, was successfully extubated after 14 days, and transferred to the pediatric ward after 18 days.

Conclusions: Pediatric ARDS management starts with precise definition and severity classification. It includes protective ventilation, selective sedation, NMB, prone positioning, and goal-setting based on severity. Long-term monitoring is essential. Prioritizing pediatric-specific aspects improves outcomes

Topic: *AS10 Infections in the Immunocompromised Host and Transplant Patients*

MULTIPLE BRAIN LESIONS CAUSED BY CANDIDA ALBICANS IN ONCOLOGICAL PEDIATRIC PATIENT – CASE REPORT

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Title of Case(s):: MULTIPLE BRAIN LESIONS CAUSED BY CANDIDA ALBICANS IN ONCOLOGICAL PEDIATRIC PATIENT – CASE REPORT

Background:: Invasive fungal infections are rare in pediatrics; nevertheless, due to immunosuppression, are more common in oncologic patients. Brain abscesses are seldom, with indistinct clinical presentation, insufficient treatment guidelines and generally unfavorable outcomes.

Case Presentation Summary:: A 4-year-old girl was referred due to fever and mediastinal enlargement. Clinical and laboratory examination revealed a T-cell acute lymphoblastic leukemia (ALL), without central nervous system involvement. Three months after initial treatment, she presented with febrile neutropenia and developed acute respiratory failure in context of fungal septicemia by *Candida albicans*. Amphotericin B, Caspogfungin and broad-spectrum antibiotics were started. Brain MRI revealed multiple lesions (Figure 1). Voriconazole was added, with progressive clinical improvement and no neurological symptoms. Nine days later, she was readmitted for headache, nystagmus, and absence seizures. All exams (including MRI) were overlapping, Voriconazole was stopped for suspected toxicity and Levetiracetam was started. An MRI performed after one year revealed progression, and Flucytosine was started leading to disease regression (suspended months later for toxicity). After three years of Amphotericin B, the patient was asymptomatic. Latest MRI showed only one stable lesion with 1mm, therefore medication was stopped. The patient is now 7 years old, with normal physical and neurological



development.

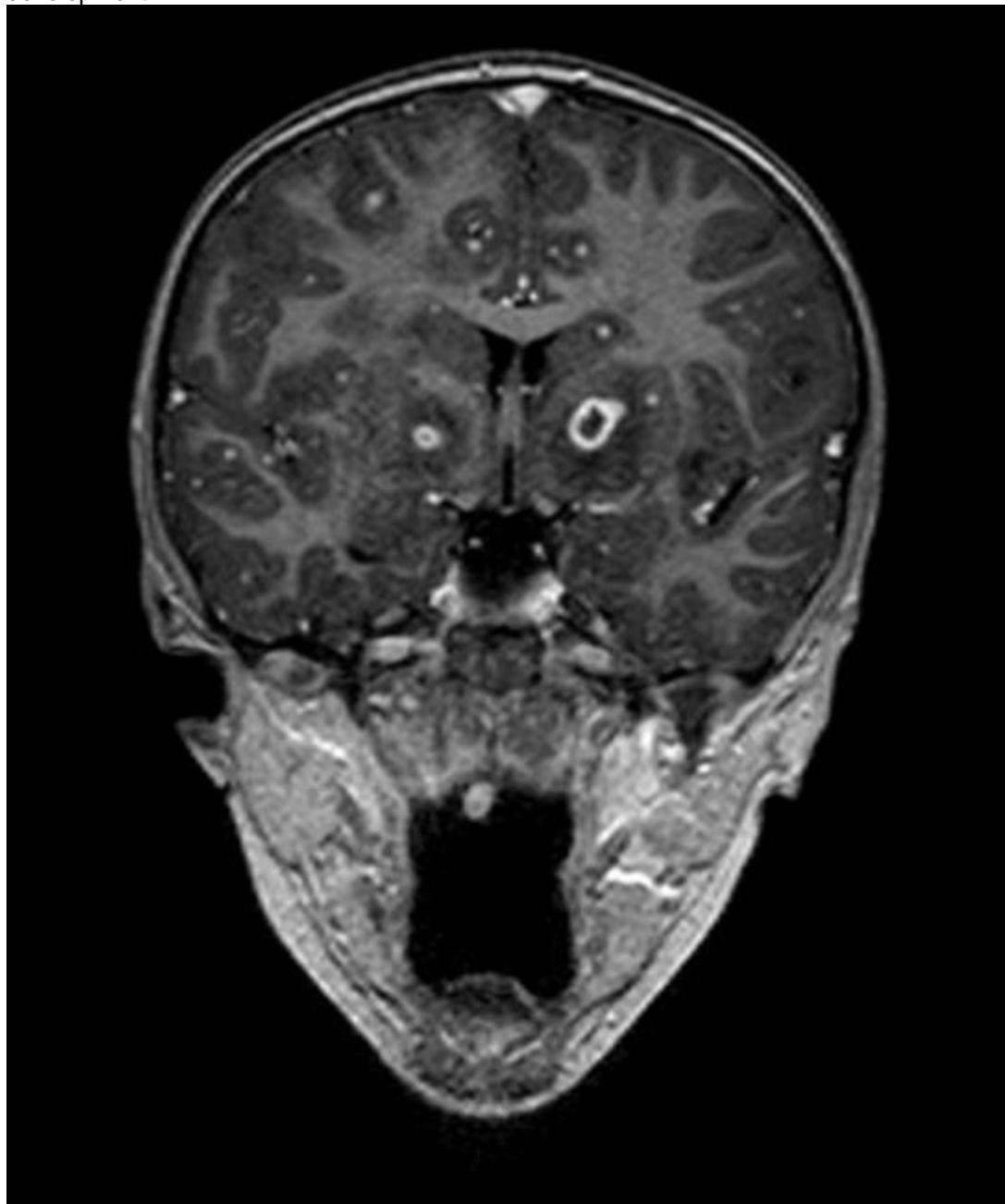


Figure 1: Lesions in both hemispheres, brainstem, cerebellum, and a 7mm cavitated lesion on left lenticular nucleus.

Learning Points/Discussion: Fungal brain abscesses are rare but very debilitating complications that can occur following chemotherapy in childhood ALL. Successful treatment of brain Candida infection



requires a high suspicion index, early diagnosis, and long-term treatment, with the endpoint determined by radiologic and clinical resolution.



EP086 / #274

Topic: *AS10 Infections in the Immunocompromised Host and Transplant Patients*

TIME TO ANTIBIOTIC ADMINISTRATION :A QUALITY-OF-CARE MEASURE IN PEDIATRIC ONCOLOGY PATIENTS WITH FEBRILE NEUTROPENIA

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Background: Time to antibiotics influences the outcome in febrile neutropenic children in terms of intensive care admissions and mortality. By assessing the time to antibiotics we can intervene by targeting the appropriate reasons.

Aims: To study the time to antibiotics in febrile neutropenia and its effect on the outcome.

Methods: This was a prospective observational study conducted over a period of fifteen months (March 2021 to May 2022) in the department of pediatrics, Dayanand Medical College and Hospital, Ludhiana. Data was collected from consenting patients meeting inclusion criteria after briefing them about the purpose of study.

Results: The most common cause of delay was non-availability of transport (55.2%) followed by NSAID use at home (25.9%) followed by unawareness of situation (10.3%) followed by hospital related issues (5.2%). • Out of all delays, inpatients were 19.8% whereas outpatients were 80.2%. • Delay before arrival to hospital was seen in 89.7% of cases and in 10.3% of cases after arrival to hospital.

Conclusions: The average duration of neutropenia was 6.31 days in patients with delay and 5.71 in non-delay. The duration of antibiotics was 7.11 days in patients with delay and 9.26 days in non-delay. The duration of hospital stay was 8.29 days in patients with delay and 10.34 days in non-delay.



EP087 / #699

Topic: *AS10 Infections in the Immunocompromised Host and Transplant Patients*

PERIPHERAL BLOOD MONONUCLEAR CELL TRANSPLANTATION FOR REFRACTORY CYTOMEGALOVIRUS DISEASE IN COMPLETE DIGEORGE SYNDROME

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Title of Case(s):: Peripheral blood mononuclear cell transplantation for refractory cytomegalovirus disease in complete DiGeorge syndrome

Background:: Complete DiGeorge syndrome (cDGS) refers to DGS with profound T cell deficiency. Thymic transplantation, hematopoietic stem cell transplantation (HSCT), and lymphocyte infusion are therapeutic options for immunodeficiency in cDGS. CD45RA⁺ depleted lymphocyte infusion has shown to reduce graft-versus-host disease (GvHD) risk. Here, we present an infant with cDGS who suffered from acquired cytomegalovirus (CMV) infection and treated with CD45RA⁺ depleted lymphocyte infusion.

Case Presentation Summary:: The girl was born with pulmonary atresia with ventricular septal defect. She was diagnosed with cDGS by the FISH study confirmed 22q11.2 deletion and profound T cell deficiency. At 1 month of age, CMV viremia was detected with a plasma viral load of 120,000 IU/ml. Ganciclovir was started to treat CMV infection. High titers of CMV viremia ensued (2,820,000 IU/mL) and CMV retinitis was complicated. CMV UL97 phosphotransferase M460V mutation conferring ganciclovir resistance emerged. To resolve refractory CMV infection, CD45RA⁺ depleted CMV-specific lymphocytes from her father were infused twice. Graft was administered without a conditioning regimen nor GvHD prophylaxis. Plasma CMV titer surged to >10,000,000 IU/mL. T-cell expansion and immune recovery were not achieved despite the second infusion. On day 200, E. meningoseptica sepsis was identified. Despite continuous renal replacement therapy and V-V extracorporeal membrane oxygenation, she expired on day 222.

Learning Points/Discussion: We share our experience of CD45RA⁺ depleted lymphocyte infusion for a cDGS infant with refractory CMV disease. Optimal management for the exhaustion of infused lymphocytes needs further investigation.



EP088 / #39

Topic: *AS10 Infections in the Immunocompromised Host and Transplant Patients*

MENDELIAN SUSCEPTIBILITY TO MYCOBACTERIAL DISEASES (MSMD) IN A 13-YEAR-OLD ETHIOPIAN GIRL WITH AUTOSOMAL DOMINANT INTERFERON GAMMA RECEPTOR 1(IFN- γ R1) DEFECT

Solomie Deribessa

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Title of Case(s):: Mendelian Susceptibility to Mycobacterial Diseases (MSMD) in a 13 year old Ethiopian girl with Autosomal Dominant Interferon Gamma Receptor 1(IFN- γ R1) defect: A clinical diagnostic and treatment challenge

Background:: Mendelian susceptibility to mycobacterial diseases (MSMD) is an inborn error of immunity categorized as defects in intrinsic and innate immunity. MSMD is characterized by vulnerability to less virulent mycobacteria, such as Bacillus CalmetteGuerin (BCG) vaccine strains, as well as environmental mycobacteria (EM). e denitive diagnosis is made by genetic analysis. ´ Treatments constitute antimycobacterial, interferon-gamma, surgery, and hematopoietic stem cell transplantation (HSCT), which is the only known curative treatment. e mortality rate ranges from 40% to 80% depending on the severity of the mutation

Case Presentation Summary:: Case: A 13-year-old female patient had multiple hospital visits since the age of 6 months. The most striking diagnosis was repeated mycobacterial infections. She had tuberculosis affecting lymph nodes, skin and soft tissue, bone and joints, lungs and epidural and para-spinal regions. She has taken all childhood vaccines, including BCG. She has been treated four times with first line and once with second line anti-tuberculosis drugs. Currently, she is on treatment for non-tuberculousmycobacteria and is receiving Interferon gamma.

Learning Points/Discussion: To the authors' knowledge, this is the first case report of Mendelian Susceptibility to Mycobacterial Diseases secondary to Interferon Gamma receptor 1(IFNG-R1) defect in Ethiopia. Although it has been immensely challenging, our multidisciplinary team has learned a lot from the clinical presentation, diagnosis and management of this child.



EP089 / #40

Topic: *AS10 Infections in the Immunocompromised Host and Transplant Patients*

A FIRST CASE REPORT OF DIGEORGE SYNDROME FROM ETHIOPIA

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Title of Case(s):: A First Case Report of DiGeorge Syndrome from Ethiopia Highlights Challenges in Identifying and Treating Children with Primary T-Cell Deficiencies in Low Resource Settings

Background:: Background. Cellular primary immunodeficiencies are rarely reported from Africa. DiGeorge syndrome is a commonly recognized form of a congenital T-cell deficiency. The disorder is characterized by hypoplastic or aplastic thymus, hypocalcemia, recurrent infections, and other associated congenital defects.

Case Presentation Summary:: We report an eleven-month-old infant presenting with recurrent chest and diarrheal infections, failure to thrive, lymphopenia, hypocalcemia, and hypoplastic thymus on imaging. A diagnosis of DiGeorge syndrome was confirmed after determining very low CD3 and CD4 levels

Learning Points/Discussion: We describe the first case report of an Ethiopian child with a congenital T-cell immunodeficiency. We have outlined essentials for diagnosis and management of cellular primary immunodeficiency disorders in low resource settings.



EP090 / #587

Topic: *AS10 Infections in the Immunocompromised Host and Transplant Patients*

PERSISTENT FEVER IN ADOLESCENT WITH EPIDERMOLYSIS BULLOSA

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Title of Case(s):: Persistent fever in an adolescent with epidermolysis bullosa

Background:: Dystrophic epidermolysis bullosa (DEB) is a genetic skin disorder characterized by severe skin and mucosal fragility. Patients with this pathology are more susceptible to infections.

Case Presentation Summary:: An 11-year-old female with severe DEB was admitted to emergency room with fever and prostration lasting for 15 days. She was on antibiotics for urinary tract infection (UTI) since day 8, and the long-term urinary catheter had been replaced, but fever persisted. Distinct bacteria had been isolated in different urine cultures (UC). Antibiotics were adjusted. A multiresistant *Pseudomonas Aeruginosa* was isolated in the last UC, so empiric treatment with ceftazidime and ciprofloxacin was started, with fever persistence. Investigation and antimicrobial therapy were enlarged, pointing to complicated UTI and MRSA infections, with no clinical improvement. Investigation included UC, with multiresistant *Pseudomonas Aeruginosa* and *Candida Albicans* being isolated; negative blood and skin cultures; negative MRSA and KPC search; and normal echocardiogram, thorax and head CT scans. An abdominopelvic CT scan showed hepatosplenomegaly. Positive IgM and IgG for cytomegalovirus (CMV) were known on day 24. CMV end-organ disease was excluded and on day 28 CMV's viremia was confirmed. Antimicrobials were suspended. On day 29, the patient presented fever resolution and progressive improvement of general state.

Learning Points/Discussion: The approach of persistent fever in patients with DEB can be extremely challenging. These are immunocompromised, have several gateways that can host resistant infectious agents, and contact frequently with health institutions. Diagnostic investigation must be exhaustive and treatment decisions must consider every possible fever cause, leading to complex decisions.



EP091 / #209

Topic: AS10 Infections in the Immunocompromised Host and Transplant Patients

NEW BLOOD SUBSTITUTE KRUNIDON FOR USE AT ACUTE BLOOD LOSS DECREASE RISK OF BACTERIAL INFECTION

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Background: Bacterial infection stemming from transfusion is a significant cause of morbidity and mortality. A new blood substitute Krunidon possess oxygen transfer function. Blood substitutes can completely replace or delay the use of donor blood components decreasing the risk of blood-transferring infection. The administration of the Krunidon contributes to the improvement of hemodynamic and parameters of blood transport function. In experiments Krunidon demonstrated a hemostimulating effect on the erythrocyte germ. In clinical trials Phase I the high level of safety was proved at health patients.

Aims: The aim of investigation was the estimation of effectiveness and safety of Krunidon in a phase II trial of patients with intraoperative acute high blood loss.

Methods: After the confirmation and estimation of intra-operative blood loss the participants were randomly assigned to three groups: two of them received a single intravenous injection of Krunidon (2 and 4 mg, n = 13 and n=14), the control group patients received the standard infusion therapy (n = 6). The primary endpoint was of the decreasing of the volume of following intravenous infusion of solution.

Results: The single use of Krunidon in both two doses reduced the signs of hemorrhagic anemia. The index of blood replacement (the ration of infusion and blood loss volumes) at high blood loss was statistically significantly lower in compare with control group.

Conclusions: The low doses of the Krunidone ^(R) can be used for the quick restoration of blood parameters and circulating blood volume with high level of safety. It reduce a risk of nfections for the patients.

Topic: *AS10 Infections in the Immunocompromised Host and Transplant Patients*

DISSEMINATED EXTRAPULMONARY TUBERCULOSIS WITH REACTIVE POLYARTHRITIS (PONCET'S DISEASE) DURING TREATMENT WITH USTEKINUMAB FOR PEDIATRIC CROHN'S DISEASE.

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Title of Case(s):: DISSEMINATED EXTRAPULMONARY TUBERCULOSIS WITH REACTIVE POLYARTHRITIS (PONCET'S DISEASE) DURING TREATMENT WITH USTEKINUMAB FOR PEDIATRIC CROHN'S DISEASE.

Background:: Patients with inflammatory bowel disease (IBD) exposed to anti-TNFs or combination therapies are at risk of tuberculosis (TB) reactivation and de novo mycobacterial infections. Newer biologics, such as ustekinumab, have been recently developed but their use has been approved only in adults.

Case Presentation Summary:: A 12-year-old Tunisian girl, vaccinated for BCG, with Crohn's Disease, and HLA-B27-negative sacroiliitis presented severe migratory polyarthritis. She was previously treated with ustekinumab due to secondary loss of response to anti-TNF therapy. IGRA and Mantoux reaction were negative on admission, and so were chest CT scan, and microscopy and PCR assays for M. Tuberculosis in gastric aspirate, urine, feces, and synovial fluid. Thirty days after seeding, blood and colonic biopsies cultures resulted positive for M. Tuberculosis complex, leading to a disseminated TB diagnosis with Poncet's Disease. TB treatment was administered for 24 months. No significant variations were identified by whole-exome sequencing with in silico gene panel analysis. No arthritis relapses occurred and subsequent microbiological investigations proved repeatedly negative.

Learning Points/Discussion: Despite adequate compliance with screening recommendations, there are still limitations to available TB screening tests. The relationship between IL12/23 antagonists and the risk of TB infection is controversial and limited data are available in children. The negativity of predisposing genetic factors for mycobacterial infections supports the major pathogenetic role of immunomodulation in the pathogenesis of infection. This underlines the importance of considering the risk of TB in IBD patients undergoing immunomodulatory treatment, including anti-IL12/23 therapy.

Topic: *AS10 Infections in the Immunocompromised Host and Transplant Patients*

TRACKING CHILDREN AND ADOLESCENTS LOST TO FOLLOW-UP IN AN HIV TREATMENT PROGRAMME: HOW EFFECTIVE IS THE USE OF CELLPHONES?

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Background: Cellphone tracking is a major modality for reengaging lost to follow-up(LTFU) HIV-positive clients. As at March 2023, >95% of Nigeria's population had mobile phones and teledensity was 118.5%. People living with HIV make up 1.4% of this population.

Aims: Success rate of cellphone calls in tracking LTFU children and adolescents living with HIV(CALHIV) at Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi, Nigeria over a 10-year period was ascertained.

Methods: Client is considered LTFU on failing to return to care within ≥ 3 consecutive months of scheduled appointment. Tracking was done using proforma similar to the standard tracking register. Clients/caregivers were called on provided cellphone numbers. If initial call wasn't successful, three further calls were made within 7 days. Calls were staggered with respect to time and day of the week.

Results: 268(90.2%) out of 297 LTFU who provided phone contact(s) and consented to phone calls were studied. Their mean age was 10.0 ± 6.73 years and male: female ratio was 1:1.3. They predominantly had their parent(s) as caregivers(82.5%) and resided ≥ 15 km from NAUTH(76.5%). About 83%(222/268) were on HAART of which 73.4% had last refill duration of ≥ 60 days. Their GSM network providers were MTN(83.6%), Airtel(8.6%), 9Mobile(3.4%) and Globacom(4.5%). Approximately 62%(165/268) of them couldn't be reached because their number was switched off(54.5%), not reachable(16.4%), didn't belong to purported owner(18.8%) or didn't exist(10.3%).

Conclusions: Success rate of cellphone tracking of LTFU CALHIV is low in study setting due to high rate of inability to connect provided cellphone numbers. Updating of cellphone number at regular intervals is recommended.



EP094 / #469

Topic: *AS10 Infections in the Immunocompromised Host and Transplant Patients*

TOWARDS EXHALED BREATH BASED MONITORING OF PULMONARY PSEUDOMONAS AERUGINOSA INFECTIONS AT HOME IN CHILDREN WITH CYSTIC FIBROSIS

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Background: *Pseudomonas aeruginosa* (PA) is an important respiratory pathogen for cystic fibrosis (CF). Routine monitoring of PA colonization is currently based on microbial sputum cultures, which frequently cannot be obtained in young CF patients. As alternative, exhaled volatile organic compounds (VOCs), such as 2-butanone and ethyl acetate (EA), are suggested to be indicative of PA colonization. We developed an easy to operate, tailorable chemical sensor based device (Pheasant) to detect 2-butanone and EA as a first step towards monitoring CF patients on PA infections at home.

Aims: To determine whether Pheasant is able to discriminate between spiked (2-butanone or EA) and non-spiked exhaled air samples.

Methods: Tidal breath based exhaled air samples (n=24) were collected using Nalophan bags, of which 16 samples were spiked with commonly exhaled concentrations of 2-butanone (n=8) and EA (n=8). All samples were immediately analyzed by Pheasant after sample preparation. Principal component analysis (PCA), combined with Kruskal-Wallis and Mann-Whitney U testing was performed to examine the differences in sensor deflections among the three samples groups, A: no VOC spiked, B: 2-butanone and C: EA.

Results: After PCA, significant separation of the three sample groups were found (Kruskal-Wallis: $p < 0.01$; Mann-Whitney U testing: A vs. B: $p = 0.01$ (PC1); A vs. C: $p < 0.01$; B vs. C: $p = 0.01$) [Figure

1].

Principal component analysis scatter plot of sensor deflections per sample group

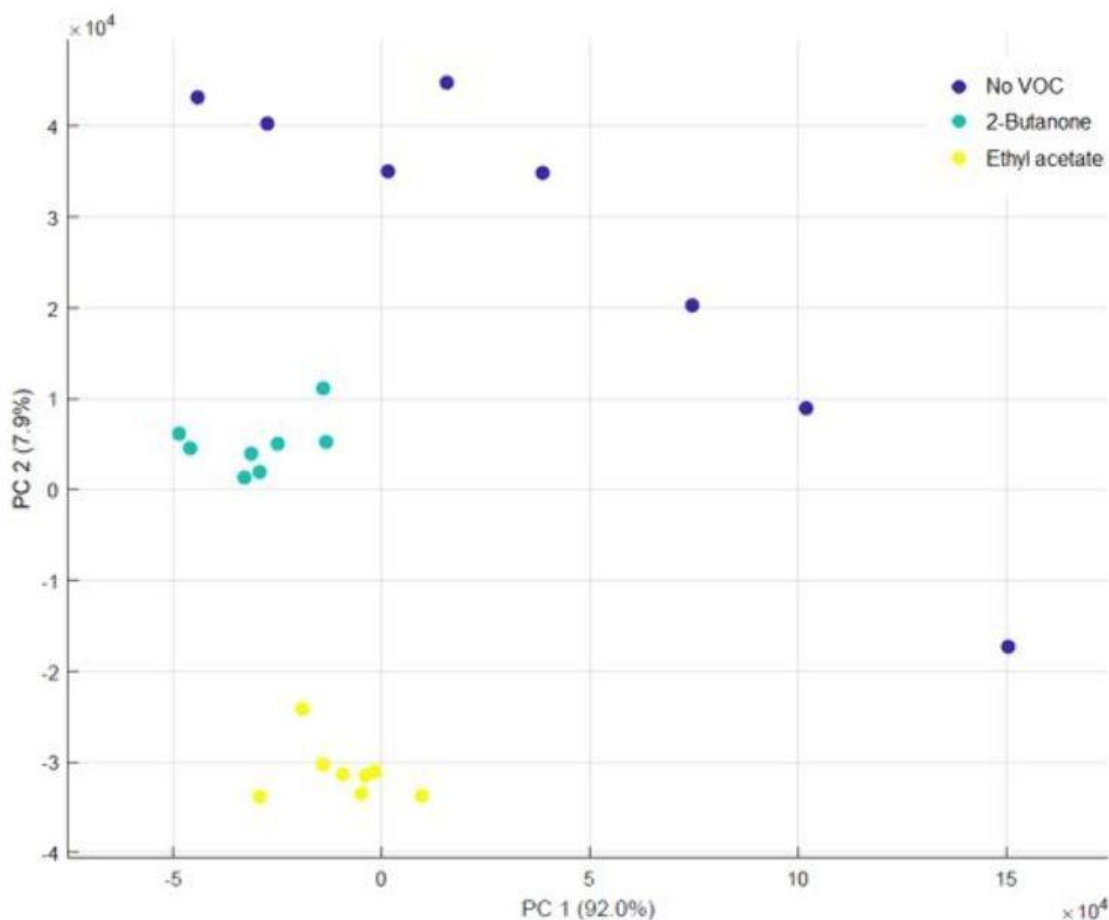


Figure 1: A scatter plot of the PCA results on the exhaled breath samples (n=24). Eight samples contained no added VOC (dark blue). Eight samples contained 2-butanone (turquoise) and eight samples contained ethyl acetate (yellow). PC: Principal Component

Conclusions: Pheasant is able to differentiate between exhaled breath samples containing and free from 2-butanone and EA, which may allow early monitoring of PA infections in patients with CF at home and thereby facilitating therapy and improving patient related outcomes.

Topic: *AS10 Infections in the Immunocompromised Host and Transplant Patients*

TUBERCULOSIS PROPHYLAXIS AND OUTCOMES OF HIGH-RISK PEDIATRIC PATIENTS UNDERGOING HEMATOPOIETIC STEM CELL TRANSPLANTATION

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Background: Tuberculosis (TB) infection is a rare but potentially fatal in hematopoietic stem cell transplantation (HSCT) recipients. TB prophylaxis guidelines or consensus for this population remain lacking.

Aims: We examined outcomes of high-risk pediatric HSCT recipients receiving TB prophylaxis.

Methods: 717 children underwent HSCT from 2018 to 2021 at Shenzhen Children's Hospital. Patients or their donors with positive TB antibody results were considered at high risk of developing post-HSCT TB infection. Chest radiography was performed to exclude active TB infection. High-risk patients received isoniazid with or without rifampicin for 3 months prior to HSCT and continuing for 3 months after HSCT for TB prophylaxis.

Results: 77 high-risk patients were identified, including 30 girls and 47 boys, and none of them had active TB infection. The median age of patients was 8 ± 3 years. Primary diseases included thalassemia (84%), primary immunodeficiencies (12%), severe aplastic anemia (3%), and adrenoleukodystrophy (1%). Grafts were from matched related (13%), matched unrelated (12%), cord blood (6%), and haploidentical donors (69%). Neutrophils and platelets engraftment occurred at 17 ± 4 days and 14 ± 6 days, respectively. Seven patients (9%) had suspected TB infection after HSCT by radiological findings and 3 of them had confirmed TB infection by nucleic acid-based examinations. All patients had good responses to anti-TB treatment. Three patients had III-IV acute graft-versus-host disease (4%). No other life-threatening complications or severe drug-related toxicities occurred. The 5-year overall and event-free survival of patients were 100% and $96.25\pm 2.12\%$, respectively.

Conclusions: TB prophylaxis is practical and safe for pediatric HSCT recipients who are at high-risk of TB infection.

Topic: AS11 Infectious Diseases in Natural and Social Disaster situations

PATHOGENS ASSOCIATED WITH DIARRHEA IN CHILDREN FROM EASTERN OF GABON

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Background: Diarrheal diseases are a major cause of morbidity and mortality in infants and young children, particularly in sub-Saharan countries. In Gabon, there are few data on the prevalence of diarrheal pathogens in children.

Aims: The aim of this study was to assess the prevalence of diarrheal pathogens in children with diarrhea in southeastern Gabon

Methods: Stool samples (n = 284) from Gabonese children 0 to 15 years of age with acute diarrhea were analyzed using polymerase chain reaction targeting 17 diarrheal pathogens.

Results: At least one pathogen was detected in 75.7% of samples (n = 215). Coinfection with multiple pathogens was observed in 44.7% of patients (n = 127). Diarrheagenic *Escherichia coli* was the most commonly detected pathogen (30.6%, n = 87), followed by adenovirus (26.4%, n = 75), rotavirus (16.9%, n = 48), *Shigella* sp. (16.5%, n = 47), *Giardia duodenalis* (14.4%, n = 41), norovirus GII (7.0%, n = 20), sapovirus (5.6%, n = 16), *Salmonella enterica* (4.9%, n = 14), astrovirus (4.6%, n = 13), *Campylobacter jejuni/coli* (4.6%, n = 13), bocavirus (2.8%, n = 8), and norovirus GI (2.8%, n = 8).

Conclusions: Our study provides useful information on the possible causes of diarrheal diseases affecting children in southeastern Gabon. A similar study with a control group of healthy children is needed to assess the burden of the disease attributed to each pathogen.



EP097 / #563

Topic: AS11 Infectious Diseases in Natural and Social Disaster situations

COMMUNITY CASE BASED MANAGEMENT- IMPACT OF ORAL REHYDRATION POINTS (ORP'S) IN ACUTE WATERY DIARRHOEA/ CHOLERA OUTBREAKS- LESSONS FROM A HIGH VOLUME ORP IN LILONGWE, MALAWI.

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Background: Malawi is experiencing a Cholera outbreak with 58,821 cases and 1761 deaths translating to a case fatality rate of 2.99% which is above the WHO recommended rate of 1%.

Aims: To curb the high CFR, oral rehydration points (ORP's) are being implemented in 17 districts.

Methods: Hotspot selection at district and community level is based on surveillance data. Training is conducted at community level for four (4) community volunteers who run the ORP's daily and 2 health surveillance assistants (HSA's) who are supervisors and community engagement sessions held with 2 local leaders (chiefs). Tumbwe 2 ORP was set up in area 36 a hotspot around Bwaila hospital (CTU) in Lilongwe district. Referral pathway identified-Underfive children, moderate as well as severe cases are to be referred to the CTU.

Results: For the period of 28th January-18th February 2023 (3 weeks from commencement) there were 47 paediatric cases (0- 19 years) translating to 43.12% (47/119) of all cases. 53.19% were male. 65.96% of cases had moderate dehydration. 25.53% of cases had mild dehydration with 2.13% with a missing status of dehydration (1 case). The impact of the ORP is measured by the referral of cases to the CTU. 53.19%(25/47) of cases were referred to the CTU. 40% (10/25) of referrals were underfive children. The community reported zero community deaths during this period.

Conclusions: The ORP demonstrated high impact due to the high rate of referrals. Oral rehydration points are essential to the response and form a cornerstone of community case based management in acute watery diarrhoea/ Cholera outbreaks.



EP098 / #378

Topic: *AS11 Infectious Diseases in Natural and Social Disaster situations*

PREVALENCE AND PROFILE OF ANXIETY AND DEPRESSION AMONG HEALTHCARE WORKERS HANDLING PEDIATRIC PATIENTS IN OSPITAL NG MAKATI DURING COVID-19 PANDEMIC

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Background: The World Health Organization declared the outbreak of a novel coronavirus a global health emergency on January 31, 2020. The frontline healthcare workers are experiencing heightened levels of stress, anxiety, and even insomnia greatly affecting their mental health aggravating the strain on our healthcare system. Early detection and targeted interventions are needed to enhance psychological wellbeing of healthcare workers and strengthen the healthcare systems' capacity during the pandemic.

Aims: To determine the prevalence and profile of healthcare workers handling Pediatric patients with anxiety and depression symptoms in Ospital ng Makati during the COVID-19 pandemic.

Methods: A cross-sectional analytic study. The questionnaires used in the study include a questionnaire on sociodemographic characteristics, Patient Health Questionnaire 9-item (PHQ-9), Generalized Anxiety Disorder 7-item (GAD-7) and Coronavirus Anxiety Scale (CAS) Questionnaire. Ordinal logistic regression analysis was used to determine the relationship between profile of healthcare workers to depressive and anxiety scores. Prevalence rates of high-level stress, anxiety symptoms requiring further evaluation, and depressive symptoms requiring treatment was expressed as proportions with 95% confidence intervals (CI).

Results: The study showed that 27.6% of the respondents screened positive for depression symptoms, 38.3% for anxiety symptoms and 4.3% for dysfunctional COVID-related anxiety. Depression and anxiety were significantly more prevalent in resident physicians than other healthcare workers.

Conclusions: The prevalence of anxiety and depression within healthcare workers handling pediatric patients in Ospital ng Makati during the COVID-19 pandemic are high specifically among nurses and residents. Appropriate psychological screening measures necessitate to improve mental health of healthcare workers is warranted.



EP099 / #636

Topic: AS12 Microbiome Studies

RESIDENTIAL AIRBORNE MYCOBIOME ASSOCIATED WITH SEVERE LOWER RESPIRATORY TRACT INFECTIONS IN CHILDREN

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Background: Microbial composition in residential environments likely contributes to the development of lower respiratory tract infections (LRTI) among children under-five, but the association is poorly understood.

Aims: We aimed to study the relationship between residential airborne dust mycobiome and severe LRTI among children in Ibadan, Nigeria.

Methods: Ninety-eight children under the age of five years hospitalized with LRTI were recruited and matched by age (± 3 months), sex, and geographical location to 99 community-based controls without LRTI. Participants' homes were visited and sampled over a 14-day period for airborne house dust using electrostatic dustfall collectors (EDC). In airborne dust samples, the composition of fungal communities was characterized by a meta-barcoding approach using amplicons targeting the internal-transcribed-spacer (ITS) region-1 of fungi. The associations between airborne dust mycobiome and severe childhood LRTI was evaluated using PERMANOVA and pair-wise differential abundance analysis.

Results: The median (IQR) age of participants was 5 (6) months with boy preponderance (60.1%). Airborne dust fungal relative abundance was dominated by Ascomycota in homes of cases (75%) and controls (64%). Beta-diversity analysis showed that fungal community composition (PERMANOVA $p < 0.001$, $R^2 = 0.028$, homogeneity $p = 0.003$) differed significantly between homes of cases and controls. Pair-wise differential abundance analysis using both DESeq2 and MaAsLin2 consistently identified the phylum Ascomycota abundance (BH adjusted $p < 0.001$) to be directly associated with childhood LRTI, while Basidiomycota (BH adjusted $p < 0.001$) was negatively associated with LRTI.

Conclusions: Our study suggests that early-life exposure to certain airborne fungal communities is associated with LRTI among children under the age of five years.



EP100 / #856

Topic: AS13 Miscellaneous

PEDIATRIC ACUTE RESPIRATORY DISTRESS SYNDROME DUE TO VIRAL PNEUMONIA INFECTION COMPLICATED WITH FUNGAL ENDOCARDITIS: A PEDIATRIC CASE

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Background: Respiratory syncytial virus(RSV)is a major cause of acute lower respiratory tract infection(ALRI)in infants and children younger than 5 yearsold,It can present as a variety of clinical syndromes ranging from simple bronchiolitis to hypoxemic pneumonia leading to severe acute respiratory distress syndrome(ARDS)often requiring extended stays in intensive care units,which exposes the patient to all types of fungal infections.

Aims: The objective ofthis case was to shedlight on the clinicalpresentation of severe forms ofRSVlower respiratory infections andthe specificity of fungal endocarditis as arare type of fungal infection especially in pediatric patients.

Methods: We report apediatric case of an8-month-old male patient,admitted to the pediatric intensive care unit at AbderrahimEl HARROUCHI hospital for severeARDS complicating aviral pneumonia,who later developed candida endocarditis.

Results: it's a case of an8-month male patient,with a past medical history of prematurity,admitted to the pediatric intensive care unit after a4-day stay in another structure for severeARDS due to bilateral viralpneumonia with molecular detection of theRSV which required mechanical ventilation.the initial examination and biological exams suggested secondary bacterial pneumonia and an IV-antibiotic therapy was initiated.During the hospitalization,the patient developed aBradyarrhythmia for which transthoracic-echocardiography wasperformed objectifying an oscillating intracardiacmass attached to the lateral wall of the right-atrium,two differentblood fungal cultures isolated acandida albicans aswell as the culture of the central catheter tip.Antifungal treatment and anticoagulantswere initiated withgood clinical improvement of thepatient.

Conclusions: The severity ofRSV infections is often associated with underlyingconditions predisposing tosevere clinical presentations with longstays in the intensive care unit,exposing patients tofungal infections.However fungal endocarditis remains arare condition,not easily diagnosed,and extremely challenging to manage especially in pediatricpatients.



EP101 / #640

Topic: AS13 Miscellaneous

DIAGNOSTIC VALUE OF RED BLOOD CELL DISTRIBUTION WIDTH (RDW) IN DETECTING MORTALITY AMONG CRITICALLY ILL PEDIATRIC PATIENT WITH SEPSIS: A META-ANALYSIS

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Background: Numerous biomarkers have been evaluated as diagnostic marker in septic patients, but most of them are difficult to perform and expensive. RDW is a part of complete blood count that is cheap and readily available.

Aims: The aim of this meta-analysis was to evaluate diagnostic value of RDW in detecting mortality among critically ill children with sepsis.

Methods: The online databases were systematically searched using the keywords red blood cell distribution width, sepsis and critically ill. The diagnostic capacity of the red cell distribution width (RDW) was determined using pooled accuracy, sensitivity, specificity, and likelihood ratios. A random-effects model was used to pool the data, and heterogeneity between studies was evaluated using the Q statistics test, I² statistics, and tau squared (τ^2) statistics. Publication bias was analyzed graphically and statistically.

Results: Seven studies with 1,214 critically – ill children were included in the meta-analysis. RDW has a pooled sensitivity of 69.9% (95% CI = 0.53-0.814) and a pooled specificity of 67.8% (95% CI =0.576-0.765) with a weak positive and negative likelihood ratio of 2.171 and 0.44 respectively and a fair diagnostic accuracy of 74%. Due to significant heterogeneity of 89% ($\chi^2=18.47$, $p=0.001$), meta-regression was performed and revealed that prevalence of mortality has a significant effect on both sensitivity and specificity of RDW.

Conclusions: Red cell distribution width can be used as screening tool to predict mortality in critically ill pediatric patient with sepsis.

Topic: AS13 Miscellaneous

THE EVOLUTION OF EFFUSION – 15 YEARS OF EXPERIENCE

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Background: A pleural effusion is an abnormal collection of fluid in the pleural space and may be caused by respiratory or non-respiratory diseases. Parapneumonic effusion is the most frequent cause of pleural effusion in children.

Aims: Characterize pleural effusions admitted in a secondary hospital.

Methods: A 15 year retrospective study was conducted regarding patients diagnosed with pleural effusion admitted in the pediatric department of a secondary hospital. Demographic, clinical and therapeutic features were accessed.

Results: A total of 77 pleural effusions were found. The median age of diagnosis was 6.8 years, 51% were girls. 51% were located on the left side, 9% bilateral. Fever was present in 88% of patients and cough in 77%. Other frequent symptoms were dyspnea and chest pain. Most effusions were diagnosed through x-ray and ultrasonography. 50% were ≥ 10 mm. Invasive procedures were conducted in 27% of the cases. The most frequent cause was parapneumonic effusion. The most commonly identified agents were *Streptococcus pneumoniae* and *Mycoplasma*. The most frequent empiric antibiotics were ceftriaxone and ampicillin. Other identified causes were pleural tuberculosis and peritonitis.

Conclusions: This analysis allowed our department to recognize the relevance of microbiological exams for identifying infectious agents - PCR tests being progressively more critical, as cultures of blood, sputum and pleural fluid are frequently negative. We also observed better use of antimicrobial agents over the years with the less frequent use of large-spectrum antibiotics as first-line therapy. Most pleural effusions are secondary to infectious processes and present a benign progression with adequate medical approach and proper use of invasive procedures.

Topic: AS13 *Miscellaneous*

KNOWLEDGE, ATTITUDE, AND PRACTICES TOWARDS COVID-19 AMONG PARENTS OF PEDIATRIC PATIENTS WITH CHRONIC DISEASES IN MAKATI, PHILIPPINES

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Background: COVID-19 was declared by the World Health Organization (WHO) as a pandemic last March 11, 2020. Due to the high transmissibility, COVID-19 has become a serious concern for people with chronic illnesses, especially children. Local data regarding the knowledge, attitude, and practices among parents of chronic pediatric patients are limited.

Aims: This study was conducted to identify the knowledge, attitude, and practices concerning COVID-19 among parents of pediatric patients with chronic diseases. Most studies in the world target the general population, but not the high-risk pediatric group. Thus, this study aimed to determine the Knowledge, Attitude, and Practices towards COVID-19 and associated factors of poor knowledge and practice among parents of chronic disease pediatric patients in Makati, Philippines.

Methods: A cross-sectional study was conducted among parents with children with chronic diseases consulting at the Emergency Room or admitted to Ospital ng Makati, a local government tertiary-level hospital that handles COVID-19 pediatric patients with chronic diseases, from July to September 2022.

Results: The majority of the study participants were knowledgeable about COVID-19. The mean COVID-19 knowledge score was 86.36% indicating a high level of knowledge. The mean score for attitude was 98.10%, indicating optimistic attitudes. The mean score for practices was 100% indicating good practices.

Conclusions: This study concludes that the participants had good knowledge, positive attitudes, and sufficient practice towards COVID-19. These findings are useful for officials to consider a comprehensive specific group target for health education programs for COVID-19 prevention and control.



EP104 / #77

Topic: AS13 Miscellaneous

FACTORS ASSOCIATED WITH READINESS TO START ANTIRETROVIRAL THERAPY (ART) AMONG YOUNG PEOPLE (15-24 YEARS) AT FOUR HIV CLINICS IN MULAGO HOSPITAL, UGANDA

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Background: Globally, the HIV burden continues to rise among young people despite the discovery of ART.

Aims: This study assessed demographic and psycho-social factors among young people associated with readiness to be initiated on ART.

Methods: A quantitative cross-sectional study was conducted among newly diagnosed HIV positive young people aged 15-24 years at 4 HIV clinics at Mulago Hospital. Readiness was measured as a self-report by the individual to the question, "How ready do you feel to start ART?"

Results: Of the 231 young people enrolled, the mean age (SD) was 20.7years (+/-2.8) and most were female (66.2%). Majority were very ready (53.3%) and very motivated (51.1%) to start ART. Higher treatment readiness was associated with being female (95% CI [5.62, 8.31], p=0.003), thinking that ART cures HIV (95% CI [0.43, 0.86], p=0.005), history of having unprotected sex (95% CI [0.79, 0.87], p<0.001), anticipating negative HIV results (95% CI [0.26, 0.88], p=0.017), internalized stigma (95% CI [0.83, 0.98], p=0.018) and knowledge of positive ART effects for others (95% CI [0.84, 0.93], p<0.001).

Conclusions: Understanding the underlying factors associated with ART readiness among young people can inform strategies to support and increase individuals' readiness to initiate ART and early engagement in care.



EP105 / #390

Topic: AS13 Miscellaneous

ACUTE APPENDICITIS: A RARE CASE BUT PROBABLE MANIFESTATION OF KAWASAKI DISEASE

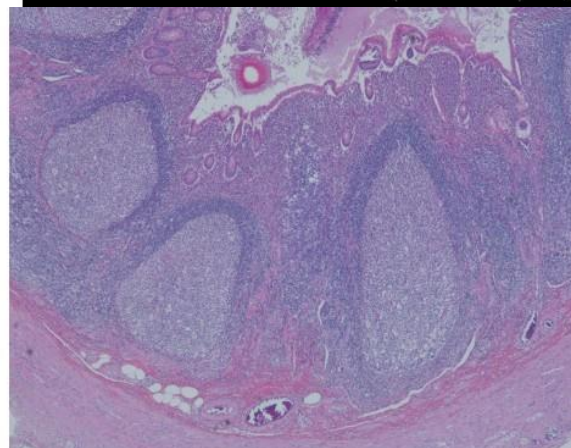
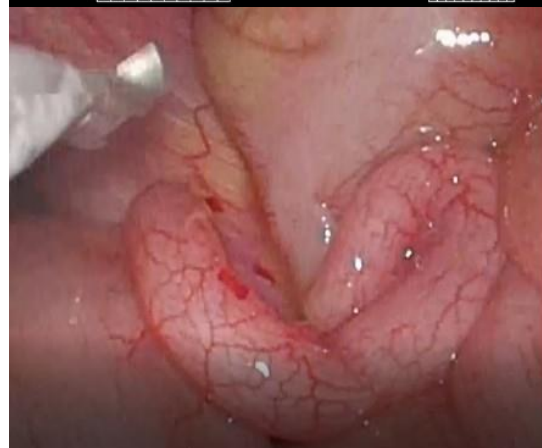
Ji Young Park, Jihye Cheon
Chung-Ang University Hospital, Pediatrics, Seoul, Korea, Republic of

Title of Case(s):: ACUTE APPENDICITIS: A RARE CASE BUT PROBABLE MANIFESTATION OF KAWASAKI DISEASE

Background:: Kawasaki disease(KD) is an acute systemic inflammatory disorder with a predilection for coronary arteries. Being the most common cause of acquired heart disease in children, timely diagnosis and intravenous immunoglobulin treatment are crucial. However, it is challenging for physicians to suspect KD if it presents with atypical manifestation.

Case Presentation

Summary::



We reported a 5-year-old boy with abdominal pain without fever. He was diagnosed with appendicitis through the abdominal computed tomography (finding: dilated appendix with thickening of appendix tip). He underwent the appendectomy on hospitalized day 1 and the laparoscopic finding was shown that the dilatation of whole bowel and tip of appendix and several enlarged lymph nodes with small amounts of inflammatory ascites in the ileocolic area. After appendectomy, fever was not subsided even though the

administration of antibiotics. He presented the nonexudative conjunctival injections and maculopapular skin rash and transferred to pediatric infectious division for prolonged fever on hospitalized day 7. He was finally diagnosed with atypical KD on hospitalized day 10 and successfully recovered after intravenous immunoglobulin treatment. After discharge, the final pathologic findings were reported to reactive follicular hyperplasia and serositis of appendix.

Learning Points/Discussion: Through literatures' review, there were 21 cases of appendicitis associated with KD. The mean age was 5.3 years old and higher proportions of incomplete KD and coronary artery complication were shown. In conclusion, appendicitis could be a rare complication of KD, so multidisciplinary cooperation and early recognition of atypical KD are essential for timely diagnosis.

Topic: AS13 Miscellaneous

LUNG MICROBIOME CHANGES IN PATIENTS WITH CYSTIC FIBROSIS AFTER A COMMENCEMENT OF IMMUNOMODULATORS, A SINGLE CENTRE RETROSPECTIVE REVIEW.

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Background: Respiratory tract infections are leading cause in mortality and morbidity in cystic fibrosis (CF) patients. Recent advances of immunomodulators have re-oriented the focus of CF management by addressing the cause and have been proven to reduce exacerbations.

Aims: This review aims to retrospectively explore the impact of immunomodulators on courses of antibiotics and microbiological growth in CF patients. Besides that it also analyses nutritional status and a lung function.

Methods: All CF patients commenced on any immunomodulator at least 15 months before start of review date (3/11/22) were included. The data were collected from patients' notes scanned to online portals. Pre-determined outcomes were: lung microbiome (positive cough swab results, oral and intravenous antibiotics usage), spirometry results and nutritional parameters.

Results: Total of 13 patients (5 females, 8 males) were reviewed with the median age of 9.8 (4.3-16.2) years. The median duration of therapy was 28.1(21.1-71.2) months. Orkambi was the commonest immunomodulator therapy, 8(61%). The commonest pre therapy growth on cough swabs was Candida species (n=13) and Pseudomonas (n=5). Comparing pre and post immunomodulator period showed improvement in median courses of antibiotic treatment of oral from 3(1-8) to 2 (0-8), and intravenous from 1(0-5) to 0(0-5). The median number of positive cough swabs however increased from 1(0-3) to 2 (0-5).

Conclusions: The increase in positive cough swabs could be attributed to the small nature of the study and sample size. A wider scale regional review would help quantify positive impact of immunomodulators on lung microbiome.

Topic: AS14 Public Health and Epidemiology: / AS14c Healthcare-associated infections

SEROPOSITIVITY OF CONGENITAL TOXOPLASMOSIS IN TURKEY, COMPARISON OF RESULTS WITH WORLD LITERATURES

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Background: Toxoplasmosis is an opportunistic protozoan disease caused by *Toxoplasma gondii* (T. gondii) infection. Morbidity and mortality are high in neonates and immunocompromised patients.

Aims: Data from newborn and childhood are generally scarce. Anti *Toxoplasma gondii* antibody results in infants born with congenital risk in our laboratory in the last five years were evaluated together with similar studies conducted in Turkey and in the world.

Methods: Anti Toxo ELISA IgG/IgM and avidity test results were evaluated in newborn sera sent to ESOGU Medical Faculty Microbiology laboratory with a preliminary diagnosis of congenital Toxoplasmosis between 2018-2022. Data on congenital toxoplasmosis performed in Turkey and in the world were searched in PubMed and Google scholar data.

Results: Toxoplasmosis during pregnancy can cause congenital toxoplasmosis with a rate of 1-30%. In case of maternal infection, fetal infection should be investigated. Intracranial sequelae are mostly reported despite treatment. Seroprevalence in women with seroprevalence is between 10-30% in Turkey and Europe. In the USA, it has been reported to be 01.5 per cent. It is estimated that transmission is higher in rural areas, but there are not sufficient data. According to the National Microbiology Standards in Turkey, if *Toxoplasma* IgG and/or IgM positivity is detected, it is recommended to repeat the tests at 2-3 week intervals and to utilise avidity, SFDT and molecular methods.

Conclusions: Although the rates have decreased in the USA and Europe thanks to effective control strategies in recent years, it is still an important in developing countries.



EP108 / #557

Topic: AS14 Public Health and Epidemiology: / AS14c Healthcare-associated infections

EVALUATING THE INFLUENCE OF HEMOGLOBIN GENOTYPE AND NUTRITIONAL STATUS ON MALARIA PREVALENCE AMONG UNDER-5 CHILDREN WITH FEVER: A HOSPITAL-BASED CROSS-SECTIONAL STUDY IN KANO, NIGERIA

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Background: Malaria remains a significant global health concern, affecting vulnerable populations particularly in malaria endemic regions.

Aims: We evaluate the influence of nutritional status and hemoglobinopathies on prevalence of malaria amongst children presenting with fever at tertiary health facilities in Kano State Nigeria, the second most populous state in the country.

Methods: As part of a study evaluating mobile-technology options for improving the care of children with sickle-cell-disease, we enrolled under-5 children (n=1534) presenting with fever. Children were tested for Malaria by malaria microscopy. Hemoglobin genotype was assessed using HPLC platform, malnutrition was evaluated with bmi-for-age using the WHO-Anthro.

Results: The median age of all 1,534 enrolled children was 17 months (interquartile range: 9-27), of which 54.3% were males. Distribution of haemoglobin genotype categories were 70.8% normal (Hb AA), 27% had sickle cell traits (AS/AC/SC), and 2.2% had sickle cell disease (Hb SS). Overall, prevalence of malaria was 4.3%. Stratified by haemoglobin genotype, prevalence of malaria was 3.9% in Hb AA, 3.1% in Sickle cell trait and none (0%) in Hb SS. Overall, prevalence of malnutrition was 21.8%. Malnourished children were less likely than well-nourished children to have malaria, even after adjusting for the effect of Hemoglobin genotype (AOR: 1.07, 95% CI: 0.29-1.34).

Conclusions: Despite the modest differences between the groups, our findings suggest a slightly higher likelihood of malaria among children with the Hb AA genotype and that malnutrition may be protective against malaria. Importantly, our results also indicate the need for wider evaluation of non-malaria causes of illness in febrile children in these settings.

EP109 / #671

Topic: AS14 Public Health and Epidemiology: / AS14c Healthcare-associated infections

EPIDEMIOLOGICAL STUDY OF CONGENITAL SYPHILIS IN BRAZIL

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Background: Syphilis is a sexually transmitted infection caused by the bacterium *Treponema pallidum*. Its transmission occurs sexually or vertically, being called congenital syphilis. In congenital syphilis, premature birth or fetal malformation of the baby may occur.

Aims: The study analyzes epidemiology of congenital syphilis in children from 2007 to 2021.

Methods: Data was obtained through the Notifiable Diseases Information System (SINAN). The variables analyzed were the cases reported in babies younger than one year of age per year of diagnosis, the percentage distribution by age of notified children, the cases of congenital syphilis according to the mother's age per year of diagnosis and and the evolution of the disease. All reported cases were from 2007 to 2021 in Brazil.

Results: Comparative data from 2007 have 5,398 notifications, in 2021 have 11,321 notifications. Diagnostic confirmation occurred in the first 6 days of life (95.28%). Mothers with age 20 to 29 years (53.33%) and 15 to 19 years (22.45%). The evolution was alive (93.06%), deaths due to aggravation of the disease (1.82%), deaths from another cause (0,83%) and ignored (4.28%).

Conclusions: It was observed that the diagnosis over the years remains effective and early in babies, in the first 6 days of life. Regarding the age of mothers with syphilis, there was a predominance in young adults and, in sequence, in adolescents. The increase in cases in these young women is a reflection of the lack of care during the sexual act on the part of these women



EP110 / #200

Topic: AS14 Public Health and Epidemiology: / AS14c Healthcare-associated infections

MATERNAL GUT DYSBIOSIS MAY CAUSE NEONATAL SEPSIS IN OFFSPRING

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Background: Sepsis is one of the leading causes of mortality and morbidity among neonates. The infection may be acquired postnatally from environment. The fetus may be infected before the birth still in utero. The source of infection may be the maternal pathobiome.

Aims: The estimation of the possibility of the development of neonatal sepsis of the newborn at the model of antibiotic-induced maternal gut dysbiosis of the late phase of the pregnancy.

Methods: This study was performed in accordance with the National standards of the RF. 19 white outbreed SPF mice (16 female, 3 male) were used . Pregnancy of mice was achieved by the standard method . Gut dysbiosis was induced by the oral use of cephalosporin. After the birth all mice and their offspring were kept during 1 month. The samples of lungs, and other organs were used for bacterial and morphological study.

Results: After the antibiotic use mothers' microbiome structure was typical for dysbiosis. St.aureus and Klebsiella pneumonia were found in offspring's lungs, liver, lymph nodes. The foci of interstitial pneumonia were found in their lungs. Inflammatory was found in lymphatic nodes, thymus and spleen.

Conclusions: The cephalosporin antibiotics use by a pregnant mother in the last trimester of pregnancy can lead to an increase of the translocation of opportunistic bacteria into the organs (liver, lungs, lymph nodes) of the fetus and the formation of foci of infection in them. Under certain conditions (compromised immune system, premature birth, artificial feeding) these foci can cause the development of systemic inflammation and sepsis of newborns .



EP111 / #320

Topic: AS14 Public Health and Epidemiology: / AS14d Viral infections

RETROSPECTIVE STUDY OF COVID-19 HOSPITALIZATION IN CHILDREN AND ADOLESCENTS IN TUNIS, TUNISIA

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Background: COVID-19 pandemic has affected individuals of all ages, including children. Our understanding of COVID disease in children is limited especially in African countries.

Aims: Determine the incidence rate of SARS-COV-2 and describe the underlying medical conditions, the clinical presentations, and outcomes of hospitalized COVID disease in children aged 0-15 years.

Methods: This observational study analyzed the hospitalization database of children in Tunis, between March 2020 and February 2022. The data was extracted from hospital and laboratory records, which included demographic information, clinical presentations, comorbidities, and outcomes. PCR testing was used for COVID diagnosis. Descriptive statistical analyses were performed to understand the predictors of disease, severity, and mortality.

Results: Of the 2,807 children with respiratory illness admitted to hospital, 321 (11%) had COVID infection with the mean age of 1.9 years, and 45% under 6 months old. The COVID hospitalization incidence and mortality rate was 119 and 6 per 100,000 persons respectively in all children. The overall case fatality rate was 5%. Among hospitalized COVID patients, 29% required oxygenation, 13% were admitted to the ICU and 12.15% required assisted ventilation. A total of 26% had at least one underlying medical condition with the most common condition neurological disease (20%), followed by asthma and congenital heart disease (17% each). The most common clinical sign was fever (95%), cough (44%), and dyspnea (40%).

Conclusions: Infants under 6 months were higher risk of COVID hospitalization. The high incidence and mortality rate of COVID emphasize the need of effective vaccination strategies.

Topic: AS14 Public Health and Epidemiology: / AS14d Viral infections

EPIDEMIOLOGICAL SURVEILLANCE OF MONKEYPOX OUTBREAK IN CHILDREN LIVING IN THE STATE OF SÃO PAULO, BRAZIL

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Background: Monkeypox (Mpox) is a zoonotic viral infection and originally endemic in West and Central Africa but in May 2022 a Mpox outbreak occurred in many countries, including Brazil and many cases were confirmed among minors (under 17 years old).

Aims: It describes the epidemiological surveillance of Mpox in minors dwelling in the state of São Paulo (SSP), Brazil.

Methods: The data was obtained from notification system of the "Public Health Emergency Surveillance Center" (CeVeSP), accessed at <https://cievs.saude.sp.gov.br/mpox/> in the SSP, considering the age groups (NIH, 2022): newborns and infants (birth-1yo), children (1yo-12yo) and adolescents (13yo-17yo). We also analyzed the frequency of symptoms and rash profile.

Results: In the SSP up to June 1st, there were 159 confirmed cases in children. Accordingly, age group, 28 cases were newborns and infants, 82 children and 49 were adolescents. The most frequent of symptoms were rashes (88%), being 8% single and 92% spreads over the body, 36% had fever, followed by headache (26%) and lymphadenopathy (20%). Considering the several stages of rashes, 34% macules, 50% papules, 59% vesicles, 38% pustules and 58% scabs. Lesions most often occurred in face (31%), torso (34%), upper (29%) and lower (25%) limbs and genital (14%).

Conclusions: In the SSP Mpox outbreak, despite the low number of confirmed cases in minors, epidemiological surveillance and adequate medical care are essential to reduce complications in these patients and avoid person-to-person transmission. Acknowledgment for São Paulo State Government and Disease Control Coordination of São Paulo State Health Department

Topic: AS14 Public Health and Epidemiology: / AS14d Viral infections

EPIDEMIOLOGICAL STATUS OF DENGUE FEVER IN CHILDREN LIVING IN THE STATE OF SÃO PAULO, BRAZIL

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Background: Dengue fever, an arthropod-borne viral (arbovirus) disease and widespread in the tropics, affects up to 400 million people around the world and Brazil is considered a high-risk area of infection. In children, it may be difficult to recognize and are like other childhood infections, with fever and unspecific symptoms (sleepiness, lack of energy or vomiting).

Aims: It aims to describe the epidemiological surveillance of dengue fever in children resident in the state of São Paulo (SSP), Brazil.

Methods: The data was obtained from notification system of diseases (SINAN Online) in the SSP, considering young people up to 19 years old. The number of recordings and confirmed cases, most frequent symptoms, and lethality percentage were analyzed.

Results: In 2023, up to June 1st, of the 251,235 of all confirmed cases, 56,228 correspond to the age group up to 19 years. Of this total, 29,946 are male and 26,213 are female. From male, 8.2% are 15-19yo; 8.7% are 10-14yo, 6.12% 5-9yo, 2.14% 1-4yo and 0.65% under 1yo. From female, 6.6% are 15-19yo; 6.0% are 10-14yo, 4.7% 5-9yo, 1.7% 1-4yo and 0.47% under 1yo. About lethality, both male and female, the highest has been occurring among 5-9yo and 15-19yo. The most frequent symptoms in children were fever and vomiting in the first 24 hours.

Conclusions: Dengue fever is one of the most important arbovirus diseases in Brazil and many needing actions to reduce infections over the country. Children are less susceptible than adults, but it is very important to be aware and improve treatments for this disease.

Topic: AS14 Public Health and Epidemiology: / AS14d Viral infections

FACTORS ASSOCIATED WITH TB-HIV CO-INFECTION IN CHILDREN RECEIVING ANTIRETROVIRAL THERAPY IN IMO STATE, NIGERIA

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Background: Children suffer a more rapid progression of HIV infection than adults, rendering them very prone to opportunistic infections. TB/HIV is the most common coinfection, which is still associated with a significant global mortality and morbidity rate. Nearly 90% of children living with HIV and Tuberculosis are domiciled in Sub-Saharan Africa. Nigeria is responsible for 4.4% of the world's TB cases.

Aims: Given the paucity of data on TB-HIV co-infection in children. This study aimed to understand the factors associated with co-infection in children receiving antiretroviral therapy (ART) in Imo State Nigeria.

Methods: We used a matched case-control study design in this study. 90 control HIV-positive children receiving ART and 30 TB-HIV incident cases were recruited for this study. Information on household TB exposure, family size, socioeconomic status, passive smoking, and food security was gathered using a structured questionnaire.

Results: Reduction in food intake ($P = .004$, $X^2 = 8.50$), having at least three individuals share a room with a child ($P = .006$, 95% CI for odds = 1.76 - 28.78). Both having TB symptoms ($P = .0001$, $X^2 = 50.39$) and having an HIV-positive family member were found to be associated with HIV-TB coinfection in children. The presence of smokers in the household ($P = .0001$, $X^2 = 17.57$), and their exposure to tobacco smoke to some extent in public spaces ($P = .0001$, $X^2 = 22.80$) were significant factors for co-infection.

Conclusions: TB-HIV co-infection in children is associated with household food security, passive smoking, family size, and household TB exposure, according to this study's findings.

EP115 / #635

Topic: AS14 Public Health and Epidemiology: / AS14d Viral infections

INFLUENZA AND COVID-19, AN INFECTIOUS PROBLEM FOR PRESCHOOL CHILDREN?!

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Title of Case(s):: Influenza and COVID-19, an infectious problem for preschool children?!

Background:: Respiratory infections are common during the winter season, is the main reason for seeking medical care for children.

Case Presentation Summary:: During this winter season, from 1st of October 2022 until 10th of January 2023, in our clinic were admitted 207 children. All children with respiratory symptoms were tested for COVID-19 and influenza by antigen test and polymerase chain reaction. Among 207 children assessed, 16 had SARS-CoV-2 infection, 17 had influenza A and one had Flurona (influenza A and SARS-CoV-2 infection). The ages varied from 21 days to 7 years old, 47% had 0 years (21 days to 12 months). In our clinic, almost 21% of them had abnormalities at the chest x-ray (with suggestive images for pneumonia and bronchiolitis) which resolved after 1 week with antiviral and antimicrobial treatment. All patients were admitted with one of their parents (all of them presented respiratory symptoms). The evolution was good in all cases, none of them needed to be monitored in the intensive care unit.

Learning Points/Discussion: During viral infection, bacterial adherence to epithelium is increased by viral glycoproteins which can lead to an increased risk for bacterial superinfection. Mixed viral-bacterial respiratory infections are relatively common in toddlers. All patients with respiratory symptoms, especially toddlers should be monitored in a medical unit due to the complications that viral infections can include (viral or bacterial pneumonia, sinusitis, otitis, coinfections with bacterial agents). These complications not treated correctly can present a high risk of morbidity and mortality in children.

Topic: AS14 Public Health and Epidemiology: / AS14d Viral infections

MEASLES OUTBREAK INVESTIGATIONS IN MPUMALANGA PROVINCE, SOUTH AFRICA, NOVEMBER 2022 – AUGUST 2023

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Background: Measles is a vaccine-preventable viral infection that commonly affects children and can lead to serious complications. A measles outbreak was declared in November 2022 in Mpumalanga Province, South Africa.

Aims: The aim of our investigations was to determine the cause and magnitude of the outbreak and to implement control measures.

Methods: Response activities involved case investigations, laboratory testing, health promotion activities, and community engagement. A vaccination campaign targeting children between the ages of 6 months and 15 years was conducted from the beginning of January to the end of March 2023..

Results: A total of 110 laboratory-confirmed measles cases were reported, of these 95.4% (n=105) were children ≤ 18 years. The majority of cases (91/105; 86.7%) were seen at primary health care centres and no deaths were reported. The median age was 7 years (IQR:3-12). Children aged 5-9 years in the province were most affected (37/105, 35.2%), with an attack rate of 8 per 100 000 persons. Ehlanzeni district accounted for the majority (52/105; 49.5%) of the cases and with an attack rate of 3 per 100 000 persons. Vaccination status was unknown for the majority of cases (56/105; 53.3%). A total of 3504 contacts were traced and 887 health talks were given. Vaccination coverage targets were reached for the 6-11-month population in the province by the end of the vaccination campaign.

Conclusions: The main contributing factor to the outbreak was most likely due to low vaccination coverage. High vaccination coverage amongst the 12-month to 15-year population needs to be improved to prevent future outbreaks.

Topic: *AS16 Vaccination: / AS16a Antibacterial vaccines*

EXAMINING THE EFFECT OF IMMUNIZATION STATUS ON CHILD SURVIVAL IN INDIA: INSIGHTS FROM THE 2019–2021 NATIONAL FAMILY HEALTH SURVEY

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Background: India's Universal Immunization Programme has been performing at a sub-optimal level over the past few decades, with there being a wide heterogeneity in terms of child immunization and infant mortality across states. The associations between immunization and infant mortality have been understudied in the Indian context.

Aims: The objective of the present study aimed to investigate the relationship between immunization coverage and child survival.

Methods: Data were drawn from the latest 2019–2021 National Family Health Survey. A time-to-event approach was applied for the current analysis using the Kaplan-Meier survival statistic, Log-Rank Chi-square test and Cox-Proportional Hazard (Cox-PH) models.

Results: In 2019–2021, nearly 76% of children received full immunization care in India. The Cox-PH models strongly supported the association between childhood immunization and infant mortality were strongly significant, even after controlling for many potential correlates. Children who had fully and partially immunized with all vaccines reduced the relative risk of mortality by 36%. Children who had fully and partially immunized with DPT/Polio reduced the relative risk of mortality by 25-43%. Similarly, children immunized with measles and BCG shots reduced the relative risk of mortality by nearly 41%. Results further suggested that a range of demographic and socio-economic factors were also strongly associated with child survival.

Conclusions: Nevertheless, several healthcare-related efforts and interventions should improve child survival that must go beyond early childhood immunization campaigns and recognize other sources of mortality and morbidity in India.

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Topic: AS16 Vaccination: / AS16a Antibacterial vaccines

WHAT DETERMINES THE DISTRICT-LEVEL HETEROGENEITIES IN CHILDHOOD IMMUNIZATION COVERAGE: FINDINGS FROM 2015–16 AND 2019–2021 INDIAN DEMOGRAPHIC HEALTH SURVEY

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Background: India's Universal Immunization Programme has faced significant challenges in achieving optimal performance for several decades, resulting in gigantic disparities in full immunization coverage across districts and disproportionately affecting demographic and socio-economic groups.

Aims: This study aimed to decrypt the place-specific spatial dependency and heterogeneity in associations between district-level immunization coverage and its driving forces.

Methods: Data were extracted from the National Family and Health Survey, conducted between 2015–16 and 2019–2021. Univariate Moran's I and LISA statistics were utilized to show the presence of spatial clustering and dependence in full immunization coverage across Indian districts. To investigate the effect of various factors on full immunization coverage, the study employed the Ordinary Least Square (OLS), Spatial (lag/error) and Geographically Weighted Regression (GWR) models.

Results: In 2015–2016, the prevalence of district-level full immunization stood at 62%, which increased to 76% in 2019–2021. The GWR results disclosed that the spatial heterogeneity in relationships between district-level full immunization status and its driving forces were strongly location-based, altering their direction, magnitude and strength across districts. Furthermore, the results indicated that healthcare-related variables were more crucial than demographic and socio-economic variables in determining strategies to enhance immunization coverage across districts.

Conclusions: The findings of this nationwide study conclusively provided robust evidence that the spatial dependencies and heterogeneities in the district-level full immunization care were strongly influenced by a multitude of factors and thus can help policymakers in formulating effective programmatic interventions to speed up the coverage of full immunization care in most high-priority districts and geographical hot spots across India.

Topic: AS16 Vaccination: / AS16a Antibacterial vaccines

SYSTEMATIC LITERATURE REVIEW OF PCV13 IMMUNOGENICITY AND IMPACT ON INVASIVE PNEUMOCOCCAL DISEASE IN CHILDREN WITH UNDERLYING MEDICAL CONDITIONS

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Background: Previous systematic literature reviews (SLRs) have investigated 13-valent pneumococcal conjugate vaccine (PCV13) immunogenicity and impact on invasive pneumococcal disease (IPD) in children with no conditions.

Aims: To summarize PCV13 immunogenicity and impact on IPD in pediatric patients with underlying medical conditions.

Methods: A SLR based on Cochrane methods was conducted to review the immunogenicity of PCV13 and its impact on IPD in children <18 years with underlying medical conditions of publications from January 2000 to September 2022.

Results: Six studies reported immunogenicity in children with underlying medical conditions (Table 1). Three studies reported 52.4%-100% and 57.4%-98% of participants with IgG concentration (IgG-C) \geq 0.35 μ g/ml for individual serotypes or for all serotypes covered by PCV13 1-month post dose 3 and 3-months post dose 2, respectively. One study reported 53.1%-93.9% or 100% of children who received 1 or 2 booster doses during or/and after chemotherapy had IgG-C \geq 0.35 μ g/ml for 70% of serotypes covered in PCV7. Two studies reported IgG geometric mean fold rise (GMFR), which ranged from 1.5-204.4 one month after PCV13 receipt versus baseline. Three studies reported PCV13 impact on IPD among children with underlying medical conditions (Table 2). Results generally showed reductions in incidence despite small sample size. One large study among HIV-infected children in South Africa reported a 69% statistically significant decline in all IPD in PCV13 versus pre-PCV period.



Table 1. Immunogenicity in Children with Underlying Medical Conditions

Author year, country	Risk condition -	Population	Vaccination, Number of doses /schedule (Sample Size)	Study End Point	Result
Jensen 2022, Denmark	Rheumatic disease	Aged 2-19 years. Median: age of 15.6 (12.0-17.3) years	PCV13, 3 doses (N=21)	IgG-C \geq 0.35 μ g/ml for specific serotypes included in PCV13	28-day post-dose 3: 52.4% to 95.2%
Makenga 2021, Tanzania	HIV-infected children	Aged 1-14 years. Mean age of 7.6 \pm 3.3 years	PCV13, 2 doses (N=115)	IgG-C \geq 0.35 μ g/ml for specific serotypes included in PCV13	3-month post-dose 2: 57.4% to 98.3%
Uffman 2022, Botswana	HIV-exposed or non-exposed	Newborns	PCV13, 3 doses at 2, 3, and 4 months (N=37)	IgG-C \geq 0.35 μ g/ml for specific serotypes included in PCV13 IgG-C \geq 0.35 μ g/ml for all serotypes included in PCV13	1-month post-dose 3: 83%-100% All PCV13 serotypes: 59% No difference between HIV-exposed and non-exposed children
Dorval 2021, Canada	Acute lymphoblastic leukemia	Aged 1-10 years who previously received either PCV7 or PCV13 at 2, 4, 12 months of age. Group 1: median age of 58 months Group 2: median age of 43 months	Group 1: received 1 booster dose during chemotherapy and 1 after chemotherapy (1+1) Group 2: 1 booster dose after chemotherapy (1+0) (N=71)	IgG-C \geq 0.35 μ g/ml for \geq 70% serotypes included in PCV7	- During chemotherapy: Group1: 53.1% - After chemotherapy: Group 1: 96.9%, Group 2: 100%
Takeshita 2022, Japan	Hematological malignancies, solid tumors, and other immunosuppressive diseases	Aged 6-22 years. Median age of 11.5 years	PCV13, 1 dose (N=30)	GMFR in IgG from baseline against all unique serotypes in PCV13	1-month post dose vs baseline: 1.5 - 12.2 6 months post dose vs baseline: 1.1 - 8.5
Yamazaki 2021, Japan	Risk conditions*	Aged 6-17 years. Mean age 12.7 years and median age 13.0 years	PCV13, 1 dose (N=53)	GMFR in IgG from baseline for PCV13 serotypes GMFR in OPA from baseline for PCV13 serotypes	1-Month post-dose: 7.3 - 204.4 1-Month post-dose: 7.9 - 501.9

Abbreviations: IgG-C: Immunoglobulin G (IgG) Antibody Concentration; GMFR: geometric mean fold rise; HIV, human immunodeficiency virus; OPA, opsonophagocytic activity; PCV: pneumococcal conjugate vaccines;

*Risk conditions: stable chronic heart, lung, liver, or renal disease, diabetes; hematologic or solid organ malignancy known or suspected immunodeficiency; anatomic host defense abnormalities such as cochlear implants, cerebral spinal fluid leaks

Table 2. PCV13 Impact on Invasive Pneumococcal Disease

Author Year, Country	Risk Condition and Study Population	Study Design (Sample Size)	Study End Point	Results
Lee 2018, USA	Cancer (hematologic and solid tumors) aged 0-14 years	Retrospective, longitudinal cohort study from 1992-2012 (N=39)	IPD incidence change from PCV7 period to PCV13 period	Aged 1-4 years: -5.0% (0.16 to 3.15); p=0.95 Aged 5-14 years: +6.0% (0.39 to 2.36); p=0.89
Nzenze 2017, South Africa	HIV-infected children aged 3 months-5 years	Retrospective cohort study based on observed changes in IPD incidence from 2005-2012	% Change in IPD incidence rate from pre-PCV era (2007-2009) to post-PCV13 (2012)	All IPD: Aged 3 months-2 years: -9.11% (-64.8 to 129.5) Aged 2-5 years: -60.1% (-89.1 to 24.4) PCV7 serotypes IPD: Aged 3 months-2 years: -45.5% (-91.2 to 155.4) Aged 2-5 years: -12.3% (-98.9 to 120.0) Additional PCV13 serotypes: Aged 3 months-2 years: -100% (NA) Aged 2-5 years: -43.0% (-90.8 to 167)
Von Gottberg 2014, South Africa	HIV children aged <2 years	Surveillance Study	% Change from pre-vaccine era (2005-2008) to post-PCV13 era (2012)	All IPD: -69% (-65 to -72) PCV7 serotypes IPD: -89% (-86 to -92) Additional PCV13 serotypes: -57% (-42 to -68)

Abbreviations: HIV, human immunodeficiency virus; IPD, invasive pneumococcal disease; NA, not applicable; PCV, pneumococcal conjugate vaccine

Conclusions: PCV13 induces strong immune responses among children with underlying medical conditions, which is consistent with results from real-world impact studies.



EP120 / #704

Topic: AS16 Vaccination: / AS16a Antibacterial vaccines

EFFECTIVENESS OF A 13-VALENT PNEUMOCOCCAL VACCINE IN A BRAZILIAN CITY. IS IT TIME TO REPLACE THE PNEUMOCOCCAL VACCINE IN THE BRAZILIAN PUBLIC PROGRAM?

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Background: Streptococcus pneumoniae is usually carried in the nasopharynx of healthy people, but occasionally leads to pneumococcal diseases (PD). The World Health Organization (WHO) annually estimates the occurrence of one million deaths in children under five years by PD. There is a huge concern about children under 2 years concerning morbidity and mortality of PD. A 13-valent Pneumococcal conjugated vaccine (PCV-13) was introduced only in the public vaccination program of the municipality of Campos dos Goytacazes, Rio de Janeiro, Brazil, in September 2010.

Aims: Evaluate the effectiveness of the PCV-13, implemented in the municipality of Campos dos Goytacazes, State of Rio de Janeiro, Brazil, three years after the introduction of this vaccine to all children under 2 years old.

Methods: Effectiveness was calculated using a formula that combined Proportion of cases in vaccinated (PC) and the proportion of population vaccinated (PPV) in 2011 and 2012. We consider a case vaccinated when received a 2-dose primary series in children under 1 year and one booster dose after 1 year old.

Results: In 2011-2012, 383 toddlers ranging 0-23 months of age with diagnosis of pneumonia were admitted in four hospitals of the city. In 2011, 215 cases were admitted and 2012, 168. The calculated effectiveness of VPC-13 in 2011 and 2012 were, respectively, 14.2 and 15.6% (4-23 months); 21.3% and 28.5% (6-23 months); and 24.4% and 32.9% (12-23 months).

Conclusions: PCV-13 was effective and reduced the incidence of pneumonia in children. Considering emergence of 19A serotype in Brazil, VPC-13 could replace the current PCV-10 in public vaccination program.



EP121 / #278

Topic: AS16 Vaccination: / AS16a Antibacterial vaccines

SAFETY AND IMMUNOGENICITY OF A 3-DOSE SCHEDULE OF AN INVESTIGATIONAL QUADRIVALENT MENINGOCOCCAL CONJUGATE VACCINE WHEN ADMINISTERED CONCOMITANTLY WITH ROUTINE PAEDIATRIC VACCINES IN INFANTS AND TODDLERS

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Background: MenACYW-TT (MenQuadfi®) is a quadrivalent meningococcal tetanus toxoid conjugate vaccine registered in more than 50 countries since 12 months of age (since 2 years old in the US).

Aims: This is the first study evaluating the immunogenicity and safety of MenACYW-TT in infants and toddlers conducted in Mexico and Russian Federation. Preliminary results for Mexico are presented here.

Methods: Phase III open-label, randomized, active-controlled study of a 3-dose schedule of MenACYW-TT vaccine or a 4-dose schedule of MCV4-CRM (Menveo) co-administered with routine vaccines (RV). hSBA was used to measure antibodies against the vaccine serogroups at baseline, after infant series and toddler booster.

Results: At Day 30 post infant series, the percentage of participants with seroprotective titers (hSBA $\geq 1:8$) was between 90.9% (serogroup A) and 100% (serogroup C) in infants vaccinated with MenACYW-TT and between 69.1% (serogroup A) to 100% (serogroup W) in infants vaccinated with MCV4-CRM. At Day 30 post booster dose, the percentage of participants with seroprotective titers was between 97.6% (serogroup A) and 100% (serogroups W and Y) in MenACYW-TT group and between 93.3% (serogroup C) to 100% (Serogroups W and Y) in MCV4-CRM group. The GMTs in the MenACYW-TT group were also numerically higher than those in the MCV4-CRM group for all serogroups post infant series and post booster. The safety profile was comparable between MenACYW-TT group and MCV4 group. No study vaccine related SAEs and no deaths were reported.

Conclusions: MenACYW-TT conjugate vaccine in a 2+1 schedule demonstrated a good immunogenicity and safety profile.



EP122 / #665

Topic: AS16 Vaccination: / AS16a Antibacterial vaccines

INSIGHTS INTO SEROTYPES OF KLEBSIELLA PNEUMONIAE IN THE INDIAN PEDIATRIC POPULATION REVEAL HURDLES TO THE FUTURE VACCINES

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Background: Klebsiella pneumoniae is a leading cause of infections in young and immunocompromised individuals. Vaccines based on surface polysaccharides are promising for preventing infections from these multidrug-resistant bacteria. Unbiased serotyping studies are needed to guide vaccine target selection in India, particularly in the pediatric population.

Aims: 1. Understand the diversity of K. pneumoniae strains in India. 2. Identify & understand the epidemiology of the most common serotypes of K. pneumoniae in children in India.

Methods: The 114 K. pneumoniae isolates consisting of a pan-India representative collection from 28 different hospitals from 2017 to 2021 including isolates from different infection types were included. Genome data were generated by paired-end Illumina sequencing. Reads were de novo assembled and insilico serotypes were predicted using the Kaptive tool.

Results: Of the 114 K. pneumoniae isolates, 8 O locus and 33 K Locus types were identified. KL2 was the most prevalent K antigen (20/114), followed by KL64, KL51, KL36, and KL24. The top 5 K Locus only covered 57% of the serotypes, while the top 5 O Locus covered 93%. The O1/O2V1 & O1/O2V2 were observed in 71% of the isolates. The serotypes were spread across India and there was no association with specimen type or geographic location.

Conclusions: K. pneumoniae is a major cause of illness worldwide and has a wide range of capsular serotypes. The bivalent and tetravalent vaccines in development do not cover the major serotypes in the Indian pediatric population. The O locus, which is highly conserved across different infections, could be an alternative target for vaccines.



EP123 / #511

Topic: AS16 Vaccination: / AS16b Antiviral vaccines

EVALUATION OF VACCINE EFFECTIVENESS (VE) AGAINST VARICELLA IN KOREAN CHILDREN

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Background: A 2-dose vaccination against varicella has been adopted in many places; however, it has not been widely introduced in Korea.

Aims: This study aimed to assess 1-dose and 2-dose VE against varicella in Korea to provide a scientific basis for developing an immunization strategy.

Methods: This cohort study analyzed all children born in Korea during 2011-2021 who were registered to the immunization registry. Varicella infection was identified by using both reported cases from National Notifiable Disease Surveillance System (NNDSS) and insurance claims from Health Insurance Review & Assessment Service (HIRA) database, respectively, and the varicella vaccination records were used from the immunization registry.

Results: Of the total 4,248,987 children in the 2011-2021 cohort, 217,363 were reported to the NNDSS for varicella and 305,006 claimed insurances for being diagnosed with varicella. Among vaccinated children, 6.7% of 1-dose vaccinated and 1.2% of 2-dose vaccinated were reported as cases and 8.9%, while the rate among unvaccinated was 4.6%. The rate of insurance claims of 1-dose and 2-dose vaccinated were 8.9% and 1.3%, respectively, while the rate among unvaccinated was 8.0%. During the observation period, the VE of 1-dose and 2-dose vaccination were -62.3% (unadjusted VE was -61.9%) and 79.2% (unadjusted VE was 79.6%) for reported cases in NNDSS. For insurance claims in HIRA, the VE of 1-dose and 2-dose vaccination were -15.8% (unadjusted VE was -16.6%) and 87.4% (unadjusted VE was 87.7%).

Conclusions: The VE of 1-dose vaccination was lower than that of 2-dose. These findings suggest that the 2-dose vaccination strategy can be an effective strategy to prevent varicella.



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Topic: AS16 Vaccination: / AS16b Antiviral vaccines

PEDMAB1 CLINICAL TRIAL: SAFETY ASSESSMENT OF CAP256V2LS TO PREVENT BREASTMILK HIV TRANSMISSION IN HIV-1 EXPOSED UNINFECTED NEONATES.

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Background: In low-middle income settings, although breastmilk optimizes child survival it continues to contribute to residual vertical HIV transmission (MTCT). Broadly neutralizing antibodies (bNAbs) such as CAP256 and VRC07-523LS could prevent MTCT. Here we first report on the reactogenicity and safety of CAP256V2LS for the first time in infants enrolled in the PedMAb trial (PACTR202205715278722), South Africa

Aims: PedMAb1 aims to define the optimal doses, ideal combination, and timing of subcutaneous (SC) administration of two HIV-1 bNAbs (CAP256V2LS and VRC07-523LS), separately or in combination, to prevent breastmilk MTCT. Here we report on the reactogenicity and safety of CAP256 (5mg/kg) in HIV-exposed uninfected infants (HEUs) enrolled in Arm 1 (n=8).

Methods: 8 eligible HEUs were enrolled (1st September -31 October 2022). All received CAP256V2LS SC (5mg/kg) within 72 hours of birth, were observed for 4 hours post-dose, and were followed up face-to-face at days 3, 14 and 28 post-doses for safety assessments, and until 6 months for pharmacokinetics. A pictorial diary helped mothers document reactogenicity and early adverse events (AEs). An internal study committee reviewed safety data bi-weekly. The Division of AIDS Table version 2.1. was used to grade AEs.

Results: No reactogenicity events were observed. There were 33 AEs documented in 6 months; 13 within 28 days and 20 within 5 months. All AEs were deemed unrelated to study product.

Conclusions: CAP256V2LS administered SC at 5mg/kg to infants within 72 hours of birth is safe.



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Topic: AS16 Vaccination: / AS16b Antiviral vaccines

IGG ANTIBODY LEVELS AGAINST THE SARS-COV-2 SPIKE PROTEIN IN MOTHER-CHILD DYADS AFTER COVID-19 VACCINATION

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Background: Current data show that COVID-19 vaccination of pregnant women is safe, prevents severe COVID-19 and may protect their infants through transplacental antibody transfer. However, more studies are needed to confirm the magnitude, duration, and protective capacity of the vaccine-induced immune response.

Aims: To assess IgG antibodies against the SARS-CoV-2 spike protein (anti-S IgG) in vaccinated mothers and their infants at delivery and 2-3 months later.

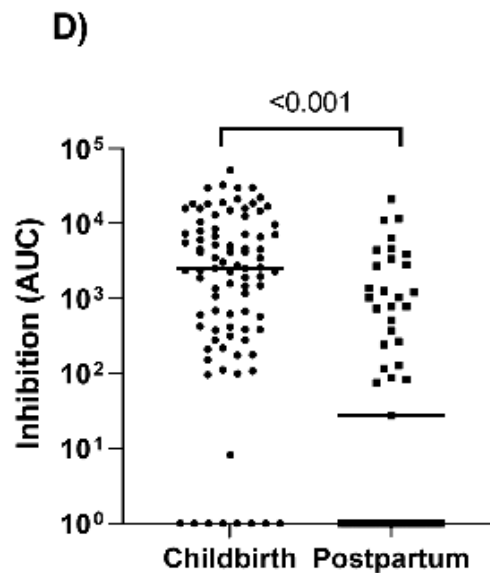
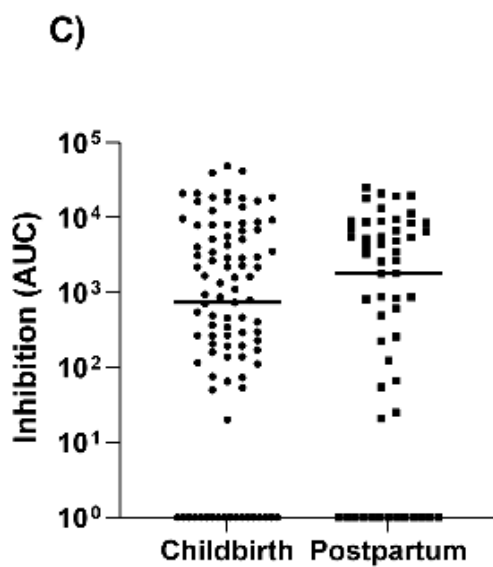
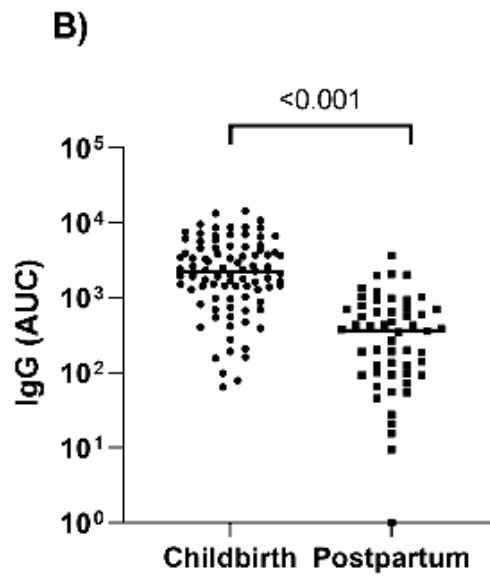
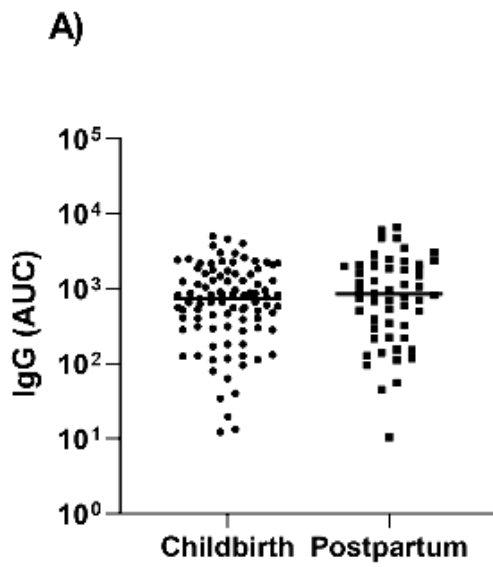
Methods: Prospective study on mothers who received at least one dose of the monovalent COVID-19 vaccine and their infants at delivery (n=93) and 2-3 months post-partum (n=53). Serum anti-S IgG titers and ACE2 binding inhibition levels were quantified by immunoassays.

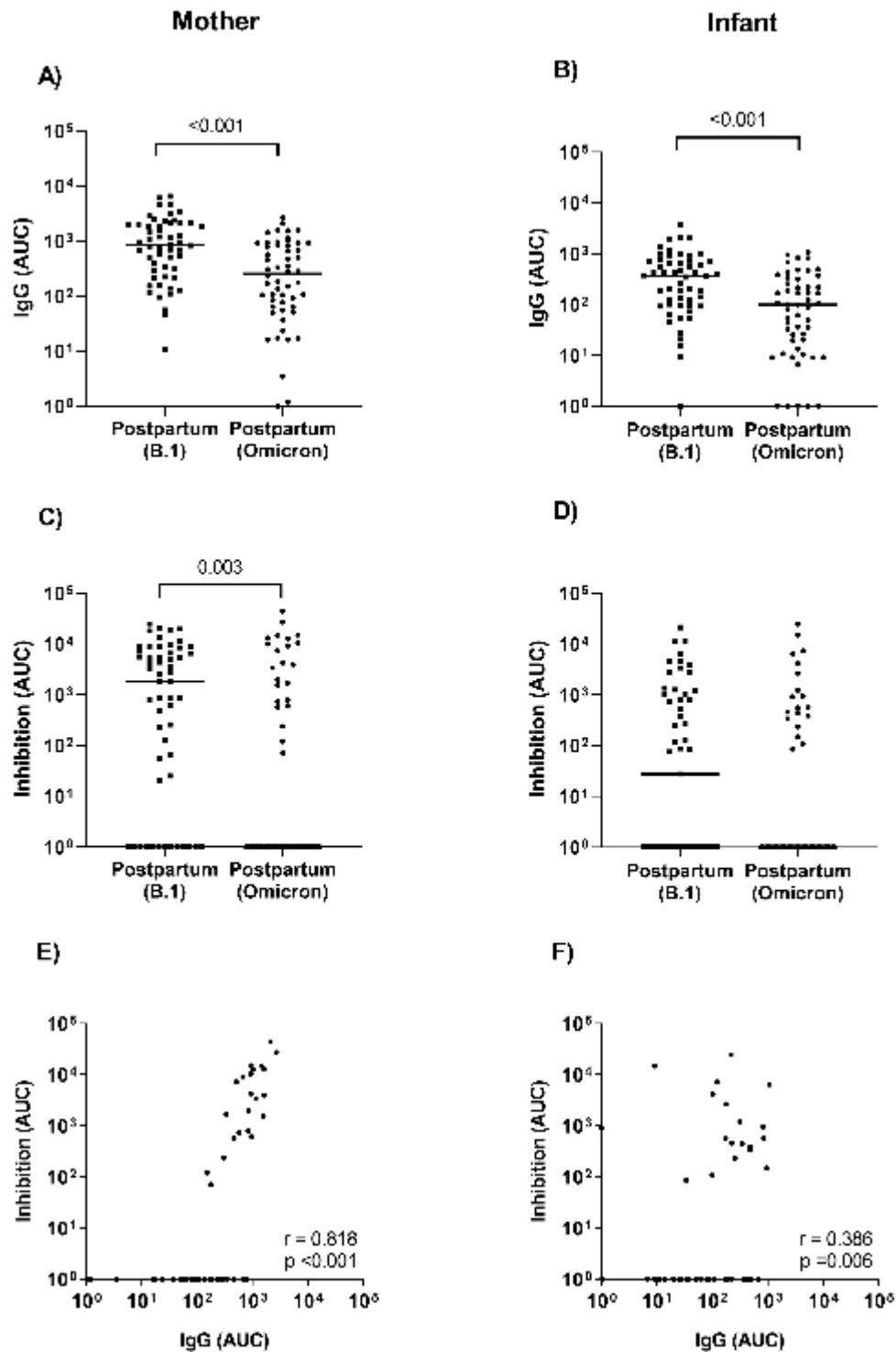
Results: Mothers and children had high anti-S IgG titers against the B.1 lineage at childbirth. Antibody titers were maintained at 2-3 months post-partum in mothers but decreased significantly in children ($p < 0.001$). At this time, antibody titers against Omicron were significantly lower than those against B.1 ($p < 0.001$). Positive and significant correlations were found between anti-S IgG titers and the ACE2 binding inhibition levels at childbirth and 2-3 months post-partum in mothers and infants for the B.1 lineage ($r > 0.8, p < 0.001$) and at 2-3 months post-partum for Omicron ($r = 0.818, p < 0.001$; $r = 0.386, p < 0.005$, respectively). Previous SARS-CoV-2 infection and COVID-19 vaccination near delivery positively impacted anti-S IgG levels.



Mother

Infant





Conclusions: COVID-19 mRNA vaccines induce high anti-S titers in pregnant women, which can inhibit the binding of ACE2 to protein S and are efficiently transferred to the fetus. However, there was a rapid decrease in antibody levels at 2-3 months post-partum, particularly in children.



EP126 / #262

Topic: *AS16 Vaccination: / AS16d Vaccine hesitancy and uptake*

A DESCRIPTION OF CHILDHOOD VACCINATION CURRICULUM GOALS, OUTCOMES, EDUCATIONAL & ASSESSMENT STRATEGIES

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Background: Despite the availability of publicly funded vaccination programs for all children under the age of 18 in Canada, the rate of vaccine coverage in Canadian children is low. Improving public knowledge about vaccination through knowledgeable health professionals has been recommended. Although didactic teaching of childhood vaccination is part of the pediatric residency program, it appears that there is a learning gap in teaching pediatric residents the practical knowledge of childhood vaccination and the required communication skills with parents. Therefore, the overall purpose of childhood vaccination curriculum is to address this learning gap.

Aims: The main aim of the childhood vaccination curriculum is to equip pediatric residents with practical childhood vaccination knowledge, attitudes, and communication skills to provide this information to parents with different cultural backgrounds, attitudes, and beliefs.

Methods: The method of developing a childhood vaccination curriculum included: 1. describing the childhood vaccination curriculum goals 2. defining its learning outcomes, and 3. specifying and explaining the educational and assessment strategies to achieve these learning outcomes.

Results: 1. An outline was prepared consisting of the learning outcomes, educational strategies, and the assessment strategies. 2. Educational and assessment strategies were identified such as Problem-Based Learning (PBL), Inquiry-Based Learning (IBL), role-playing, Standardized Patients (SPs), and Reflective writing 3. A childhood vaccination logic model was developed with a detailed representation of their curriculum design and activities to achieve the specific measurable objectives.

Conclusions: This paper summarizes the initial steps in developing a childhood vaccination curriculum and a model of implementing it.

Topic: AS16 Vaccination: / AS16d Vaccine hesitancy and uptake

ASSOCIATION OF EDUCATIONAL STATUS OF MOTHERS AND INCOMPLETE IMMUNISATION IN CHILDREN OF TERTIARY CARE HOSPITAL

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Background: In Pakistan, suboptimal vaccine coverage is associated with maternal education explaining differentials in child health outcomes.

Aims: To determine the association of educational status of mothers and incomplete immunization in children presented at Tertiary Care Hospital, Karachi.

Methods: This Case-control study was conducted in Karachi in January 2019. The data were prospectively collected from 434 subjects with consent out of which 217 had an incomplete vaccination status and 217 had completed vaccination status. Case group included unvaccinated children whose mothers were uneducated whereas control group included vaccinated children whose mothers were educated. Quantitative data were presented as mean and standard deviation while qualitative variables were presented as frequency and percentages. Chi square test was applied to compare both groups and the odds ratio was calculated. Effect modifiers were controlled through stratification to see the effect on the outcome variable. p-value of 0.05 was considered as significant.

Results: A total of 434 (217 cases and 217 controls) were included in this study. The mean age was 3.27 ± 1.79 years (case) and 3.49 ± 1.40 years (controls). On the basis of which the uneducated mothers (who did not receive formal education of any level) in case group were 144 (66.4%) while in control group was 52 (24%). Children with incomplete immunization were 6.25 times more likely to have uneducated mothers than those with complete immunization, after controlling for the other factors.

Conclusions: This study has strengthened the value of maternal education in context of complete childhood immunization because acquisition of literacy and health-seeking behavior enhance vaccine uptake for their children.

Topic: AS16 Vaccination: / AS16d Vaccine hesitancy and uptake

VACCINE WITHOUT DOUBTS: A NEW PUBLIC HEALTH STRATEGY FOR COMBATING FAKE NEWS AND VACCINE HESITANCY IN THE STATE OF SÃO PAULO, BRAZIL

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Background: Information technology (IT) is an important strategy for combating disinformation and fake news regarding vaccines, intensified during Covid-19 vaccination and which promoted a strong decrease of immunization for many vaccine-preventable diseases, such as Poliomyelitis, Yellow Fever, Hepatitis, among others.

Aims: This study aims to show how this tool has helped to intensify actions and raise awareness among the population about the importance of vaccination, focusing on children, mainly ones up to 1-year-old; and improve the vaccination coverage in all municipalities in the state of São Paulo (SSP).

Methods: Vaccine without doubts (VACINA 100 DÚVIDAS in Portuguese) is a website (<https://www.vacina100duvidas.sp.gov.br/>) developed for the population to clarify any doubts about vaccines. It brings one hundred most frequent questions and a clear and accurate explanation. A digital campaign was also developed on social media and public establishments.

Results: From March 7th to 31st, 2023, there were 419.8 million of total print, 201 million from Meta (Facebook), 184.9 million from Google and 33.9 million from others. By radio, there were 14,049 reproductions in 336 broadcasting stations and 120 cities. On other social media, there were 71,974,265 reproductions. 141 news were spontaneously published in all regions of SSP.

Conclusions: Besides countering vaccine fake news, this campaign reinforces the importance of vaccination, making the population awareness about this action, mainly in young group. It also targets the reduction of vaccine hesitancy, especially with vaccines that are included in basic calendar of vaccination.
Acknowledgements: Thanks for Government of São Paulo and São Paulo State Health Department

Topic: AS16 Vaccination: / AS16d Vaccine hesitancy and uptake

VACIVIDA: A DIGITAL SOLUTION FOR RECORDING COVID-19 VACCINATION IN THE STATE OF SÃO PAULO, BRAZIL

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Background: The Covid-19 pandemic brings the needing to vaccinate the entire population in the state of São Paulo (SSP), Brazil, and ensure the control and traceability of applied doses, helping epidemiological surveillance professionals and health authorities be aware of the vaccination coverage (VC) of Covid-19.

Aims: This study aims to describe the use of VacíVida, the official database for real-time recording Covid-19 vaccine doses, as an epidemiological surveillance tool and shows how useful is this kind of digital solution for follow VC, improving decision-making by health authorities.

Methods: VacíVida attaches some information concerning Covid-19 vaccination, as follows: type of immunobiological, applied doses, adverse events following immunization (AEFI), absentees, and the number of fully vaccinated. All information is managed in DataSus by National Health Data Network (RNDS, in Portuguese).

Results: VacíVida has been giving real time records of some information concerning Covid-19 vaccination. During the vaccination campaign, all health units from SSP received 5,000 tablets. Some information is available for anyone in online interactive panels (Vacinômetro) and it is possible to get the Vaccination Certificate. There was also a panel for AEFI. Nowadays, the SSP has over than 134 million of applied doses and the VC is over 90% of the population.

Conclusions: VacíVida was an innovation for Covid-19 vaccine campaign, and it has been helping health professionals to have control and effectiveness of vaccination actions. It also has been useful to manage the decision-making by health managers in face of control Covid-19 pandemic and could be applied in other public health emergencies in the future.



EP130 / #84

Topic: *AS16 Vaccination: / AS16d Vaccine hesitancy and uptake*

ROUTINE IMMUNIZATION - THEORY AND PRACTICE

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Background: Immunization is significant achievements of medicine, saves 2-3 million lives every year and prevents more than 20 life-threatening diseases, helps people live longer and healthier. It is the human rights and one of the best investments in health. Countries make the immunization available to citizens to achieve satisfactory vaccination coverage. However, a lot of people are unvaccinated due to the unavailability of vaccines, or because they refuse immunization. In Federation of Bosnia and Herzegovina (FB&H) compulsory immunization is for persons from birth to 18 years with vaccines BCG, Hep B, DTP, polio, Hib, MRP.

Aims: To show the vaccine coverage in the Federation of Bosnia and Herzegovina in the period 2016.-2020.

Methods: Descriptive-analytical epidemiological method. We used reports on the immunization of the Federal Institute of Public Health.

Results: In the observed period was decline vaccine coverage of all vaccines used in the FB&H. The best average vaccination coverage was BCG and Hep B vaccines (95.4% :95.3%), with the smallest variation in vaccination coverage by year: BCG-2016: 96.4% - 2020: 95.0%, Hep B1 2016: 96.0% - 2020: 93.8%. The worst vaccine coverage was for MRP1 and MRP2 vaccines (65.2%: 67.5%). For MRP2 was the largest decline in vaccine coverage (2016: 74.4% - 2020: 49.0%). There are differences in vaccination coverage according to the cantons. The worst vaccination coverage was in Canton Sarajevo with MRP2, only 24.1%

Conclusions: Vaccination coverage in the FB&H is not satisfactory and represents a risk for the occurrence of vaccine-preventable diseases.

Topic: *AS16 Vaccination: / AS16d Vaccine hesitancy and uptake*

FACTORS ASSOCIATED WITH COVID-19 VACCINE HESITANCY AMONG PARENTS OF 5 TO 11 YEAR OLDS IN A TERTIARY PEDIATRIC GOVERNMENT HOSPITAL IN METRO MANILA, PHILIPPINES

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Background: The COVID-19 pandemic highlighted the importance of vaccination to mitigate the spread and severity of the disease.

Aims: The study aimed to determine factors associated with COVID-19 vaccine hesitancy among parents of 5 to 11 year old Filipinos in National Children's Hospital, a tertiary pediatric government hospital.

Methods: A cross-sectional analytic study using a 31-item self-administered questionnaire was employed. Univariate binary logistic regression analyses were performed to determine the associations of the different demographic characteristics, COVID-19 experiences and beliefs with COVID-19 vaccination hesitancy status.

Results: A total of 223 parents participated wherein 136 (60.99%) were non-hesitant and 87 (39.01%) were hesitant to vaccinate their child. Parents with a history of refusal or delaying the vaccine for their child and thought that lines were long were 20.12 and 6.07 times more likely to be hesitant, respectively. Those who had intention to vaccinate themselves or had already been vaccinated with COVID-19 vaccines were 50 times and 16.67 times less likely to become hesitant, respectively. Beliefs that the vaccines were unsafe or had concerns on the side effects and those who refused or hesitated due to lack of trust in the government were 7.93 times and 2.46 times more likely to be hesitant, respectively. Necessity of COVID-19 vaccines to attend school decreased the likelihood of hesitancy by 4.00 times. Those who would change their mind after receiving more scientific or medical information were 87% more likely to be hesitant.

Conclusions: These results can serve as a guide to developing a more strategic approach to promoting COVID-19 vaccination.

EP132 / #380

Topic: AS16 Vaccination: / AS16d Vaccine hesitancy and uptake

ROUTINE CHILDHOOD VACCINATIONS IN GUINEA-BISSAU BEFORE AND DURING THE COVID-19 PANDEMIC

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Background: Globally, health system resources were diverted to COVID-19-related activities. Modelled estimates indicate decreased vaccination coverages, especially in low-income countries.

Aims: To assess coverages, timeliness, and out-of-sequence vaccinations in rural Guinea-Bissau before and during the pandemic.

Methods: Utilising Bandim Health Project's Health and Demographic Surveillance System, 12-month vaccination coverages and timeliness were assessed for all scheduled vaccines (Figure 1) among children born in 2017 and 2020.

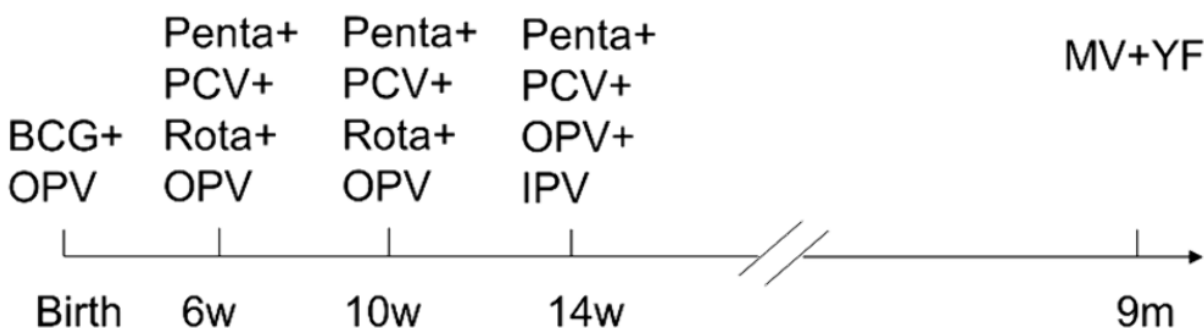


Figure 1: The immunization programme. Vaccines: BCG=Bacillus Calmette Guerin, OPV=Oral Polio, Penta=Diphtheria-Tetanus-Pertussis-Hepatitis B.-H.influenza type B, PCV=Pneumococcal, Rota=Rota virus, MV Measles, YFV=Yellow fever. Fully immunized children (FIC) were defined as having received all scheduled vaccinations, except at-birth OPV and IPV (due to global IPV shortage). Out-of-sequence vaccinations (altered order of BCG/penta and penta/MV) were assessed. Associations between background factors and coverages/out-of-sequence vaccinations were analysed in binominal regression models with generalised estimating equation correction for village cluster.

Results: A total of 6579 children were included (2017: 3505, 2020: 3074). Coverages varied for different vaccines (Figure 2). FIC dropped from 64% (2017) to 50% (2020). When excluding vaccines affected by stock-outs (BCG, OPV), there was no difference in FIC estimates (66%). Delays were common and increased with each subsequent dose of multidose vaccines, but for all vaccines except BCG, timeliness improved from 2017 to 2020. Ethnicity was the only background factor associated with all outcomes.

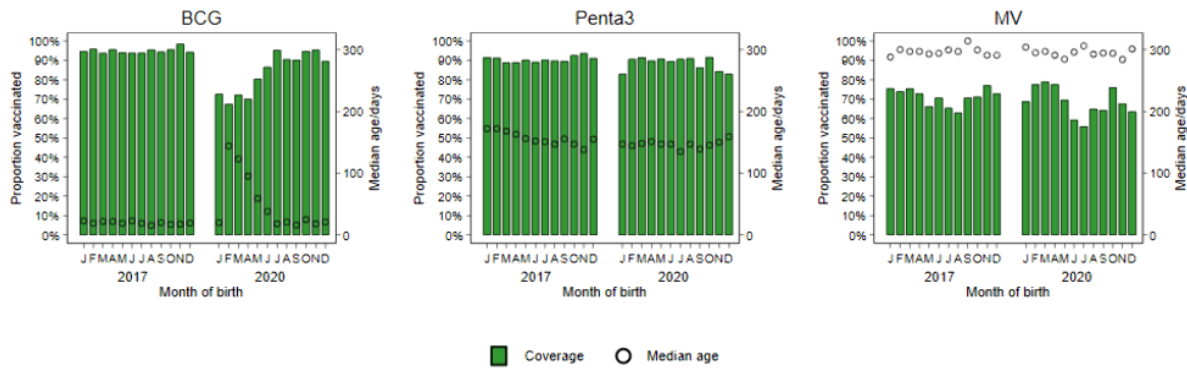


Figure 2: Coverage and median age at time of vaccination by year and month of birth.

Conclusions: Changes in coverages were driven by stock-outs rather than changes in vaccination services and not reflected in timeliness of vaccination.

Topic: AS17 Viral Infections: / AS17a Antiviral drugs and resistance

A DESCRIPTIVE ANALYSIS OF CHILDREN AND ADOLESCENTS WITH PROTEASE-INHIBITOR RESISTANCE REFERRED TO A THIRD-LINE ANTIRETROVIRAL THERAPY PROGRAMME IN SOUTH AFRICA: AN 8-YEAR REVIEW.

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Background: In South Africa, patients failing antiretroviral therapy (ART) with protease-inhibitor (PI) resistance confirmed on genotype resistance testing (GRT) are eligible for individualised ART regimens recommended by an expert review committee (ERC).

Aims: To describe the demographics, clinical characteristics, drug resistance profile, ART recommendations, and virological outcomes in children and adolescents (<20 years) with PI-resistance referred to the Western Cape provincial ART ERC from October 2013 to December 2021.

Methods: A retrospective descriptive analysis was performed using the ERC database, GRT results, and laboratory data. Ethical approval was obtained from the University of Cape Town (HREC REF 330/2023).

Results: Seventy-six cases (62% male) had PI resistance confirmed on GRT. At ERC referral, the median (interquartile range) age and duration on ART were 11.1 (7.3-13.1) and 8.7 (5.6-10.8) years respectively. First-line ART comprised a boosted or un-boosted PI-based regimen in 41 (54%) and 18 (24%) cases, respectively. Thirty-four cases (45%) received concurrent antituberculosis treatment while on a PI-based regimen but only 15/34 (44%) had appropriate ART regimen modification documented. Common PI resistance mutations were I54V (79%), V82A (72%) and M46I (39%) and GRT indicated susceptibility or potential low-level resistance to darunavir (Stanford mutation score <15) in 45 cases (59%). Individualised definitive ART regimens were initiated in 71/76 (93%) cases. HIV-1 RNA was <50 copies/mL in 41/65 (63%) cases with viral load data at 12 months.

Conclusions: Concurrent PI-based ART and antituberculosis treatment with low recorded rates of ART regimen modification were frequent in this cohort of children with PI resistance.



EP134 / #377

Topic: AS17 Viral Infections: / AS17c Arbovirus infections including Chikungunya, Dengue virus, yellow fever, Zika virus

COMPARISON OF CLINICAL COURSE AND OUTCOME OF DENGUE PATIENTS WITH AND WITHOUT DENGUE VACCINE IN A TERTIARY HOSPITAL IN MAKATI

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Background: Dengue is a major health crisis in the Philippines. In 2016, Dengue vaccine was introduced in response to a high incidence of dengue. It was a school-based campaign organized by the Department of Health (DoH) but was discontinued on December 2017. Real-world reports of outcomes of vaccination would provide valuable data for the use of the vaccine.

Aims: This study was conducted to determine the effect of dengue vaccine on the clinical course and outcome of pediatric patients with dengue fever in a tertiary hospital in Makati

Methods: Retrospective cohort study

Results: There were 194 admitted dengue patients included in the study. Clinical course among vaccinated patients showed the mean duration of illness (6 days, SD=2.9) and mean febrile days (4 days, SD=1.7) were significantly shorter compared to unvaccinated (8 days, SD=1.6 and 5 days, SD=1.3, respectively). Hypotension is lower among vaccinated vs unvaccinated (9.3% vs 18.6%; $p=.0626$) but this was not significant. There were 9.3% of vaccinated patients who presented with dengue severe, which is lower than in unvaccinated patients (18.6%). Dengue vaccination decreased the risk for severe dengue compared to unvaccinated patients (AOR = 0.37; 95% CI 0.15 to 0.92).

Conclusions: Patients with Dengue vaccine had significantly shorter mean duration of illness and mean febrile days. Dengue vaccine significantly decreased the risk for severe dengue and there was no association between dengue vaccine and mortality rate.

EP135 / #423

Topic: AS17 Viral Infections: / AS17e Gastrointestinal tract infection

DE NOVO ONSET OF CROHN'S DISEASE IN A 10 YEAR OLD GIRL SHORTLY AFTER COVID-19 INFECTION

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Title of Case(s):: DE NOVO ONSET OF CROHN'S DISEASE IN A 10 YEAR OLD GIRL SHORTLY AFTER COVID-19 INFECTION

Background:: The onset of autoimmune diseases may be generated by a variety of factors through the creating a hyper-stimulated state of the immune system. Infection from Sars-Cov-2 has been related to pathologic immune response even in children and could initiate various autoimmune diseases. These may present either during or shortly after resolution of disease.

Case Presentation Summary:: A 10 year old girl was referred to our hospital due to daily low grade fever, diarrhea, anorexia and periodic epigastralgia, all initiating 10 days after infection from Sars-Cov-2. She wasn't vaccinated against Covid-19. Clinical findings included pallor and emaciation. Double antibiotic therapy was administered to our patient, immediately after laboratory tests were performed: Ht: 30%, Hb: 9.9g/dl, WBC: 12.8 k/ μ L (N: 70%), CRP: 86, 37mg/L, ESR: 36mm/h, PCR panel for various viruses, antibodies for celiac disease, parasitological and stool cultures, C. difficile toxin, Widal-Wright, antibodies for autoimmune diseases. Each test was negative. Due to persistence of symptoms stool calprotectin was checked with upcoming results highly off normal values (1008, 9 μ g/g). Abdominal ultrasound revealed the presence of abnormal mesenteric lymph nodes (1cm), while X-rays of the abdomen were normal. Patient was transferred to a tertiary hospital where after gastro-colonoscopy and MR Enterography diagnosis of Crohn's disease was established and cortisone and azathioprine therapy was administered.

Learning Points/Discussion: According to up to date data, infection from Covid-19 can induce intestinal inflammation and lead to denovo onset of IBD, possibly due to disturbance of bowel barrier, mutations in genetic expression, intestinal dysbiosis and immunologic hyper-responsiveness. Nevertheless, more studies should be conducted in order to export safer results. Until then, the clinician should be vigilant for possible IBD manifestations after Covid-19 infection, and refer immediately any such patient to a pediatric gastroenterologist.

EP136 / #341

Topic: AS17 Viral Infections: / AS17e Gastrointestinal tract infection

THE CHANGING PATTERN OF ROTAVIRUS INFECTION AMONG OUTPATIENT CHILDREN IN PUNE, INDIA: TWO YEARS OF THE COVID-19 PANDEMIC

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Background: In addition to reducing the spread of SARS-CoV-2, the extensive non-pharmaceutical interventions (NPIs) used during the COVID-19 pandemic also had an effect on the prevalence of other viruses.

Aims: Aim: This study aimed to investigate the incidence of Rotavirus-A (RVA) among children hospitalized with acute gastroenteritis (AGE), Pune, Maharashtra, India during the COVID-19 pandemic.

Methods: Material and methods: The study includes a total of 218 fecal specimens collected from gastroenteritis patients hospitalized in Pune city and compared between the post-COVID-19 (from 2020 to 2022) and 340 specimens from pre-COVID-19 period (from 2017 to December 2019). Enzyme immunoassay (EIA) was used to examine stool samples for rotavirus antigen. RT-PCR and Q-PCR was used to genotype 31% of the EIA positive samples in order to determine the G (VP7) and P (VP4) types.

Results: Of the 558 samples tested, 173 (31%) were positive for rotavirus. The number of patients with Rotavirus A infection was similar across the two periods (29.9% and 33.9%). Of the 173 genotyped samples, G3P[8] (62.4%) was the most common, followed by G2P[4] (9%) during post and pre COVID-19. During analysis we observed that the positivity was increased for G2P[4] during post COVID-19. A smaller proportion of mixed and partially typed/untyped samples was also observed in few samples.

Conclusions: The need for ongoing enteric virus surveillance to assess the effects of diarrhoeal vaccine(s) given in India is highlighted by a shift in prevalence pattern and increased variety from 2017 to 2022.



EP137 / #279

Topic: AS17 Viral Infections: / AS17e Gastrointestinal tract infection

PROFILE OF GASTROENTERITIS AMONG TOGOLESE CHILDREN YOUNGER THAN FIVE YEARS OF AGE AFTER EIGHT-YEAR EXPERIENCE WITH A MONOVALENT ROTAVIRUS VACCINE INTRODUCTION INTO EPI

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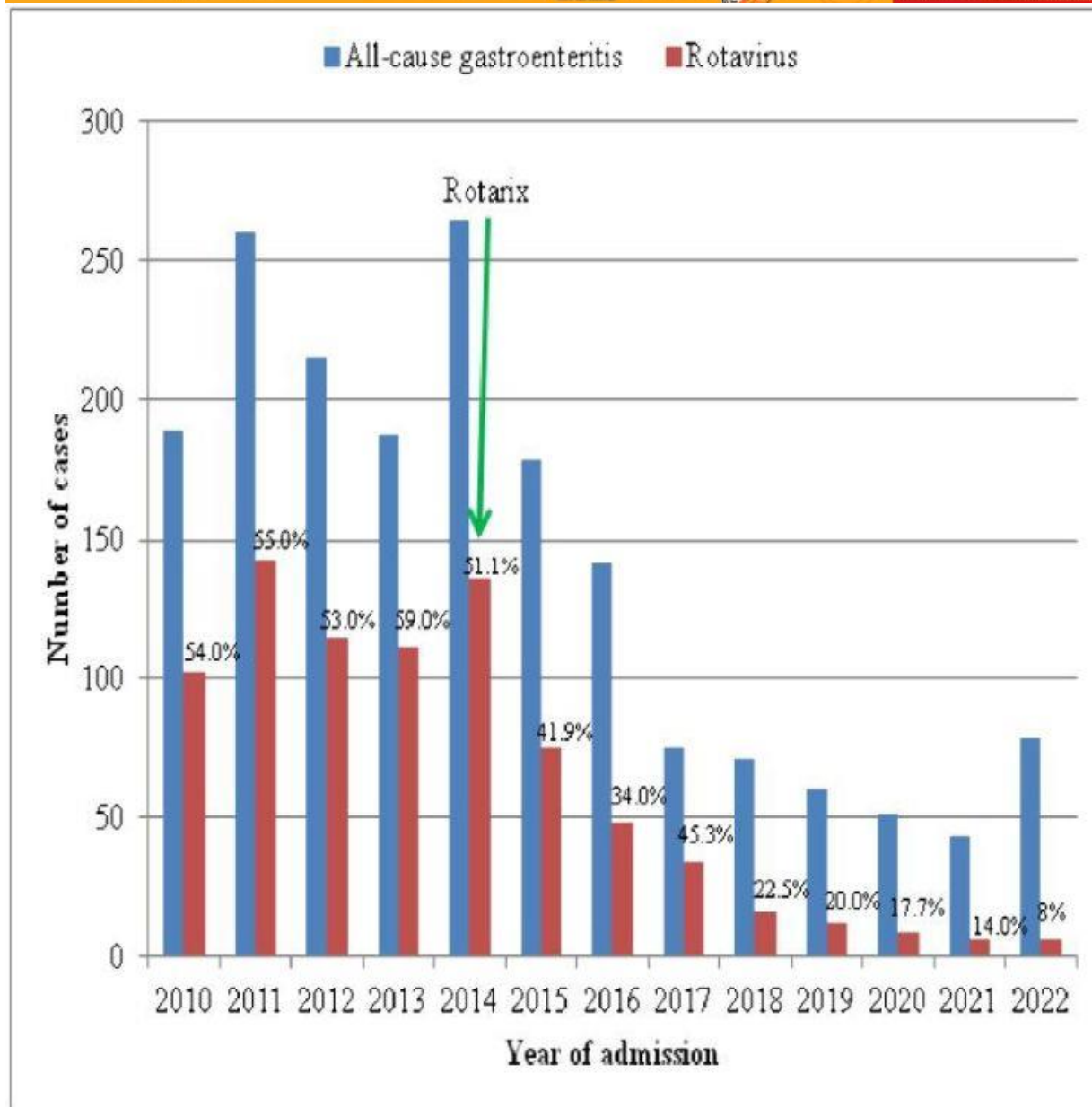
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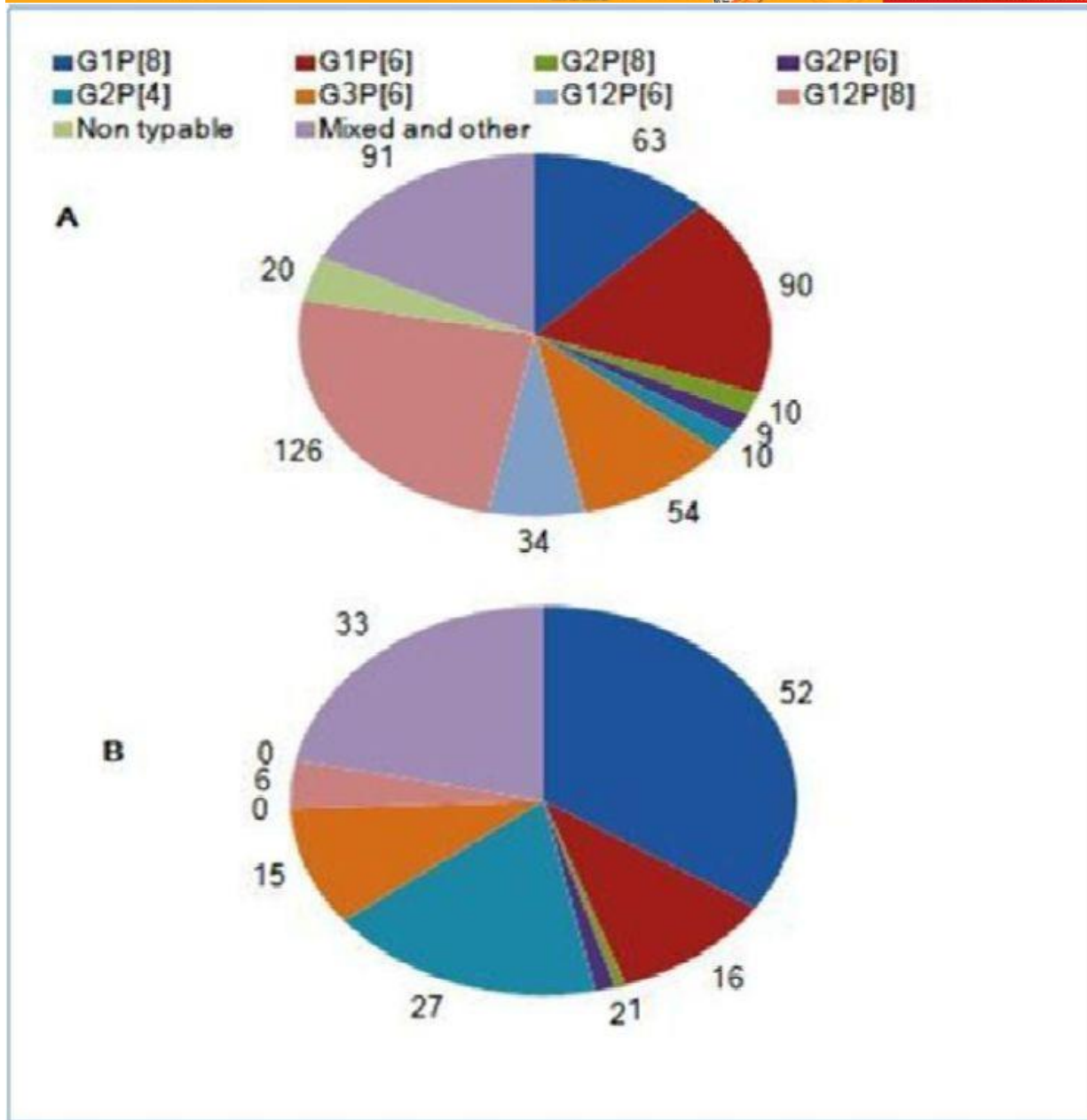
Background: Against rotavirus, the leading cause of children gastroenteritis worldwide, a vaccine (Rotarix®) has been introduced into the Togolese immunization schedule since June 2014.

Aims: After 14-year (2008-2022) experience of active sentinel surveillance in hospitals for gastroenteritis, we presented the epidemiology of the disease and rotavirus vaccine impact in Togo.

Methods: The generic protocol developed by WHO for the surveillance is used for data collection at Sylvanus Olympio Teaching Hospital and Be Hospital. ELISA test (Enzyme Linked Immunosorbent Assay, IDEIATM Rotavirus OXOID) is used for diagnostic in stool samples. Quality control and genotyping were performed in Accra and Pretoria. Epi Info was used for data analysis.

Results: A total number of 1,873 children <5 years of age were enrolled; with ELISA test result available for 1,814 (97%). Rotavirus infection was confirmed for 811 children (prevalence. 45%). Prior to rotavirus vaccine introduction 1,116 children were enrolled; with an annual prevalence of 54% (range. 51 - 59%). During the 8-year post-vaccine period, 700 children were enrolled, and the annual prevalence was 21% (range. 7 - 45%); with an annual rotavirus-associated gastroenteritis reduction of 61% (range. 17 - 87%). Marked year-to-year variability was observed in circulating rotavirus genotypes during all the surveillance period. The most commune genotype combinations were G12P[8] (20%), G1P[8] (17%), G1P[6] (16%) and G3P[6] (10%). G2P[4] was observed in 18% of cases during the post-vaccine period. The overall case fatality rate was 1% (26/1,814).





Conclusions: Rotarix® has changed the magnitude of gastroenteritis among Togolese children.
Acknowledgments to: surveillance participants, GAVI, CDC/Atlanta, WHO/AFRO, Togo's Ministry of Health.



EP138 / #500

Topic: AS17 Viral Infections: / AS17f Hepatitis

ULTRASONOGRAPHIC AND HEMODYNAMIC MONITORING OF THE LIVER AND SPLEEN PARAMETERS IN CHILDREN WITH CHRONIC VIRAL HEPATITIS B AND C IN UKRAINE DURING WARTIME

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Background: During the period of military invasion in Ukraine, a number of patients have limited access to medical care, and its exacerbates the problem of monitoring for the condition of patients with hepatitis B and C. The assessment of changes in the morphometric, hemodynamic, and echoacoustic characteristics of abdominal cavity organs should be performed, as predictors of prognosis of fibrosis.

Aims: To evaluate the morphometric and hemodynamic parameters of the liver in children with viral hepatitis B and C.

Methods: Analysis of abdominal organs US scans was carried out according to the Y. Davoudi scale (2015), analysis of blood flow velocities (BFV) in v. portae, v. lienalis and a. hepatica; statistical analysis.

Results: 21 children with hepatitis B and C (group I) and 16 healthy children (group II) were examined. According to the Davoudi scale (2015), it was established that the score in the I group was 2.7 ± 0.25 points, and in the II group it was 1.5 ± 0.29 points ($p < 0.01$). The BFV in v.portae in I group was 15.64 ± 0.45 cm/s, and in the II group – 17.54 ± 0.78 cm/s ($p < 0.05$). The BFV in v.lienalis in the I group was 15.74 ± 0.76 cm/s, and in the II group – 17.48 ± 0.38 cm/s ($p < 0.05$). The BFV in a.hepatica in patients of I group was 18.78 ± 0.68 cm/s, and in patients of II group – 21.12 ± 0.84 cm/s ($p < 0.05$).

Conclusions: Morphometric changes of the liver and spleen were more pronounced in patients of I group ($p < 0.01$). Rates of BFV in v.portae, v.lienalis and a.hepatica were significantly lower in patients of I group ($p < 0.05$).



EP139 / #421

Topic: AS17 Viral Infections: / AS17g HIV infection

ASSESSING VIRAEMIA RATES IN ADOLESCENTS LIVING WITH HIV SCREENED FOR A CLINICAL TRIAL

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Background: Adolescents living with HIV, experience more adherence challenges than their adult counterparts in poor virological suppression rate. It is evident that adolescents will not meet UNAIDS' 2030 targets of 95% viral suppression rates.

Aims: Understanding the depth of poor virological outcomes is critical for determining strategies needed to address these challenges.

Methods: Enhancing Care Foundation Clinical Research Site in Durban, KZN is involved in an international study aiming to assess a treatment strategy aimed at improving adherence in virologically suppressed adolescents. Between December 2022- Feb 2023, the site pre-screened potential adolescents, for participation, by chart reviews of adolescents referred to site by the clinics or site recruiters. Information obtained was dates of birth, sex and viral loads of potential study participants.

Results: A total of 283 adolescent's medical charts were reviewed. The patients were aged 12-19 years old, 157 (55,4%) were male. Only 55/283 (19,4%) of the adolescents had a suppressed viral load 100% of the time in the 2 years prior to chart review. We noted that there were adolescents [24 (8,5%)] who didn't have viral loads performed in the 2 years. Adolescents who met the pre-screening criteria were contacted and 23 participants agreed to be screened for the study. Additionally, 5/23 (21,7%) screened participants were not eligible for the study due to viraemia (VI>50).

Conclusions: Adherence to ART is critical for treatment success and to prevent transmission of HIV. However, despite newer, simplified, and effective ART, optimal adherence remains a challenge in adolescents. Strategies to address this are a critical need.

Topic: AS17 *Viral Infections:* / AS17g *HIV infection*

A PILOT STUDY EXPLORING THE PRESENTING DIAGNOSIS OF CHILDREN WITH HIV AT A TERTIARY HOSPITAL

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Background: There is limited data on the causes of hospital admissions amongst children living with HIV (CLHIV) in the ART era.

Aims: The aim of this study was to describe hospital diagnoses in CLHIV before and during the COVID-19 pandemic.

Methods: A retrospective descriptive cross-sectional study was performed. Inclusion criteria were children younger than 13 years with a positive HIV PCR or ELISA test admitted to three paediatric wards and the paediatric intensive care unit of Tygerberg Hospital from January 2019 through December 2021. Period A (pre-COVID) was defined as January 2019 through February 2020. Period B (During COVID) was defined March 2020 to December 2021. Clinical and laboratory data were retrieved by reviewing folders. Statistical analysis was done using STATA version 17. Ethical approval from Stellenbosch University HREC was granted (U22/05/182).

Results: Of the 96 children in this study, 42 (43.75%) were female. The median age was 2.12 years (IQR 0.82, 6.7). The three most common primary diagnoses on presentation were unspecified HIV disease (25.26%) mycobacterial infection (18.95%) and encephalopathy (9.47%). The median CD4 count was 377 (IQR 126, 726) and 8.00% of the children were virally suppressed. 3.13% of admissions resulted in death. Median weight for age Z score in period A was -2.71 and -3.84 in period B (P value 0.03). 5.00% of children required ICU admission in Period A while 19.23% required admission in period B. (P value 0.018).

Conclusions: TB remains the most common cause of hospital admission amongst CLHIV. Children appeared to be more malnourished and severely ill following COVID-19 pandemic.



EP141 / #516

Topic: AS17 Viral Infections: / AS17g HIV infection

CORRELATES OF HIV ASSOCIATED MORBIDITY AND MORTALITY AMONG CHILDREN AND ADOLESCENTS ADMITTED IN KENYATTA NATIONAL HOSPITAL IN KENYA

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Background: There are 2.8 million children and adolescents living with HIV in the world. New HIV infections are higher in adolescents than in children. AIDS-related deaths have been declining in children but rising in adolescents despite scale up of ART in both groups. Limited data is available on patterns of mortality and morbidity among HIV infected children and adolescents in Kenya.

Aims: To describe the correlates of HIV associated and mortality among children and adolescents admitted in Kenyatta National Hospital

Methods: retrospective review of hospital records of children and adolescents admitted in Kenyatta National Hospital between 2013 and 2019. Descriptive statistics were used to describe characteristics of the study population, chi-square used to describe factors associated with morbidity and mortality across different age groups from 0-19 years.

Results: Five hundred and sixty-six children and adolescents were admitted in the hospital between 2013 and 2019. Median age of children and adolescents admitted was 8.7 (IQR 2.3-14.7), mostly male(55%), while 60% were WHO Stage 3. Mortality was 28.8% ((95% C.I.) 25.1-32.9). Median duration of hospital stay 8 days (IQR 7-14) $p=0.001$ for those who died and 18 days (IQR 9-28) $p=0.001$ for those who were discharged. Pneumonia was identified as the major cause of morbidity and mortality followed by Tuberculosis. Non-infectious causes of morbidity and mortality were commoner in adolescents than in children.

Conclusions: Most children and adolescents who are admitted in Kenyatta National Hospital came in with HIV associated morbidity come with advanced disease highlighting the need for scaling up early identification of children and adolescents living with HIV.

EP142 / #545

Topic: AS17 Viral Infections: / AS17g HIV infection

PROGRAMMATIC USE OF DOLUTEGRAVIR IN A TERTIARY CENTRE IN GHANA

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Background: HIV is now classified as a chronic disease. This is largely due to the impact of Highly-Active Anti-retroviral Regimen (HAART). Integrase Strand Transfer Inhibitors (INSTI) such as Dolutegravir (DTG) leads to higher viral load suppression and lower drug discontinuation with a better side-effect profile as compared to traditional Efavirenz and ritonavir-boosted lopinavir. It has been recommended as the first-line regimen since 2019 in Ghana.

Aims: The purpose of this study is to review the use and outcomes amongst patients started on Dolutegravir-containing HAART in Komfo Anokye Teaching Hospital

Methods: A folder review of all patients > 3kg, 3 months-24 years started on DTG as at the end of April 2023

Results: 391 clients, 51% of them males, were on DTG with majority having mother-to-child transmission, 96.6%(270/383). 72.6%(284/371) on the Fixed-dose combination of Tenofovir/Lamivudine/Dolutegravir (TLD) for those weighing >30kg with minimal change in the average creatinine levels of clients over 3 years duration. 67.7 %(210/310) of clients were virally suppressed within 6 months of starting DTG. Patients on TLD-based fixed drug combination had a mean age of 15.8 years (sd=4.4) compared to Abacavir OR Zidovudine/lamivudine/DTG-based with a mean age of 8.5 years(sd=3). Only 44.7%(171/383) were disclosed to at a mean age of 17.7 years (sd=3.6)

Conclusions: Disclosure of HIV status should be enhanced. This intervention, coupled with increased access to TLD has the potential to drastically improve adherence with subsequent viral suppression among adolescents and young adults living with HIV in Ghana.



EP143 / #503

Topic: AS17 *Viral Infections:* / AS17h *Influenza infection and respiratory virus infections*

WHOLE GENOME SEQUENCING AND MOLECULAR SURVEILLANCE OF INFLUENZA IN SOUTH AFRICAN CHILDREN.

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Background: Annually, seasonal influenza epidemics result in five million cases of severe disease and 300,000 fatalities globally. Children in low-to-middle-income countries (LMIC) are disproportionately affected by influenza-related lower respiratory tract infections (LRTI). Hemagglutinin and neuraminidase are key targets for influenza vaccine development due to the immune response elicited during viral entry and release of progeny virions, respectively. Ongoing surveillance is needed to ensure continued vaccine effectiveness.

Aims: In order to investigate the molecular epidemiology of influenza in South African children, an all-cause LRTI surveillance study was conducted in a tertiary public hospital in South Africa between 2021 and 2022.

Methods: Nasopharyngeal swabs collected from participants were tested for common respiratory pathogens including influenza A and B using a total nucleic acid amplification test. Influenza-positive samples were sequenced and phylogenetically analysed.

Results: Three percent (n=224/6744) of the participants tested positive for influenza – influenza A accounted for 78% (n=175/224) and influenza B for 21% (n=49/224). Whole genome sequencing of 107 influenza-positive samples revealed the presence of three influenza viruses: H3N2 (n=25/107, 23%), H1N1pdm09 (n=60/107, 56%), and B-Victoria (n=22/107, 21%). Further, six clades of the hemagglutinin region were identified, and a single Tamiflu-resistant mutation was detected in the neuraminidase region.

Conclusions: This study enhances the understanding of the molecular epidemiology of influenza, emphasizing the importance of surveillance in informing vaccine development. Insights into the genetic characteristics and diversity of influenza strains aid in pandemic preparedness, reducing the public health burden of influenza-related morbidity and mortality on vulnerable populations such as children in LMIC.



EP144 / #226

Topic: *AS17 Viral Infections: / AS17h Influenza infection and respiratory virus infections*

COVID-19 INFECTION IN PEDIATRIC PATIENTS WITH SEVERE MOTOR AND INTELLECTUAL DISABILITIES: EXPERIENCE AT A TERTIARY CHILDREN'S HOSPITAL IN JAPAN

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Background: Pediatric patients with underlying conditions are at high risk of severe SARS-CoV-2 disease 2019 (COVID-19). Children with severe motor and intellectual disabilities (SMID) are prone to severe infections. However, there are few reports describing the clinical characteristics of COVID-19 in this population.

Aims: We aimed to describe the clinical characteristics of COVID-19 in children with SMID.

Methods: We conducted a retrospective, single-center cohort study of COVID-19 pediatric patients with SMID at a children's hospital in Japan. All admitted patients with COVID-19 between September 2020 and April 2023 were identified. We examined the demographic and clinical data of the children with SMID.

Results: Among 513 COVID-19 cases admitted to our hospital, 33 (6.4%) cases were identified to have SMID. Median age was 8.1 (IQR 3.0-12.8). Neurological diseases were the most common underlying diseases (79%), followed by congenital heart diseases (49%) and genetic disorders (27%). Five (15%) patients were post-tracheostomy; seven (21%) were on ventilators or home oxygen therapy; 17 (52%) were on tube feeding. Although fever and cough were the most frequent symptoms (97% and 61%, respectively), they were often admitted because of lower respiratory symptoms (hypoxia, increased respiratory secretions, and wheezing; 42%, 36%, and 33%, respectively). 15 (46%) required supplemental oxygen therapy. Eight (24%) patients received intravenous antibiotics and six (24%) received intravenous steroids. The median length of stay was 8 days (IQR 5-10).

Conclusions: We found that children with SMID were more susceptible to severe COVID-19 than children without underlying diseases. The management of COVID-19 in this population requires much more healthcare resources.

EP145 / #614

Topic: *AS17 Viral Infections: / AS17h Influenza infection and respiratory virus infections*

RECURRENT CROUP: ASSOCIATION WITH ALLERGY IN THE FIRST YEAR OF LIFE

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Background: There is currently no single point of view regarding the causal relation between allergy and recurrent croup.

Aims: Determine the association between recurrent croup and allergy in the first year of life.

Methods: A questionnaire was used to obtain life history of 465 children aged 6-14 years: 60 children with asthma, 74 children with recurrent croup (≥ 4 episodes), 133 children with croup (≤ 3 episodes) and 198 control.

Results: Incidences of allergy in the neonatal period among children with asthma significantly exceeded the corresponding values among children with recurrent croup, croup and in the control group (41.7% vs 9.5%, 3.8% and 4.0%, respectively, $p < 0.05$). At the same time, there was no significant difference in incidences of allergy in the neonatal period between children with recurrent croup, children with croup, and children from the control group. The incidences of allergy increased in children of all groups during the first year of life and amounted to 75% in children with asthma, exceeding the corresponding values among children with recurrent croup, croup and in the control group 1.5, 2.7, and 3.2 times, respectively, $p < 0.05$. The difference in the frequency of allergy in the first year of life was also significant between children with recurrent croup on one side and children with croup and children from the control group on another side.

Conclusions: There is an association between recurrent croup and allergy in the first year of life.

Topic: *AS17 Viral Infections: / AS17i Other virus infections*

IMPACT OF SARS-COV-2 AND BURDEN OF COMMUNITY ACQUIRED PNEUMONIA (CAP) IN HOSPITALIZED CHILDREN, A TERTIARY CARE CENTRE EXPERIENCE, BANGLADESH

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Background: The COVID-19 preventive measures such as social distancing, cough etiquette and lockdown strategies were associated with a significant decrease in pediatric infectious diseases including non-COVID CAP in children following the COVID-19 outbreaks, notably during high COVID transmission period.

Aims: This study aimed to assess the impact of the COVID-19 pandemic on non-COVID-19 CAP in children.

Methods: We conducted a retrospective analysis of all patients (age ≤ 18 years) presenting with CAP from April 2019 to March 2021 in Bangladesh Shishu Hospital & Institute. We compared the patients admitted with non-COVID CAP between April 2020 to March 2021 and April 2019 to March 2020.

Results: The number of hospitalized patients with non-COVID CAP was significantly lower in 2020-2021 (2240 cases) than that in 2019-2020 (3604 cases), a decline of cases by -43.9% in 2020-2021. During 2019-2020 more non-COVID CAP cases were hospitalized, April-June 29.3% and July-September 22.65% in contrast to decreasing cases during, April-June 9.78% and July-September 10.54% in 2020-2021. Whereas hospitalization of child non-COVID CAP cases took a surge during October-December 24.6% and January-March 55.63%. On the other hand, in 2020-2021 during the low transmission status of COVID 19 in the country, lower numbers of cases detected during October-December 18.3% and January-March 29.31% of 2019-2020.

Conclusions: The number of children with non-COVID CAP during 2020-2021 was lower than the same period in 2019-2020. The role of SARS-COV-2 and preventive measures for COVID-19 helped in reducing child CAP cases.

EP147 / #424

Topic: *AS17 Viral Infections: / AS17i Other virus infections*

PROSPECTS FOR MEASLES ELIMINATION IN THE RUSSIAN FEDERATION.

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Background: The measles elimination target set by WHO in 6 regions was only achieved in the Americas region in 2002, but to date, 5 WHO regions have not achieved success.

Aims: Determine the main conditions for the elimination of measles in the Russian Federation, which is part of the WHO European Region.

Methods: Epidemiological, serological, molecular genetic methods

Results: Measles vaccination coverage at 1 and 6 years of age in the Russian Federation has been maintained at 95% since 2002. The incidence in the years of recovery was recorded at the level of 2,3 (2003), 3,2 (2014), 3,1 (2019) per 100,000. During the years of recession in 2008-2010, 2021-2022, the indicator dropped to a level of less than 1.0 per million. In the structure of cases more than 80% were unvaccinated against measles. According to serological monitoring data, the proportion of children and adults seronegative to the measles virus is stable on average in the country 10-12% and does not tend to increase. There has been a reduction in the diversity of circulating measles virus strains. At the moment, both in Russia and in the European region, predominantly circulates the D8 genotype.

Conclusions: Elimination of measles is possible if high vaccination coverage of the entire population is maintained. Given the high contagiousness of measles, the presence of sensitive contingents is likely in the future, even at low numbers, the alternation of ups and downs in the incidence and the formation of local outbreaks.

Topic: AS17 *Viral Infections:* / AS17i *Other virus infections*

IMPACT OF VACCINATION STATUS ON DIRECT COSTS AND MEASLES-RELATED DEATHS AMONG CHILDREN AGED 0 TO 14 IN BRAZZAVILLE, REPUBLIC OF CONGO

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Background: to evaluate the direct costs taking into account the vaccination status of the child hospitalized in the infectious diseases department of the Brazzaville University Hospital, and secondarily the death.

Aims: to evaluate the direct costs taking into account the vaccination status of the child hospitalized.

Methods: This was a retrospective study of children aged 0 to 14 hospitalized in the infectious diseases department of the Brazzaville University Hospital, from May to December 2022, with a clinical picture compatible with measles. The vaccination status was described as follows: up-to-date vaccin: child who has received 2 doses of measles vaccine according to the recommendations of the EPI, incomplete vaccine: child who, from 15 months of age, has not yet received the 2nd dose of measles vaccinated and, not – vaccinated: child who has not received any dose of vaccine. Direct costs were defined as the expenses generated by the disease (measles): including treatment, hospitalization and death.

Results: Of 36 children included, 55.56% were male with an average age of 24.29±4.6 months. 11.11%, 11.11% and 77.78% were respectively vaccinated up to date, vaccinated incompletely and not – vaccinated. The average direct cost was 173.99 ± 19.89 euros in the vaccinated, 230.11 ± 125.96 euros in the incompletely vaccinated and 243.85 ± 187.77 euros in the non-vaccinated. Two (2) children died in the unvaccinated group.

Conclusions: Vaccination reduces the direct cost and deaths associated with measles. Messages during vaccination campaigns, in addition to focusing on mobilization, must also focus on the benefits of the vaccine

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Topic: *AS17 Viral Infections: / AS17i Other virus infections*

RECURRENT KAWASAKI DISEASE DURING THE SARS-COV2 PANDEMIC

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Title of Case(s):: Recurrent Kawasaki disease during the SARS-Cov2 pandemic

Background:: Kawasaki disease (KD) is an acute medium-vessel vasculitis of childhood, with a predilection for coronary arteries. Recurrent episodes are rare with an incidence of 1–4% in Asian countries. Since the global pandemic, SARS-Cov2 has been postulated as a trigger for recurrent KD in genetically susceptible individuals. KD also shares similar pathogenic and clinical criteria with multisystem inflammatory syndrome in children (MIS-C), a late manifestation of SARS-Cov2 infection.

Case Presentation Summary:: We report the case of an 11-month male infant who presented with fever and rash for 3 days. On examination, he had a polymorphous rash, cheilitis, erythematous palms and pedal oedema. The infant was treated for KD with 2 doses of intravenous immunoglobulin (Ig) and aspirin, however the fever persisted. His SARS-Cov2 polymerase chain reaction (PCR) test was negative, however SARS-Cov2 antibodies were detected. MIS-C was considered and Methylprednisolone was commenced, with defervescence by day 2. Echocardiography revealed multiple coronary artery aneurysms. These gradually resolved over 4 months, however the patient re-presented at 15 months of age with clinical criteria suggestive of recurrent KD. Defervescence was achieved after administration of one dose of intravenous IG. His SARS-Cov2 PCR tested negative at this admission. Repeat echocardiography revealed no new coronary aneurysms and good ventricular function.

Learning Points/Discussion: The case reports a rare recurrence of KD in an infant of African ethnicity and highlights the diagnostic overlap and treatment differences between KD and MIS-C. Clinicians should also be aware of the role of SARS-Cov2 as a potential viral trigger for recurrent KD.

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Topic: *AS17 Viral Infections: / AS17i Other virus infections*

CIRCOVIRUS INFECTION IN HUMANS – SHOULD WE WORRY OR NOT?

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Background: Circovirus is a DNA virus from the Circoviridae family. It has got a single-chiral ring DNA molecule. Circovirus infection has been considered to be animals and birds disease since its identification in 1974 and the isolation in 1991. Currently, 80-100% of the pig population here has antibodies to the CVS-2 virus. Circovirus is a serious pathogen for birds too, especially for parrots: it is the reason of psittacine beak and feather disease (Pbfd).

Aims: The aim of the study was to analyze the literature to assess the possible danger of circoviruses for humans.

Methods: In 1997 human circoviruses were first described as transfusion-transmissible virus (TTV) and TTV-like mini-virus (TLMV). They were found with high abundance in various body fluids in humans. In 2002, Hart CA et al attributed circoviruses to a group of new pathogens capable of causing pathology of the liver and, possibly, other organs..

Results: In February 2023, Pérot P. published a paper reporting a confirmed circovirus infection in an immunosuppressed person with severe liver disease. Metagenomic analysis of NGS (mNGS) revealed 1011 sequences in biopsy specimens corresponding to the genes of the capsid and Rep proteins of viruses of the Circoviridae family. The new virus species has been named human circovirus 1 (HCirV-1). We are probably dealing with a new infection that can spread against the background of the consequences of a coronavirus infection which, in particular, leads to the suppression of cellular immunity.

Conclusions: But we can also have deal with a new viral infection, so we should be attentive.

EP151 / #455

Topic: AS17 *Viral Infections:* / AS17i *Other virus infections*

DE NOVO ONSET OF SYSTEMIC LUPUS ERYTHEMATOSUS (SLE) DISEASE IN A 13Y OLD GIRL AFTER COVID-19 AND EPSTEIN-BARR VIRUS (EBV) COINFECTION

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Title of Case(s):: DE NOVO ONSET OF SYSTEMIC LUPUS ERYTHEMATOSUS (SLE) DISEASE IN A 13y OLD GIRL AFTER COVID-19 AND EPSTEIN-BARR VIRUS (EBV) COINFECTION

Background:: SLE is caused by the interaction between genetic and environmental factors, however, its underlying triggers remain unknown. Among the environmental factors, the involvement of infections, as a trigger for SLE, especially those of viral etiology, has been widely reported. Viruses such as EBV have been documented to be involved in SLE pathogenesis and the new Sars-Cov-2 is now implemented in autoimmune and autoinflammatory disorders.

Case Presentation Summary:: A 13-year-old girl visited our outpatient clinics due to persistent arthralgia over the past trimester. At first only major joints were affected (knee and limb) but shortly after pain and oedema presented in smaller joints of upper and lower extremities as well. Headache, hoarseness of voice, difficulty in climbing steps, weight loss and worsening hair loss were also mentioned. The above symptoms started 3 months after a laboratory-confirmed COVID-19 and EBV coinfection. Due to persistence of symptoms the patient admitted to hospital and extensive laboratory tests were performed and revealed: severe leukopenia, thrombocytopenia, elevated erythrocyte sedimentation rate (ESR), hypocomplementemia, hyperglobulinemia, positive ANA, anti-ds DNA markers, anti-cardiolipin IgM antibodies, positive anti-β2GPI IgM antibodies, positive Lactest and mild proteinuria. The patient fulfilled the classification criteria for SLE and was then referred to a rheumatologist and immunosuppressive treatment was started.

Learning Points/Discussion: There is a strong belief that EBV infection is involved in SLE pathogenesis. Covid-19 infection related autoimmune response has been documented as well. It would be interesting to observe any relationship between Covid and EBV coinfection and trigger of autoimmune diseases. Until then the clinician should be vigilant for possible infections or infectious reactivation that are potential triggers for initiation of autoimmunity and for SLE flares.

Topic: AS17 Viral Infections: / AS17i Other virus infections

ACTIVE PERSISTENCE OF THE EPSTEIN-BARR VIRUS WORSE PROGNOSIS ESOPHAGITIS IN SCHOOL CHILDREN

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Background: Cases of severe variants of erosive and ulcerative esophagitis in older children and adolescents have become more frequent. There are publications on the effect of Epstein-Barr virus (EBV) on the development of severe and complicated esophagitis and an increased risk of developing adenocarcinoma of the esophagus with active persistence of EBV, which has a tropism for gastrointestinal epithelial cells.

Aims: To study the effect of active persistence of EBV in school-age children with esophagitis and complicated variants of GERD, based on the results of a comprehensive study.

Methods: 388 children aged 6-18 years with esophagitis were examined. The diagnosis was verified endoscopically and morphologically. Hp was determined histologically, the activity of EBV - by PCR of blood serum. The results were statistically processed.

Results: The overall infection with Hp was 56%. Patients were divided into 2 groups : group 1 - 295 (76%) patients with catarrhal esophagitis, group 2 - 93 (24%) patients with erosive esophagitis. EBV in catarrhal esophagitis was detected in 12%, and in erosive esophagitis in 48% of patients ($p < 0.01$). 24.5% of patients with erosive esophagitis had complications in the form of torpid slit-like erosions, ulcers and polyps of the esophagus. When analyzing the infection rate of this category of patients, it turned out that Hp-positive variants of complicated esophagitis accounted for only 28%, while active EBV infection was detected in 92% of patients ($p < 0.01$).

Conclusions: EBV is significantly more often detected in school-age children with erosive and complicated esophagitis. Active long-term persistence of EBV worsens the prognosis of esophagitis.



EP153 / #502

Topic: AS17 Viral Infections: / AS17i Other virus infections

NEUROLOGICAL MANIFESTATIONS AND COMPLICATIONS AMONG CHILDREN WITH MULTISYSTEM INFLAMMATORY SYNDROME IN 16 LATIN AMERICAN COUNTRIES: A MULTICENTER STUDY OF THE REKAMLATINA NETWORK

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Background: Neurological involvement following SARS-CoV-2 infection is well known. However, neurological manifestations and complications in children with Multisystem Inflammatory Syndrome (MIS-C) are less clear.

Aims: To describe the neurological involvement in a cohort of Latin American children with MIS-C.

Methods: Multicenter observational descriptive retrospective/prospective study of children <18 years with confirmed MIS-C admitted to 69 centers in 16 Latin American countries from January-2020 to June-2022.



Descriptive statistical analyses were performed, and logistic regression was used to identify factors associated with neurological involvement.

Results: 1,236 children with MIS-C were hospitalized during this period. Of these, 784 (63.4%) had at least 1 neurological sign/symptom. Irritability (485/1236, 39.2%), headache (358/1236, 28.9%) and encephalopathy (129/1236, 10.4%) were the most frequently reported. Children with neurological signs/symptoms were younger than those without neurological compromise (6.6 years-old vs 7.4 years-old; $p = 0.002$). The main complications were encephalitis ($n=25$), ischemic stroke ($n= 3$) and Guillain-Barré Syndrome ($n= 2$). Neurological signs/symptoms in children with MIS-C were significantly associated with acute severe respiratory illness (OR:1.54, 95% CI: 1.02–2.37; $p=0.032$) and need of mechanical ventilation (OR:1.46, 95% CI: 1.05–2.03; $p=0.017$). There was no association between neurological signs/symptoms and other variables such as sex, underlying disorders, PICU admission, and mortality.

Conclusions: A significant proportion of MIS-C patients had neurological signs/symptoms, which were associated with acute severe respiratory illness and need of mechanical ventilation. However, these were not associated with more PICU admission or higher mortality. Although neurological manifestations in MIS-C patients were common, these does not necessarily imply a worst prognosis.

EP154 / #656

Topic: AS17 *Viral Infections:* / AS17i *Other virus infections*

GIANT PERIANAL CONCYLOMAS IN CHILDREN: A REAL THERAPEUTIC CHALLENGE

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Background: Giant perianal condylomas are rare diseases of the anogenital area diseases in children. They are induced by Human Papilloma Virus type 6 and 11. The sexual transmission in children is still debated. Treatment in children is challenging and should be eraly started.

Aims: The aim of our study was to describe the clinical and therapeutic features of giant perianal condylomas in 4 immunocompetent children.

Methods: A prospective study was conducted in our Dermatology Department including 4 children with giant perianal condyloma followed-up from January 2021 to June 2023.

Results: Our study included 4 immunocompetent children aged respectively 18 months, 2 years, 2 yeats and 3 years. There were 2 males and 2 females. There was no significant past medical history and there was no history of sexul abuse. Clinical examination revealed an exophytic verrucous condylomatoid tumor around the anal margin. Screening for other sexually transmitted diseases was negative. Skin biopsy performed in all our patients was consistent with condyloma. In situ hybridization for HPV was positive to subtype 6 in two patients and to subtype 11 in two patients. All our patients were initially treated with cryotherapy (4 sessions) without results. Topical imiquimod 5% was then started and applied three times a week for about 2 months with a favorable outcome and disappearance of the perianal giant tumor.

Conclusions: In a child, sexual abuse should always be excluded. Treatment of giant perianal condylomas should be non invasive in children and conservative. Topical imiquimod 5% appears to be a safe alternative with non scarring cosmetic outcome.



EP155 / #25

Topic: AS17 Viral Infections: / AS17j Perinatal and congenital infections

HERPES SIMPLEX VIRUS DISEASE IN NEONATES AND INFANCY: COMPARISON BETWEEN NATIONAL SURVEILLANCE DATA AND STATEWIDE EVALUATION OF LABORATORY AND CLINICAL RECORDS

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Background: Herpes simplex virus (HSV) disease in infancy is not a mandatory notifiable condition in Australia. Australian surveillance relies on voluntary reporting of cases to the Australian Paediatric Surveillance Unit (APSU) by clinicians.

Aims: To evaluate the epidemiology, disease characteristics and outcomes of HSV disease in infancy in the Australian states of Queensland (QLD) and Western Australia (WA) using laboratory and clinical data and complementary national surveillance data collected via the APSU.

Methods: Positive HSV 1 and 2 PCR results were obtained from state-wide pathology providers in QLD and WA for infants (0-3months) from 2007-2017. Clinical data were obtained from patient records. Comparison was made to cases collected via APSU surveillance for these states.

Results: 94 cases of HSV disease (70 QLD; 24 WA) were identified from laboratory datasets, compared to 36 cases (26 QLD; 10 WA) reported to the APSU. Twenty-eight were common to both datasets, (7/28 skin eye mouth(SEM) disease, 13/28 central nervous system (CNS) disease and 8/28 disseminated disease). Of the 66 laboratory cases not reported to the APSU, the majority (57/66) had SEM disease, with 5/66 CNS disease and 4/66 disseminated disease. Eight cases reported to the APSU were not captured by laboratory datasets (5 SEM disease, 1 CNS disease, 2 disseminated disease). Surveillance cases had a higher case-fatality rate (13.9%) compared to laboratory cases (7.4%) Neurological sequelae at discharge were comparable (8.3% APSU cases versus 7.4% laboratory cases).

Conclusions: Active surveillance captures approximately one third of the cases of hospitalised HSV disease in QLD and WA, mostly those with severe disease.



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Topic: AS17 Viral Infections: / AS17j Perinatal and congenital infections

RARE NEONATAL INFECTION: HUMAN HERPESVIRUS 6 (HHV-6) PRESENTING AS FEBRILE ILLNESS WITH MICROPAPULAR EXANTHEMA

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Title of Case(s):: Rare Neonatal infection: Human Herpesvirus 6 Presenting as Febrile Illness with Micropapular Exanthema

Background:: Human herpesvirus 6 (HHV-6) infection is a common disease during childhood but rare in neonates. In newborns, infection can occur both vertically and through postnatal transmission, usually causing mild disease.

Case Presentation Summary:: We present a 22-day-old-male admitted in the special care newborn unit after presenting in the ER with high fever (maximum 39.7°C) without accompanying symptoms. In our observation, he was febrile, had intermittent moaning and marbled skin. The remaining physical exam was unremarkable. At the septic screening performed, the CBC and WBC were normal. CRP was over 156mg/L. Urine test strip revealed leukocyturia. Lumbar puncture was performed with traumatic CSF output. CSF PCR for viruses and bacteria was positive for HHV-6 and urine culture confirmed infection with multisensitive E. coli. Blood culture was negative. Empirical therapy with ampicillin and cefotaxime was instituted, which was deescalated according to the antibiogram. He became afebrile on D2 of hospitalization, and on the next day a micropapular exanthema appeared all over his body. The patient was released after 10 days of antibiotics.

Learning Points/Discussion: We present a case of co-infection between HHV-6 and E. coli. With the evolution of meningitis/encephalitis panels, the identification of etiologic agents is becoming more precise allowing for quick diagnosis and, when necessary, adequate treatment. In the present case, given the patient's age, treatment with ganciclovir was considered, but, as in other cases in the literature, it was decided not to administer it, given the benign course of the disease.

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Topic: *AS17 Viral Infections: / AS17k Respiratory syncytial virus infection*

WAR AGAINST RESPIRATORY SYNCYTIAL VIRUS 12-YEAR EXPERIENCE AT A TERTIARY HOSPITAL

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Title of Case(s):: War against respiratory syncytial virus 12 -year experience at a tertiary hospital

Background:: Objectives: To assess the respiratory syncytial virus (RSV) infection incidence rate through the analysis of data collected before and after implementation of a new palivizumab dosing regimen customized for a high-risk Saudi population. Methods: This was a retrospective cohort study performed at Prince Sultan Military Medical City, Riyadh, Saudi Arabia between November 2009 and April 2017 on 1704 high risk Saudi young children and comparing 3 palivizumab regimens: a 4-week interval dosing regimen starting in either November or mid-September and a 3-week interval dosing regimen starting in mid-September.

Case Presentation Summary:: Results: Despite a decrease in the incidence rate of RSV infection with the three-week interval regimen (3.9% versus 5.9% in seasons 1 and 9.1% in seasons 2), we did not find significant differences among the 3 groups.

Learning Points/Discussion: Although the incidence rate of RSV infection decreased by half with the new palivizumab dosing regimen, the difference between the considered groups was not significant. This result may be due to different factors: far fewer participants were included in the group dosed according to the product labeling (n=170) and the early injection group (n=164) than in the new dosing regimen group (n=1169), the baseline characteristics of each group were not comparable, and the incidence rate may vary from season to season due to climate conditions (mild or extremely cold winter).

Topic: AS17 Viral Infections: / AS17k Respiratory syncytial virus infection

RESPIRATORY SYNCYTIAL VIRUS INFECTION DISRUPTS THE PULMONARY MICROBIOME AND IMMUNE BARRIERS TO INDUCE MICROGLIA PHENOTYPE SHIFT

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Background: There is considerable evidence that a significant proportion of children hospitalized with RSV bronchiolitis suffer recurrent wheezing and even asthma in the months and years following recovery, much more frequently than non-RSV infected peers.

Aims: The study aimed to identify the effects of lung microbiota on RSV infection, through the investigations of changes in lung microbiota and metabolites during RSV infection

Methods: 6-8 weeks old BALB/c female mice (16-22 g) were randomized into the four treatment groups, namely, Ampicillin, RSV, and RSV+Ampicillin and control. Seven days after the respective treatments, the mice tissues were collected for hematoxylin-eosin (HE) staining, immunofluorescence, the levels of ROS/ NOS detection, ELISA, non-targeted metabolomics detection and 16S rRNA sequencing.

Results: The difference of metabolic function was mainly manifested in membrane transport function, carbohydrate metabolism and amino acid metabolism. Results of non-targeted metabolomic tests on lung tissues showed that bacterial metabolite Spermine was significantly increased, while D-ala-D-ala significantly decreased in lung tissues after RSV infection. While after Ampicillin treatment during RSV infection, D-glutamine increased significantly, in contrast, D-ala-D-ala and D-Treose were reduced. These were mainly related amino acid metabolism and tricarboxylic acid cycle (TAC). In vitro, D-ala-D-ala and D-glutamine promoted the proliferation and inhibited the ROS production in BECs. Moreover, the increases of IL-1, IL-4, IL-6 and IFN- γ induced by LPS decreased significantly after D-ala-D-ala or D-glutamine treatment.

Conclusions: The study revealed that RSV infection may induce dysbacteriosis. There are significant changes in bacterial metabolites during RSV infection. Apparently, some bacterial metabolites can restore cell damages and inflammation in lung.



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Topic: AS17 Viral Infections: / AS17k Respiratory syncytial virus infection

PATTERNS OF IMMUNE GENE EXPRESSION PREDICT THE SEVERITY OF RESPIRATORY SYNCYTIAL VIRUS BRONCHIOLITIS IN PEDIATRIC PATIENTS

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Background: Respiratory syncytial virus (RSV) is a leading cause of severe acute lower respiratory tract infections in infants worldwide, resulting in bronchiolitis and further complications. The immune response plays a crucial role in disease progression.

Aims: To analyze whether the expression of inflammatory and antiviral genes in the peripheral blood of RSV-infected infants is associated with the severity and progression of RSV bronchiolitis.

Methods: We conducted a prospective study on 117 infants infected with RSV between 2015 and 2022 in Spain. The expression levels of twelve genes (IL6, TNF α , IL8, PLAUR, TNIP1, TNFAIP3, TAX1BP1, ISG15, IFN β , RIGI, CCL5 and CXCL10) were quantified by quantitative RT-PCR. The severity of bronchiolitis in RSV-infected infants was stratified using the "Sant Joan de Déu Score" (SSJDD) and the Wood Downes score. Infants were classified into two groups at the emergency room: mild or moderate disease, and into two groups in the Pediatric Intensive Care Unit (PICU): stable clinical course or unfavorable progression. The association analysis was performed by logistic regression, adjusted by the most significant covariables.

Results: Infants were 57,3% male, and their median age was 61 days. In the emergency room, high TNIP1 values (aOR=1.52; p-value=0.008), IFN β values (aOR=1.15; p-value=0.032), and RIGI values (aOR=1.37; p-value=0.029) were associated with moderate bronchiolitis, compared to the group with mild bronchiolitis. In the PICU, CCL5 expression was inversely associated with unfavorable initial clinical progression (aOR=0.81, p-value=0.03).

Conclusions: Infants with moderate RSV bronchiolitis had increased expression levels of ABIN1, IFN β , and RIGI, while low expression of CCL5 was associated with unfavorable clinical progression.



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Topic: AS17 Viral Infections: / AS17k Respiratory syncytial virus infection

TNIP1 POLYMORPHISMS ASSOCIATED WITH PROTECTION AGAINST SYMPTOMATIC HUMAN RESPIRATORY SYNCYTIAL VIRUS INFECTION IN INFANTS

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Background: Bronchiolitis is the most common severe inflammatory disease in infants with human respiratory syncytial virus (HRSV) infection. TNIP1 is a repressor of inflammatory signaling, and single-nucleotide polymorphisms (SNP) in the TNIP1 gene are associated with inflammatory diseases.

Aims: We aimed to determine the association of TNIP1 SNPs with symptomatic HRSV infection and bronchiolitis.

Methods: This case-control study included 129 infants hospitalised with acute medical illness, symptom duration of ≤ 10 days and positive HRSV test (cases) during 2016-2018 in 3 provinces of South Africa; and 161 control infants presented at outpatient clinics with no history of fever, no respiratory or gastrointestinal symptoms ≤ 14 days preceding visit and tested HRSV negative. Genotyping for six TNIP1 SNPs including rs73272842 and rs999011 were done. Logistic regressions (binomial and ordinal) were used to analyze the association between TNIP1 SNPs and the outcome variables using Stata 17.

Results: The rs73272842 GG/GA genotypes, G allele and rs999011 CC genotype and C allele were less common in symptomatic HRSV infection [adjusted odd ratio (aOR)=0.55 $p=0.024$] and aOR=0.68 ($p=0.030$) and [aOR=0.36 ($p=0.003$) and aOR=0.36 ($p=0.002$)]; respectively. Similarly, these SNPs were also less common in bronchiolitis cases. The haplotype GC for rs73272842 and rs999011 was less common in symptomatic HRSV infection (OR=0.52; $p=0.001$) and bronchiolitis (OR=0.62; $p=0.002$).

Conclusions: TNIP1 rs73272842 GG/GA and rs999011 CC genotypes and rs999011 C allele and their GC haplotype were significantly less common in South African infants with symptomatic HRSV infection. We hypothesise that some TNIP1 variants confer protection against severe RSV illness through inhibition of inflammatory pathway signaling.