22nd
National Health Sciences Research Symposium

15-17 November 2019
Aga Khan University

antimicrobial resistance

An opportunity to transform global health

Programme

THE AGA KHAN UNIVERSITY

The Aga Khan University Hospital

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Message from Chair, Organising Committee

Dear colleagues and friends,

It is our pleasure and a great privilege to welcome you to the Aga Khan University's 22nd National Health Sciences Research Symposium.

Control of infectious diseases through use of antimicrobials is a foundation of modern medicine. Use of antimicrobials has enabled implementation of novel therapeutic modalities, secure in the knowledge that infectious complications can be managed. Antimicrobials have contributed to a reduction in infection-related maternal and neonatal mortality, facilitated safe surgical practices, played a role in the successful treatment of cancer and transplant patients and allowed management of infections in all age groups. Antimicrobials have furthermore played a major part in food safety. Use of antimicrobials to prevent diseases in farm animals and in crops allowed increase in agricultural output to sustain the expanding global population. The emergence of antimicrobial resistance (AMR) which threatens this progress is thus recognized as a threat to global health, development and security. There is recognition that efforts to control AMR are essential for sustaining gains as well as for future advancements. It is for this reason that the theme of this year's symposium is "Antimicrobial Resistance; an opportunity to transform global health".

National and international leaders in the field will focus on different aspects of the problem; tackling AMR at a global level and over view of the problem in the region. The recent outbreak of extensively drug resistant typhoid, as well as new diagnostic approaches to AMR will be discussed. Other sessions will address policy issues around AMR and highlight its implications in the clinical settings and as a one health problem. Scientists will present studies exploring its molecular and cellular basis. Implications for public health and disease control efforts will be debated, together with new technology for AMR surveillance.

Participants will find a programme of highest scientific quality with inaugural talks, plenary sessions and invited talks by leading experts in the field, and free papers, e-posters and posters selected from among the best abstracts. The symposium also includes an Ignite session, an innovative and creative platform, which will be of great interest to many.

We hope you will enjoy the symposium and take the opportunity to meet friends and colleagues. We warmly welcome you to the Aga Khan University and to Karachi and are excited that you are part of this symposium, and wish you a fruitful symposium.

Dr. Rumina Hasan
Chair, Organizing Committee
22nd National Health Sciences
Research Symposium

Dr. Kulsoom Ghias
Chair, Scientific Committee
22nd National Health Sciences
Research Symposium

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PRE-SYMPOSIUM SESSION

Thursday, November 14, 2019

9:30am–2:30pm **London School of Hygiene and Tropical Medicine-Aga Khan University satellite session** (closed session by invitation only)

PRE-SYMPOSIUM WORKSHOPS

Friday, November 15, 2019

9:00am–5:00pm *Venue: Centre of Innovation in Medical Education (CIME)*

Bioinformatics hands-on on bacterial genomics

Coordinator: Safina Abdul Razzak, Aga Khan University

Venue: ASLS Laboratory

Performing antimicrobial susceptibility testing methods, know the standards

Coordinator: Noureen Zeeshan, Aga Khan University

Venue: Microscopy Lab, Medical College

Next generation sequencing: hands-on library preparation for bacterial genome

Coordinator: Najia Ghanchi, Aga Khan University

9:00am–1:00pm *Venue: Centre of Innovation in Medical Education (CIME)*

Antibiotic stewardship and infection prevention

Coordinator: Kashif Hussain, Aga Khan University

Multidisciplinary approach of infection prevention and control in preventing multi drug resistant organisms in hospital setting

Coordinator: Rozina Roshan, Aga Khan University

Health journalism and media communication

Coordinator: Erum Khan, Aga Khan University

Venue: Computer Laboratory, Juma Building

Assessing type of measurement scale of clinical variables and choosing appropriate statistical tests for analysis

Coordinator: Rehana Siddiqui, Aga Khan University

2:00–5:00pm   *Venue: School of Nursing and Midwifery Science Lab*

Proper donning and doffing of personal protective equipment: step to reduce multi drug resistance infections

Coordinator: Shagufta Iqbal, Aga Khan University

Venue: Centre of Innovation in Medical Education (CIME)

Simulation techniques for increasing adherence to surviving sepsis protocol

Coordinator: Amber Sabeen, Aga Khan University

Venue: Computer laboratory, Jumma laboratory

Design and analysis of outbreak investigation

Coordinator: Rehana Siddiqui, Aga Khan University

2:00-5:00pm   *Venue: Dr J Robert Buchanan Lecture Hall (Lecture Hall 1)*

Technological advances in microbiology laboratory-impact on AMR
Coordinator: Issa Tawfiq Saadeh, bioMerieux Moyen Orient

3:00–4:30pm   *Venue: Lecture Hall 2*

Special session: AMR and women's health

Moderator: Hunaina Shahab

Panelists: Naseem Salahuddin, Unab Khan, Lumaan Sheikh

Inaugural Session
Friday, November 15, 2019
AKU Auditorium

5:30–5:35pm   **Recitation of the Holy Quran**

5:35–5:40pm   **National anthem**

5:40–5:50pm   **Introduction and overview of symposium**
Rumina Hasan, Chair, Organizing Committee, 22nd NHSRS

5:50–6:00pm   **Welcome address**
Firoz Rasul, President, Aga Khan University

6:00–6:10pm   **Remarks**
Adil Haider, Dean, Medical College, Aga Khan University

6:10–6:20pm   **Remarks**
Shagufta Hassan, Interim CEO, Aga Khan University Hospital

6:20–6:40pm   **Keynote address I: Tackling antimicrobial resistance for global good**
Anthony Huszar, South East Asia Regional Coordinator, Fleming Fund

6:40–7:00pm   **Keynote Address II: Overview of antimicrobial resistance in the Eastern Mediterranean Region**
Maha Talaat, World Health Organization, EMRO, Egypt

7:00–7:20pm   **Address by chief guest**
Zafar Mirza, State Minister for Health, Government of Pakistan

7:20–7:30pm   **Remarks and vote of thanks**
David Arthur, Dean, School of Nursing and Midwifery, Aga Khan University

7:30–7:40pm   **Cultural programme**

8:00pm   **Dinner at Sports and Rehabilitation Centre**

SYMPOSIUM PROGRAMME
Saturday & Sunday, November 16–17, 2019

Day 1 Overview
Saturday, November 16, 2019

7:30am	**Registration**

8:00–8:45am	**Meet and greet breakfast**
	(separate registration required)
	Venue: FOB Courtyard

PLENARY I | *Venue: AKU Auditorium*

9:00–10:00am	Chair: Adil Haider, Aga Khan University
	Chair: Aamer Ikram, National Institute of Health, Islamabad
	Moderator: Imran Ahmed, Aga Khan University
	XDR Typhoid: challenges and opportunities
	Farah Qamar, Aga Khan University
	Whole genome sequencing approaches to the AMR problem
	Andrea Cabibbe, San Raffaele, Italy

10:00–10:30am	**Coffee break and e-poster session I**
	Venue: Medical College Quad
	Moderators: Satwat Hashmi, Aga Khan University and Shobha Luxmi, Dow University of Health Sciences
	A multicenter point prevalence survey of antibiotic use in Punjab, Pakistan: Findings and implications
	Zikria Saleem, Rashid Latif College of Pharmacy, Lahore
	Self-medication with antibiotics among medical students in Karachi: a cross-sectional institution based study
	Hunain Muhammad Asif, Jinnah Sindh Medical University, Karachi
	Antimicrobial stewardship programme in a tertiary care hospital of a developing country, Aga Khan University Hospital, Karachi
	Kashif Hussain, Aga Khan University

Assessment of antibiotic resistance in patients with urinary tract infections in Timurgara District Hospital, Pakistan

Mohammad Zeeshan, Aga Khan University

Carbapenem sensitivity vs resistance: impact on inpatient outcomes

Mir Ibrahim, Aga Khan University

Use of pefloxacin as a surrogate marker to detect ciprofloxacin susceptibility in *Salmonella enterica* serotypes Typhi and Paratyphi A

Safia Moin, Aga Khan University

Coexistence of blaNDM and mcr-1 producing *Escherichia coli* isolated from human, poultry and environmental water from Pakistan

Muhammad Usman Qamar, Government College University, Faisalabad

Antifungal susceptibility profile of invasive *Candida glabrata* isolates (2009-2019) from a tertiary care hospital laboratory in Pakistan

Saba Memon, Aga Khan University

High type-specific prevalence of anal human papillomavirus infection among HIV infected and uninfected men who have sex with men and transgender in Pakistan: Implications for vaccination strategies

Muslima Ejaz, Aga Khan University

Computation analysis of Type III bacterial flagellar export (BFE) apparatus-exploiting evolution to its utmost utilisation in infectious diseases

Arooj Shafiq, Barrett Hodgson University, Karachi

10:30am–12:00pm **Scientific session I: Young infant sepsis**

Venue: AKU Auditorium

Chair: Ejaz Khan, Shifa International Hospital, Islamabad

Co-chair: Salman Kirmani, Aga Khan University, Karachi

Moderator: Ali Faisal Saleem, Aga Khan University

INVITED TALKS

Young infant sepsis: historical perspective and evidence

Shamim Qazi, World Health Organization, Switzerland

AMR in neonatal pathogens and implications on empiric regimens in community and hospital cohorts

Fatima Mir, Aga Khan University

Impact of pneumococcal carriage in young infants

Imran Nisar, Aga Khan University

FREE PAPERS

A randomised trial of prophylactic antibiotics for miscarriage surgery

Rahat Qureshi, Aga Khan University

Molecular characterisation of NDM-1, -5, -7 producing-Gram-negative pathogens isolated from children in Pakistan

Muhammad Usman Qamar, Government College University, Faisalabad

Predominance of genomovar I among *Burkholderia cepacia* complex bacteremia and antibiotic resistance in the neonatal population – a study from Karachi

Tazeen Fatima, Aga Khan University

10:30am–12:00pm **Scientific session II: World War AMR: Have we been taken over?**

Venue: Lecture Hall 2

Chair: Johanna Hanefeld, London School of Hygiene and Tropical Medicine, the United Kingdom

Chair: Mateen Izhar, Sheikh Zayed Medical Complex, Lahore

Moderator: Mohammad Zeeshan, Aga Khan University

INVITED TALKS

AMR in the human-animal axis

Osman Dar, Public Health England and Chatham House, the United Kingdom

Animal AMR/AMU surveillance and food safety in Pakistan

Ali Ahmad Sheikh and Aleena Kokab, University of Veterinary and Animal Sciences, Lahore

AMR and environment & water safety

Imran Hashmi, National University of Sciences and Technology, Islamabad

Global sewage project

Rene Hendriksen, Technical University of Denmark [via video link]

FREE PAPERS

Monitoring colistin usage and its association with emergence of plasmid-mediated colistin resistance mcr-1 gene in poultry farming in Pakistan

Mashkoor Mohsin, University of Agriculture, Faiasalabad

Trends in antimicrobial resistance amongst invasive pathogens in Pakistan (2011-2015): a retrospective cross-sectional study

Nida Javaid, Lahore University of Management Sciences

10:30am–12:00pm　**Scientific session III: Molecular and cellular basis of AMR**

Venue: Dr J Robert Buchanan Lecture Hall (Lecture Hall 1)

Chair: Bushra Jamil, Aga Khan University

Co-chair: Andrea Cabibbe, San Raffaele Scientific Institute, Italy

Moderator: Hani Abidi, Aga Khan University

INVITED TALKS

Emergence of drug resistance in zoonotic Salmonella isolated from poultry

Aamir Ali, National Institute for Biotechnology and Genetic Engineering, Faisalabad

Gut colonisation with MDR Gram negatives

Mehreen Arshad, Northwestern University, USA

Microbiome and AMR

Najeeha Iqbal, Aga Khan University

Typhoidal *Salmonella* strains in Pakistan: an impending threat of extensively drug-resistant *Salmonella* Typhi

Luqman Satti, PNS Shifa Hospital, Karachi

FREE PAPERS

Absence of mcr-1 gene among colistin resistant enterobacteriaceae from Pakistan

Seema Umar, Aga Khan University

Synergism between antibiotics and natural compounds exhibits potent activity against *Staphylococcus aureus* biofilms

Fizza Nazim, Aga Khan University

PLENARY II | *Venue: AKU Auditorium*

12:30–1:30pm　Chairs: Mushtaq Ahmed, Aga Khan University

Chair: Mateen Izhar, Sheikh Zayed Medical Complex, Lahore

Moderator: Wafa Aftab, Aga Khan University

AMR and health policy

Johanna Hanefeld, London School of Hygiene and Tropical Medicine, the United Kingdom

Drug quality impacts AMR: control of antibiotic quality in Pakistan

Hamid Zaman, Boston University, USA

Political and health systems barriers to combating AMR in Pakistan

Mishal Khan, London School of Hygiene and Tropical Medicine, the United Kingdom

1:30–2:30pm   **Lunch**

2:30–4:30pm   **Scientific session IV: AMR in respiratory infections**

Venue: AKU Auditorium

Chair: Shamim Qazi, World Health Organization

Chair: Javaid Khan, Aga Khan University

Moderator: Masooma Aqeel, Aga Khan University

INVITED TALKS

Challenges of recurrent infections and antibiotics usage in patients with chronic structural lung diseases

Muhammad Irfan, Aga Khan University

Indirect effect (herd immunity) of PCV 10 pneumococcal vaccine

Imran Nisar, Aga Khan University

Global challenges of drug resistance in tuberculosis

Arshad Javaid, Khyber Medical University

RETAPP Study – non severe pneumonia trial in children (amoxicillin vs placebo)

Fyezah Jehan, Aga Khan University

FREE PAPERS

Concordance between phenotypic resistance to fluoroquinolones and gyrA mutations among multidrug resistant isolates of *Mycobacterium tuberculosis* from Pakistan

Asma Shahid, Aga Khan University

Screening for triazole resistance in clinically significant *Aspergillus* species from Pakistan

Safia Moin, Aga Khan University

Nasopharyngeal carriage of *Streptococcus pneumoniae* serogroup 6A/6B/6C/6D in infants pre- and post-introduction of pneumococcal vaccine (PCV 10) in rural districts of Sindh

Sahrish MuneerUddin, Aga Khan University

2:30–4:30pm **Scientific session V: Combating antimicrobial resistance: Challenges and Strategies**

Venue: Dr J Robert Buchanan Lecture Hall (Lecture Hall 1)

Chair: Naseem Salahuddin, The Indus Hospital, Karachi

Co-chair: Shehla Baqi, Shaheed Mohtarma Benazir Bhutto Medical College
Moderator: Nosheen Nasir, Aga Khan University

INVITED TALKS

The problem and challenges in the treatment of patients with MDR Gram negative pathogens

Faisal Mahmood, Aga Khan University

The challenge of treating MDR infections in transplant recipient

Asma Nasim, Sindh Institute of Urology and Transplantation

Personalised treatment for tuberculosis using next-generation sequencing

Zahra Hasan, Aga Khan University

Antimicrobial resistance and the role of stewardship

Asad Ali, Aga Khan University

FREE PAPERS

Situational analysis of antimicrobial stewardship programme (ASP) among public and private sector tertiary care hospitals in Karachi: a qualitative case study

Asma Pethani, Aga Khan University

Introducing external quality assurance (EQA) as a capacity building tool in clinical microbiology laboratories of Pakistan: challenges and outcome

Noureen Saeed, Aga Khan University

Stewardship and training in antimicrobial resistance (STAR), Nepal

Linda M. Kaljee, Henry Ford Health System Global Health Initiative, USA

2:30–4:30pm **Scientific session VI: Emerging AMR in Pakistan**

Venue: Lecture Hall 2

Chair: Maha Talaat (WHO, Eastern Mediterranean Regional Office)

Co-chair: Seema Irfan (Aga Khan University, Karachi)

Moderator: Fizza Farooqi (The Kidney Center, Karachi)

INVITED TALKS

Candida auris **global outbreak and cases from Pakistan**

Joveria Farooqi, Aga Khan University

Mutation rate, selection pressures and drug resistance in HIV-1

Hani Abidi, Aga Khan University

Surgical site infection in knee replacement surgery: quo vadis?

Shahryar Nooruddin, Aga Khan University

FREE PAPERS

Detection and genetic analysis of novel, drug-resistant HIV-1 circulatory recombinant forin Pakistan

Uroosa Tariq, Aga Khan University

Azoles resistant *Candida parapsilosis* and *Candida tropicalis* isolated from clinical specimens: single centre study during 2018 and 2019

Faheem Naqvi, Aga Khan University

Distribution of mutations associated with antifolate and chloroquine resistance among *Plasmodium vivax* isolates from Pakistan

Najia Ghanchi, Aga Khan University

4:30–5:00pm	**Coffee break and Poster viewing**
5:00–6:00pm	**Ignite**	Venue: AKU Auditorium
	Dinner at Sports and Rehabilitation Centre

Day 2 Overview
Sunday, November 17, 2019

PLENARY III | *Venue: AKU Auditorium*

9:00–10:30am   **Point-counterpoint**

Venue: AKU Auditorium

Chair: Osman Dar, Public Health England and Chatham House, the United Kingdom

Chair: Rumina Hasan (Aga Khan University)

Moderator: Kiran Iqbal, Aga Khan University

Does mass drug administration facilitate AMR spread?

Point: Fyezah Jehan, Aga Khan University

Counter-point: Marc Mendelson, University of Cape Town, South Africa (video link)

Panel discussion

10:30–11:00am   **Coffee break and e-poster session II**

Venue: Medical College Quad

Moderators: Kiren Habib, Aga Khan University and Sunil Dodani, Sindh Institute of Urology and Transplantation, Karachi

Trend of *Salmonella* in blood culture from June 2017 to June 2019 in public sector commercial laboratory

Irum Rafiq Shahzaib, Jinnah Sindh Medical University Diagnostic Laboratory, Karachi

Vancomycin dosing, trough concentrations and AUC24 in paediatric population; retrospective review of current practices and its impact on healthcare cost

Syeda Anum Fatima, Aga Khan University

Prevalence of fecal carriage of ESBL producing enterobacteriacea among infants in hospital and community and its association with severe acute malnourished infants and mortalities

Sadia Parkar, Aga Khan University

Overview of multi drug resistant bacteria in a tertiary care hospital of Pakistan – no action today, no cure tomorrow

Fareeha Adnan, The Indus Hospital, Karachi

Implementation of an antimicrobial stewardship programme at the Aga Khan University Hospital, Nairobi, Kenya

Rodney Adam, Aga Khan University

Extra-intestinal complications of extensively drug-resistant (XDR) *Salmonella* **Typhi - case series from Karachi**

Salima Rattani, Aga Khan University

Occurrence and antimicrobial resistance of *Salmonella* **of public health significance in slaughtered animals in Pakistan**

Aitezaz Ahsan, National Agricultural Research Centre, Islamabad

Infections in patients with multiple myeloma treated with conventional chemotherapy: a single-center, 10-year experience from Pakistan

Natasha Ali, Aga Khan University

Are we progressing to meet the waterloo? A laboratory based retrospective study regarding *Shigella* **susceptibility from fecal specimens**

Saeeda Chandio, Aga Khan University

11:00am–1:00pm **Scientific session VII: Translating AMR research into public health action**

Venue: AKU Auditorium

Chair: Anthony Huszar, South East Asia Regional Coordinator, Fleming Fund

Co-chair: Rehana Siddiqui, Aga Khan University Moderator:Dania Saeed, Aga Khan University

INVITED TALKS

Beyond national action plans for AMR: implementation challenges

Marc Sprenger, World Health Organization, AMR Secretariat, Switzerland

Lessons learnt from XDR typhoid outbreak in Pakistan

Rumina Hasan, Aga Khan University

Diagnostic stewardship in acute febrile illnesses to reduce AMR burden

Erum Khan, Aga Khan University

Understanding TB care pathways and opportunities to improve outcomes: lessons learned from South India

Marissa Becker, University of Manitoba, Canada

FREE PAPERS

National AMR surveillance system in Pakistan*:* generating evidence for informed decision making

Afreenish Amir, National Institute of Health, Islamabad

Antimicrobial resistance among GLASS priority pathogens from Pakistan:

2006-2018

Dania Saeed, Aga Khan University

Differential antibiotic susceptibility of *Helicobacter pylori* isolates from gastric antrum and corpus - preliminary results of an ongoing study

Revathi Gunturu, Aga Khan University

11:00am–1:00pm   **Scientific session VIII: Digital health technology for AMR surveillance in LMICs**

Venue: Lecture Hall 2

Chair: Irfan Ali Mirza, Armed Forces Institute of Pathology, Rawalpindi

Co-chair: Amanullah Khan, IQVIA, Pakistan

Moderator: Farah Qamar, Aga Khan University

INVITED TALKS

Use of mobile phone based applications and AI models for infection control and antimicrobial stewardship

Saad Qazi, NED University, Karachi

Environmental surveillance to assess public health risks using digital health toolkit SaniPath

Christine Moe, Emory University, USA (via video link)

Implementation of digital health technology for the control of *Salmonella* typhi and other enteric pathogens in low and middle-income countries

Momin Kazi, Aga Khan University

FREE PAPERS

Initiative of massive open online courses (MOOCs) as a tool for antimicrobial susceptibility testing (AST) methods training and education

Noureen Saeed, Aga Khan University

Panel discussion

11:00am–1:00pm   **Scientific session IX: AMR in the nosocomial setting – infection prevention and control**

Venue: Dr J Robert Buchanan Lecture Hall (Lecture Hall 1)

Chair: Asim Belgaumi, Aga Khan University

Chair: Altaf Ahmed, Pakistan Kidney and Liver Institute and Research Center, Lahore

Moderator: Iffat Khanum, Aga Khan University

INVITED TALKS

C. difficile **reduction strategies**

Jamil Kanji, University of Alberta, Canada

New approaches to preventing AMR in surgical site infections

Amir Shariff, Aga Khan University

Infection control in AMR prevention – beyond stewardship

Afia Zafar, Aga Khan University

FREE PAPERS

Validation and routine use of a breakpoint broth microdilution method for susceptibility testing of gram-negative bacilli against colistin sulfate in a high-volume, resource limited setting

Imran Ahmed, Aga Khan University

Treatment outcome and adverse effects in patients receiving colomycin for gram negative bacteremia in Pakistan

Zaheer Udin Babar, Sindh Institute of Urology and Transplantation, Karachi

Analysis of *Candida auris* fungemia at a single facility in Kenya

Rodney Adam, Aga Khan University

1:00–1:30pm   **Closing ceremony**

Venue: AKU Auditorium

Lunch

INVITED SPEAKERS

Dr Aamir Ali: Dr Aamir completed Doctor of Veterinary Medicine (DVM) degree from University of Agriculture, Faisalabad in 2001. He completed MPhil Biotechnology from Quaid-i-Azam University, Islamabad, and PhD Biotechnology. He completed PhD research training at International Vaccine Institute (IVI), Seoul, South Korea and has completed 2-year BRAIN Marie Curie postdoctoral fellowship from Brandenburg University of Technology, Germany in year 2017.
Currently he is working as Senior Scientist and Faculty Member at Health Biotechnology Division, National Institute for Biotechnology and Genetic Engineering (NIBGE), Faisalabad. He has published more than 35 research articles in well reputed national and international journals. He is also teaching and supervising MPhil and PhD students in the subject of Biotechnology. His area of research is Medical Microbiology and Immunology.

Dr Afia Zafar: Dr Afia is currently working as consultant Microbiologist and Chairperson, Department of Pathology and Laboratory Medicine, Aga Khan University, from Dec 2015 to date. She is a member of Hospital Infection Society, UK. Society of Antimicrobial Chemotherapy,-UK, Pakistan Association of Pathologists, and Pakistan Medical Association.
Her research interest includes Infection control and Antimicrobial resistance

Dr Ali Ahmad Sheikh is DVM with PhD in Microbiology. He is currently serving as Associate Professor (Tenured) at University of Veterinary and Animal Sciences, Lahore. His area of research is Antimicrobial Resistance. He has produced 20 MPhil while 4 PhD scholars are working under his supervision. He has 40 research publications in national and international journal. He is running two research projects of worth more than 16 million rupees on "use of bacteriophages as an alternative to antibiotics to control infectious diseases".

Dr.Andrea Maurizio Cabibbe completed a doctoral degree in Medical Biotechnology and he works since 2012 as molecular biologist at the WHO Collaborating Centre, TB Supranational Reference Laboratory in San Raffaele Scientific Institute (Milan, Italy), being involved in a number of funded research grants focusing on the use of molecular techniques for the detection of drug-resistant tuberculosis and genotyping. Also, the Unit provides technical assistance and direct support to Countries in their drug resistance surveillance activities and in

the implementation of new TB diagnostic technologies including sequencing, with the final aim to scale-up the laboratory capacities of the assisted Countries.

Andrea also used to work as a consultant with the WHO team to support the analysis and interpretation of results from sequencing- based surveys conducted in several Countries.

Dr.Anthony Huszar is the South East Asia Regional Coordinator for the Fleming Fund, a UK aid programme supporting countries to generate, share and use antimicrobial resistance (AMR) data to reduce drug resistance. He is part of a team from Mott MacDonald, the Management Agent of the Fleming Fund. Prior to working in public health, Dr Huszar practiced as a medical doctor in London, specializing in internal medicine. He was a Visiting Research Fellow at the London School of Hygiene and Tropical Medicine (LSHTM)'s Communicable Disease Policy Research Group in Thailand, before moving to the consultancy sector. He joined Mott MacDonald Group in 2013, and has lived and worked on programs across Africa, Asia and the Pacific, advising and supporting governments, donors and UN agencies on health systems planning, financing and policy development. Dr Huszar holds an MA in Neuroscience and an MB BChir in Medicine and Surgery from the University of Cambridge. He also holds a DTM&H in Tropical Medicine from the Royal College of Physicians (UK), and an MSc in Health Policy, Planning and Financing from the London School of Economics and LSHTM.

Dr Arshad Javaid is the Vice Chancellor, Khyber medical University, KPK Peshawar. He has 26 years' experience of teaching and training of postgraduate and undergraduate students in this country. He played a lead role in establishing the pioneering, state-of-the-art department of pulmonology for teaching and training the first fellowship students in the whole of Pakistan

He generated funding through events and grant applications to enable research to be conducted at a national and international level. He is member Ad-hoc Council Pakistan Medical & Dental Council Islamabad, Member Executive Committee of Pakistan Medical & Dental Council Islamabad. Chairman Curriculum Review & Medical Education Committee of PM&DC. Chairman Dental Education Committee PMDC, member Pakistan Health Research Council, Islamabad. Chairman Pakistan Network of Quality Assurance in PNQAHE.

Dr Asad Ali is the Associate Dean of Research at AKU Medical College, Pakistan and Associate Professor and Former Director Research of the Department of Paediatrics and Child Health. He is an alumnus of AKU Medical College, Pakistan and obtained his advanced clinical training in Paediatrics at Duke University, and Fellowship in Paediatric Infectious Diseases and Masters in Public Health at the Vanderbilt University, USA. His research interests pertain broadly to paediatric public health of

developing countries, including pneumonia, diarrhea, vaccines and childhood malnutrition. He recently completed two large trials to study the factors responsible for lower effectiveness of rotavirus vaccines in developing countries. He is the principal investigator of two Bill and Melinda Gates Foundation funded studies to better characterize environmental enteropathy, a key precursor of chronic malnutrition in children in developing countries. He maintains a broad clinical portfolio and participates actively in the advocacy of issues related to infectious disease and vaccines in Pakistan and in the region. He served as the general secretary of the Medical Microbiology and Infectious Diseases Society of Pakistan from 2013-2015. He currently serves as the President of AKU Medical College Alumni Association, Asia chapter, and chairs the National Committee to monitor adverse events following immunization in Pakistan.

Dr Asma Nasim, FCPS Medicine and Infectious Diseases, is an Associate Professor in the Department of Infectious Diseases at Sindh Institute of Urology and Transplantions Karachi (SIUT). Dr. Nasim did her MBBS from Dow Medical College and Civil Hospital Karachi and then her first residency in Medicine at the Aga Khan University Hospital. She joined SIUT for persuing her second Fellowship in Infectious Diseases and after getting FCPS in Infectious Diseases she is currently working as the head of the department of Infectious Diseases at SIUT. Dr. Nasim has published papers in reputed medical jounals. Her main areas of interest are complicated hospital acquired infections and antibiotic stewardship. She is the member of Medical Microbiology and Infectious Diseases Society of Pakistan. Dr. Nasim has also interest in bioethics and she did her Diploma in BioMedical Ethics from Center of BioMedical Ethics and Culture, SIUT.

Christine L. Moe: Dr Moe is the Eugene J. Gangarosa Professor of Safe Water and Sanitation in the Rollins School of Public Health and the Director of the Center for Global Safe Water, Sanitation and Hygiene at Emory University.
Her research focuses primarily on the environmental transmission of infectious agents, in particular, foodborne and waterborne diseases. Her field research in Bangladesh, Bolivia, Cambodia, China, El Salvador, Ethiopia, Ghana, Honduras, India, Kenya, Mozambique, the Philippines, Rwanda, Uganda and the United States includes studies of diarrheal diseases, dry sanitation systems, fecal contamination in low-income urban environments, water quality in distribution systems, water, sanitation and hygiene in healthcare facilities in low-resource settings, and environmental contamination of vegetable crops.
Dr. Moe has a BA in Biology from Swarthmore College and an MS and PhD in Environmental Microbiology and Infectious Disease Epidemiology from the University of North Carolina at Chapel Hill. She completed a post-doctoral fellowship at the Centers for Disease Control and Prevention in the Viral Gastroenteritis Unit. Her primary appointment is in the Hubert Department of Global Health with joint appointments in the Departments of Epidemiology and Environmental Health.

Dr Erum Khan is a Consultant Clinical Microbiologist and Professor in the Department of Pathology and Laboratory Medicine at the Aga Khan University, Karachi. She did MSc in Molecular Biology and Pathogenesis of Viruses from University of London, Imperial College of Science and Technology, 2005 her research interests are Arborous prevalence and pathogenesis with a focus on Dengue Haemorrhagic Fever and other Arboviruses in Pakistan and emergence of multi-drug resistant pathogens, resistance trends and mechanisms.

She is a member of American Biological Safety Association, member International Society of Infectious diseases, President Pakistan Biological Safety Association

Dr Farah Qamar is an Associate Professor in the Department of Pediatrics and Child Health at AKU. Her area of research interest includes vaccines and preventable diseases, she was one of the initial trainees of the previous AKU-NIH Fogarty Infectious Diseases in Child Health Training Program between the Aga Khan University (AKU) and Emory University as a Clinical Investigator and completed her Masters in Clinical Research at AKU in 2010. She currently serve as the PI of two actively funded studies, one of which is funded by the WHO: The Antibiotic for Children with severe Diarrhea (ABCD) trial study. She also support the Pediatric Infectious Diseases, Enteric Health and Malnutrition in Pakistan (PIDEMP) Research Training Program

Dr Fatima Mir is an Assistant Professor in the Department of Pediatrics and Child Health, The Aga Khan University Hospital, Her specialty is pediatric infectious diseases, and she is a member of, Pakistan Medical & Dental Council and Pakistan Society of Infectious Diseases. Areas of her research interest include Neonatal Infections and Pediatric HIV.

Dr Fyezah Jehan, MBBS, MSc. is the Section Head and associate professor of Paediatric Infectious Diseases in the Department of Paediatrics & Child Health Aga Khan University (AKU), Pakistan.
Dr. Jehan also chairs the Medical College Ethics Review Committee and the Immunization Subcommittee of Aga Khan University Hospital (AKUH). She joined AKU after her degree in medicine from Baqai Medical University and pursued residency training in Paediatrics and Fellowship in Paediatric Infectious Diseases from Aga Khan University. She also received an MSc in Epidemiology and Biostatistics also from AKU through a scholarship from the NIH-Fogarty Infectious Diseases Training Program. Dr. Jehan is a practicing paediatric infectious disease consultant and also leads several research programs in novel point of care diagnostics and

treatment of childhood pneumonia and neonatal sepsis- the leading killers of children under age 5 worldwide, bio repository research for improving maternal and new-born health with a special focus around prematurity using multiomics approaches and diagnosis and prevention of early infant growth failure. She is supported by the Bill and Melinda Gates Foundation, World Health Organization (WHO)-Geneva, University of California San Francisco to name a few. One of her passions is mentorship and fostering the development of the next generation of global health leaders—these include research staff, medical students, residents, fellows, and junior faculty. She has over 50 publications and serves on international guideline review committees such as those for WHO defined childhood pneumonia and mass drug administration of Azithromycin for childhood mortality.

Dr Hamid Zaman is Howard Hughes Medical Institute Professor of Biomedical Engineering and International Health at Boston University. Prof. Zaman's current research is focused on two distinct areas. The first deals with developing a fundamental understanding of tumor invasion and metastasis by building realistic model systems in the lab to study cancer progression. The second area is focused on developing robust technologies, and systems level solutions, to improve the quality of medicines, particularly as they are related to mortality and morbidity issues associated with anti-microbial resistance in low income settings, including refugee settlements. Technologies developed by Prof. Zaman and his lab are in various stages of implementation in a number of developing countries. Scientific American has named technologies from the Zaman lab among the top 10 technologies that will change the world.

In addition to over 120 peer-reviewed research articles, he has also authored two books for broad general and academic audiences. His first book, *Bitter Pills* (Oxford University Press, 2018), looks at the global challenge of substandard and counterfeit drugs and the need for integrated solutions, ranging from innovation and technology to public health and regulation, to address the global crisis in the prevalence of substandard drugs and how they relate to global anti-microbial resistance challenges. His forthcoming book *Biography of Resistance* (Harper Collins, appearing in April 2020), is aimed for a broad general audience

In addition to his research, Prof. Zaman is actively engaged in improving access to quality engineering education, with a multi-disciplinary focus on innovation, in a number of countries in Africa, Middle East and Asia. With the support of UN Economic Commission in Africa, in 2017, he co-founded Pakistan's first citizen science festival, the Lahore Science Mela that attracts over 25,000 people every year.

Professor Zaman has developed both research and education programs on refugee health at Boston University. He founded the university wide teaching and research initiative on forced displacement – the first program of its kind at any US institution (https://iafd.bu.edu).

In addition to his books and research papers, Professor Zaman is a prolific writer and hundreds of his newspaper columns have appeared in newspapers around the world, including the New York Times. He is a regular contributor on issues of refugee health, drug quality and global health for the Project Syndicate (his columns have appeared in newspapers in more than 30 countries in six different languages), Huffington Post and since 2012 he has written a weekly column on innovation, health and social justice for leading Pakistan daily, Express Tribune

Dr Imran Hashmi joined Institute of Environmental Sciences and Engineering (IESE), School of Civil and Environmental Engineering (SCEE), at National University of Sciences and Technology (NUST) in December 2004 and currently serving as Professor and Associate Dean. He holds PhD in Environmental Sciences from University of Karachi, Pakistan with postdocs in Environmental Biotechnology and Environmental Engineering from Michigan State University, USA and Chonbuk National University, South Korea and a Masters and Bachelors in Biochemistry from University of Karachi, Pakistan. Since then, he has been actively involved in both academic and research activities. In addition to undergraduate, postgraduate research and teaching, Dr. Hashmi and his group produce interesting data and findings on environmental issues, thus far, he has published forty-eight (48) research articles in prestigious International Journals and peer reviewed conferences with a cumulative impact factor of almost 115 (Google Scholar: citations 579 and h-index 13) along with supervision of several MS and PhD students. Dr. Hashmi has secured several research grants as PI and Co-PI, on a highly competitive ground and served as a resource person on projects with national and international organizations besides collaboration with local and international universities.

Dr Imran Nisar is an Assistant Professor (Research) and Director, Clinical Research in the Department of Paediatrics and Child Health at Aga Khan University. He got his medical degree from Karachi University in year 2005 and his Master of Science in Epidemiology and Biostatistics from Aga Khan University in 2011. Much of his research is focused on maternal and child health, vaccine preventable illnesses and early childhood development. He has attracted USD 2.5 million grant funds to AKU as an independent investigator. He helped establish Pakistan's first population based in-country bio bank – the WHO and BMGF funded Alliance for Maternal and Neonatal Health Improvement (AMANHI) project. He recently won a Grand Challenges Exploration grant to perform Metagenomic sequencing for discovery of novel pathogens in childhood illnesses. He has worked closely with WHO EMRO and NIH, USA in conducting various capacity building workshops in the field of computational methods in infectious disease epidemiology in the region. He has more than 35 publications to his credit. He is passionate about teaching and actively engages with clinical faculty and residents in the department to help them with their proposals. He conducts various workshops on Epidemiology and Biostatistics all year round and is also the course director for the infectious disease epidemiology course taught in the MSc Program at AKU.

Dr Jamil Kanji is an Associate Clinical Professor of Medicine in the Departments of Medicine, Laboratory Medicine & Pathology, Faculty of Medicine & Dentistry at the University of Alberta. He is a dual trained in Infectious Diseases physician and Medical Microbiologist who completed his medical training at McMaster University (Ontario, Canada) and the University of Alberta (Alberta, Canada). He also holds certification in Tropical Medicine

& Hygiene from the Royal College of Physicians (London, UK). He currently practices as a consultant in both Infectious Diseases and Medical Microbiology as well as the Medical Co-Director of Infection Prevention & Control at the Covenant Health System in Alberta, overseeing the program at 17 hospitals and health centres across the province. His research interests include hospital acquired and surgical site infections, zoonotic infections, and medical education.

Dr. Johanna Hanefeld is Associate Prof Health Policy and Systems in the Department of Global Health and Development at the LSHTM and lead of the LSHTMs Berlin office, a new collaboration with the Charite Medical School. Her work focuses on policy processes in low and middle income countries. Specific focus of this work is AMR, migration and health systems resilience and she was recently PI on a grant examining the policy process and political economy relating to AMR in Pakistan with colleagues at AKU.

Dr Joveria Faroqui is working as Assistant Professor and Consultant Microbiologist at Department of Pathology and Lab Medicine in Aga Khan University, Karachi. She trained for post-graduation at AKU and received her FCPS in Microbiology in 2012, did MSc in Epidemiology and Biostatistics (Clinical Research) in 2016. She has special interest in Mycology, Mycobacteriology and AMR as well as ID epidemiology and One Health. She is also the ambassador of International Society of Human and Animal Mycoses (ISHAM) to Pakistan, working towards the awareness of and improving diagnosis of fungal diseases in Pakistan.

Dr Luqman Satti did MBBS from Army Medical College Rawalpindi in 2001. He did Fellowship in Medical Microbiology from College of Physicians and Surgeons Pakistan in 2010. He has experience of working at renowned hospitals and institutes such as Armed Forces Institute of Pathology, Army Liver Transplant Center Rawalpindi and University Hospital South Manchester. He has more than 50 publications to his credit both in National and International journals. At present he is working as Consultant Medical Microbiologist and Associate Professor of Microbiology at PNS Shifa Hospital Karachi.

Dr Maha Talaat is currently the Regional Adviser for Antimicrobial Resistance and Infection Prevention and Control at the World Health Organization, Eastern Mediterranean Region in Cairo, Egypt.
Dr. Talaat holds Master's and Doctoral Degrees in Public Health and Epidemiology and has about 50 publications in international journals and presented in about 40 international meetings and conferences.
Dr. Talaat's professional focus includes providing technical expertise and capacity building to the Ministries of Health and national stakeholders in countries of the Eastern Mediterranean Region to develop and implement national plans for antimicrobial resistance and infection prevention and control programs. Her areas of expertise

are national AMR surveillance, surveillance and prevention of healthcare-associated infections, antimicrobial stewardship programs, and strengthening national and facility level infection prevention and control programmes.

Dr Marc Sprenger, a medical doctor and expert in global health and health systems, is Director of Antimicrobial Resistance (AMR) at the World Health Organization in Geneva. He successfully established this flagship of the WHO by creating a new secretariat that coordinates work on AMR across all levels of WHO and provides international leadership. From 2010 to 2015, Dr. Sprenger was Executive Director of the European Centre for Disease Prevention and Control (ECDC). Under his leadership, ECDC has been recognized as a leading organization in the provision of independent scientific advice. In his previous leadership role as Director-General of the Dutch National Institute for Public Health and the Environment (RIVM), Dr. Sprenger initiated the organization's transformation from a research-dominated to a results-based agency. Throughout his career, Dr. Sprenger has made significant contributions to health-related organizations and programmes at global, regional and national levels

Dr Marissa Becker is an Associate Professor in the Centre for Global Public Health at the University of Manitoba, Departments of Community Health Sciences, Medical Microbiology and Internal Medicine. She is also the Associate Director of the Manitoba HIV Program. Dr. Becker is currently working as an Infectious Diseases and HIV physician and researcher with the University of Manitoba. She uses a Program Science framework for her research in Manitoba, India, Kenya and Ukraine. Her research program focuses on understanding HIV risk, vulnerability and outcomes among marginalized populations, with a specific focus on adolescent girls and young women. She has been awarded a Canadian Institutes for Health Research New Investigator Award for her research. Dr. Becker is currently based in New Delhi, India where she is the Country Director, Health Programs for the University of Manitoba.

Dr Mehreen Arshad is an AKU alumnus who did her Paediatric residency and Infectious Diseases fellowship from Duke University. She recently moved to North-western University affiliated Ann and Robert H. Lurie Children's Hospital of Chicago. As a physician-scientist her interests lie in understanding the pathogenesis of urinary tract infections, development of drugs that target important pathogenic factors as a novel anti-virulence strategy and elucidating the bacterial and host factors involved in persistent gut colonization with antibiotic resistant Gram negative bacteria. Her translational/basic science research laboratory is a part of the Host-Microbe Interaction (HMI3) initiative by Stanley Manne Children's Research Institute at North-western.

Dr Mishal Khan is an Associate Professor and Director of the TB Centre at the London School of Hygiene and Tropical Medicine (LSHTM). She is a social epidemiologist by training, with extensive expertise in quantitative and qualitative health policy and systems research to improve infectious disease control programmes in South and Southeast Asia.

Dr Khan leads research on: engagement with informal, for-profit healthcare providers; gender differences in access to health services; tuberculosis control; antimicrobial resistance; One Health; investments in research and development; strengthening human resources for health; and the policy process in low and middle-income countries. This builds upon her six-year experience of working as a strategy consultant advising pharmaceutical companies on investment strategies.

In addition to a PhD focusing on socio-economic and health systems factors influencing gender differences in TB notifications across Pakistan from LSHTM, Dr Khan also holds a MSc in Control of Infectious Diseases from LSHTM and a MA in Natural Sciences (Pathology) from the University of Cambridge.

Dr Khan is a section editor for the Health Policy and Planning journal and a research fellow at the Centre on Global Health Security at Chatham House, working closely with high level policy actors on institutional capacity building in low and middle-income countries. She also hold an honorary appointment at the Aga Khan University in Karachi, Pakistan.

Dr Momin Kazi is an Assistant Professor Research, at the Aga Khan University Hospital. He is a physician (M.B.B.S in Dow Medical College, Pakistan), an epidemiologist (MSc. Vanderbilt University, TN USA) and is currently completing his PhD from the University of British Columbia, BC, Canada. Momin Kazi main research focus is digital/mobile health (mhealth) and health surveillance system measures in infectious diseases.

Dr Muhammad Irfan graduated from Dow Medical College, Karachi in 1995. He holds FCPS in Medicine as well as Pulmonology, currently working as an Associate Professor in section of Pulmonary and Critical Care Medicine, Department of Medicine, AKU. He is also a Program Director of Pulmonology Residency Program, AKU since 2012. He is current Ambassador (National Delegate) of European Respiratory Society as well as Joint secretory of Pakistan Chest Society. He has published 87 research papers in peer reviewed International and national Journals and 20 research grants as PI or Co-PI. He is also Associate editor of Pakistan Journal of Chest Diseases.

Dr Najeeha Iqbal Talat is working as an Assistant Professor with a joint appointment in the Departments of Pediatrics and Child Health and Biological and Biomedical Sciences at Aga Khan University (AKU), where she has been investigating malnutrition and growth faltering in children as primary projects. She had been mentored initially by NIH trained scientist in the area of Immunology and had an opportunity to work under eminent scientists of US during Ph.D. and postdoctoral fellowship from California USA. Her other research interests include discovery of immune biomarkers and exploration of new diagnostic and prognostics biomarkers. She is focusing on targeting B cell and plasma blasts as biomarker of active TB disease in children, which is often challenging due to the non-clinical presentation of disease in children. Her current NIH funding support allows her to delve into the association of gut microbiome in children with malnutrition in collaboration with Jeffrey Gordon lab at Washington University St.Louis. The project is focused on evolution of Microbiome in malnourished children postnatally and alteration of microbiome in children with malnutrition. She has a track record of publications and research fundings from prestigious institutes like NIH-USA to lead her independent program of research at AKU.

Dr Osman A Dar is a fellow of the Royal College of Physicians Edinburgh (FRCP Edin) and a fellow of the Faculty of Public Health (FFPH London). At Chatham House, he is director of the Centre on Global Health Security's One Planet-One Health project, an umbrella term referring to the Centre's work on zoonotic emerging infections, ecological approaches to disease control, antimicrobial resistance, sustainable livestock development and food security. Osman is also a consultant in global public health at Public Health England where he oversees and supports the development of capacity building projects in low and middle income countries.

Dr Rene S. Hendriksen is professor at the Technical University of Denmark, National Food Institute, Research group of Genomic Epidemiology and act as director and deputy for the reference centres; World Health Organization Collaborating Centre (WHO CC) for Antimicrobial Resistance and genomics, Food and Agriculture Organization Reference Canter for Antimicrobial Resistance and the European Union Reference Laboratory in Antimicrobial Resistance (EURL AR), respectively.
He provide advisory service to European Commission, European Food Safety Authority, WHO Global Foodborne Infection network, WHO Global Antimicrobial Resistance Surveillance System, WHO Advisory Group on Integrated Surveillance of Antimicrobial Resistance, Food and Agriculture Organization of the United Nations in the area of antimicrobial resistance and whole genome sequencing.
His main focus is research in global epidemiology, surveillance, antimicrobial resistance, and genomics of mainly food and waterborne pathogens. Thus, his and colleagues at the research group main priority is to establish a global surveillance of human infectious diseases including

antimicrobial resistance using a Metagenomic approach to detect, control, prevent and predict human infectious diseases. He is author of > 100 peer-reviewed published and accepted articles in international refereed journals conducted in collaboration with >500 scientists in >100 countries.

Dr Rumina Hasan MBBS, PhD, FRCPath is a Consultant Clinical Microbiologist and Professor in the Department of Pathology and Laboratory Medicine at the Aga Khan University, Karachi. She is an honorary Professor at the London School of Hygiene and Tropical Medicine. Dr. Hasan's research areas include tuberculosis and antimicrobial resistance. She furthermore initiated the establishment of the Pakistan Antimicrobial Resistance Network (www.parn.org.pk). Dr. Hasan has served as Vice Chair of the Global Laboratory Initiative (2012-2014) and member of New Diagnostic Working Group (2011-2014). She is a member of the WHO Eastern Mediterranean Regional Green Light Committee (RGLC), and currently also serves on the WHO Strategic Technical Advisory Group on Antimicrobial Resistance (STAG-AMR).

Saad Ahmed Qazi received his B.E. in Electrical Engineering in 2001 from NED University, Karachi. He completed his M.S. from Lancaster University, U.K. in Digital Signal Processing Applications in 2002. He did Ph.D. from Brunel University, U.K. in 2006. Saad Ahmed Qazi is currently serving at NED University as Professor and Dean, Faculty of Electrical and Computer Engineering. He has several international publications and research projects. He is also PI of Neurocomputation Lab under National Centre of Artificial Intelligence. His research interests include Digital Signal Processing, Joint Time Frequency Analysis, Intelligent Algorithms, Data Analytics and Decision Support Systems

Dr Sadaf Khan graduated from the Aga Khan University in 1992. She completed her General surgery residency and Colon and rectal surgery Fellowship from the Henry Ford Hospital, Detroit, USA. She joined the same institution as Senior Staff for a period of 5 years. She then returned to her alma mater. During this time she completed her Diploma in Health Professionals Education. She then took up a position of Associate Professor Surgery and Director of the Surgical Simulation program at the Case Western Reserve University. She subsequently rejoined the Department of Surgery at AKU as Associate Professor. She is Associate Dean of Undergraduate Medical Education, and is Program coordinator for the General Surgery Postgraduate program. Her clinical interests include colorectal cancer, complex anal pathology, and quality initiatives for the care of surgical patients.

Dr Shahryar Noordin is an Associate Professor and Consultant Orthopedic Surgeon at Aga Khan University. His sub specialties include Joint Replacement Surgery, Oncology and Pediatric Orthopedic Surgery for which he trained at Harvard Medical School, University of British Columbia and Hospital for Sick Children, Sick Kids, University of Toronto. He was an invited Visiting Assistant Professor in Arthroscopic Surgery and Sports Medicine at Massachusetts General Hospital, Harvard Medical School. He has published four book chapters in American Orthopaedic texts and to date has authored 68 manuscripts including those in top-notch American Orthopaedic journals. His active areas of research include joint replacement, paediatric orthopaedics, sports medicine and trauma.

He has lectured and presented extensively nationally and internationally on a wide range of Orthopaedic pathology and surgery problems in Pakistan.

Dr Shamim Ahmad Qazi is a pediatrician and a researcher. He has programmatic, clinical, training and research experience in the field of communicable and preventable childhood diseases. His focused areas of work are childhood pneumonia and neonatal infections. He works as a WHO and independent consultant now.

He worked as Medical Officer in the Department of Maternal, Newborn, Child and Adolescent Health World Health Organization, Geneva, Switzerland for nearly 20 years. At WHO he coordinated several large clinical and implementation research studies. He helped develop and update the WHO guidelines in light of research findings and provided specific input and technical support on pediatric clinical content and in promotion of such activities in developing countries. He co-led the development of the WHO/UNICEF integrated global action plan on prevention and control of pneumonia and diarrhoea (GAPPD).

Dr Syed Hani Abidi is a molecular virologist at AKU. He leads the systems virology & molecular epidemiology research group and has research interests in HIV molecular evolution, emergence of new strains, and evolution of drug resistance mutations

Dr Zahra Hasan is Professor and Head, Section of Molecular Pathology, Department of Pathology and Laboratory Medicine, The Aga Khan University. She received her PhD from Imperial College of Science, Technology and Medicine, London, UK; training in *Mycobacterium tuberculosis (MTB)* related molecular and cellular biology of the pathogen-host interaction in London (St Mary's School of Medicine, Imperial College) and Amsterdam (Netherlands Cancer Institute) and then did her Post-doctoral training at the Basel Institute for Immunology, Switzerland. She has received

Fellowship of the Royal College of Pathologists, UK for Microbiology and Immunology.

At the Aga Khan University, she has worked in both Host and Pathogen biology. Working, on aspects of human immunity and susceptibility to Tuberculosis infections; and the study of MTB strains and their variation which impacts diagnosis of drug resistance. She is working on whole genome based identification of MTB for rapid diagnosis of drug resistance. She is interested developing the pathogen genomics area for other disease applications and in establishing. She has enhanced research capacity at AKU, training and mentoring research faculty and students, building new collaborations with international and domestic institutions.

As Section Head, Molecular Pathology, she has worked on translational applications of new molecular diagnostics for the enhancement of laboratory based testing for different areas; Infectious diseases; Molecular Oncology; Tissue transplant services and Clinical genetics. The Section has received College of American Pathologist Accreditation for the above mentioned services. Currently, she is President, Association of Molecular Pathologists Pakistan.

<div align="center">**ABSTRACTS**</div>

Inaugural session

Keynote address I: Tackling antimicrobial resistance for global good
Anthony Huszar, South East Asia Regional Coordinator, Fleming Fund

Despite the serious risk that AMR poses to global health, little is known about its geographical distribution and the scale of the problem. Without this knowledge, our ability to combat the problem is limited. Nevertheless, estimates from the Review on Antimicrobial Resistance (2016) suggest that 89% of deaths related to AMR in 2050 will occur in Africa and Asia. In order to support countries that are potentially affected, the UK Government set up the Fleming Fund to provide the much needed resources to catalyse efforts to better understand and address AMR. By strengthening national surveillance systems for AMR in Pakistan, it is hoped that these efforts will benefit Pakistan's ability to better understand and manage the AMR threat, as well as add to Pakistan's contribution to the Global Good

Keynote Address II: Overview of antimicrobial resistance in the Eastern Mediterranean Region
Maha Talaat, World Health Organization, EMRO, Egypt

Antimicrobial resistance (AMR) one of the world's most complex and serious health and development challenges. It affects all countries and poses growing threats to human, animal and plant health; food production and food security; the environment, and economic development. Drug-resistant infections are estimated to cause at least 700,000 deaths globally each year. If AMR left unaddressed, up to 10 million deaths may occur by 2050 as a result of AMR. Alarming levels of resistance have been reported in countries of all income levels, with the result that common diseases are becoming untreatable, and lifesaving medical procedures riskier to perform. This presentation aims to provide a regional oversight on the burden of AMR at the Eastern Mediterranean Region, progress of development and implementation of the national AMR action plans, AMR surveillance, Infection Prevention and Control program capacities and antimicrobial stewardship programs.

XDR Typhoid: challenges and opportunities
Farah Qamar, Aga Khan University
Abstract: Not Available

Whole genome sequencing approaches to the AMR problem
Andrea Maurizio Cabibbe
Emerging Bacterial Pathogens Unit
WHO Collaborating Centre in Tuberculosis Laboratory Strengthening
Tuberculosis Supranational Reference Laboratory
IRCCS San Raffaele Scientific Institute
Milano, Italy

For years, clinical microbiology laboratories have relied on the use of conventional phenotypic and genotypic methods for species identification, detection of antibiotic resistance and studying transmission of bacteria responsible for hospital- or community-acquired infections. These are useful methods, but they have technological constraints and long turnaround times, require specific infrastructure and have low discriminatory power to distinguish highly genetically related strains. Next-generation sequencing (NGS) technologies using massively parallel processing to interrogate pathogen genomes in days are revolutionizing clinical microbiology practice. Whole genome sequencing (WGS) offers unprecedented resolution for genotyping, taxonomical classification, outbreak investigation, prediction of antimicrobial resistance and virulence. WGS-based approaches have been proposed for surveillance of bacterial pathogens included in the "priority list" by the World Health Organization. At present, proof-of-principle and validation studies have been conducted for WGS from culture samples of *Escherichia coli, Klebsiella pneumoniae, Staphylococcus aureus, Streptococcus pneumoniae, Pseudomonas aeruginosa, Salmonella* spp., *Acinetobacter* spp., *Neisseria gonorrhoeae* and *Clostridium difficile* included in this list, in addition to the globally established priority group *Mycobacterium* spp. (including *Mycobacterium tuberculosis*). Reported evidence had concluded that WGS can complement and in some cases replace traditional phenotypic methods for drug resistance prediction, and trace phylogenetic relationships with very high resolution to improve prevention and control strategies.

AMR and health policy
Johanna Hanefeld, London School of Hygiene and Tropical Medicine, the United Kingdom

AMR is a key challenge facing health globally, it has been acknowledged as such with a global action plan by the WHO which foresees national implementation across human, animal and environmental health. While it is accurate to identify the universal challenge AMR represents for high middle and low income countries, solutions required may differ. The multitude of actors

and sectors directly relevant to any attempt at control of AMR - ranging from the regulation of antibiotic use, to infection prevention and the control of new antibiotics - mean that this is what political scientists will call a classic 'wicked issue' involving complexity and many different actors. It also means that implementation of global plans to address AMR at national level will need to take account of different contexts and power relations. Here we present findings from policy analysis focused on actor power in relation to AMR in Pakistan, conducted in 2017/18. It analyses how the political economy in Pakistan will affect AMR policy responses and makes recommendations on how to take this into account when formulating and implementing policy on AMR in Pakistan.

Drug quality impacts AMR: control of antibiotic quality in Pakistan
Hamid Zaman
Departments of Biomedical Engineering and International Health, Boston University

The problem of AMR is both grand in its scope and complex in its origin. The typical drivers of AMR are associated with transmission of resistant pathogens, overuse or abuse of antibiotics in the clinic or in the veterinary sector (called stewardship), or poor adherence to treatment. Work from my lab, in addition, has shown that poor quality medicines – both sub-therapeutic and substandard (i.e. impure, falsified and counterfeit) can drive resistance independently even when the patients are adherent. This driver of resistance works both in synergy with other drivers, as well as an independent pillar of resistance. Our results have shown acquisition of stable resistance and specific mutations due to poor quality rifampicin, colistin and ciprofloxacin. Our field work has shown that low-income communities, refugees, forced migrants and those living in places where the regulatory system has collapsed are particularly vulnerable to poor quality medicines. In this talk, I will focus on both the mechanism of resistance due to poor quality medicines, and its impact on Pakistan due to large unregulated market and the presence of substandard drugs. The final part of the talk will focus on specific policy goals and action items (including development and implementation of new technology) to address this challenge in rural and urban areas.

Political and health systems barriers to combating AMR in Pakistan
Mishal Khan, London School of Hygiene and Tropical Medicine, the United Kingdom

Using Pakistan as a case study representing a populous country with extremely high antibiotic usage, we systematically identified organizations or individuals that are influential with respect to implementation of policies to reduce irrational use of antibiotics, and used a novel methodology to investigate their support for regulations addressing actions of frontline healthcare providers and antibiotic producers across the One Health spectrum. Key impediments for implementing policies were:
   1) Critical gaps in medical and veterinary education, primary healthcare, veterinary services, food security and information to guide doctors and policymakers;
   2) The number of diverse stakeholders that are affected by and can influence policies that regulate antibiotic use;

3) Limitations in resources and political will for implementation of policies and regulations. Global health actors formulating policies and guidelines to address antimicrobial resistance need to be more cognizant of the specific complexities, power relations and vested interests that influence policy processes in low and middle income countries. Taking these complexities into account will enable development of more effective strategies to reduce irrational use of antibiotics – ones that focus as much on understanding the policy process and contending with vested political and economic interests as they do on laboratory, surveillance and infection control capacity.

Plenary III: Point –Counter point
Does mass drug administration facilitate AMR spread?

Scientific Session I-Young infant sepsis:

Young infant sepsis: historical perspective and evidence
Shamim Qazi, World Health Organization, Switzerland

Neonatal mortality has reduced from 5 million in 1990 to 2.5 million in 2017 globally. The proportions of neonatal deaths has increased substantially as infant and under five year mortality decreased more rapidly from 12.6 million in 1990 to 5.4 million in 2017. The three most common causes of neonatal mortality still remain as preterm births, infections and intra-partum related events. At an outpatient level, the WHO/UNICEF integrated management of childhood illnesses (IMCI) categorizes serious infections such as sepsis, meningitis and pneumonia as possible serious bacterial infections (PSBI) and recommends referral of young infants up to two months of age to a hospital for management. Unfortunately, many families are unable to accept the referral advice in low resource settings, making injectable antibiotic therapy and supportive care at a hospital inaccessible to these sick young infants. In 1990s and early 2000s observational studies in India, Bangladesh and Nepal managed young infants with PSBI with outpatient simplified antibiotic regimens when referral was not possible. Subsequently WHO and several international partners supported randomized controlled trials to compare various simplified antibiotic regimens against a reference antibiotic regimen in young infants with PSBI in Bangladesh, Democratic Republic of Congo, Kenya, Nigeria and Pakistan when referral was not feasible. Trials showed that outpatient simplified regimens were effective in a large proportion of young infants with PSBI, whereas critically ill young infants still needed hospitalization. In 2015 WHO launched a guideline, "Managing possible serious bacterial infection in young infants when referral is not feasible". Implementation research to use WHO guideline in programme setting in Bangladesh, Democratic Republic of Congo, Ethiopia, Kenya, India, Malawi, Nigeria and Pakistan, showed reduced mortality in young infants with PSBI. The guideline is currently being implemented in many Asian and African countries.

Scientific session II: World War AMR: Have we been taken over?

Politics and policy: framing AMR control in a global context
Osman Dar, Public Health England and Chatham House, the United Kingdom

The presentation will provide an insight into the role politics, multilateral institutions and global policy development have played in positioning AMR as a priority global health issue in recent years. It will reflect on what the implications of these global efforts have been for Low and Middle Income countries and provide an insight into the inner workings of the global health system

Animal AMR/AMU surveillance and food safety in Pakistan

Ali Ahmad, University of Veterinary and Agricultural Sciences, Lahore

The objective of this review is to estimate antimicrobial resistance (AMR) in food borne pathogens of animal origin and Antimicrobial use (AMU) in Pakistan. From the past two decades antibiotics usage has increased tremendously as an essential part of treatment, prevention of diseases and for growth promotion in animal sector not only Pakistan but also globally leading towards antimicrobial resistance. It is expected that consumption of antibiotics in animals will increase up to 1, 05, 00 tons by 2030. In Pakistan, Punjab Compound feed act, 2016 clearly define banned and permitted antibiotics in feed but there is complete lack of AMR/AMU surveillance programs in poultry/ livestock and even in humans. Data on antibiotic resistant pathogenic bacteria of veterinary importance (*E. coli, Salmonella, Campylobacter, Staph aureus* etc) available from various research studies in Pakistan is scattered. Studies revealed increasing trends of resistance in E.coli isolated from chicken and beef against sulphamethoxazole – trimethoprim, trimethoprim, ciprofloxacin, nalidixic acid and ampicillin. MDR *Salmonella typhimurium and Salmonella enteritidis* showed resistance against 22 antibiotics out of 24, with highest resistance against pefloxacin (PEF) (92.6% and 100%). In *Campylobacter jejuni,* isolated from both chicken and beef, an increasing trend of resistance was observed against enrofloxacin (79.2), cephalothin (89%), tylosin (77.6%), amoxicillin and ciprofloxacin (71.2%), colistin (69.6%), neomycin (32.8), sulfamethoxazole+trimethoprim (30.8%), gentamicin (25.6%) and doxycycline (8.8%). Even methicillin resistant *S. aureus* (MRSA) was isolated from poultry meat and live Cockerel with high resistance to tetracycline (44.3%) and 100% resistance against oxacillin, cefoxitin and penicillin. For *E. coli*, non-typhoidal *Salmonella* and *Campylobacter* there is excessive emergence of extended spectrum beta lactamase (ESBL) producers which are difficult to treat even with third, fourth-generation cephalosporins and monobactams. In conclusion, increase in antimicrobial resistance is affecting ability to treat a range of infections involving both human and veterinary sector, so steps should be taken at Government level for implementing laws for restricted use of antibiotics in both sectors.

AMR and environment & water safety

Imran Hashmi, National University of Sciences and Technology, Islamabad

Rapid industrial development and growing agricultural trends have given rise to contaminants that are threating not only the environment but are also a concern for public health, a wide range of chemicals such as pharmaceuticals are among these contaminants, their extensive usage and presence in the environment warrants immediate action. The pharmaceutical industry has increased with time reflecting the increasing demand for drugs. These drugs are ultimately excreted or disposed of and end up in the environment, thus accumulation of these drugs is recognized as a threat. The presence of antibiotics in water bodies and as a result the development of antibiotic resistant microorganisms have come to light as a major issue of the modern world and has raised potential concern. The widespread overuse and misuse of antibiotics in humans, animals and agriculture is considered to be closely linked to the growing increase in antibiotic resistance. The presence of high levels of antibiotics in environment and

water bodies could lead to the development of antibiotic resistance genes (ARGs), making the environment a reservoir for further growth of ARGs to pathogens via water bodies and food webs. Antibiotics in water bodies also effects non target organism such as flora and fauna leading to immunosuppression and growth problems

Global sewage project
Rene Hendriksen, Technical University of Denmark [via video link]

The dynamics of common infectious diseases are changing with the world heading towards an era of emerging and re-emerging infectious diseases where AMR threatens the very core of modern medicine and the sustainability of an effective, global public health response. Due to the complexity of the problems, there is a need for a harmonized and immediate action setting up surveillance to avoid moving into a post-antibiotic era where common infectious disease agents can't be treated.

From a surveillance point of view, sewage as well as animal wastewater are attractive matrices because it combines material from a large and mostly healthy population, which would otherwise not be feasible to monitor. Metagenomic sequencing of sewage and wastewater as well as quantification of antimicrobial resistance genes and residues combined with epidemiological data is a possible way to determine the occurrence and burden of resistance in defined healthy populations.

Recent developments in high throughput sequencing offer the ability to rapidly identify nucleic acids from various organisms in clinical and environmental samples and provide a much broader resolution than offered by current methodologies. Thus, we launched a Global Sewage Surveillance study, collecting urban sewage from 77 cities across 63 countries including all inhabited continents. Our findings suggest that global AMR gene diversity and abundance vary by region and are caused by national circumstances. Improving sanitation and health could potentially limit the global burden of AMR. We propose to use sewage for an ethically acceptable and economically feasible continuous global monitoring and prediction of AMR.

Scientific Session III: Molecular and cellular basis of AMR

Emergence of drug resistance in zoonotic Salmonella isolated from poultry
Aamir Ali,
Health Biotechnology Division, National Institute for Biotechnology and Genetic Engineering (NIBGE), Faisalabad, Pakistan,

Salmonellosis is one of the main bacterial diseases of poultry that has substantial economic and zoonotic importance. The treatment is usually based on experience of the veterinarian while sensitivity of the prevailing Salmonella serovars against particular antimicrobial has not been investigated, thus not considered. Total 144 zoonotic Salmonella isolates from poultry were tested against 24 antimicrobial agents using disc diffusion assay and highest resistance was found against pefloxacin (94.4%) while lowest against ertapenem (20.13%). The 7.6% isolates showed extended-spectrum β-lactamase production. Pulse field gel electrophoresis (PFGE) revealed 69 types of the isolated Salmonella. Fifty-nine genes reported for antimicrobial

resistance and 12 for conferring virulence were targeted. The most prevalent resistance gene for aminoglycosides was aadA1 (38.2%), for quinolone resistance parE (61.1%), for chloramphenicol cat2 (46.5%) and for beta-lactams blaTEM-1 (44.4%). Among efflux pump coding genes, armA showed highest prevalence (61.8%) and for virulence, a high prevalence of SopE (88.8%) showed the zoonotic potential of the isolates. The detected high prevalence of the important zoonotic Salmonella serovars is of public health concern. Moreover, the prevalence of genes including SopE, blaTEM-1 and armA may help in identifying molecular mechanisms responsible for the emergence of drug resistance against various groups.

Gut colonization with MDR Gram negatives
Mehreen Arshad, Northwestern University, USA

Background: The recent rapid rise of multi-drug resistant Enterobacteriaceae (MDR-E) is seriously threatening the treatment of common infectious diseases. Using a cross-sectional study, we aimed to estimate the prevalence of gut colonization with ESBL-producing Enterobacteriaceae among healthy infants in a community with a high incidence of MDR-E infections.
Methods: Stool samples were collected from 104 healthy infants between the ages of 5 and 7 months. Enterobacteriaceae isolates were screened for resistance against several antimicrobial classes. Presence of extended-spectrum beta-lactamase (ESBL) and carbapenemase genes was determined using multiplex PCR. Sequence types were assigned to individual strains by multi-locus sequence typing. Phylogenetic analysis was done using the triplex PCR method.
Results: Forty-three percent of the infants were positive for ESBL-producing Enterobacteriaceae, the majority of which were E. coli. Molecular testing showed that 70% of infant stools were positive for TEM β-lactamase gene, 55% for the CTX-M β-lactamase gene and 25% for the KPC carbapenemase gene. We identified several different ESBL E. coli sequence types most of which belonged to the phylogenetic group B2 (23%) or D (74%).
Conclusion: The widespread colonization of infants in a developing country with ESBL-producing Enterobacteriaceae is concerning. Molecular studies revealed that a quarter of the infants in our cohort were also carriers of carbapenemase-producing bacteria.

Microbiome and AMR
Najeeha Iqbal, Furqan Kabir, Aneeta Hotwani, Kamran Sadiq, Asad Ali.
Aga Khan University

Globally AMR accounts for 500,000 deaths annually. Suboptimal use of antibiotics has an impact of 0.9% on total global health expenditure. One of the mandates of WHOs Global Action Plan is to reduce antibiotic use in children to avoid emerging drug resistance. Frequent antibiotic use due to diarrhea and recalcitrant infection in malnourished children is a key factor of emerging drug resistance (2). Early colonization of enteropathogen (3) and pathobionts (4) may be prevented by healthy microbiota (4). The magnitude of AMR gene transfer from pathobiome to microbiome has not be well studied.
A cohort of Pakistani children demonstrated a high proportion of stunting (HAZ<-2.0) (5). A subset of children (n=63) were selected for upper GI endoscopy for identifying treatable cause of

malnutrition. Presence of enteropathogen in duodenal aspirate was studied through q-RT PCR based TaqMan Array cards.

We found a high proportion of enteropathogen colonization in gut; including Giardia 38/60 (63%), *H. pylori* 7/60 (12%) & *Campylobacter* 8/60 (13%). Along with enteropathogen colonization, the positivity (12- 67%) for fluoroquinolone (ShEgryA83S, ShEparC80s) and ESBLs (CtxM1-2-9, CtxM 8-25) resistance genes were also observed.

Antibiotic carriage study of gut microbiome using metagenomics will confirm the presence of above drug resistance genes.

Typhoidal Salmonella strains in Pakistan: an impending threat of extensively drug-resistant Salmonella Typhi
Luqman Satti, PNS Shifa Hospital, Karachi

The aim of this study is to see the frequency, clinical presentation, and therapeutic response of extensively drug-resistant Salmonella enterica serovar Typhi and current susceptibility pattern of typhoidal Salmonella strains in our setup. This study was carried out at the Department of Medical Microbiology and Immunology and Department of Medicine, Pakistan Navy Ship (PNS) Shifa Hospital, Karachi, from January 1 to December 31, 2018. All the blood culture samples of patients (indoor and outdoor) with suspicion of enteric fever were processed. Isolates were cultured and identified using standard microbiological procedures. The antimicrobial sensitivity against the typhoidal Salmonellae was determined using Kirby-Bauer disc diffusion method as per the guidelines of Clinical and Laboratory Standards Institute (2018) and all the extensively drug-resistant (XDR) isolates were confirmed by Vitek 2 system. Clinical presentation and response to treatment of patients were followed. A total of 292 typhoidal Salmonella isolates were cultured. Resistance to ciprofloxacin against both Salmonella Typhi and Salmonella Paratyphi A was found to be very high (91%). Percentage of multidrug-resistant (MDR) isolates in Salmonella Typhi was 76% (182 isolates) and in Salmonella Paratyphi it was 34% (18 isolates). XDR isolates in Salmonella Typhi were significant that is 48% (115 isolates). Only 10 cases were given azithromycin who responded to treatment in mean 4.3 days. Out of 115 cases of XDR Salmonella Typhi, 103 patients were given parenteral meropenem and clinical response was seen in mean 5 days. The emergence and rapid spread of extensively drug-resistant Salmonella Typhi is alarming and highlights the significance of strict antimicrobial susceptibility surveillance programs with antimicrobial stewardship.

Scientific session IV: AMR in respiratory infections:

Challenges of recurrent infections and antibiotics usage in patients with chronic structural lung diseases
Muhammad Irfan, Aga Khan University

Recurrent infections are common in chronic pulmonary diseases like chronic obstructive lung disease (COPD), bronchiectasis and interstitial lung diseases. The microorganisms causing recurrent infections in these patients are resistant to treatment with common antibiotics and may

result in fatal outcome. Frequent and inappropriate usage of antibiotics in these patients o lead to increased antimicrobial resistance in community.

Patients with chronic lung diseases and recurrent respiratory tract infections represent a diagnostic dilemma. Establishing the underlying cause of driver of the recurrent infections is essential to guide future therapeutic and preventative strategies.

Before treating these patients physicians should think: a) why does the patient have recurrent respiratory tract infections? b) What is the causative organism and drug sensitivity pattern? c) Is there an established therapy to modify the underlying defect? d) Is there an established pathway for prevention of recurrent infections in this patient?

Where the underlying disorder cannot be corrected or reversed, the objective of treatment must be to prevent the development of respiratory tract infections and the resulting impact of such infections on lung function decline and quality of life. Key components of management are therefore to treat the underlying defect, controlling bacterial infection (with prophylactic antibiotics which may be oral or inhaled), reducing symptoms and maintaining lung function, and prevention of serious bacterial or viral infections by vaccination.

Indirect effect (herd immunity) of PCV 10 pneumococcal vaccine
Imran Nisar, Aga Khan University

Abstract: Not available

Current global challenges of drug resistance in tuberculosis
Arshad Javaid, Khyber Medical University

Incidence of tuberculosis (TB) is annually decreasing by 2%, and during the last two decades the effective diagnosis and management of TB have averted an estimated 54 million deaths globally. But unfortunately, the increasing spread and multiple challenges in management of drug-resistant TB (DR-TB) are putting these gains at risk. Because of its challenging diagnosis, a total 397,316 of estimated 558,000 rifampicin/multidrug resistant TB (RR/MDR-TB) were notified in 2017, and only 25% of notified cases were initiated on treatment. Considering acquired or secondary resistance as the major of reason for DR-TB and putting more emphasis on it, TB control programs have neglected the transmission from other persons as a cause DR-TB which has become an "elephant in the room" of DR-TB epidemic. Complicated treatment of DR-TB patients with less effective and more toxic second-line anti-TB drugs (SLD) for prolonged duration results in lower treatment success rate (61% in MDR-TB, 30% in extensively drug-resistant TB vs. 82% in drug susceptible TB) and higher incidence of adverse events. Other major challenges for control and management of DR-TB are co-infection with Human Immunodeficiency Virus, insufficient domestic and international funding, lack of political commitment and unavailability of novel treatment regimen.

RETAPP Study – non severe pneumonia trial in children (amoxicillin vs placebo)
Fyezah Jehan, Aga Khan University
Abstract: Not available

The problem and challenges in the treatment of patients with MDR Gram negative pathogens
Faisal Mahmood, Aga Khan University
Abstract: Not available

The challenge of treating MDR infections in transplant recipient
Asma Nasim, Sindh Institute of Urology and Transplantation

Infections in solid organ transplant (SOT) recipients possess unique challenges. SOT recipients are particularly vulnerable to infections due to complicated surgeries, immunosuppressive medications, prolonged hospital stay, pre-existing comorbidities. Unusual presentations, rare infections, drug- drug interactions, drug side effects in this population are problematic and challenging to manage. The increasing emergence of multidrug resistant (MDR) organisms becomes a further burden in this population. Sindh Institute of Urology and Transplantation is the largest renal transplant center of Pakistan. Urinary tract infections (UTI) are the most common infection in renal transplant recipients with recurrent infections very difficult to eradicate. The trend of resistance among uropathogens has gradually increased in past years. MDR Gram negative bacteremia is one of the complications of UTI with graft loss and mortality. Nocardia has become resistant to ceftraixone and imipenem in majority of our patients and we are left with amikacin, cotrimoxazole and linezolid with severe drug -drug interactions and nephrotoxicity. We face great difficulty in managing MDR tuberculosis due to severe side effects and drug- drug interactions. The treatment of cytomegalovirus infection has slowly become difficult to manage. In conclusion MDR infections are a great threat in transplant recipients with many challenges in managing these infections.

Personalized treatment for tuberculosis using next-generation sequencing
Zahra Hasan,
Aga Khan University

Multi-drug resistance (MDR) defined by MTB resistant to rifampicin (RIF) and isoniazid (INH) account for 4.2% of new TB cases and up to 16% of re-treatment and relapse TB cases in Pakistan. This translates to an estimated 15,000 MDR-TB cases. However, there were MDR/RR-TB: 3 475 laboratory confirmed cases of which approximately 30,000 were put on treatment. This suggests 12,000 missing MDR-TB cases. Further, resistance other than to RIF may be

mistakenly treated as susceptible TB, increasing the chance of treatment failure, increasing disease burden, perpetuating morbidity and the period of transmission.

For MDR-TB treatment, new drugs have been recommended. However, rapid genotypic testing is not available for a number of these such as, Bedaquiline (BDQ), Linozelid (LZ), Clofazamin (Cz), Cycloserine (Cs), Pyrazinamide (PZA) or Ethionamide (Eth). Sequencing of MTB strains can provide reliable genotypic resistance assessment of strains. Initiating patients on standard treatments (TB and MDR-TB) without a comprehensive assessment of resistance to all drugs may result in treatment failures.

We propose impactful treatment of TB by early diagnosis target-based next generation sequencing (NGS) to cover mutations to first- and second-line drugs to determine resistance to drugs other than rifampicin (RIF) to guide appropriate personalized regimens in high risk TB groups.

Targeted genetic sequencing of MTB using NGS will have great value in early diagnosis of DR in individuals who are at high risk of developing resistance such as, those who have previously received TB treatment. NGS based testing will give comprehensive genotype information for new drugs including bedaquiline and delaminid. This would further guide personalized personalized treatment of drug resistant TB at the time of treatment initiation improving treatment and management outcomes

Antimicrobial resistance and the role of stewardship
Asad Ali, Aga Khan University

Antimicrobial stewardship programs and infections control programs complement each other in achieving the common goal of limiting the number of new infections with multi-drug resistant organisms. Antimicrobial stewardship aims to limit the unnecessary use of broad-spectrum antibiotics and involves a continuous effort by healthcare institutions to optimize antimicrobial use in hospitalized patients. Its targets are to improve outcomes, ensure cost-effective therapy, and to reduce adverse effects of antimicrobial use, including resistance. This talk will summarize some recent global literature about the role of ASPs in limiting antimicrobial resistance

Scientific session VI: Emerging AMR in Pakistan:

Candida auris global outbreak and cases from Pakistan
Joveria Farooqi, Aga Khan University

Candida auris is fast becoming the second most (in) famous candida species after *Candida albicans*. Its claim to fame being the first multi-drug resistant candida which has emerged over the globe as the latest infection control nightmare. The most fascinating thing is that it was identified as a benign new specie in 2008 and by 2014 it was the cause of candidemia outbreaks in Korea, India, Pakistan, South Africa and Kenya. In the next 5 years it has spread across 36 countries with only USA having over 600 cases.

In October 2014 in Pakistan, the Aga Khan University Hospital Laboratories identified the odd new yeast as a cause of invasive candidiasis in clusters of patients from ICUs and special care

units. At first we noticed it from patients admitted at or discharged from AKU only, but later on we identified cases from different centers of Pakistan.

This talk will describe the typical characteristics of patients likely to be infected with *Candida auris* and the outcomes of these infections. Some individual cases will be described in detail so the audience can get a clearer picture of the progress of such patients and its spread in a unit.

Mutation rate, selection pressures and drug resistance in HIV-1
Hani Abidi, Aga Khan University

With the introduction of antiretroviral drugs, the survival of most HIV patients has been prolonged markedly. However, this is greatly threatened by increasing rates of antiretroviral dug resistance, which may eventually lead to undesirable treatment outcomes. With continued/suboptimal use of antiretroviral agents, the emergence of resistance mutations is likely to occur. The drug resistance mutations tend to accumulate in the genomic region that are under selection pressure or have high genomic entropy. Our study suggests that genomic variability analyses can be used to predict regions in HIV-1 genome that can evolve to amplify drug resistance mutations. Knowledge about the mutational hotspot can be useful in tailoring therapy according to patient's genotype profile.

Surgical site infection in knee replacement surgery: quo vadis?
Shahryar Nooruddin, Aga Khan University

Introduction: Surgical Site Infection (SSI) after knee arthroplasty is a major cause of morbidity and mortality that increases hospital stay and financial burden. Aga Khan University Hospital (AKUH) incorporated total knee arthroplasty in its surgical care surveillance program and started collecting data in June 2012.

Patients and methodology: All patients from June 2012 to December 2013 undergoing knee arthroplasty were included. Data was acquired from the hospital SSIdatabase for knee arthroplasty surgery including post-discharge monitoring in clinics till 90 days post-op follow-up.

Results: During this time period a total of 164 patients had primary TKR. Of these, 85 patients (52%) had bilateral TKR while 79 (48%) had unilateral TKR. The overall SSI was in 2 patients (1.2%).

Conclusion: Identifying SSIs is multidimensional. Since our 2 infected cases after TKR occurred after discharge, this highlights the importance of post-discharge surveillance and not limiting the surveillance for inpatients only.

Future Directions: Progression to SCIP infection prevention care measures and ongoing prospective cohort study to analyze relationship between Staphylococcus carriage and surgical site infection following hip and knee arthroplasty. Preliminary data to assess the extent of AMR colonization on the cell phones of local health care professionals and to identify any association with post-operative SSI.

Scientific session VII: Translating AMR research into public health action

Beyond national action plans for AMR: implementation challenges
Marc Sprenger, World Health Organization, AMR Secretariat, Switzerland

Antimicrobial resistance (AMR) is a major threat to human health and security. Some countries have reported that more than 40% of infections are resistant to common antimicrobial therapies. Moreover, the microbes that cause these infections do not recognize borders between countries or industries. The Global Action Plan (GAP) on AMR calls for strengthening in five strategic areas, including: awareness and behavior change, surveillance, infection prevention and control, antimicrobial stewardship and sustainable research and development. Many countries have been working towards the objectives of the AMR GAP through development of National Action Plans (NAPs). While more than 60% of Member States have a plan for AMR, it is critical to translate these plans into action. There are several challenges that have been faced in NAP implementation, including: funding delays, governance, resource constraints, prioritization, monitoring, and maintaining political interest and buy-in. The lessons learned thus far indicate that a multi-sectoral, One Health Approach is key for tackling AMR. Ultimately, fulfilling the objectives of the Global Action Plan on AMR is paramount for preventing transition into a post-antibiotic era.

Lessons learnt from XDR typhoid outbreak in Pakistan
Rumina Hasan, Professor, Department of Pathology and Laboratory Medicine
Aga Khan University

Outbreak of extensively drug resistant (XDR) Salmonella Typhi was reported from Pakistan in 2018. The outbreak first detected end of 2017 has continued to spread across the country. Travel associated cases are increasingly reported from other countries. The outbreak has captured global attention not only due to the fact that treatment options for XDR typhi are limited, but also because of the ability of this strain to spread rapidly.
Over the past decade Pakistan has experienced a number of outbreaks in addition to its burden of endemic infectious diseases. The outbreak associated with XDR typhi spread through ingestion of contaminated food and water occurred at a time with increasing focus on antimicrobial resistance. It thus provided an opportunity to address two issues; access to safe food and water, and, the threat of antimicrobial resistance.
The steps implemented to address this outbreak will be discussed along with progress, gaps and lessons learnt.

Diagnostic stewardship in acute febrile illnesses to reduce AMR burden
Erum Khan, Aga Khan University

Acute febrile illness is a common cause of hospital admission, and its associated infectious causes contribute to substantial morbidity and death worldwide, especially in low- and middle-

income countries. With availability of rapid diagnostic tests for malaria and blood culture for typhoid fever, other causes of febrile illness are increasingly being suspected in patients negative for these two etiologies. Infections like leptospirosis, rickettsioses, respiratory viral infection, and arboviruses are common clinical differentials. However, clinical diagnosis in the absence of specific diagnostic testing can be difficult and over treatment with anti-malarial and anti typhoidal drugs even in the setting of a negative test results is a common practice. Moreover the decision to order a lab test often lacks careful clinical evaluation, recognition of a clinical syndrome, and estimation of the pretest likelihood of the condition for which the test is being obtained.

Diagnostic stewardship involves modifying the process of ordering, performing, and reporting diagnostic tests to improve the treatment of infections and other conditions and help reduce the AMR burden.

Understanding TB care pathways and opportunities to improve outcomes: lessons learned from South India
Marissa Becker, University of Manitoba, Canada

In India, 2.7 million people had active Tuberculosis (TB) in 2017, corresponding to an incidence of 204 TB cases per 100,000 population. Delays in identifying persons with TB disease and initiating treatment can lead to worse disease outcomes, increase the risk of death and further disease transmission in the community. The magnitude and risk factors that contribute to delay in TB diagnosis and treatment initiation vary. In effort to understand these delays, we conducted a study to measure the total time from TB symptom onset to treatment initiation and the care pathways taken by persons newly diagnosed with TB in Karnataka, south India. Of the 451 adults interviewed, the median number of consultations prior to TB treatment was 4, the median total delay was 47 days and the median out-of-pocket medical cost was □1300 (US$ 18.6). No significant difference was found in the total delay in initiating treatment by the care seeking pathways (defined as the facility consulted first and last). Greater number of consultations and higher out-of-pocket medical costs were associated with delay in initiating TB treatment. Our study underscores the importance of reducing the number of consultations and shortening the time to treatment initiation. Our study also highlights the need to increase the interaction between private health providers and public sector for TB diagnosis and treatment initiation.

Scientific session VIII: Digital health technology for AMR surveillance in LMICs:

Use of mobile phone based applications and AI models for infection control and antimicrobial stewardship
Saad Qazi, NED University, Karachi
Abstract: Not available

Environmental surveillance to assess public health risks using digital health toolkit SaniPath
Christine Moe, Emory University, USA (via video link)

Abstract: Not Available

Implementation of digital health technology for the control of Salmonella typhi and other enteric pathogens in low and middle-income countries
Momin Kazi, Aga Khan University

Implementation of digital health technology for the control of Antimicrobial resistance pathogens (AMR) in low and middle-income countries
This symposium highlights innovations in digital health technology that have contributed in understanding transmission of Antimicrobial resistance pathogens in low and middle-income countries (LMICs). Given the mobile phone access and acceptability in LMIC, there is great potential for digital health interventions to improve service quality, provide information and decision support to health professionals and improve communication thereby having a positive public health impact even in resource constrained developing country settings. In this symposium we would be describing the role of environmental factors in AMR pathogens using digital health SaniPath® tool kit and in assessing public health risks from unsafe fecal and sewerage management in AMR pathogens high burden areas. Further we will be discussing use of a mobile phone based application personalized for infection control and antimicrobial stewardship in a resource constrain settings and lesson learned from field based implementation and how data captured can be incorporated in a machine learning (ML) and artificial intelligence (AI) models to come up with relevant prediction models. Lastly we will talk about the role of geospatial mapping in ceftriaxone resistant Salmonella typhi outbreak investigation in Hyderabad city in identifying the specific distribution of the outbreak and predicting water born origin of this organism that was causing infection. In addition, we will describe geospatial data to understand the spread of AMR pathogen in neighboring city of Karachi, Sindh province and rest of Pakistan.

Scientific session IX: AMR in the nosocomial setting – infection prevention and control:

C. difficile **reduction strategies**
Jamil Kanji, University of Alberta, Canada

In the last two decades, *Clostridioides difficile* has become a prominent hospital-acquired infection.   Any surfaces contaminated with faeces (e.g., bed/hand rails, commodes, rectal thermometers) can act as a reservoir for spread between hospitalised patients through direct contact by the patient or by healthcare worker transmission to their patients. Recent studies have also shown that *C. difficile* can be acquired from the community, and that community-infected patients can facilitate hospital transmission when they present for evaluation and management of diarrhoea. Research in the area of One Health highlights that community-acquisition of *C. difficile* may be bi-directional between farm animals and humans, also facilitating transfer of antimicrobial resistant genes.

The morbidity and mortality associated with *C. difficile* infections (CDIs) can be substantial. Outbreaks can be challenging to control due to spore persistence, and require a multifactorial approach to preventing and controlling CDIs. This presentation highlights a multidisciplinary strategy implemented to help gain control of and reduce our hospital-associated CDIs, complications and outcomes.

New approaches to preventing AMR in surgical site infections
Sadaf Khan, Associate Professor Surgery, Aga Khan University

Appropriate antibiotic prophylaxis has been proved unequivocally to reduce postoperative surgical site infection. Although not clinically proven, perioperative antibiotics could potentially contribute to the development of antimicrobial resistance. Whether or not this has clinical implications is yet to be determined. Antibiotic stewardship that caters specifically to surgical concerns can potentially guide antibiotic therapy and reduce the development of AMR. Similarly, use of topical antiseptics, skin preparation, hand washing, and glove use can reduce the need for antibiotic by reducing the risk of surgical site infection. Antibiotics if required should be guided by previous cultures whenever possible.

Infection control in AMR prevention – beyond stewardship
Afia Zafar, Aga Khan University

Antimicrobial resistance has emerged as a major health problem all over the world. This has led to increase in infections due to multidrug and extensive drug resistant organisms not only in the hospitals but also in the community. This is a global issue, however scenario is worse in the middle and low income countries. Unfortunately, most of those countries have severely compromised infection control (IC) programs and practices which results longer illness of patients with complications and higher mortality as well as increased cost of management which effects directly to patients and their family and indirectly to community and government.

Comprehensive IC program in any health care setting plays major role in limiting the dissemination of multidrug and extensive drug resistant organisms. Technically advanced and affluent countries have developed and implemented IC programs in every health care setting as per their requirement. Little attention has been paid in this part of the world. It is evident that implementation of basic evidence-based & best infection prevention and control practices reduce significant numbers of bloodstream infections for IV and indwelling urinary catheters, surgical site infections and ventilator-associated pneumonia.

Strategies for the implementation of policies and practices are simple, but they need commitment of government, hospital leaders, physicians, nurses and other paramedics. A basic IC program with limited surveillance and regular audits has proven to reduce transmission of AMR organisms and nosocomial infections in significant number in any healthcare setting.

Scientific session I: Young infant sepsis
10:30-12:00 p.m, Saturday 16 November 2019
Venue: AKU Auditorium

Antibiotic In Miscarriage Study
Rahat Qureshi, David Lisseur, A. Wilson, C.A. Hewitt, L. Middleton, J.R.B. Bishop, J. Daniels, A. Merriel, A. Weeks, C. Mhango, R. Mataya, F. Taulo, T. Ngalawesa, A. Chirwa, C. Mphasa, T. Tambala, G. Chiudzu, C. Mwalwanda, A. Mboma, Iffat Ahmed, H. Ismail, O.T. Oladapo, G. Mbaruku,* J. Chibwana, G. Watts, B. Simon, J. Ditai, C. Otim Tom, J.F. Acam, J. Ekunait, H. Unzia, M. Iyaku, J.J. Makiika, J. Zamora, T. Roberts, I. Goranitis, S. Bar‑Zeev, N. Desmond, S. Arulkumaran, Z.A. Bhutta, A.M. Gulmezoglu, and A. Coomarasamy

Introduction: Prescribing antibiotics to women who are going through a miscarriage and need surgical intervention has not been supported through medical evidence.
Methodology: This was a in this multi-country, multicenter, double-blind, placebo-controlled, randomized trial conducted in low- and middle-income countries, to evaluate if prophylactic antibiotic used was of benefit to the patient. Patients who were going through a spontaneous miscarriage and had been planned for surgical intervention. Patients were randomly assigned an intervention and a control group. Patients were prescribed doxycycline and metronidazole or a placebo. The primary outcome was pelvic infection 14 days after surgery.
Results: the rate of primary outcome was 4.1% in the antibiotic group as compared to 5.3% in the placebo group. The point estimates from the specified sensitivity analyses were consistent with the point estimate from the primary analysis. Conclusion: Antibiotic prophylaxis with doxycycline and metronidazole before miscarriage surgery did not result in a significantly lower 14-day risk of pelvic infection, as defined by pragmatic broad criteria, than placebo. Giving simple antibiotic regimes can be beneficial for prophylaxis.

Keywords: antibiotic prophylaxis, miscarriage

Abstract ID: OP-61

Molecular characterization of NDM-1, -5, -7 producing-Gram-negative pathogens isolated from children in Pakistan.
Muhammad Usman Qamar, Timothy R. Walsh, Mark A. Toleman, Jonathan M. Tyrrell, Sidrah Saleem, Ali Aboklaish, Shah Jahan

Background: Emerging of New Delhi metallo-β-lactamase (NDM) producing pathogens is becoming a serious threat to public health sectors particularly in developing countries like Pakistan. These pathogens produce resistance not only against β-lactam drugs but various other classes of antibiotics except colistin. NDM are mainly plasmid mediated and transfer through horizontal to different bacteria. Therefore, we determine the prevalence of NDM producing

Gram-negative pathogens isolated from children's samples. Materials & methods: Carbapenem-resistant clinical isolates (n = 117) were confirmed by VITEK 2 compact system, matrix-assisted laser desorption ionization–time of flight and multilocus sequence typing. MIC (µg/ml) of various antibiotics was determined by VITEK 2 compact system. Molecular characterization of the isolates was performed by PCR, DNA sequencing, PFGE and DNA hybridization.

Results: Out of 117 carbapenemase producers, 37 (31.6%) and 29 (24.7%) were *Klebsiella pneumoniae* and *Acinetobacter baumannii,* respectively. 72 (61.5%) isolates were NDM positive and among these 60, 9 and 3 were NDM-1, -5 and -7, respectively. Majority of the NDM-producing *K. pneumoniae* belonged to ST11 and ST273 while most of the *E. coli* belonged to ST405 and ST101. blaNDM were mainly located on 150kb plasmids. MIC displayed high resistance against β-lactams drugs including carbapenems, and the most sensitive drugs were tigecycline and colistin.

Conclusion: Dissemination of blaNDM-producing pathogens, particularly in children clinical settings, is a matter of great public health concern.

Keywords: NDM, children, MLST, MIC, plasmid profile

Abstract ID: OP-34

Predominance of Genomovar I among Burkholderia cepacia complex bacteremia and antibiotic resistance in the neonatal population – a study from Karachi, Pakistan

Tazeen Fatima, Amna Nasir, Erum Khan, Sadia Shakoor

Background: Burkholderia cepacia complex (BCC) has been reported as an emerging cause of healthcare associated neonatal bacteremia and sepsis. Genomic speciation (genomovar determination) by recA PCR has been employed to study genetic variability among different patient populations, but no previous reports have determined genomovars within the neonatal population.

Objectives: The aim of the study was to determine most prevalent genomovar of BCC causing bacteremia among neonates in Karachi, Pakistan, through species-specific PCR for recA gene. Methods: Of 589 BCC neonatal bacteremic episodes detected from May 2015 - September 2016 at the Clinical Microbiology Laboratory at The Aga Khan University Hospital, 138 isolates were randomly selected for susceptibility testing and genomovar determination. Susceptibility testing was performed by disc diffusion for ceftazidime, meropenem, and cotrimoxazole and with Vitek 2 for levofloxacin. recA PCR was performed on 138 isolates. All isolates were first identified using B. cepacia complex-specific primers BCR1 and BCR2. Genomovar status was then determined sequentially by using PCR primer specific for B.cepacia genomovar I (BCRG11, BCRG12a).

Results: All isolates were identified as Burkholderia cepacia complex by detection of BCR1 and BCR2 gene. Susceptibilities against tested antibiotics were: ceftazidime 92.8%, (n=128), co-trimoxazole 85.5% (n=118), meropenem 52.2% (n=72), and levofloxacin 60.3% (n=73 of 121 isolates tested). BCC was differentiated further into lineages and B. cepacia genomovar I was found to be the most prevalent species, being indeitified in 129 of 138 patients (93.4%). B. cenocepacia which is the predominant species in cystic fibrosis patients was found in only 2.9% cases (n=4).

Conclusions: We confirm the dominance of B. cepacia genomovar I in neonatal population in Karachi, Pakistan. Further studies are required to elucidate transmissibility and genetic similarity

of B.cepacia genomovar I isolated from neonatal bacteremia cases. Antibiotic resistance in BCC is emerging, and routine surveillance is indicated.
Keywords: B.cepacia genomovar I, AMR, neonatal sepsis

Scientific Session II: World War AMR: Have we been taken over?
Venue: Lecture Hall 2 | 10:30-12:00 p.m. Saturday 16 November 2019

Abstract ID: OP-24

Monitoring colistin usage and its association with emergence of plasmid-mediated colistin resistance mcr-1 gene in poultry farming in Pakistan
Mashkoor Mohsin, Qasim Ali, Muhammad Umair

Background and Aims: In food animals, antimicrobials play a crucial role in the maintenance of animal health, animal welfare, and food-safety. For decades, colistin has been used in poultry for treatment and as growth promotor. Since the discovery of plasmid-mediated colistin resistance mcr-1 gene in poultry isolates from Pakistan, we suspected that such high prevalence of colistin resistance is linked to colistin usage in poultry farming. Therefore, aims of this study was to monitor colistin usage in poultry farms and its association with emergence of plasmid mediated colistin resistance mcr-1 gene.

Methods: Two large commercial broiler farms in Faisalabad, Pakistan were selected for monitoring AMU and AMR. The amount of colistin administered by the farmer to produce 1 kg of live chicken was estimated by dividing the total amount of antimicrobial used (in milligrams) by the estimated body weight (in kg) of the bird. After screening colistin resistance on selective CHROMAgar followed by PCR confirmation of mcr-1 gene, whole genome sequencing (WGS) was performed on an Illumina MiSeq instrument. Results: Among the most commonly used antimicrobials for therapeutic purposes, the top three agents were colistin (65mg/kg), doxycycline (51.81 mg/kg) and tylosin (44.7 mg/kg). Colistin was used most frequently in all the 12 flocks on two poultry farms. Prevalence of mobile colistin resistance gene, mcr-1, was 24%. WGS revealed ST10 as major sequence types among broilers (n= 10). Core genome SNP analysis showed close relationships among E. coli strains. PlasmidFinder showed IncI2 as dominant plasmid replicon type.

Conclusion: Poultry farming in Pakistan is consuming alarmingly high amount of antimicrobials critical for human healthcare and its use is linked to the emergence of mobile colistin resistance gene mcr-1.

Keywords: antimicrobial usage, antimicrobial resistance, food animals, colistin

Abstract ID: OP-122

Trends in antimicrobial resistance amongst invasive pathogens in Pakistan (2011-2015): a retrospective cross-sectional study
Nida Javaid, Safee Ullah Chaudhary, Qamar Sultana, Shaper Mirza

Antimicrobial resistance (AMR) has emerged as a major public health concern in both developing and developed countries. Continuous surveillance of AMR has been recommended by World Health Organization (WHO) as a necessary step for controlling emergence of resistance as well as infections caused by resistant pathogens. Despite this urgent need to investigate AMR trends, only a handful of studies till date have reported resistance trends in invasive pathogens in Pakistan. The current study stands to fill this gap in knowledge by presenting a comprehensive situational analysis of AMR association with invasive infections across the country. Antimicrobial resistance data for invasive pathogens isolated between the years of 2011 and 2015 was obtained from collection centers across Pakistan. Most common pathogens were identified and analyzed further. Statistical analysis was performed on isolates with complete demographic variables and sensitivity profile. Comparison of multidrug resistance between pathogens was followed by evaluation of associations between patient demographics (age and sex) and susceptibility of a patient to resistant pathogens. Temporal AMR variations as well as co-resistance patterns were examined and a Circos-based AMR map was developed. Our results show that out of 3092 invasive infections, 41.7% were caused by coagulase negative Staphylococci, 10.6% by Escherichia coli, 7.7% by Strenotrophomonas maltophilia, 6.2% by Acinetobacter, 6.1% by Salmonella enterica serovar Typhi (S. Typhi), 5.9% by Staphylococcus aureus, and 5% by Klebseilla pneumoniae. . We found that resistance has been at rise for several of these infections. Highest resistance rates were observed in Acinetobacter species against all tested antimicrobials including carbapenems. Resistance to third generation cephalosporin has also been on the rise in S. Typhi during the study period. Policy makers should prioritize and expedite implementation of infection control practices and antimicrobial stewardship in the country to control the emerging threat of AMR to public health.
Keywords: antimicrobial resistance trends; invasive infections

Scientific session III: Molecular and cellular basis of AMR
Venue: Dr J Robert Buchanan Lecture Hall (Lecture Hall 1) 10:30-12:00 p.m. Saturday 16 November 2019

Abstract ID: OP-132

Absence of mcr-1 gene among colistin resistant enterobacteriaceae from Pakistan.
Seema Umar, Kiran Iqbal, Joveria Farooqui, Sadia Shakoor, Rumina Hasan

Introduction: Colistin is one of the last resort antibiotics for a number of multidrug resistant Gram-negative bacteria. Colistin resistance is associated with presence of plasmid mediated mcr-1 gene. Plasmids bearing mcr-1 have been reported in colistin resistant E.coli isolates from Pakistan. Here we investigate presence of mcr-1 gene among the clinical isolates of colistin resistant enterobacteriaceae. Methodology A non-probability purposive sampling of clinical isolates of enterobacteriaceae received in our laboratory was carried out 2015-2018.

Enterobactericeae isolates were obtained from urine (n: 20), blood cultures (n: 16), respiratory specimens (n: 13), tissue (n: 4), cerebrospinal fluid (n: 3), pus (n: 2), and 1 ascitic fluid samples. Organisms were identified using of API ® E, Biomerieux. Carbapenem susceptibilities were performed by disc diffusion (Kirby-Bauer) method on Mueller Hinton agar as well as byVITEK2 system. Colistin MICs were performed by broth micro dilution. Colistin resistant enterobacteriaceae (n: 59) were stored at -80 degrees Celsius in glycerol phosphate broth until further processing. Archived isolates were revived and DNA extraction performed, using Fisher Scientific QIA®amp DNA kit (QIAGEN, USA), as per manufacturer protocols. These were than run in real time polymerase chain reaction using primers and probes for mcr-1.

Results: Enterobacteriaceae isolates tested included 2 Enterobacter cloacae, 1 E.coli, 4 Klebsiella oxytoca, 36 Klebsiella pneumoniae, 1 Pantoe species, 1 Raoutella ornitholytica, and 14 Raoutella terrigena. All were carbapenem resistant and all were colistin resistant. However, PCR testing however did not reveal presence of mcr-1 gene in any of the isolates studied. Discussion: These data suggest that mcr-1 gene is not the predominant mechanism of colistin resistance amongst our isolates, and there is a need to identify additional mechanisms towards this resistance. Whole genome sequencing (WGS) of K.pneumoniae of isolates from Pakistan (Lomonaco S et al 2018) did not identify plasmid mediated mechanism and suggested disruptions and mutations in chromosomal loci as contributing to colistin resistance. Our data further reinforces the need for whole genome sequencing to better understand the mechanisms of colistin resistance amongst our strains.

Keywords: MCR-1, colistin resistant, enterobacteriaceae

Abstract ID: OP-153

Synergism between antibiotics and natural compounds exhibits potent activity against *Staphylococcus aureus* biofilms

Fizza Nazim, Sobia Mastoor, Uroosa Tariq, Syed Hani Abidi,

Introduction: *Staphylococcus aureus (S. aureus)*, a gram positive pathogen, is one of the most frequent causes of biofilm-associated infections on indwelling medical devices. Biofilm is formed when bacteria lives in communities and forms a matrix as a survival mechanism in a generalized manner. With the emergence of methicillin-resistant S. aureus (MRSA), and its biofilm forming ability, there is an urgent need to discover novel active agents against a range of Gram-positive pathogens. We screened the clinical isolate of S. aureus for susceptibility/resistance and biofilm forming ability against commonly prescribed antibiotics. Furthermore, we tested four natural compounds alone and in combination with antibiotic drugs to find possible synergistic antimicrobial and antibiofilm activity.

Materials and Methods: S. aureus clinical isolate was screened for susceptibility/resistance against ciprofloxacin, chloramphenicol, ampicillin, amikacin, cephalothin, clindamycin, streptomycin and gentamicin using the Kirby-Bauer disk diffusion method. The antimicrobial potential of a Eugenol, and 3 derivatives of cinnamic acid were tested alone and in combination with antibiotics. Several qualitative and quantitative assays were used to detect Biofilm formation ability of S. aureus isolate. Subsequently, we applied a Biofilm reduction assay to evaluate anti-biofilm activity of natural compounds alone and in combination of antibiotics. RESULTS: The individual Minimum Inhibitory Concentration (MIC) of natural compound

ranged from 2-70mg/mL. However, the MICs reduced to a range of 0.5-40 mg/mL when compounds were combined with antibiotic. In reduction assay, we found a significant biofilm inhibition percentages (100-60%) when antibiotics and compounds were used in combination.

Conclusions: The natural compound used in the study exhibited additive and synergistic antimicrobial and antibiofilm activity against S. aureus, hence providing an effective alternative/adjuvant therapy to deal with the problem of emerging antimicrobial resistance.

Keywords: biofilm formation, staphylococcus aureus, antimicrobial resistance, biofilm inhibition

Scientific session IV: AMR in respiratory infections
Venue: AKU Auditorium   2:30-4:30 p.m.   Saturday 16 November 2019

Abstract ID: OP-129

Concordance between phenotypic resistance to fluoroquinolones and gyrA mutations among multidrug resistant isolates of M. tuberculosis from Pakistan

Asima Shahid Sabzwari, Sarah Baber, Sadia Shakoor

Introduction: Fluoroquinolones (FQs) are primary antituberculous agents in the treatment of multidrug resistant (MDR) Mycobacterium tuberculosis (MTB). Rapid drug susceptibility testing (DST) for gyrA and gyrB mutations has enabled earlier identification of extensively drug resistant (XDR) isolates. Mutations may confer high to low resistance to FQs and correlation with minimal inhibitory concentrations (MICs) of levofloxacin/ofloxacin (LEV/OFX), and moxifloxacin (MFX) are necessary to ascertain the predictive value of mutations in optimising therapeutic use and dosage of FQs. We have correlated MICs of LEV/OFX and MFX with the presence of gyrA and gyrB mutations in randomly selected MDR MTB clinical isolates from Pakistan.

Methods: MDR MTB isolates cultured from clinical samples received at the Aga Khan University mycobacteriology laboratory from 2016 to 2017 were included. DST was performed as part of the Johnson & Johnson Global Public Health-sponsored Bedaquiline DREAM drug resistance surveillance study. FQ MICs were performed by the broth microdilution method using frozen microtiter plates from ThermoFisher Scientific. Mutations in the gyrA and gyrB regions were detected using the Hain line probe assay (MTBDRsl) as per manufacturer's instructions. Results: 46 MDR MTB isolates with high MICs for LEV/OFX or a second line injectable drug were included in the study. Four (4) isolates were from extrapulmonary sources while 42 were from pulmonary tuberculosis patients. The majority of patients [52.2% (24/46)] were from the Punjab province; while 41.3% (19/46) were from Sindh, and 4.3% (2/46), and 2.2% (1/46) from Balochistan and KPK, respectively. Concordance between genotypic and phenotypic resistance to FQ was observed in 89.1% isolates (n=41). The most common mutation identified was D94G in the gyrA gene in 52.2% of isolates (n=24). A90V mutations were associated with lower MFX MICs (1 µg/mL). MFX MICs should be tested in samples/ isolates with A90V mutations.

Keywords: tuberculosis, fluoroquinolone, gyrA

Abstract ID: OP-105
Screening for Triazole resistance in clinically significant Aspergillus species from Pakistan
Safia Moin, Joveria Farooqi, Kauser Jabeen, Sidra Laiq

Objective: To determine the frequency of triazole (itraconazole, voriconazole, posaconazole) resistance in clinically significant Aspergillus species isolated at a tertiary care centre, Karachi, Pakistan. Methods: A descriptive cross-sectional study was conducted in the Department of Pathology and Laboratory Medicine, Microbiology Section of the Aga Khan University Clinical Laboratories, Karachi, from September 2016 to May 2019. One hundred and fourteen, clinically significant Aspergillus isolates [A.fumigatus (38; 33.3%), A.flavus (64; 56.1%), A.niger (9; 7.9%) and A.terreus (3; 2.6%)] were included in the study. They were assessed for their clinical significance. The clinical spectrum ranged from Invasive Aspergillosis (IA) (n=25; 21.9%), further divided into proven invasive extrapulmonary aspergillosis (n=8; 7%), proven invasive pulmonary aspergillosis (IPA) (n=6; 5.3%), putative/probable IPA (n=11; 9.6%) according to the AspICU and 2008 EORTC criteria, to Chronic Pulmonary Aspergillosis (CPA) (n=58; 50.9%), Allergic Bronchopulmonary Aspergillosis (ABPA) (n=4; 3.5%), Severe Asthma with Fungal Sensitization (SAFS) (n=4; 3.5%) and saprophytic tracheobronchial aspergillosis (n=23; 20.2%). Screening for triazole resistance was performed by antifungal agar screening method as described by Mortenssen et al. The minimum inhibitory concentration (MIC) of 41 representative isolates [A.flavus (n=15; 13.2%), A.fumigatus (n=15; 13.2%), A.niger (n=8; 7%), A.terreus (n=3; 2.6%)] representing a clinical spectrum of extrapulmonary IA (n=7; 6.1%), IPA (n=4;3.5%) putative/probable IPA (5; 4.4%), CPA (n=18;15.8%), ABPA (n=3; 2.6%), SAFS (n=1; 0.9%), and saprophytic tracheobronchial aspergillosis (n=3; 2.6%) were tested according to the CLSI broth microdilution method.
Results: All the isolates were categorized as triazole-susceptible based on the triazole antifungal agar screening. The MICs of the three azole antifungals for 41 representative isolates tested were found to be ≤1 ml/L and hence according to CLSI breakpoints, all the isolates tested were found to be triazole-susceptible. The MIC 90 of itraconazole, voriconazole and posaconazole of the representative aspergillus isolates was 1mg/L, 1mg/L and 0.5mg/L respectively.
Conclusion: This study may set precedence for future periodic antifungal resistance surveillance studies in our region on Aspergillus isolates causing invasive disease, as well as other syndromes requiring long term antifungal therapy.
Keywords: aspergillus, itraconazole, voriconazole, posaconazole.

Abstract ID: OP-47

Nasopharyngeal carriage of Streptococcus pneumoniae serogroup 6A/6B/6C/6D in infants pre- and post-introduction of pneumococcal vaccine (PCV10) in rural districts of Sindh, Pakistan
Sahrish MuneerUddin, Furqan Kabir, Adil Kalam, Fatima Aziz, Huma Saleem,Muhammad Buksh, Sana Muslim, Aneeta Hotwani, Shahida Qureshi, Muhammad Imran Nisar,Sadia Shakoor, Syed Asad Ali

Background and Aim: Streptococcus pneumoniae infection continues to be the leading cause of morbidity and mortality in children globally. Based on the chemical composition of capsular

polysaccharides, more than 96 serotypes have been identified1 amongst which Serogroup 6 is an important cause of invasive pneumococcal disease (IPD) worldwide2. Serotypes included in current PCV (pneumococcal conjugate vaccine formulations -PCV10 and 13) along with serotypes (6A and 6B) accounts for 49%–88% of deaths in Africa and Asia3. In Pakistan, pneumococcal carriage rate was found to be 73.6% and 79.5 % of infants in urban and rural communities of Sindh respectively. PCV programs holds the potential for disrupting nasopharyngeal carriage and transmission4. The 10-valent pneumococcal vaccine (PCV10) was incorporated in the Expanded Program on Immunization (EPI) in Sindh, Pakistan in February 2013. This study was conducted pre- and post PCV10 introduction to establish pneumococcal carriage and serogroup 6A/6B/6C/6D prevalence in infants in rural district of Sindh, Pakistan

Methods: Healthy infants (aged 3-11 months) in a rural community (Matiari) were enrolled randomly before (Phase I, 2013) and after (Phase II to IV, 2014-2016) PCV10 introduction. Nasopharyngeal swab were collected from enrolled children as per WHO guidelines5. S.pneumoniae were identified by the alpha-hemolytic colonies and confirmed through Optochin sensitivity and bile solubility testing6. They were serotyped using the CDC standardized sequential multiplex PCR assay7. Serogroup resolution of 6A/B/C/D was carried out as described previously8.

Results: Prevalence of serogroup 6 and its individual serotypes are summarized in table1. Table1 Pre-vaccination Phase Post-vaccination Phases Serotypes Phase I (Immediately before Feb 2013) Phase II (Feb-Mar 2014) Phase III (Feb-Mar 2015) Phase IV (Jan-Mar 2016) 6A 19(10.6%) 17(9.4%) 14(7.4%) 12(6.6%) 6B 7(3.9%) 9(5.0%) 8(4.2%) 5(2.7%) 6C 1(1.0%) 9(5.0%) 9(4.78%) 1(0.5%) 6D 7(3.9%) 1(0.5%) 7(3.7%) 0(0%) 6A/B/C/D 34(19.10%) 36(20%) 38(20.2%) 18(10%) Sample Size (confirmed S.pneumoniae) 178 180 188 180

Conclusion: We found an overall decline in nasopharyngeal carriage of serogroup 6A/6B/6C/6D in infants post PCV10 introduction. A reduction in PCV serotypes 6A (included in PCV13) and 6B (included in PCV10) was also observed over time indicating possible cross protection9. These findings suggests the need for expanding PCV10 coverage in children to enhance direct and indirect protection and reduce transmission of S.pneumoniae infection.

Keywords: pneumococcal carriage, s.pneumoniae, serogroup 6, pcv10, pakistan

Scientific session V: Combating antimicrobial resistance: Challenges and Strategies
Venue: Dr J Robert Buchanan Lecture Hall (Lecture Hall 1) 2:30-4:30 p.m. Saturday 16 November 2019

Abstract ID: OP-30

Situational Analysis of Antimicrobial Stewardship Program (ASP) Among Public and Private Sector Tertiary Care Hospitals in Karachi: A Qualitative Case Study

Asma Pethani, Ali Faisal Saleem, Shagufta Perveen, Atif Riaz

Learning Outcomes: The study aims to assess the current status of implementation of ASP and to identify the barriers and facilitators faced by hospital leadership for its implementation among public and private tertiary care hospitals of Karachi, Pakistan. Moreover, the study also aims to

identify the challenges faced by Provincial and National Key Stakeholders for the formulation, implementation, and monitoring of ASP.

Target Audience/Methodology: We performed an exploratory case study design. The study data was collected from 3 public and 4 private tertiary care hospitals in the city of Karachi during July to September 2018. Twenty-Eight in-depth interviews were conducted from the higher and middle management. Purposive sampling was done to include higher and middle managers whereas the infectious diseases consultant, infectious diseases/clinical pharmacist and clinical microbiologist were interviewed through snowball sampling methodology. Moreover, two key informant interviews were conducted consisting of one each from provincial and national stakeholders. The findings of interviews were analyzed via NVivo.

Conclusion: In this study, we found that more than two thirds (n=7, 71%) of tertiary care hospitals in Karachi do not have structured ASP which includes major public sector hospital (n=3, 43%) and half of the private sector hospital (n=4, 29%). The biggest barrier faced by hospital leadership for the implementation of ASP were related to lack of funding, lack of expertise, inadequate information technology resources, non-compliance with infection control and prevention practices, and prescriber opposition. However, the facilitators were related to acceptance and existence of ASP, dealing with physician antagonism, multidisciplinary team, and institutional surveillance. Moreover, the challenges highlighted by provincial and national key stakeholders were lack of national policy on surveillance of AMR, weak understanding and limited awareness regarding AMR and ASP, and the dearth of expertise. The study identifies the serious dearth of ASP in one of the major city of the country. Moreover, the insight offered by the study can, in turn, inform future stakeholders regarding ASP and strategies for structural change at hospitals.

Keywords: antimicrobial resistance; antimicrobial stewardship; challenges

Abstract ID: OP-135

Introducing external quality assurance (EQA) as AMR capacity building tool in clinical microbiology laboratories of Pakistan: challenges and outcome

Noureen Saeed, Dania Saeed, Muhammad Zeeshan, Sadia Shakoor, Joveria Farooqui, Imran Ahmed, Kauser Jabeen, Jessica McLean, Jason Rao, Rumina Hasan

Objectives: Implementation of standard laboratory practices are important for accurate antimicrobial susceptibility testing (AST) towards limiting spread of antimicrobial resistance (AMR). Efforts to improve AST are required to address knowledge and practice gaps amongst laboratory personnel. In this study we aimed to address these gaps through external quality assurance and mentoring of public and private sector laboratories in Pakistan. Method: This prospective study was conducted between May 2017 and September 2019. Consenting laboratories were recruited. External quality assessment (EQA) panels of bacterial isolates were distributed quarterly followed by onsite visits for technical evaluation. EQA performances and select technical indicators were evaluated and scored (laboratory performance score; LPS). Guidance was provided to address any gaps identified. Results: Our data shows significant improvement in the Laboratory performance scores (LPS) which include performance in EQA,

antimicrobial susceptibility testing parameters, quality control, and laboratory safety measures. While improvement in the LPS scores varied between laboratories, a linear regression model showed an over improvement within the cohort from 21.37 mean CI:95% (May 2017) to 91.5 mean CI: 95% (Sept 2019); a significant overall increase of 70.13 points (p=0.001).

Conclusion: Measures to control AMR spread should include improved laboratory detection methods, training laboratory staff, using standardized procedures, and ensuring good quality control of all reagents, discs and AST supplies .This was achieved through EQA exercise and considerable improvement was observed in all laboratories after training and guidance. We strongly recommend implementation of such quality improvement exercise at national level for capacity building, staff training, and introducing standard operating procedures to counter antimicrobial resistance in Pakistan

Keywords: AMR, external quality assurance, capacity building

Abstract ID OP-186

Stewardship and Training in Antimicrobial Resistance (STAR), Nepal

Linda M. Kaljee, Marcus Zervos, Rajesh Dhoj Joshi, Shankar Man Rai, Tyler Prentiss, Gina Maki, Yubraj Acharya, Karki Kshitji, Deepak Bajracharya,

Background: In the United States and Europe, antimicrobial stewardship (AMS) programs have been successfully implemented in hospitals and ambulatory clinics. However, there remains limited data on implementation of AMS programs in low- and middle-income countries. Globally, there also remain many challenges and barriers to implementation of both hospital- and community-based AMS programs at the structural, interpersonal, and individual levels.

Methods: Over the past three years, the Henry Ford Health System has partnered with multiple organizations within Nepal to establish Stewardship and Training in Antimicrobial Resistance (STAR). Under the auspices of STAR, post-prescription review and feedback (PPRF) programs are being implemented and evaluated in five hospitals in Pokhara and Kathmandu including a burn ICU and internal medicine, ob/gyn and surgical wards. The PPRF program includes training of AMS physician champions and the development and utilization of locally salient antibiotic use guidelines. Evaluation data include collection of retrospective (baseline) and prospective (post-intervention) patient chart data including patient demographics, diagnoses, prescribed antibiotics (class, dose, duration, administration [IV/PO]), length of hospitalization, and as available laboratory data. In addition, the STAR programs have included a pilot community water testing project and a mixed methods needs assessment for introduction of AMS in community-based clinics and pharmacies.

Results: Over 50 hospital-based health providers have been trained through the PPRF projects. To date, a total of 590 baseline and 584 post-intervention patients have been enrolled. Evaluation data indicate decreases in antibiotic-days/1000 patient days (PD/1000) for both IV and oral antibiotics, and decreased use of Cephalosporins and aminoglycosides. While there were variations across wards, an independent review of study patient charts by infectious diseases specialists indicate at post-intervention increased justified use of antibiotics, de-escalation, increased rational use and greater conforming to antibiotic guidelines.

The pilot water project data indicate that that 9.1% (5/55) samples of drinking water from four locations in Kathmandu tested positive for Acinetobacter sp (ACBC). These water sources

supply 1/3 of the water for the region. Community needs assessments indicate that over 80% of pharmacists state that less than half of their clients have prescriptions. More than 32% of pharmacists (and as high as 63.1%) reported they were likely or very likely to dispense antibiotics without a prescription for an adult presenting with various symptoms (e.g., fever, sore throat, or diarrhea). Both social and economic factors affect clinicians and pharmacists decisions about use of antibiotics. There was a strong demand among assessment respondents for AMS training and community antibiotic guidelines, as well as advocacy programs targeting community residents.

Conclusions: The STAR, Nepal programs include a multidiscplinary approach and engagement with a broad range of governmental, non-governmental, academic, international, and hospital- and community-based organizations. PPRF can be successfully implemented in settings with little to no infectious disease specialists. There remains an urgent need for adaptation of evidence-based AMS hospital- and community-based programs to meet the conditions and needs within LMIC and rigorous evaluations to document outcomes and potential challenges/barriers to AMS.

Scientific session VI: Emerging AMR in Pakistan
Venue: Lecture Hall 2   2:30-4:30 p.m. Saturday 16 November 2019

Abstract ID: OP-95

Detection and genetic analysis of novel, drug-resistant HIV-1 circulatory recombinant forms in Pakistan
Uroosa Tariq, Dilsha Siddiqui, Faisal Mehmood, Ayesha Iftikhar; Faisal Sultan; Syed Ali, Syed Hani Abidi

Background: In Pakistan, HIV has converted from outbreak to concentrated epidemic and has also bridged into the low-risk population. The HIV epidemic in Pakistan is mainly driven by subtype A, however, the overlapping transmission chains facilitate recombination between multi-drug resistant subtypes and existing circulating recombinants forms (CRFs), leading to the emergence of new and complex CRFs. Pakistan is experiencing HIV outbreaks one after another, with the continuous emergence of new strains. This suggests the complexity of HIV epidemic and warrants investigations into genetic characterization and molecular surveillance of the circulating strains. Here, we report the genetic analysis of three novel CRFs HIV-1 isolated from different HIV-1 infected patients with virological failure.

Methods: For the study, the Pol gene was amplified from three patients categorized in virological failure. The genotyping, recombination and drug resistance analysis was performed to identify the CRFs in the patients. Results: The genetic analysis revealed the presence of three novel CRFs, namely CRF 56_cpx, unassigned complex CRF-A1, CRF_22, CRF_33, and unique CRF_GD, in our study subjects. Drug resistance analysis of these CRFs indicated these CRFs to be resistant to more than one classes of antiretroviral drugs. Conclusion: This report warrants the need for continuous monitoring of genotype and drug resistance profile of HIV positive patients and suggests the implementation of effective health systems and infection control measures to control the HIV epidemic in Pakistan.

Abstract ID: OP-65

Azoles resistant Candida parapsilosis and Candida tropicalis isolated from clinical specimens: Single center study during year 2018 to 2019

Syed Muhammad Faheem Naqvi, Syed Muhammad Zeeshan, Joveria Farooqi

Background: Azoles are commonly used in treating Candida infection. Fluconazole is the preferred choice because of its availability, low cost, reduced toxicity and oral administration. Candida species like C. albicans, C. parapsilosis and C. tropicalis are generally considered susceptible to triazoles. Empirical treatment with triazoles is started in case of suspected fungal infections in variety of clinical situations. However, emerging resistance against azole group is on the edge, especially against C. albicans, C. parapsilosis and C. tropicalis. In future, use of azoles as empirical therapy could jeopardize the clinical outcome of patients.
Objective: The aim of this study is to report the azole resistance and the susceptibility to other antifungals in C. parapsilosis and C.tropicalis strains isolated from clinical specimens.
Methodology: A retrospective observational single center study was performed by evaluating laboratory data for azole resistance in C. parapsilosis and C. tropicalis over one year (July 2018-June 2019) in the Section of Clinical Microbiology at the Aga Khan University Hospital Laboratories in Karachi. Candida spp. were identified using morphology on BiGGY, ChromAgar Candida, and Cornmeal Tween80 Agar (all from Becton Dickinson GmbH, Germany), and biochemical reactions on API 20C AUX (BioMérieux, France). Antifungal susceptibility testing was performed by disc diffusion method according to CLSI M44-A. MICs were determined using Sensititre Yeast ONE YO10 (TREK Diagnostic Systems, UK) according to manufacturer recommendations. Interpretation was according to CLSI M60 ED1:2017 **Result:** Total 15 azole-resistant fungemia isolates were identified in one year. Eleven were C. parapsilosis and 4 C. tropicalis. Results of disc susceptibility were compatible with MICs in all isolates. MICs of all 4 isolates of C. tropicalis against fluconazole and voriconazole were > 256 µg/ml and >8 µg/ml, respectively. In C. parapsilosis MICs ranged between 08-256 µg/ml for fluconazole, and 0.12-4.0 µg/ml against voriconazole.
Conclusion: There is clear emergence of antimicrobial resistance in C. tropicalis and C. parapsilosis against triazoles. Proper candida identification and susceptibility is essential to avoid poor treatment outcomes.
Keywords: clinical diagnostic laboratory

Abstract ID: OP-148

Distribution of Mutations Associated with Antifolate and Chloroquine Resistance among Plasmodium vivax isolates from Pakistan.

Najia Ghanchi, Mohammad Asim Beg, Bushra Qureshi, Talyha Khalid

Background: Pakistan is one of the five countries from where 82% of estimated vivax malaria cases were reported in 2017. In Pakistan, Plasmodium vivax and P. falciparum co-exist and usage of Sulphadoxine Pyrimethamine (SP) against P. falciparum exposes P. vivax to the drug leading to resistance. The aim of this study was to investigate distribution of drug resistance associated mutations in pvcrt-o and pvmdr genes (chloroquine) and pvdhfr, pvdhps genes (antifolate) after the introduction SP as partner drug and removal of CQ.

Methods: A total of 650 blood samples were collected from patients with microscopy confirmed P.vivax malaria attending Aga Khan University Hospital during September 2015-August 2018. DNA was isolated using the whole blood protocol for the QIAmp DNA Blood Kit. Pvcrt-o and pvmdr and pvdhfr and pvdhps genes were amplified using nested PCR and double-strand sequencing was performed using Sanger sequencing methodology. Sequences were analyzed and compared against reference sequences using MEGA 6 and Bioedit software to identify specific SNP combinations. Results: Of 640 (98%) successfully amplified samples dhfr mutations were observed at codons F57L (1.25%), S58R (44.5%) and S117N (54.4%), I173T (0.15%), N50I (6.45%). Novel non-synonymous mutation was observed at codon S93H (11%) and synonymous mutations were observed at codon position 15A, 69Y and 103N. In dhps gene, mutations were observed at codon position A383G while novel non-synonymous mutations were observed at D459A (1.73%) and D541A (0.94%). In Pfcrt, mutations were observed at K32T (11.2%), L62P (81.4%),C53Y (12%), and R202K (9.4%) while K10 'AAG' insertion was not observed in this study.

Conclusion: Our findings suggest that chloroquine resistance in Pakistan is not wide spread with sporadic cases of CQ treatment failures therefore CQ might remain an effective therapeutic option in uncomplicated vivax malaria in several areas. Results from this study confirm that diverse pvdhfr and pvdhps drug resistant alleles are circulating within this region and phenotypic correlation is needed.

Keywords: P.vivax, antifolate, chloroquine

Scientific session VII: Translating AMR research into public health action
Venue: AKU Auditorium   11:00-1:00 p.m. Sunday 17 November 2019

Abstract ID: OP-184

National AMR Surveillance System Pakistan: Generating evidence for informed decision making
Afreenish Amir , Aamer Ikram, Muhammad Salman, Asim Saeed

Objective:
The growing problem of Antimicrobial Resistance (AMR) has emerged as a major health crisis in almost all countries of the world including Pakistan, resulting in an alarming increase in the burden of infections due to multi-resistant bacteria and limiting the choice of antimicrobials for treatment. Pakistan joined in the international endorsement of The AMR Global Action Plan at the 68th session of the World Health Assembly (2015).
Methodology:

The responsibility for development and implementation of AMR surveillance was given to the National Institute of Health (NIH) as National International Health Regulation (IHR) and AMR focal point. The first measure taken was the development of a National AMR Strategic Framework for Containment of Antimicrobial Resistance in 2016, and this was followed by establishing an operational AMR National Action Plan in 2017. The Pakistan National AMR Action Plan identifies the establishment of an integrated "national AMR surveillance plan" as a major strategic priority and identified the lack of nationwide surveillance to as a principle factor limiting the ability of Pakistan to control the growing threat of AMR. National AMR surveillance system for Pakistan is developed which is aligned with the WHO | Global Antimicrobial Resistance Surveillance System. Plan was developed based on laboratory assessment SWOT analysis. The primary goal of the Pakistan AMR surveillance system is to generate evidence on the burden of antimicrobial drug resistance among priority pathogens isolated from in-patient clinical samples in acute care hospitals throughout Pakistan for informed decision making or for enhancing the response to AMR.

Discussion:

The document describes the surveillance strategy and procedural steps needed for implementation and represents input from throughout the health sector (federal, provincial, and regional) as well as the health care facilities and clinical laboratories that will be instrumental is providing reliable high quality surveillance data. The surveillance plans have monitoring/evaluation component, which will help to incorporate the lessons learned through gained surveillance experience, latest scientific evidence and relevant international guidelines. The sites being enrolled in Surveillance system are part of National External Quality Assurance System (NEQAS) and have been trained on Laboratory Quality Management System. Strengthening and capacity building of the national/provincial laboratory systems can help to shorten the gaps in AMR surveillance and implementation system, which is the main objective of National AMR Surveillance Plans.

Abstract ID: OP-156

Antimicrobial resistance among GLASS priority pathogens from Pakistan: 2006-2018
Dania Saeed, Joveria Farooqi, Sadia Shakoor, Jason Rao

Background: The Global Antimicrobial Surveillance System (GLASS) initiative addresses antimicrobial resistance (AMR) rates among priority pathogens against essential antibiotics. Pakistan is in the process of establishing a national AMR surveillance system. We carried out a situational analysis of AMR rates amongst GLASS pathogens from Pakistan as a pre-implementation exercise to inform future surveillance priorities. Methodology Resistance rates were determined from two data sources: (i) Published peer-reviewed, MEDLINE-indexed literature on antimicrobial resistance rates for GLASS pathogens from Pakistan (publication year 2006-18) (ii) laboratory and hospital cumulative antibiograms reported to Pakistan Antimicrobial Resistance Network (PARN) (2011-18). Studies that did not indicate compliance with international antimicrobial sensitivity standards (CLSI, EUCAST), systematic reviews, case reports, were excluded. Resistance rates expressed as percent resistance was used. Geometric means of the resistance rates from both data sources were determined using STATA (vr.14). For peer reviewed literature, geometric mean of resistance rates was taken based on the published year of the study. Additionally, literature was categorized into the following subgroups for analysis; (i) pediatrics, (ii) intensive care unit(ICU)/surgical ward, (iii) community/lab-

surveillance/ and hospital-based studies.   Results Increasing resistance rates were noted against 3rd generation cepholosporins: 24-76.9% (lab-surveillance data; 2009-2017) and 81.7% (ICU studies; 2010) for E. coli and 33.8-56.5% (lab-surveillance data; 2012-16) and 9-94% (ICU studies; 2009-16) for K. pneumoniae. Emerging resistance to carbapenem was reported in E. coli 5.04-7.04% (lab-surveillance; 2010-18) and 1.6-8.9% (PARN; 2011-18) and in K. pneumoniae 2.3-31% (lab-surveillance; 2012-16), 0-56% (ICU studies; 2009-16). Resistance to colistin amongst carbapenem resistant E. coli and K. pneumoniae was reported at 21% and 8% respectively (lab-surveillance; 2016). While 2018 PARN data suggested colistin resistance rates of 0% (E. coli), 25% (K. pneumoniae) and 3% (Acinetobacter species). Lab surveillance/hospital-based data reported high resistance rates in Acinetobacter species: against carbapanems; 53.49-79.8% (2009-16), gentamicin; 91.8 % (2016), and amikacin; 67.3-78% (2009-16). While intensive care unit based date suggested 33% resistance to minocycline (2015) in Acinetobacter species. Emerging resistance to ceftriaxone in S. Typhi has been reported in a lab surveillance study (0.2%; 2018) as well as by PARN data (0-0.86%; 2011-18). Resistance to ceftriaxone in N. gonnorheae has so far not been reported in either of the data sources.

Conclusion: Review of GLASS pathogen-antimicrobial resistance rates 2006 to 2018 reveals high resistance rates to cephalosporins and emergence of carbapenem and colistin resistance in Enterobacteriaceae. Antibiogram data also supports these resistance trends.

Keywords: antimicrobial resistance; glass pathogens; pakistan

Abstract ID: OP-76

Differential antibiotic susceptibility of H pylori isolates from gastric antrum and corpus - preliminary results of an ongoing study

Gunturu Revathi, Catherine Mwangi, Stephen Njoroge, Allan Rajula, Smita Devani, Rose Kamenwa, Kimanga Nyerere, Sam Kariuki

Anti-Microbial Resistance (AMR) is a daunting global public health challenge at present. Recently H pylori was included in the WHO list of priority pathogens for control of AMR. Experts have consensus that this pathogen must be eradicated in all infected persons using one of the approved cocktails of treatment regimens. H pylori is a unique pathogen on several important aspects including its strong potential to develop and spread AMR. Antimicrobial Stewardship programs conveniently ignore this fact at present. H pylori is notorious for showing differential susceptibility in different anatomic areas of gastric mucosa in any given patient. Different Antibiotic Susceptibility patterns may be seen in isolates from gastric antrum and corpus. In Kenya, H pylori infections are widely prevalent in all age groups. Treatment failures are said to be gradually increasing. There is no data available on H pylori AMR pattern. Data from a previous study in Aga Khan University Hospital Nairobi done during 2008-2009 is 10 years old and invalid.   A prospective cross-sectional study which began since June 2018, collected and cultured 335 fresh gastric biopsy tissues from endoscopy suite, using standard bacteriology techniques. As far as possible, both antrum and corpus were sampled in majority of patients. E test was used to test amoxicillin, clarithromycin, levofloxacin, metronidazole and tetracycline. 133 positive cultures were obtained from 81 adult patients. All the patients had failed routine macrolide-based therapy. The study is ongoing. Preliminary results are presented

here. The following resistance rates were seen, Amoxicillin 0%, tetracycline 0%, Levofloxacin 2.5% and Clarithromycin 23%, metronidazole 96%. Pairs of isolates form antrum and corpus biopsies were available for only 43 patients. Differential susceptibility was seen in these patients as follows. Amoxicillin different susceptibility in 4 patients, Levofloxacin in one patient and clarithromycin in 7 patients. The differences were statistically not significant. Their individual contribution to failure of therapy is unclear therefore has to be very carefully considered. Other reasons for treatment failure should also be explored. Conclusions – Metronidazole has no place in treatment regimens for H pylori due to very high resistance, while resistance to clarithromycin at 23% makes its efficacy quite uncertain. Quinolone based regimens may be more potent due to lack of resistance. A comprehensive antibiogram of H pylori using a large collection of isolates, is an urgent necessity to inform standard practice guidelines for managing H pylori infections.
Keywords: helicobacter pylori, metronidazole, standard practice guidelines

Scientific session VIII: Digital health technology for AMR surveillance in LMICs

Venue: Lecture Hall 2   11:00-1:00 p.m. Sunday 17th November 2019

Abstract ID: OP-149

Initiative of Massive open online courses (MOOCS) as a tool for antimicrobial susceptibility testing (AST) methods training and education
Noureen Saeed, Sadia Shakoor, Joveria Farooqi, Kausar Jabeen, Muhammad Zeeshan, Erum Khan, Faisal Malik, Jessica McLean, Jason Rao, Rumina Hasan.

Background: Massive open online courses (MOOCS) is a convenient tool to provide teaching and training in health care and is especially useful for remote areas in countries like Pakistan that face challenges of lack of access to education and training material.
Method: Our online courses focused on all aspects of Antimicrobial Susceptibility Testing (AST). Modules were uploaded fortnightly and all participants were required to attempt a pre-assessment quiz, while post-assessment quiz was optional for those interested in getting a certificate of participation. Frequencies of modules taken and the demographics of the participants were calculated. T-test was used to compute the difference in pre- and post-assessment scores for modules where possible. Difference in overall pre- and post-assessment scores was also determined.
Results: A total of 170 students enrolled for different modules. Out of these, 38 (22.3%) students also attempted post-assessment quiz to get certificate of completion. Most popular course among the students was good laboratory practices (GLP) (51% enrollment). Fig1 shows the participation from different areas of Pakistan   Data analysis showed a significant difference between pre and post assessment scores for GLP module: mean difference=17.7, 95%CI: 7.6-27.8 (p=0.0005). In other modules though a trend towards improvement is evident but failed to reach statistically significant values mostly due to very small number of participants. Linear model showed that public sector laboratories performed better in overall as compared to private sector laboratories. Courses Mean 95 % CI Overall pre assessment 82.47 68.73 - 96.22 Overall post assessment 103.05 83.41 - 122.69 Overall pre/post 21.35 -4.34 - 47.05 Difference between pre and post

20.58 -3.04 - 44.19 Difference between Private and public sector pre and post scores 31.23 - 0.55 - 63.00

Discussion: MOOCS is a relatively uncommon mode of education in Pakistan, mainly due to technical challenges and limited resources: limited access to personal computers, power outages etc. and only 18% of Pakistanis using the internet (World Bank report 2016). With only 23% attempting the post-assessment test, the study results show there is a need for building self-improvement culture in laboratory personnel. Our finding shows an overall trend towards improvement in knowledge after attending the courses. Initiatives for performance improvement should also include private sector laboratories to achieve the desired impact.

Keywords: MOOCS, antimicrobial resistance, susceptibility testing, training, education

Scientific session IX: AMR in the nosocomial setting – infection prevention and control

Venue: Dr J Robert Buchanan Lecture Hall (Lecture Hall 1)   11:00-1:00 p.m. Sunday 17th November 2019

Abstract ID: OP-152

Validation and routine use of a breakpoint broth microdilution method for susceptibility testing of Gram-negative bacilli against colistin sulfate in a high-volume, resource limited setting

Imran Ahmed, Sidra Laiq, Najma Shaheen, Khalid Wahab, Joveria Farooqi, Asima Shahid, Rumina Hasan, Sadia Shakoor

Background: Minimum inhibitory concentration (MIC) determination by broth microdilution (BMD) is the only valid method for colistin susceptibility testing of Gram-negative bacilli. Preparing MIC panels in-house is the most cost-effective method for resource-constrained but high volume laboratories. However, this is laborious and requires highly trained staff and large number of plates to be prepared, frozen, and later inoculated. We describe the validation and routine ongoing use of an in-house breakpoint BMD (BBMD) method for colistin MIC testing, comparing the results of this method with expanded range of MICs. Materials/methods: BBMD plates were prepared in 96-well microtitre plates as per guidance by the Clinical Laboratory Standards Institute. MIC concentrations of 1, 2, and 4 µg/mL for test, and 0.25, 0.5, 1, 2 & 4 µg/mL for control strains were prepared as shown in Figure, to accommodate 19 test and 3 quality control strains per plate. Plates were frozen at -80^0 C until testing. A collection of sixty well-characterized carbapenem-resistant Enterobacteriaceae (CRE), Acinetobacter baumannii complex and Pseudomonas aeruginosa strains from a previously published study were used for initial validation, and compared with freshly prepared expanded, reference MIC panel of 16 – 0.05 µg/mL. Thereafter, the method was employed for routine colistin susceptibility testing from July to September 2018. Ten core staff were trained in preparing, inoculating, and interpreting panels.

Results: The results of initial validation showed 100% agreement with reference BMD method. From 2nd July to 16th September 2018, a total of 1341 (17.4 ±5.8 isolates/day) clinical isolates were tested; 1204/1341 (15.6 ±5.1 isolates/day) were reported as susceptible within 24 hours, whereas 137 (1.78 ±1.54 isolates/day) required resistance confirmation by reference BMD. Resistance was confirmed for all but 26 isolates. The 26 discrepancies were due to contamination

with inherently resistant bacteria during BBMD plate inoculation, as determined by subculture of inoculated microtitre wells.

Conclusions: The colistin BBMD method is high throughput, convenient to perform, and can be sustained with few core trained staff. Laboratories with a high volume of CRE, multidrug resistant Acinetobacter baumannii complex and Pseudomonas aeruginosa can use BBMD to ensure reliable results can be reported for colistin timely.

Keywords: antimicrobial resistance, gram negative bacilli, breakpoint broth microdilution, colistin

Abstract ID: OP-125

Treatment outcome and adverse effects in patients receiving colomycin for gram negative bacteremia in Pakistan
Zaheer Udin Babar, Asma Nasim, Sunil Dodani

Treatment outcome and adverse effects in patients receiving colomycin for gram negative bacteremia in Pakistan Abstract: Objectives: Polymyxins (colomycin) have been re-emerged as a drug of choice for carbapenem resistant gram negative infections. There is a paucity of data on treatment outcomes and adverse effects of high dose colomycin in South Asian region. Our aim is to find the efficacy and toxicity of new recommended dosage of colomycin in patients, including that with renal failure and on hemodialysis.

Material and Methods: This was a comparative prospective cohort study from 15th May to 15th April 2018 at Sindh Institute of Urology and Transplantation (SIUT) Karachi, Pakistan. Patients admitted in the hospital aged> 18 years with documented gram negative bacteremia were included. Results: A total of 137 patients were included in the study, 73 (53.28%) on colomycin and 64 (46.71%) on other antibiotics. Patients on hemodialysis were more on colomycin group [52 (71.2%) vs 35 (53.5%), p=0.04 RR 1.08 CI (0.79-1.47)]. Urinary tract infection as a source of bacteremia is found more in non colomycin than colomycin group [9(12.3%) vs 21(32.8%) p=0.004 RR 0.50(0.28-0.88)]. Twelve patients in colomycin group had acute renal failure (ARF) or acute on chronic renal failure (CRF) and not required hemodialysis were evaluated for nephrotoxicity. Those who were ARF or acute on CRF had an average base line creatinine of 8.08 mg/dl which came down to 5.5 mg/dl at day 3 and 4.85 mg/dl at day 7 of colomycin. None of these patients required hemodialysis. Patients who received colomycin did achieve 83.56% microbiological success at day 3 compared to 82.81% who received other antibiotics. Around 26% developed paresthesia which settled by slow infusion. All-cause mortality was significantly high in patients on colomycin at 14 days of follow up [14 (19.2%) vs 5(7.8%) , p=0.05 RR 1.47 CI (1.04-2.04)].

Conclusion: The efficacy of colomycin was comparable with other antibiotics. There were no significant adverse effects except one fourth of the cohort develop mild neurotoxicity. The all-cause mortality was significantly high in patients on colomycin at 14 days of follow-up.

Keywords: colomycin, gram negative infection

Abstract ID: OP-136

Analysis of Candida auris fungemia at a single facility in Kenya

Rodney Adam, Gunturu Revathi, Nancy Okinda, Melanie Fontaine

Background: Candida auris emerged as a human pathogen in 2009 and has subsequently been identified around the world as a cause of invasive candidiasis. We did an analysis from a single institution in order to analyze risk factors and outcomes for C. auris candidemia. Methods: Patients with candidemia were identified by the electronic medical record and reviewed for risk factors and outcome. Candida isolates were identified by Vitek2 as Candida haemulonii, but species determinations for 21 of the isolates using published molecular and proteomic methods identified all as C. auris. Results: From September 2010 to December 2016, C. auris accounted for 38% of 201 patients with candidemia, while C. albicans contributed 25%. C. auris patients had been hospitalized longer (mean 32 days vs. 13 days; p

Keywords: candida auris, candidemia, carbapenems, central venous catheters, antimicrobial stewardship

IGNITE

"Fast and Furious Pharmacy"

Igniter: **Ume-e-Aiman Younus**
Student of Masters in Epidemiology and Biostatistics, Aga Khan University
aiman.younus1@gmail.com

The scorching sun was over my head. Having conjunctivitis on the first day of my new academic year, I was running around the hospital to get eye-drops. With itching and burning eyes, I reached the pharmacy to see a long-drawn-out queue. What a nightmare! As the counter finally shows my token number 3051, I rush towards the counter, only to hear the pharmacist say: "sorry these eye-drops are currently not navailable at the pharmacy". Oh bother! I waited for 25 minutes just to hear this bad news. As I moved back and stared at the counter screen displaying my token number, I wondered what could be done about this? What if we could get all the information we need while getting our pharmacy token?

Have you experienced a similar situation too? Then this ignite truly belongs to you! Come and see how I solve this problem!

Aiman graduated from Dow University of Health and Science and the co-founder of Maseeha Health which aims to reduced re-admission rate. Researcher by day, entrepreneur by night, she aims to incorporate her learnings from her master's program into her passion for social entrepreneurship. Being an elder sibling, she considers herself a part-time parent as well!

"We might just say 'Lysin!"

Igniter: **Areeba Shakeel Ahmed**
Biomedical Engineer, CCIT, Aga Khan University
areeba.shakeel@aku.edu

Antimicrobial resistance is a major problem in the pharmaceutical industry today. Research by Ryan Donnelly, a professor of Pharmaceutical Technology from Queen's University, Belfast talked about a very interesting idea to develop 'micro needles' for delivering antibiotics across the skin. This method simply bypasses the human gut which is full of bacteria. Initially, there were several major difficulties in bypassing the gut as only things that are in the form of a solution can actually be absorbed.

This particular research discovered that by changing the material of microneedles, the correct dosage of antibiotics can be delivered by passing the human gut and also making it absorbable. This is absolutely brilliant! It potentially extends the existing lifetime of antibiotics, giving scientists time to develop new drugs.

My idea is to combine this innovative method of injection with my own find. Discovered a 100 years ago bacteriophages (viruses that eat bacteria) can be used to kill bacteria. But the practice is more refined to using only the compound produced by these viruses called Lysin. Lysin is known to kill actively growing planktonic and non-dividing stationary base bacteria and disrupts biofilms. This methodology will kill the bacteria just like the bacteriophages but in a more refined way rather than injecting viruses. Come here me Ignite about it!

Areeba graduated as a Biomedical Engineer from Ziauddin University in 2018. Her interests lie in development of innovative materials that will promote healing and experimenting with bio-signals extraction and sensor-based modelling. She is also interested in understanding the way people look at and interact with machines. Currently she is involved in designing healthcare products being developed through the Critical Creative Innovative Thinking (CCIT) forum at AKU.

"Why not pull out the germ?"

Igniter: **Mehdia Nadeem**
5th Year Medical Student, Aga Khan University
mehdia.m511360@student.aku.edu

What do you and plastic have in common? A singular origin, a common essence, constituting of Atoms.

All matter, whether living or non-living has the same basic blueprint at its core. At the nanoscale, all material landscape is made up of atoms interacting with one another in accordance with the universal physical laws. This microcosmic similarity makes the possibility of human-machine interfaces (HMIs) a formidable strategy to diagnose, cure and augment the human state.

One example of such a biotic-abiotic interface is a biomaterial. A Biomaterial is any substance that has been specially designed to interact with biological systems for a medical purpose. This science of designing biomaterials is highly interdisciplinary, integrating ideas from materials science, cell and molecular biology, medicine, chemistry, physics and engineering. Most biomaterials are inspired by nature, designed after careful study of the biological response and molecular behavior in vivo.

Pharmacological management has been the mainstay therapeutic modality to fight against microbes for centuries. Yet, with each new drug that is introduced, the following years witness the emergence of a superbug, one that has cleverly adapted to persevere in the face of that chemical attack. Clearly, splurging billions for the formulation of new antimicrobial drugs does not appear to be a yielding direction.

As a potential antimicrobial tool, I propose the use of biologically inspired bioactive surfaces that can be introduced into the human body in different spatial configurations to pull the microbes out. Come hear me Ignite about it!

Having a penchant towards learning new words, Mehdia feels that the words "Perception" and "Juxtaposition" enjoy distinguished seniority amongst others in the English language, a bias that is apparent in her writing. She likes bossing around, cooking food that her mom frowns upon, making sassy remarks, crossing intangible boundaries and preferring cats over human babies. Currently, a 4th year medical student at The Aga Khan University, she aspires to become a jack of all trades by having an interdisciplinary career.

"Sputum Culture has to change!"
Igniter: **Muhammad Ali**
5th Year Medical Student, Aga Khan University
muhammadali6637@gmail.com

You search for an item in google and the next thing you know is that Facebook starts showing ads about it in your newsfeed. For me that's every day and this is not some magic-it is Artificial Intelligence (AI). In the last decade AI has taken the world in a spin. From something as simple as setting your Snapchat filter to asking Siri to call your friend and even self-driving cars; AI is everywhere.

The technology has the power to find patterns within big datasets and predict future outcomes with precision. While medicine is using AI to read off complex radiographs and pictures of our retina I wonder why can't we use it for something so simple yet common and concerning?

People are popping Antibiotics, medicines used to cure bacterial infections, as if they were some wonder drug. They use them even for the commonest self-limited throat infections caused by viruses and that too on doctor's prescription. This improper use of antibiotics results in bugs becoming resistant. The reason for this wrong prescription even by physicians is that the existing test to differentiate between a viral and bacterial infection is expensive and time taking. The problem however is that if we consume antibiotics at this rate the bugs will outsmart all existing antibiotics in no time leaving us with no choice.

My solution is to have a self-diagnostic AI powered camera torch which will be fed the data from thousands of laboratory cultures and their corresponding throat pictures using AI's "supervised learning approach". Once ready, the torch will have the power to give a spot diagnosis based off the appearance of the throat. This handheld device could then be used across the world and can even help people in self-diagnosing themselves thus saving us from the doom of Antibiotic resistance.

Muhammad Ali is a final year medical student and is an aspiring ophthalmologist. His interest in ophthalmology started concomitantly when studying about this intricate organ in his school years for he believes that the sense of sight- the real worth of this small but powerful organ is often taken for granted. Ali has founded Quadragon a social welfare organization working primarily for education & poverty alleviation in Karachi, and has authored CHSME a community health resource for medical students. He is also the current Convener of the Surgery Interest Group at AKU.

"Bugging the Superbugs"

Igniter: **Syeda Ramlah Tul Sania**
3rd Year Medical Student, Aga Khan University
ramlahtulsania@outlook.com

Scrolling through my Facebook feed, I came across an article which instantly caught my attention, titled "Nano-robots to make repairs at the cellular level." After reading it, I got curious to know more about this tremendously developing nano-technology which is now entering medicine as "Nano-medicine."

Nano-technology has been widely used in biomedicine with applications in improving drug delivery and cellular permeation of drugs via encapsulation. To combat anti-microbial resistance (AMR), we may use nano-particles (NPs), coupled with existing antimicrobial agents, to cause enhancement of anti-biotics' physio-chemical behavior. Secondly, the colloidal forms of zinc, silver, copper, etc. also have anti-bacterial activity.

We may have many alternatives like investing in new medicines, diagnostic tools, vaccines, etc. to tackle AMR; but making novel antibiotics is not an easy task plus increasing evolution in bacteria is rendering it non-beneficial for investor's interest. The availability of a rapid diagnostic test, that can differentiate between viral and bacterial infections, would help to optimize anti-microbial prescription. But can Pakistan develop this technology soon and make it available at every primary health care? The answer is definitely "No".

Aiming to expand your information on nano-technology, I shall ignite about the extent to which it is useful in helping us dealing with AMR. I will shed light on the underlying mechanism of action of nano-particles (NPs) and will also highlight any limitations to its use. Most importantly, I will take you through how NPs can serve as an alternative to antibiotics. Come hear me ignite the superbugs.

Syeda Ramlah Tul Sania, is a third-year medical student at Aga Khan University, who believes in the power of technology and research to tackle any crisis. Her interests included reading, writing, photography, calligraphy, interior designing, politics and religion. Not yet sure about which field she wants to pursue as a doctor, she says, "I want to do a work which is impactful."

"Prescription monitoring by Mobile Application"

Igniters: **Rawshan Jabeen & Dr. Shehla Zaidi**
Department of Community Health Sciences, Aga Khan University
rawshanjabeen@gmail.com

Antimicrobial Drug resistance is a health violation which leads to numbers of systematic errors like poor regulation of drugs, Nonfunctioning pharmacist, misuse and overdose of antibiotics, self-medication, hand writing errors and even the use of expired antibiotics. Our health care system is unintentionally involved in this human violation. Antimicrobial resistance is responsible for losing many valuable lives over the globe where no more antibiotics could treat them.

Our Ignite solution that resolves all of the systematic errors is Prescription Monitoring App to improve the quality of prescription and prescriber. The inspiration behind this solution is TEEKO app; the main purpose of which was to improve their child vaccination by monitoring and evaluating their performance and make an effective impact on community-level which helped to reduce antibiotic resistance by improving vaccine against infections.

The crust of Prescription Monitoring App could directly lead to improving the quality of prescription, prevent misuse overuse of medicine, dropdown the side effects, over prescription, dispatch errors and in this way the performance and accountability of their work will achieve. This will be done with the capacity building approaches of available Health providers and improve culture of Continuous Medical education. Come here me Ignite about it!

Rawshan is a 2nd year student of MSc. Health policy and management. Her Expertise lies in m-mobile health and health System researchers. She formerly worked in Urban Health Program CHS, AKU

Shehla Zaidi, completed her PhD, MSc in Health Policy and Management, Harvard School of Health Policy, USA, 1997 and PhD Health Policy from London School of Hygiene and Tropical Medicine, UK, 2008. She is currently an Associate Professor in the Department of Community Health Sciences

"Promoting antimicrobial resistance awareness in children to combat self-medication"

Igniter: **Rayaan Mian**
1st Year A' Level Student, Karachi Grammar School
rmian2486@gmail.com

Antimicrobial resistance is a global phenomenon, plaguing countries ranging all across the world. In Pakistan, one of the greatest sources of this issue is the lack of awareness present in the community, due to which self-medication is running rampant, as well as the ease of access with which authentic or even counterfeit antibiotics can be obtained. Therefore, if there was to be an increase in awareness, the intensity of the situation would definitely decrease.

In order to minimize the effects of antimicrobial resistance in the near future, I feel that spreading awareness, especially in the younger generation, is crucial. In order to do this, it must be done through a medium easily accessible to all the children in Pakistan, regardless of the background they come from. Furthermore, it must be suitable for the current era, in which the use of social media has exploded in popularity.

In my presentation I wish to reinforce the importance of spreading awareness among children about antimicrobial resistance. I will share some work that has already been done around this using creative writing and doodling to impact child health literacy, in order to compare a solution that has worked recently in the past to a more modern one.

Through this session I wish to advocate for a movement that is simple, easily accessible/scalable, and cost-effective - one that shall truly Ignite the Resistance!

Rayaan Mian is currently in the midst of completing his second year of A-Levels. While he has close to no prior experiences with CCIT events, and just a very basic grasp of medicine, he will try and use his other strengths to provide a fresh perspective on the current issues plaguing our society. When not immersed in school studies, you can find him reading books, playing video games, or playing the piano.

"Antibiotic Avengers: The Rise of the Superbugs"

Igniter: **Zaubina Kazi**
Department of Pediatrics and Child Health, Aga Khan University
zaubina.kazi@aku.edu

What are the multi-colored, vicariously shaped pills your doctor wants you to pop every time you have severe gastroenteritis or pneumonia? Or when you are recovering from major surgery, even one with a happy outcome such as a C-section, what is your body being fed through those insidious tubes? Antibiotics.

This 'miracle drug' that led to a biomedical revolution in the '50s and '60s and saved millions of lives, may no longer be effective. Why? This is due to the mutation of microbes into 'superbugs' which can withstand the onslaught of most antibiotics and still emerge vengefully victorious. The fact that no antibiotic has been discovered in the past 30 years means that potentially by the year 2050 we are looking at a horrific scenario that could push back medicine by 100 years.

How did this 'superbug' evolve? Injudicious antibiotic prescription by doctors. Liberal use by farmers leading to the presence of antibiotics in the poultry and milk we consume. Increased international travel leaves us vulnerable to a global pandemic.

The main reasons perceived for antibiotic over prescription are: a high throughput pressurizing doctors to treat symptomatically and 'patient expectations' for a quick symptomatic relief that is presumed through the immediate efficacy of antibiotics.

I believe dispending antibiotics solely through designated vending machines may help curtail this problem. This two-pronged approach will eliminate the possibility of self-prescription as well as help identify prescription patterns of doctors. Given the current terrifying situation of antibiotic resistant typhoid slaying Pakistanis, this is an issue that needs our immediate attention.

Zaubina Umar Kazi is working as a Research Specialist with the Peadiatrics Department of Aga Khan University. Currently working is a Site Coordinator, Pakistan for the Childhood Acute Illness and Nutrition Network (CHAIN) she takes keen interest in child nutrition and Infectious Diseases. As a mother of 3 young children she hopes to leave the world a better and safer place for future generations.

Abstract ID: EP-18

A Multicenter Point Prevalence Survey of Antibiotic Use in Punjab, Pakistan: Findings and Implications
Zikria Saleem, Mohamed Azmi Hassali, Ann Versporten, Furqan Khurshid Hashmi

Learning Outcomes: Antimicrobial Resistance (AMR) is a growing concern especially in low and middle income countries (LMICs) such as Pakistan. The first step to develop appropriate strategies as part of any Global Action Plan is to undertake point prevalence surveys (PPS) in hospitals. In line with the recent National Action Plan for antimicrobial resistance, the first time such a comprehensive survey has been undertaken in Pakistan, sixth most populous country.
Target Audience: Healthcare professionals and Policy Makers Method: This point prevalence survey (PPS) was conducted in 13 hospitals among 7 different cities of Pakistan. The survey included all inpatients receiving an antibiotic on the day of PPS. A web-based application was used for data entry, validation, and reporting as designed by the University of Antwerp. Results: Out of 1954 patients, 1516 (77.6%) were treated with antibiotics. Top three most reported indications for antibiotic use were prophylaxis for obstetrics or gynaecological indications (16.5%) and gastrointestinal indications (12.6%) and lower respiratory tract infections (12.0%). Top three most commonly prescribed antibiotics were ceftriaxone (35.0%), metronidazole (16.0%) and ciprofloxacin (6.0%). Out of total indications, 34.2% of antibiotics were prescribed for community-acquired infections (CAI), 5.9% for healthcare-associated infections (HAI), and 57.4% for either surgical or medical prophylaxis. Of total surgical prophylaxis, 97.4% of antibiotics were given for more than one day.
Conclusion: Study concluded that unnecessary prophylactic antibiotic use is extremely high and broad-spectrum prescribing is common. There is a considerable need to work on a national action plan of Pakistan on antibiotic resistance. A multifaceted approach is need to address current concerns, which is starting to happen as Pakistan progresses is NAP for AMR.

Keywords: point prevalence survey, antimicrobial prescribing, antimicrobial resistance, hospitals, pakistan

Abstract ID: EP-21

SELF-MEDICATION WITH ANTIBIOTICS AMONG MEDICAL STUDENTS IN KARACHI: A CROSS-SECTIONAL INSTITUTION BASED STUDY
Hunain Muhammad Asif, Marina Aziz, Khadija Khalid

Background: Self-medication is described as the use of medicines by a person on his own or on the proposition of a nonprofessional or a lay person instead of seeking guidance from a health care provider. Due to this practice and especially with antibiotics, the strains of multiple bacteria

are getting resistant. Self-medication increases the likelihood of improper use of drug and drug dependency.

Method: A cross sectional study was conducted on a sample size of 359 students. The sample was taken through non-probability convenient sampling from students of Sindh Medical College, Jinnah Sindh Medical University, Karachi. An informed verbal consent was taken from the people. the data was entered and analyzed using SPSS version 23.0 with 95 % confidence interval in margin of error 5 % and p value of less than 0.05 was considered as statistical significance. RESULTS: The percentage of self-medication among students of Sindh Medical College, Jinnah Sindh Medical University, Karachi is 52.1%. Age groups were (16-18 = 14.5%, 19-21 = 58.2% and 22-24 = 27.3%). Participants from all years were (01st = 20.6%, 02nd = 19.5%, 03rd = 20.6%, 04th = 19.5% and 05th = 19.8%). The minimum days an antibiotic course should be continued from the collected data were (3-5 Days = 69.6%). The most hazardous outcome of using inappropriate antibiotics reported by the students was (Drug resistance = 40.4%). The most frequently used antibiotics were (Co amoxiclav = 11.7%, Metronidazole = 5.8%). Students normally stop taking antibiotics (At the completion of course = 42.1%, After symptoms disappear = 31.5%, After consulting doctor = 10.6%).

Conclusion: This study suggests that students of Sindh Medical College, Jinnah Sindh Medical University, were found to self-medicate themselves with antibiotics. However, knowledge about drug resistance is required at individual level in-order to refrain from doing so.

Keywords: self-medication + antibiotics + karachi + medical students

Abstract ID: EP-29

Antimicrobial Stewardship Program in Tertiary Care Hospital of Developing Country, Aga Khan University Hospital (AKUH), Karachi, Pakistan
Kashif Hussain, Asad Ali, Syed Shamim Raza,

Background and Learning objectives: Antimicrobial resistance (AMR) has become critical public health issue. A growing body of evidence demonstrates that hospital based programs dedicated to improving antibiotic use, commonly referred to as "Antibiotic Stewardship Programs (ASPs)," can both optimize the treatment of infections and reduce adverse events associated with antibiotic use. Antibiotic stewardship initiative in Pakistan (ASIP) is an emerging concept. Learning objective is to present in-service education regarding purposes and methods of a stewardship program to other health care providers who are participants/stakeholders in a health care organization

Audience: Physicians, Pharmacists, Nurses.
 Methodology: Started in January 2018. PDSA tool is used in methodology. Hospital leadership was taken into loop and issued a note on importance and implementation of ASP and nominated physician and pharmacist leader. Antimicrobial stewardship committee approved the protocol which includes core and supplemental interventions Core interventions include pre-authorization and Prospective audits of regimens selected by committee. These audits are done by a team of clinical pharmacists headed by ID pharmacist. Supplemental interventions are pharmacy driven which include dose adjustment, IV to PO, drug interactions. Result: Results compared with historical control. Pre-authorization compliance is 100% in year 2018 while compliance of

prospective audits recommendations acceptance is 78% in 2018.Total 625 interventions were done in prospective audits. Define daily dose (DDD) of antimicrobials also decrease after implementation of ASP. Like DDD of ceftriaxone decrease from210/1000 pt-days to 185/1000pt-days.Supplemantal interventions also result in cost saving of USD 20000.Infection rate of multi-drug resistant organisms is also on decreasing trend.

Conclusion: More than its economic impact, this antibiotic stewardship approach leads to decrease in un-necessary antibiotic administration in hospitalized patients.

Keywords: leadership, stewardship, prior authorization, compliance

Abstract ID: EP-40

Carbapenem Sensitivity Vs Resistance: Impact on Inpatient Outcomes
Mir Ibrahim Sajid, Bushra Jamil, Safia Awan

Introduction: The treatment of bacterial infections has become increasingly intricate due to the ability of the microorganisms to develop resistance to the current regimen of antibiotics. Carbapenems provide enhanced anaerobic and gram negative coverage as compared with other beta lactams. Due to their stability against extended spectrum beta-lactamases, they have proven to be an effective antimicrobial agent. This study looks at the impact of carbapenem resistance on the inpatient outcomes at our center.

Methods: This is a retrospective study which includes all in-patient admissions at our institute, Aga Khan University Hospital, Karachi between the years 2015 and 2019. All the patients who had their antibiotic sensitivity cultures done were included in the sample. Fifty shortlisted patients were then divided into two groups. Group A: those who were carbapenem resistant and Group B: those with an ESBL infection sensitive to Carbapenem (B). Results: The mean age of the sample was 56.54±16.93 years with 31 (62%) of the patients being male, 30 (60%) diabetic, 29 (58%) hypertensive and 26 (52%) having renal dysfunction. The most common presenting complaint pertained to the genito-urinary system (32%), followed by disorder of the pulmonary system (26%). There were 31 (62%) patients in group A and 19 (38%) in Group B. Patients in Group A had a significantly longer inpatient stay than those in group B (Mean: 15.12 vs 7.68 days). A total of 24 (77.42%) patients developed complications during inpatient stay as opposed to 9 (47.4%) patients in Group B. There was a significantly higher mortality rate in Group A patients as opposed to group B patients (38.7% vs 21.05%).

Conclusion: With an increased resistance being developed against antimicrobials around the world, judicious use of antibiotics is recommended in light of the data presented in the paper.

Keywords: carbapenem sensitivity; inpatient outcomes

Abstract ID: EP-42

Vancomycin dosing, trough concentrations and AUC24 in pediatric population; retrospective review of current practices and its impact on healthcare cost
Syeda Anum Fatima, Mehreen Sohail, Kashif Hussain

Background: Vancomycin is drug of choice for gram positive infections. Recommended standard dosing for therapeutic levels vary between paediatric population.

Objective: To evaluate the relationship between standard dosing guidelines as being practised by the physicians with initial and desired vancomycin trough concentrations and AUC24 in paediatric population. A secondary objective is to evaluate the burden on cost of therapy with dosing insufficient to achieve desired trough concentrations.

Method: A retrospective review was conducted in AKUH, Karachi. Patients aged from 1 month to 18 years admitted as inpatient and received vancomycin for ≥3 days were included in the study. Initial and subsequent vancomycin dosing, resultant trough concentration and AUC24 were evaluated. Cost of therapy was evaluated by all the doses that were insufficient to produce target trough concentrations during the initial dosing regimen.

Results: 150 patients from July 2018 till June 2019 were included. Among 150 patients no change in dose was required by only 10 patients (15%). Median trough concentrations for median doses of 46.2 (40-80) and higher doses of 62 (55-108) mg/kg/day were 7 mcg/mL (1–25 mcg/mL) and 12.4 mcg/mL (6-35 mcg/mL) respectively while median AUC24 were 219.78 mg•hr/L (90.02–775 mg•hr/L) and 325.90 mg•hr/L (115.22–1033.86 mg•hr/L) respectively. Average baseline and end of therapy creatinine was 0.32 and 0.38 mg/dl respectively while 85% of the patient who required a change of dose corresponded to total initial doses worth 426532/= CONCLUSION: There is wide inter-patient variability in vancomycin dosing, trough concentrations and AUC24. 85% (n=140) of the patients receiving an initial average dose of 45 mg/kg/day required increase in dose due to sub-therapeutic trough concentrations which resulted in additional cost of therapy while 40% (n=60) patients on higher doses after initial therapy required further escalation of dose due to sub-optimal levels.

Keywords: vancomycin, pediatric population, therapeutic concentration, AUC24

Abstract ID: EP-46

Prevalence of Fecal carriage of ESBL producing Enterobacteriacae among infants in hospital and community and its association with Severe acute malnourished infants and mortalities.
Sadia Parkar, Mah-e- Jabeen Zehra, Aneeta Hotwani, Ali Faisal Saleem

Abstract Title: Prevalence of Fecal carriage of ESBL producing Enterobacteriacae among infants in hospital and community and its association with Severe acute malnourished infants and mortalities.
Background: Infections due to extended-spectrum beta-lactamase producing Enterobacteriaceae (ESBL-E) are increasing worldwide, resulting in increased morbidity, mortality and healthcare

costs. Recent studies have shown association between malnutrition and acute infection. Malnourished children have increased incidence, severity and case fatality due to common acute infections. We aim to investigate the prevalence of ESBL in stools samples of hospitalized and community infants from the CHAIN cohort and find association of ESBL positive infants with Severe acute malnutrition (SAM) and mortalities.

Methods: A cross-sectional study was conducted on 307 children, 255 infants aged 0 to 23 months, admitted in Civil Hospital, Karachi, and 52 community children of the same age from Karachi. Hospitalized infants were followed for 6 months for their nutritional and vital status. Stool samples were collected at the time of admission and community samples were collected at the time of community enrollment. The stool samples used were collected as part of Childhood Acute Illness and Nutrition (CHAIN) Network Cohort.

Results: The overall ESBL carriage is 59%. The prevalence of ESBL carriage is significantly high in hospitalized infants 61.9%, compared to community which is 47%. We found high prevalence of Escherichia coli and Klebsiella pneumoniae positive ESBL as 72.3% and 62.1% respectively in stool samples of all infants. Among severe acute malnourished infants 73.8% were ESBL positive for Escherichia coli and 78.3% were ESBL positive for Klebsiella pneumonia. Mortalities in SAM infants were 87.5% Escherichia coli ESBL positive and 66.7% were Klebsiella pneumoniae ESBL positive. Conclusion: There is significantly high prevalence and mortality in severe acute malnourished infants who are positive with ESBL.

Keywords: ESBL, severe acute malnutrition

Abstract ID: EP-52

Infections in patients with multiple myeloma treated with conventional chemotherapy: a single-center, 10-year experience from Pakistan.
Natasha Ali, Mohammad Faizan Zahid, Mohammad Asim Beg

Multiple myeloma (MM) is a common hematologic malignancy with variable degrees of immunodeficiency. Disease- and treatment-related compromise of the immune system predisposes patients to infections, which are a major cause of morbidity and mortality. We aimed to establish the incidence and main characteristics of infections in MM patients treated at our center over a 10-year period. A total of 412 patients were retrospectively analyzed. 154 (37.4%) were documented to have at least one episode of infection and were included in this study. A total of 244 infectious episodes were documented. The most common site of infection was pulmonary followed by genitourinary system. The most common infections were bacterial, followed by viral. Escherichia coli were the most common organisms. In 160 (65.5%) episodes, the agent was not isolated. Thalidomide with dexamethasone was the most common treatment followed by melphalan with dexamethasone. Infection was the main cause of death in 26 (6.3%) out of all 412 patients. Infections are a notable cause of morbidity and mortality in the clinical course of MM patients. Taking into account patient and disease characteristics, a risk-adapted selection of MM treatment should be employed, with special attention towards patient age and disease-associated organ dysfunction. Patient education, access to healthcare and physician

vigilance are also essential. Vaccination and antimicrobial prophylaxis may be considered prior to or during therapy.

Keywords: multiple myeloma, infections, mortality, treatment

Abstract ID: EP-60

Use of pefloxacin as a surrogate marker to detect ciprofloxacin susceptibility in Salmonella enterica serotypes Typhi and Paratyphi A
Safia Moin, Syed Mohammad Zeeshan, Sidra Laiq, Ahmed Raheem

Objective: To determine the use of pefloxacin as a surrogate marker to detect fluoroquinolone (ciprofloxacin) susceptibility against Salmonella enterica serotypes Typhi and Paratyphi A.
Methods: It was a prospective, descriptive cross sectional study, conducted in the Department of Pathology and Laboratory Medicine, Microbiology section, Aga Khan University, Karachi, from September 2016 to March 2018. One hundred and thirty eight, Salmonella Typhi and Paratyphi A isolates of blood cultures were included in the study. Disk susceptibility tests and broth microdilution (to test minimum inhibitory concentration) were performed as per Clinical and Laboratory Standard Institute guidelines.
Results: On disk diffusion test, out of 138 isolates, 91 (66%) were found intermediate resistant (IR) to ciprofloxacin but resistant to pefloxacin, 42 (30%) resistant to both ciprofloxacin and pefloxacin, and 5 (4%) susceptible to both ciprofloxacin and pefloxacin. Minimum Inhibitory Concentration (MIC) of ciprofloxacin was determined for IR isolates, 85/91 (93%) strains showed MIC between 0.12-0.5 mg\L (intermediate) and 6 (7%) revealed MIC of >1 mg\L (resistant to ciprofloxacin) with a p-value of <0.0001.
Conclusion: Our results showed that pefloxacin disk diffusion test is reliable to detect fluoroquinolone resistance among enteric fever causing Salmonella. Therefore, we suggest that in resource limited clinical laboratories, where establishing infrastructure to check MICs is not a viable option, pefloxacin disk diffusion assay can be used as a surrogate marker to detect fluroquinolone resistance.

Keywords: enteric fever causing salmonella, ciprofloxacin, pefloxacin, fluoroquinolones.

Abstract ID: EP-62

Coexistence of blaNDM and mcr-1 producing Escherichia coli isolated from human, poultry and environmental water from Pakistan.

Muhammad Usman Qamar, Muhammad Rizwan, Iqra Bashir, Mashkoor Mohsin Gillani
Muhammad Rizwan, Iqra Bashir, Qasim Ali, Mashkoor Mohsin Gilani, Muhammad Saqalein, Muhammad Shafique, Muhammad Hidayat Rasool, Sam Kariuki, Guy Palmer.

Background: Emergence and spread of New Delhi metallo-β-lactamase (NDM) and mcr-1 producing Escherichia coli is a serious threat to public health sector around the globe particularly in developing countries like Pakistan. NDM producing bacteria showed resistance against multiple antibiotics. mcr-1 is a novel plasmid-mediated gene conferring resistance to colistin which is considering a last resort to treat clinical infection caused by carbapenem resistant pathogens. The aim of the study was to determine the prevalence of both blaNDM and mcr-1 producing E. coli in different settings.

Methods: A total of 100 poultry cloacal swabs, 100 environmental water samples and 100 human samples (blood, urine, pus) were collected from Faisalabad metropolitan during October 2018-April 2019. Samples were screened for NDM and mcr-1 producing E. coli using colistin and meropenem (4µg/mL) containing MacConkey agar. Further, isolates were confirmed using UTI ChromoSelect agar and API 20E. Antibiogram and phenotypic confirmation of carbapenemase and metallo-β-lactamase was carried out as per CLSI 2018 guidelines. Molecular identification of mcr-1and NDM gene was performed using PCR. Results: Of 100 poultry samples; 22 E. coli were positive for mcr-1. Of 100 water samples, 17 E. coli were NDM producers and 4 were positive for mcr-1. However, in human samples, 15 E. coli were NDM producer and none for positive for mcr-1. E. coli from poultry displayed 100% resistance to β-lactam, β-lactam inhibitors and colistin while 63% to ciprofloxacin and 18% to meropenem. E. coli from water samples also displayed 100% resistance to β-lactam, β-lactam inhibitors followed by 52.5% to ciprofloxacin, 47.4% to amikacin, 16.9% to meropenem and 6.7% to colistin. Moreover, NDM producing E. coli from human samples also displayed 100% resistance against β-lactam and inhibitors and 75% to ciprofloxacin and 68% to amikacin and all were sensitive to colistin.

Conclusion: Dissemination of blaNDM and mcr-1 producing E. coli from clinical, poultry and environmental water is a matter of great concern for both livestock and public health. A One Health approach is necessary to further explicate the variability of these high-risk genes.

Keywords: NDM, MCR-1, one health

Abstract ID: EP-70

Trend of Salmonella in Blood culture from June 2017 to June 2019 in public sector commercial lab
Irum Rafiq Shahzaib

Introduction: Typhoid fever is one of the many diseases burdening the third world countries. In 2000, over 2.16 million episodes of typhoid were recorded worldwide. In 2004, typhoid fever caused 216,000 deaths, of which more than 90% occurred in Asia. Recent data shows that typhoid fever is very common in developing countries along with an estimated 120 million infections and 700,000 annual deaths occurring worldwide. Historically, the first-line treatments for typhoid have been ampicillin, trimethoprim-sulfamethoxazole, and chloramphenicol. S. Typhi strains with resistance to these three antibiotics are considered multidrug resistant (MDR). Fluoroquinolones are the drug of choice in treating typhoid fever but with antibiotic resistance rearing its head there are numerous reports of treatment failures with fluoroquinolones. The trend of antibiotic resistance is on the rise with emerging XDR strains of salmonella. Methodology: The total number of blood culture from June 2017 – June 2019 received were 1190.The sample was received in BACTEC Blood culture bottle. The instrument used in this study was BACTEC 9050.
Results: During 2017 from June till June 2019 1190 blood cultures came to JSMU Diagnostic laboratory and blood bank out of which 61 cases of enteric fever were diagnosed in automated blood culture Bactec. Out of 61 strains of Salmonella 45 were resistant to Ceftriaxone sensitive only to azithromycin and meropenem.
Conclusion: Typhoid fever is a life-threatening infectious disease caused by Salmonella enterica serovar Typhi. S.typhi colonizes only humans, is transmitted through the fecal-oral route. Adequate and timely antimicrobial treatment invariably cures typhoid fever. The rise of extensively drug resistant Salmonella is alarming and leaves limited treatment options with carbapenems which are costly as well as require administration by injectable. Preventive measures like improved food safety and hygiene may be adopted in order to curtail spread of such resistant strains of typhoid. According to reporting by Pakistan Press International (PPI), the Sindh health department has launched an emergency typhoid vaccination campaign. Around 250,000 children will receive doses of the Typbar-TCV vaccine, a conjugate vaccine that was recently prequalified by the World Health Organization.

Keywords: XDR

Abstract ID: EP-72

Antifungal susceptibility profile of invasive Candida glabrata isolates (2009-2019) from a tertiary care hospital laboratory in Pakistan
Saba Memon, Joveria Farooqi, Kauser Jabeen

Objective: Candida glabrata invasive infections are increasingly being associated antifungal resistance and poor clinical outcomes. The objective of this study was to evaluate antifungal

resistance and distribution of minimum inhibitory concentrations (MICs) against invasive C. glabrata isolates (200-2019) at Aga Khan University (AKU) at Karachi, Pakistan. This laboratory, through its network of satellite collection centers receives specimens from more than 100 major cities and towns of the country.

Method: Candida glabrata were isolates from blood (101), body fluids (26), pus and wounds (21) tissue (4) and others (10). Isolates were identified by conventional method using API 20C Aux, gross morphology on chromogenic and microscopic morphology on corn meal agar. MICs were determined using colorimetric broth microdilution (YeastOne Sensititre, Trek diagnostics). Susceptibilities were interpreted according to Clinical Laboratory standard Institute breakpoints mentioned in "Performance Standard for Antifungal Susceptibility Testing of Yeasts M60-ED1:2017".

Results: Out of 1917 archived invasive candida, 162 (8.4%) were C.glabrata 76% of these isolates were from patients admitted at AKU. Male to female ratio was 1.4 and 62% of the isolates were from ages 18-64 year. MIC90 of these strains against fluconazole was 64 µg/ml, voriconazole 2µg/ml, itraconazole 1µg/ml and posaconazole 2µg/ml. Among echinocandins, MIC90 was 0.12µg/ml for caspofungin, 0.06µg/ml for anidulafungin and 0.03µg/ml for micafungin. MIC90 for amphotericin B was 0.5µg/ml.   Conclusion: Antifungal sensitivity testing for invasive candidiasis is essential in the face of emerging resistance as empiric therapy may not have reliable outcomes. Surveillance data of antifungal resistance among common Candida species should be monitored closely for identifying resistant strains in circulation.

Keywords: candida glabrata, resistance, fluconazole, voriconazole, echinocandin, amphotericin

Abstract ID: EP-94

Occurrence and antimicrobial resistance of Salmonella of public health significance in slaughtered animals in Pakistan

Aitezaz Ahsan, Hamid Irshad

Background: Salmonella species are considered a major public health concern causing gastroenteritis, septicemia and extra-intestinal complications and death in humans. Ruminants especially cattle are the paramount reservoir of public health significant Salmonellae are a source of foodborne infection. Therefore, the current study is proposed to assess and quantify the burden of AMR Salmonella in food animals slaughtered at different abattoirs of the country.

Methods and Results: In total 266 recto-anal mucosal swabs (RAMS) were collected from cattle (n=98), buffaloes (n=66), sheep (n=23) and goats (n=79) slaughtered in abattoirs of Islamabad/Rawalpindi, Lahore and Peshawar, Pakistan. RAMS were subjected to pre-enrichment in buffered peptone water at 37 °C for 24 hours and then to selective enrichment in selenite cystine broth (SCB) at 37 °C for 24 hours. After enrichment, the samples were inoculated onto Xylose Lysine Deoxycholate (XLD) agar plate for isolation of Salmonella. Two presumptive Salmonella colonies per sample were picked and purified on XLD plate. The isolates were biochemically characterized and confirmed using PCR targeting its invA gene. The overall prevalence of Salmonella was 15% (40/266). The highest prevalence of Salmonella was observed in Lahore (18.3%; 11/60), followed by Islamabad (17.1%; 25/146) and in Peshawar (6.66%; 4/60). The species wise occurrence of Salmonella was highest in buffaloes (31.8%;

21/66) as compared to cattle (14.2%; 14/98), goats (5%; 4/79) and sheep (4.34%; 1/23). Conclusion: The study indicated Salmonella is prevalent in slaughtered animals of Pakistan indicating that these animals may be responsible for the transmission of Salmonella of public health significance to humans.

Keywords: salmonella, food safety, public health

Abstract ID: EP-96

High type-specific prevalence of Anal Human Papillomavirus infection among HIV infected and uninfected men who have sex with men and transgender in Pakistan: Implications for vaccination strategies
Muslima Ejaz, Salma Batool, Tazeen Saeed Ali, Anna Mia Ekstorm

Objectives: Anal Human Papillomavirus (HPV) infection is very common worldwide among men having sex with men (MSM) and in particular MSM living with HIV. Given the prevalence of HIV among MSM and male to female transgendered individuals who are commonly commercial sex workers is high in Pakistan, understanding the prevalence of anal HPV infection among them is a critical first step in addressing this emerging public health issue. The aim of this study was to determine the prevalence, types and risk factors for HPV among MSM and transgender with and without HIV in Karachi Pakistan.
Methods: A cross sectional study was conducted from March 2016 to November 2017 in Karachi Pakistan. Study participants were recruited of National AIDS Control Program's center for antiretroviral therapy (ART) and a local Community Based Organization. MSM and transgender were eligible who self-reported to have had anal sex in the last preceding at least 6 months and of age 18 and above. Structured questionnaire was administered to collect socio-demographics and other relevant Information. A blood sample was obtained for confirmation of their HIV status, viral load and CD4+ T-cell count. Anal swabs were collected for HPV DNA detection and typing. For factors independently associated with prevalence of HPV infection Cox proportional hazard model algorithm analysis was conducted.
Results: Lab data were available for 298 MSM (HIV+ n=131; HIV- n=167). The overall HPV DNA prevalence was 65.1% and was higher in HIV+ then HIV- MSM (87% versus 48%; p= <0.001). The most frequently HPV types identified were HPV6/11 (46.9%), HPV16 (35.1%), HPV18 (23.2%), HPV35 (21.1%). A strong dose-response relationship was found between HIV seropositivity and multiplicity of HPV types (p=<0.001). HIV status (PR: 1.81 95% CI 1.16-2.82), never condom use (PR: 2.31 95% CI 1.03-5.20) were independently associated with prevalence of any anal HPV infection. **Conclusion:** High prevalence of HPV indicates future risk of anal cancer in MSM in general and MSM living with HIV in particular. Current findings support HPV vaccination efforts to this high-risk population. Dedicated efforts are needed to make those services available for the sake of both public health and human rights

Keywords: men having sex with men, MSM, transgender, HPV, HIV, pakistan

Abstract ID: EP-110

Computation analysis of Type III bacterial flagellar export (BFE) apparatus-exploiting evolution to its utmost utilization in infectious diseases.

Arooj Shafiq, Shahid Khan

Purpose: The purpose of this study is to evaluate evolutionary relationship and structural similarities of bacterial type III flagellar export (BFE) apparatus and F1F0 ATP synthase. Type III secretion systems (T3SS) are responsible for a broad spectrum of bacterial infections ranging from whooping cough to gastric cancer. Understanding BFE is therefore, crucial to target it therapeutically and for prophylactic development efforts.

Methods: A representative set of 109 diverse motile bacterial genomes were selected. Protein sequences were retrieved from the Integrated Microbial Genomes system. Identity of sequences was established by homology search (BLASTP) and gene neighborhoods. Multiple sequence alignments were calculated by using ClustalW and Muscle and edited manually to remove extraneous gaps. Residue conservation was calculated as profile hidden Markov models using HMMER. Phylogenetic trees were calculated using PhyML. SignalP was used on the first hundred residues of each protein to identify putative N-terminal signal sequences.

Results: The phylogenetic spread and secondary structure of comparably sized membrane proteins and their gene orders were similar between BEF and F1F0 ATP synthase, however the conserved residue patterns were different. FlhA was also identified as a unique transmembrane component of Type III systems, which could have caused the BFE membrane module to diverge from F1F0 ATP synthase, to form a structurally distinct module. Order of the gene cluster encoding the cytoplasmic homologs was also conserved. It was found that for BFE proteins, the horizontal gene transfers involved modular gene sets rather than single genes, consistent with the selfish operon hypothesis. Conclusion Our analysis has revealed mechanistic and structural similarity between the BFE and F1Fo ATP synthase, consistent with an evolutionary linkage. This knowledge can assist the development of antimicrobial drugs where T3SS can be exploited as a drug target.

Keywords: T3SS – type III protein secretion systems; BFE – bacterial flagellar export apparatus, bioenergetics, phylogenetic, antimicrobial drug target, proton potential, rotary motors, membrane proteins.

Abstract ID: EP-138

Implementation of an antimicrobial stewardship program at Aga Khan University Hospital Nairobi, Kenya

Rodney Adam, Inaara Karsan, Nath Arwa, Saeed Samnakay

Introduction: There are few studies regarding the implementation and impact of ASP in hospitals in Sub Saharan Africa (SSA). Aga Khan University Hospital Nairobi (AKUHN) became a university hospital in 2004 and currently operates as a mix between private and

academic practice. The prevalence and resistance rates of Gram negative infections as well as candidemia are high, but MRSA and Clostridioides difficile disease are infrequent.

Methods: An infectious disease (ID) physician and pharmacist led ASP was introduced in May 2018 with the requirement of prior authorization by ID for antimicrobials selected on the basis of overuse and rare indications for use in empiric therapy. In June 2019, an audit and feedback restriction for selected broad spectrum antibiotics was implemented with an automatic stop at 72 hours and a requirement for an ID consultation before continuing. Antimicrobial utilization was analyzed by data from the electronic medical record to determine total days of therapy (DOT) and number of patients treated pre and post-intervention.

Results: For the prior authorization restrictions, the DOT and number of treatment courses from January 2017 through April 2018 were compared with data from June 2018 through August 2019. The DOT for tigecycline, linezolid and teicoplanin were reduced to 28%, 32% and 7% of baseline, respectively. Caspofungin remained high at 85% of baseline due to the large prevalence of candidemia. Polymyxin use is 57% of baseline and their use reflects the number of carbapenem resistant organisms. After introduction of audit and feedback restrictions in June 2019, the number of treatment courses didn't change significantly but DOT were reduced for all restricted drugs; carbapenems (45% of baseline), piperacillin/tazobactam (57%), vancomycin (40%) ceftazidime (75%) and cefepime (38%). Conclusion: Both prior authorization and audit and feedback resulted in dramatic reductions of DOT for most of the restricted drugs.

Keywords: antimicrobial stewardship, carbapenems, candidemia, resistant gram negative infections

Abstract ID: EP-140

Extra-intestinal complications of extensively drug-resistant (XDR) Salmonella Typhi - Case Series from Karachi, Pakistan

Salima Rattani, Seema Irfan, Mohammad Zeeshan, Joveria Farooqi

Background: Enteric Fever, caused by Salmonella Typhi and Salmonella Paratyphi is a leading water borne infection in low and middle income countries like Pakistan. Highest numbers of cases belong to pediatric group and people living in low socioeconomic conditions. Extensively drug-resistant (XDR) Salmonella Typhi resistant to first line treatment options including ampicillin, co-trimoxazole, and chloramphenicol along with fluoroquinolones and second line treatment options like ceftriaxone and Cefixime has now spread across Pakistan.

Objective: We report ten extra-intestinal cases of XDR Salmonella Typhi from Karachi, Pakistan.

Methodology: This was a retrospective, observational study conducted at Aga Khan Clinical Microbiology Laboratory during January 2016 to December 2018 after ethical review committee approval. Patients in whom XDR S. Typhi was isolated from clinical samples other than blood/bone marrow, stool and urine were included for detailed history after obtaining proper verbal consent. Laboratory based data for yearly isolation of ceftriaxone sensitive and resistant S. Typhi, from extra intestinal body sites was searched.

Results: During 2018, XDR S. Typhi was isolated from ten extra-intestinal clinical specimens susceptible only to meropenem, imipenem and azithromycin. It included deep seated abscesses at different anatomical locations including three at the injection site, two splenic abscesses and one

case each of breast, pleural, sub-diaphragmatic and leg abscess and a case of meningitis. Extra intestinal location Numbers Injection abscess 03 Breast abscess 01 Splenic abscess 02 Leg abscess with suspected osteomyelitis 01 Pleural abscess 01 Sub diaphragmatic abscess 01 Meningitis 01 All of these cases were due to delayed clinical diagnosis and start of inappropriate empirical antibiotic during the outbreak of XDR S.Typhi

Conclusion: This case series highlights consistent frequency of isolation of S. Typhi from extra intestinal sites with an average of 6 cases per year from the year 2013 to 2017. In the year 2018 we isolated a total of 18 cases out of which 10 were caused by XDR S. Typhi. Antibiotic options for XDR S. Typhi are surely limited, i.e. either azithromycin or meropenem/imipenem. Delayed physician's awareness about emergence of XDR S. Typhi in Pakistan and inappropriate empiric treatment may have led to complicated cases due to dissemination of Typhoid bacilli to the different body sites.

Keywords: salmonella typhi, extensively drug resistant, extra intestinal

Abstract ID: EP-150

Are we progressing to meet the waterloo? A laboratory based retrospective study regarding Shigella susceptibility from fecal specimens
Saeeda Chandio, Syed Muhammad Zeeshan**, ,** Faisal Malik

Introduction: Episodes of diarrhea and dysentery in the community generally get empirical antimicrobial treatment, therefore the changing pattern must be highlighted which can help general physicians in antibiotic selection. The objective of this study is to observe the isolation rate of Shigella species from fecal specimens and observe for evolution of antimicrobial resistance   Material and Methods: It was a retrospective, observational cross-sectional single center study. Fecal Shigella species isolated between 2007 to 2016 were included in the study. Frequency of Shigella species and their susceptibility against ampicillin, chloramphenicol, fluoroquinolone, quinolone, ceftriaxone, cefixime and sulphonamide-trimethoprim was tested. Antimicrobial resistance trends were assessed for each specie, Data was entered and analyze in EXCEL to see the trend. Result: Isolation rate of Shigella species from fecal specimens was 2.18%. S.flexneri was the most commonly isolated species (52%) followed by S.sonnei (33%), S.boydii and S.dysenteriae. Predominantly (74%) affected population were paedriatic age group (0-16 years). There was no seasonal variability and all species were isolated throughout the year. Highest resistance rate was observed against co-trimoxazole (82%), ampicillin (48%) and nalidixic acid (48%) which was progressive throughout the study duration. However, resistance to 3rd generation cephalosporin was slowly progressive and ranged 1% to 20%. Notably S.flexneri had highest ceftriaxone (9%) and fluoroquinolone (13%) resistance. Isolated strains of S.dysentry were least resistant to all groups of antibiotics. Chloramphenicol showed persistent decreasing resistance trend.

Conclusion: Isolation of Shigella is not uncommon in our population. The first line therapeutic agents have high resistance rate. Antibiotics commonly prescribed as empirical therapy i.e. ceftriaxone and fluoroquinolones showing trends of emerging resistance.

Keywords: AMR, trends in emerging resistance

Abstract ID: EP-165

Assessment of antibiotic resistance in patients with Urinary Tract Infections in Timurgara District Hospital, Pakistan

Syed Mohammad Zeeshan, Maarten Bullens, Andrei de Cerqueira Melo, James S. Lee, Said Raziq, Gul Ghuttai Khalid, Letizia Di Stefano, Said Nawaz Khan, Anwar Zada, Atta-Ur Rehman, Yves Wailly, Guido Benedetti, Julita Gil Cuesta, Anita Williams

Background: The level of resistance of pathogens causing uncomplicated UTI has risen significantly. The 2017-18 Pakistan-GLASS report indicates >70% resistance to ceftriaxone and ciprofloxacin in Escherichia coli. This study was done to highlight the bacterial etiology of UTIs and determine local resistance patterns.

Methodology: A prospective study was conducted in the Médecins Sans Frontières (MSF) supported Timurgara District Headquarter Hospital, Pakistan, from September 2017 to December 2018. Women aged 18-65 years presenting to the Emergency Department with symptoms of uncomplicated UTIs were included. Patients who had >3 episodes of UTI in the past twelve months, were pregnant or had urinary tract abnormalities were excluded. All samples with postive dipstick or nitrite test were sent to Agha Khan Laboratory for microbiological analysis. Results: 200 patients participated in the study, with 105 (52.5%) patients diagnosed with pyelonephritis and 89 (44.5%) with cystitis. Forty-three samples (21.5%) were culture positive, with E. coli isolated in 27 samples, Enterococcus spp. in 7 samples and Klebsiella pneumoniae in 6 samples. One sample grew both E. coli and K. pneumoniae. Overall resistance to Ciprofloxacin was observed in 51.8% of E. coli isolates, and Ceftriaxone resistance was found in 66.7% of E. coli isolates and in 33.3% of K. pneumoniae. Resistance to Fosfomycin-tremetamine was low (only one isolate of E. coli).

Conclusions: This study highlights the significant resistance to both first and second-line antibiotics for treating UTIs as per the MSF protocol. In order to inform local prescription recommendations, a larger population-wide survey and continued surveillance should be implemented.

Keywords: UTI, antibiotic resistance, pakistan, E. coli

Abstract ID: EP-174

Overview of multi drug resistant bacteria in a tertiary care hospital of PAKISTAN – no action today, no cure tomorrow.

Fareeha Adnan, Nazia Khursheed, Shakir Husain, Maira Khan

Objective: Overview of multi drug resistant bacteria in a tertiary care hospital of Pakistan – no action today, no cure tomorrow.

Methedology: A cross-sectional study conducted in Indus hospital from jan2016 to DEC 20198. Multidrug resistant organisms isolated from the laboratory-based culture of different samples i.e blood, body fluids, routine culture, urine etc. were included in the study. Antibiotic susceptibility testing performed by using Kirby bauer disc diffusion method according to clinical laboratory standard institute (CLSI) guidelines. The data were entered and analyzed using IBM SPSS

Statistics for Windows, Version 22.0 (IBM Corp., Armonk, NY). Frequencies and percentages were calculated.

Result: A total of 9,066 samples were analyzed for MDR bacteria at the microbiology lab of The Indus Hospital (TIH) between January 2016 and December 2018. Frequency of Staphylococcus aureus MRSA in the three year period are 21.4% were found during 2016, 31.4% in 2017 and 47.3% in 2018. Frequency of Enterococcus (VRE) 2016-2018; 12.5% were reported in 2016, 40% in 2017 and 48% in 2018. Resistant pattern for XDR Salmonella typi, 16.3% were in 2016, nearly 28% in 2017, and 56% in 2018 MDR Pseudomonas aeroginosa found in three years; 25.2% were reported in 2016, 30% in 2017 and 44% in 2018. Frequency of MDR Acinetobacter species observed were 22% were found in 2016, 30.5% in 2017 and 47.5% in 2018.

Conclusion: Rising trend of antimicrobial resistance is a concern for Pakistan as well as for all countries in the world. Over use, under use, and misuse of antibiotic is a leading cause for it. The lack of proper antibiotic tracking system, AMR (antimicrobial resistance) surveillance, and facilitated laboratories are principal difficulties of Pakistan. Continuous surveillance on the multidrug resistant bacterial isolates are mandatory to provide resistant pattern for appropriate therapy.

Keywords: MDR, enterococcus faecium, staphylococcus aureus,klebsiella pneumoniae,acinetobacter baumanii, pseudomonas aeruginosa

Poster Presentation

Abstract ID: PP-2

Antimicrobial Susceptibility Profile of Multi Drug Resistant Acinetobacter and Pseudomonas against Polymyxin E and Tigecycline.
Zuhair Ali Rizvi, Rabbia Khurshid, Maira Zafar, Hajra Khan

Background: Antimicrobial Resistance of Multidrug Resistant (MDR) Acinetobacter and Pseudomonas against Polymyxin E and Tigecycline is increasing exponentially. However, a wide range of variation of these pathogens against Polymyxin E and Tigecycline among various ends of the world has been noted.

Materials & Methods: This cross sectional study was conducted in Medical Intensive Care Units (MICU) of Holy Family Hospital for a duration of 1 year after ethical approval from Institutional Research Forum (IRF) of Rawalpindi Medical University. Hospital records of patients admitted in MICU were included using consecutive sampling technique. Organisms that were not MDR Acinetobacter or MDR Pseudomonas were excluded. Antimicrobial resistance of included isolates was noted against Polymyxin E & Tigecycline. Variables like gender, age, organism, site of isolation and antimicrobial resistance against Polymyxin E & Tigecycline were noted. Data were entered and analyzed SPSS v20

Results: Mean age of isolation of MDR Acinetobacter was 35.79±15.55 while mean age of isolation of MDR Pseudomonas was 26.54±7.83. The difference was very highly statistically significant. MDR Acinetobacter & MDR Pseudomonas both were more commonly isolated from male as compared to female patients. MDR Acinetobacter & MDR Pseudomonas were more commonly isolated from catheter tips, followed by blood. However, MDR Pseudomonas was not isolated from urine. Antimicrobial Resistance against Polymyxin E & Tigecycline was surprisingly high Conclusion: The high antimicrobial resistance of MDR Acinetobacter or MDR Pseudomonas was alarmingly high. Therefore, proper strategies should be formulated regarding use of antimicrobial agents.

Keywords: antimicrobial resistance; acinetobacter; pseudomonas; MDR; polymyxin E; tigecycline

Abstract ID: PP-3

ANTI-MICROBIAL RESISTANCE IN AGENTS CAUSING URINARY TRACT INFECTIONS
Zuhair Ali Rizvi, Ali Murad Jamal, Ali Hassan Malik, Naimat Ullah

Background: Urinary Tract Infections are usually treated with empirical therapy by physicians based on previous knowledge of predictability of causative agents and their antimicrobial susceptibilities.

Objective: The objective of this study was to determine the frequency of various pathogens causing urinary tract infections and their antimicrobial susceptibility in patients presenting in out-patient department of a tertiary care hospital.

Materials and Methods: This descriptive cross sectional study was conducted in Out-Patient department of Urology of Benazir Bhutto Hospital during a period of 6 months from January 2017 to June 2017 after ethical approval from institutional research forum of Rawalpindi Medical University. 1000 patients (12 years old or above) that were clinically suspected for urinary tract infections were included in this study. Patients with co-morbidities like diabetes mellitus, renal pathologies, Immunodeficiency disorders, malignancies and congenital urogenital disorders were also excluded. Recipients of corticosteroid therapy or with a history of intake of broad spectrum antibiotics in previous 15 days were also excluded. Modified Kirby-Bauer disc diffusion method was used for determining the antimicrobial resistance against various antimicrobials.

Results: A total of 530 (53%) isolates were found to be culture positive for E.coli(77.4%),Klebsiella (6.4%), Enterobacter (6.0%), Pseudomonas (3.8%), Staphylococcus saprophyticus (3.4%), Citrobacter (1.1%) and Morganella (0.4%). Antimicrobial resistance against commonly used antimicrobials was alarmingly high CONCLUSION: Surveillance of trends of antimicrobial susceptibility pattern is highly important.

Keywords: urinary tract infections, UTI, agents, anti-microbial susceptibility

Abstract ID: PP-4

A rare variant of Guillain-Barre syndrome after Chikungunya viral fever.
Sajid Hameed, Sara Khan

Chikungunya viral fever is a self-limiting illness that presents with severe debilitating arthralgias, myalgia, fever and rash. Neurological complications are rare. We present a case of a 36-year-old woman who presented with acute onset progressive difficulty swallowing and left arm weakness. She was diagnosed with chikungunya viral fever four weeks prior to admission. After investigations, she was diagnosed with a pharyngeal–cervical–brachial variant of Guillain-Barre syndrome. In hospital ,she required ventilator support... Her condition improved after five sessions of intravenous immunoglobulin with complete resolution within six months of symptom onset. With recent chikungunya outbreaks, the neurological complications are increasingly seen in the emergency department. The knowledge of these associations will result in early diagnosis and treatment.

Keywords: chikungunya; guillain-barre syndrome; pharyngeal–cervical–brachial variant

Abstract ID: PP-7

Quantitative Study of Antimicrobial Resistance Overwhelm in Slum Community of Karachi, Pakistan

Shamsher Moloo, Iqra Navroz, Richardson Joseph

Introduction: Antimicrobial resistance is a global health challenge and one of the greatest threats to health. Worldwide 3.4 % cases were estimated with diagnosis of multi-drug-resistant Tuberculosis, was resistant to rifampicin and isoniazid in 2010. Antibiotic have major advantages to human health but it's over and misuse have negative impact too. Every year patients died with Methicillin-Resistant Staphylococcus Aureus instead of Parkinson's disease, HIV/ AIDS and emphysema. In Karachi Pakistan, antimicrobial resistances become a serious dilemma due to its inappropriate use many people use antibiotics without any knowledge of it. So in this quantitative research 200 sample size were selected in which 34 (17.0%) participants fulfilled the complete course of antibiotic while 166 (83.0%) of them has denied. People who are on antibiotic's treatment, mostly use antibiotics as a source of self-medication and when feels better they dropped in the middle of it. People purchased antibiotics were 54 (77.0%) while 46 (23.0%) of them do not use antibiotics without prescription. **Methodology:** The data collected by a prepared questionnaire from the literature review and by using "WHO" questionnaire tool as well. This questionnaire completely based to perceive knowledge for antibiotic use, misuse and antimicrobial resistance. Key Words Antibiotic misuse, Lack of knowledge, resistance, antimicrobial agents, and excessive use. **Result:** In table, 63.33% responded that antibiotics are safe to use without prescription and 36.67% believed that antibiotics are not safe without prescription. This Table showed that 60.83% stated, when symptoms are prevented should stop the antibiotic course in the mid and 39.17% has denied. **Conclusion:** In the state of antimicrobial resistance the body loses its ability to kill the antigen efficiently. This study suggested that people does not have enough knowledge regarding safe use of antibiotic, which leads antimicrobial resistance.
Keywords: antibiotic misuse, lack of knowledge, resistance, antimicrobial agents, and excessive use

Abstract ID: PP-9

Fishing for vaccines against Vibrio cholerae using in silico pan-proteomic reverse vaccinology approach

Muhammad Rashid , Sammya Reham, Amjad Ali, Saadia Andleeb

Background: Cholera, an acute enteric infection, is a serious health challenge in underdeveloped and developing world. It is caused by Vibrio cholerae, after ingestion of fecal contaminated food or water. Cholera outbreaks have recently been observed in regions facing natural calamities (i.e. earthquake in Haiti 2010) or war (i.e. ongoing civil war in Yemen 2016) where healthcare and sanitary setups have been disrupted as a consequence. Whole-cell Oral Cholera Vaccines (OCVs) have been in market but its regimen efficacy has been questioned. Reverse vaccinology

(RV) approach has been applied as a successful anti-microbial measure for many infectious diseases.

Methodology: With the aim of finding new protective antigens for vaccine development, V. cholerae O1 (biovar eltr str. N16961) proteome was computationally screened in sequential prioritization approach that focused on determining antigenicity of potential vaccine candidates. Essential, accessible, virulent and immunogenic proteins were selected as potential candidates. The predicted epitopes were filtered for effective binding with MHC alleles and epitopes binding with greater MHC alleles were selected. Results: In this study, we report lipoprotein NlpD, Outer membrane protein OmpU, Accessory colonization factor AcfA, Porin, putative and Outer membrane protein OmpW as potential candidates qualifying all the set criteria. These predicted epitopes can offer a potential for development of a reliable peptide or subunit vaccine for V. cholerae.

Keywords: vibrio cholerae, reverse vaccinology, subunit vaccine, cholera

Abstract ID: PP-10

In silico Drug Repurposing via Chemical-Protein Interaction Analysis: Targeting Pyocyanin based virulence of Antibiotic resistant Pseudomonas aeruginosa
Muhammad Rashid, Parkha Tariq, Habiba Rashid, Saadia Andleeb

World Health Organization has classified Pseudomonas aeruginosa as one of top priority threat in terms of prevailing pandemic scenario of antibiotic resistant superbugs. This pathogen is widespread in healthcare settings and is listed as one of the top three nosocomial infectious agents. Susceptible population is vulnerable due to lack of vaccine availability to combat this opportunistic pathogen. Pyocyanin (PCN) is considered as prime virulence factor of P. aeruginosa among many others. A wide range of bioactivities have been attributed to this compound primarily based on is redox active nature. We attempted to exploit structural information of PCN in order to screen available drug pool for disrupting or reducing PCN production. In this proof of concept study PCN molecule's structure was studied for potential drug hit via studying chemical-protein interactome (CPI). The CPI data was used to identify query-drug interactions. Screening was performed and high probability hits were selected. The predicted targets were tested for inhibition of PCN production. Peperaquine showed remarkable inhibition of PCN biosynthesis. This predicted reported target may provide a basis for development of a reliable anti-virulence drug against acute and urinary tract infections by P. aeruginosa. The approach adopted here could be extended to other bacterial pathogens for potential immunogenic target predictions and ultimately successful drug development.

Keywords: pseudomonas aeruginosa, pyocyanin, chemical-protein interaction, anti-virulence

Abstract ID: PP-11

Evaluation of Pyocyanin induced Systemic Pathogenicity of Pseudomonas aeruginosa

Muhammad Rashid , Parkha Tariq, Habiba Rashid, Saadia Andleeb

Pseudomonas aeruginosa (PA) is one of most clinically significant nosocomial infectious agent. Clinical significance of this bacterium is intensified due to phenomenon of its natural tendency for acquiring drug resistance mechanisms. PA produces Pyocyanin (PCN), an important redox active virulence factor. PCN has been detected in higher quantities in sputum samples of PA infected Cystic Fibrotic patients. PCN producing PA strains were isolated and characterized. Genomic 16S rRNA gene segment was amplified and sequenced (GenBank accession # JX280426). PCN was extracted and purified. In silico analysis yielded permeability and cytotoxic potential of PCN in modeled cell lines. PCN has high intestinal absorption, plasma protein binding potential, and permeability across biological membranes. Oral toxicity study in in silico rodent model classified PCN in class IV 'harmful if swallowed' (LD50 0.3-2g/kg). Cytotoxicity was assessed by oxidative stress levels in different organs in balb/C mice induced by intra peritoneal PCN injection. Significant alterations in oxidative stress levels in different organs of balb/C mice were observed. Increased levels of oxidative stress were observed in lungs, and heart, lower in liver and spleen while muscle tissues showed no significant difference in comparison to control.
Keywords: pseudomonas aeruginosa, pyocyanin, cytotoxicity, oxidative stress

Abstract ID: PP-12

In vitro Synergistic Effect of Honey and Olive Oil Against Extended Spectrum β-lactamase Producing Bacterial Strains Isolated from Diabetic Foot Ulcers (DFUs) Patients

Qurrat-Ul-Ain Shah

Honey has been reported for therapeutic properties which includes antibacterial activity in vitro and anti-inflammatory and wound healing properties in vivo. The aim of this study was to assess the antibacterial potential of Manuka honey and extra virgin olive oil (EVOO) against Extended spectrum β-lactamase (ESBL) producing strains of bacteria isolated from Diabetic Foot Ulcer (DFUs). A total of 30 ESBL producing bacteria were isolated from 100 pus samples collected from DFUs patients at Hayatabad medical complex, Peshawar. Dilutions of Manuka honey with distill water and olive oil with Dimethyl sulfoxide (DMSO) were made. Agar well diffusion method was used to determine the antibacterial sensitivity of Manuka honey and EVOO alone and in combination. The present study shows that honey in its diluted form is effective against Pseudomonas aeruginosa, Escherichia coli, Klebsiella pneumoniae and Proteus vulgaris. Honey at a concentration of 25% and 100% inhibited only K. pneumoniae and E. coli. Excellent antibacterial activity of honey was observed at 50% and 75% dilutions, where it killed all strains of bacteria. In case of EVOO, no zones of inhibition were seen at 25% and 100% while at 50% and 75% zones of inhibition ranging from 12-15mm were observed. When used synergistically, it was observed that all the bacterial strains were killed at concentrations of 25%, 50%, 75% and 100% of honey and olive oil. Zones of inhibition ranging from 12mm-19mm were observed for the tested bacteria. This showed an increase in the inhibition zones for all the bacterial strains

when used synergistically. Honey and olive oil in synergism possess strong antibacterial potency against ESBL producing strains of bacteria isolated from DFUs, and thus can be used as a valuable tool by medical staff involved in diabetic foot management.
Keywords: ESBLs honey olive oil diabetic foot ulcers

Abstract ID: PP-14

Emergence of enterococcus with increased minimum inhibitory concentration to daptomycin during treatment with daptomycin in a patient with myelodysplastic syndrome and successful clearance with linezolid.
Ali Aziz, Stephen Smith

Abbreviations: VRE:Vancomycin resistant enterococcus; MIC: Minimum inhibitory concentration Introduction: Antimicrobial resistance to enterococci continues to be a problem, despite the development of new drugs with activity against VRE. We discuss a case of immunocompromised host with VRE bacteremia, who failed to respond to daptomycin after isolate's MIC was increased. Linezolid has shown effectiveness against VRE after other therapies have failed. Prospective randomized controlled trials are needed to confirm long-term effectiveness of linezolid against VRE.
Case: An 80-old male with history of severe myelodysplastic syndrome was admitted with fever and found to have VRE bacteremia. This E. faecium isolate's daptomycin MIC was 0.5 µg/ml. The source of the VRE bacteremia was not discovered. He completed 6 weeks of daptomycin therapy. Follow-up blood cultures obtained 2 weeks after cessation of daptomycin were negative. Four months later patient was admitted again with fever and found to have recurrent VRE bacteremia. The daptomycin MIC had increased from 0.5 to 4.0 µg/ml. The new isolate was sensitive to linezolid and tigecycline. He was re-started on daptomycin, because of his severe thrombocytopenia. Transesophageal echocardiogram, gallium scan, MRI spine and renal imaging were unremarkable for any source of infection. His blood cultures continued to grow VRE for 18 days of daptomycin treatment. The patient was subsequently switched to linezolid 600 mg Q12. His blood cultures became negative after 6 days of linezolid treatment. He was discharged to complete 8 weeks of total antibiotics, 2 weeks of linezolid alternating with 2 weeks of tigecycline. Blood cultures drawn a month after completing linezolid-tigecycline therapy were negative.
Discussion: Current therapeutic options for VRE-ampicillin resistant bacteremia include daptomycin, linezolid, quinupristin-dalfopristin and tigecycline. Daptomycin is considered to be the most effective. Daptomycin has bactericidal activity; the others are bacteriostatic. The mechanism of daptomycin decreased susceptibility occurs from reduced diffusion of daptomycin into the bacterial cells, felt secondary to their thickened cell walls. Possible measures to avoid the development of daptomycin tolerance include the use of higher doses of daptomycin in combination with a second, effective agent. Linezolid inhibits bacterial ribosomal protein synthesis. Being bacteriostatic, linezolid should not be considered first line agent for VRE. However, linezolid can be used if other therapies have been ineffective. A meta-analysis of retrospective cohort studies showed that use of daptomycin carries higher 30-day all-cause mortality than linezolid despite having equal effectiveness. One of the major side effect is

pancytopenia for which reason it cannot be used long-term. Prospective randomized controlled trials are needed to confirm long-term effectiveness of linezolid against VRE.

Keywords: vancomycin resistant enterococcus, vancomin, daptomycin, linezolid

Abstract ID: PP-15

Some studies on microbial spoilage of commercially available fruits
Salman Ranani, Sarmad Muhammad Soomar

Background: Microorganisms are everywhere. They can be found in the air, in water, in soil, on animals, and even on humans. Some are beneficial, such as those used to make fermented dairy and meat products. Others cause spoilage of various food products. Eating fruits is a healthy practice due to its nutritional composition but when it gets spoiled by microbes, it can be harmful for human consumption. Microorganisms have been reported to cause extensive deterioration of fruits. Some of these microorganisms cause rotting, discoloration or fermentation of the fruits which affect their preservation.

Aim of study: Research was done to identify and analyse microbial diversity that cause the spoilage. Methodology: Pour plate method was used for the isolation of microbes from spoil fruit. A portion of the fruit was aseptically inoculated into the beaker; it was homogenized and then diluted. The colonies were identified by standard bacteriological procedures. Gram's staining was performed to determine if the organism is gram negative or gram positive. Further confirmatory biochemical tests were done such as catalase, coagulase and oxidase. The identification of the isolated fungi was done both macroscopically and microscopically. Results: This research revealed that the rotten or spoiled fruit possess appreciable number of microbes. The Microorganisms isolated and observed were bacteria and fungi majorly. This is due to various processes taking place in the rotten fruit which favoured bacterial and fungal growth. It could also be as a result of the moisture content of the fruit as well as the difference in the nutritional composition of the fruits. This work finds that there are microorganisms that could be responsible for inducing spoilage in the fresh fruit.

Conclusion: Fruits are a good source of nutrient and could be used for many applications. However to reduce the susceptibility of the fruit to microbial spoilage and to ensure its effectiveness in different applications and safety measures should be taken. Hence if you want to prevent spoilage of food by micro-organisms, you must remove the conditions which are appropriate for their growth and preserve them with the best possible techniques

Keywords: food, safety, spoilage, microbial, commercial, fruits

Abstract ID: PP-19

Bioinformatics pipeline for predicting drug resistant M. tuberculosis from whole genome sequencing data to identify the role Efflux pumps
Safina Razzak Abdul , Zahra Hasan, Rumina Hasan, Sadia Shakoor

Background: Tuberculosis (TB) has a very high global burden, around 10.0 million people developed TB disease in 2017 out of which 5.8 million were men, 3.2 million were women and 1.0 million were children. Pakistan ranks 5th amongst high TB-burden countries. Tackling drug resistance is critical to ending the TB epidemic, hence, there is an urgent need for internationally recognized rules for the unambiguous clinical interpretation of genetic changes that can predict phenotypic resistance to anti-TB drugs. Active efflux of drugs mediated by efflux pumps that confer drug resistance is one of the mechanisms. Whole genome sequencing (WGS) based of target genes allows identifications of single nucleotide polymorphisms (SNP) that may be associated with drug resistance.
Methods: To understand SNPs in drug efflux genes we, initially, we focused on 10 genes to pull out SNPs and INDELs (insertion/ deletions) on three MTB isolates. Further, we will run the same on 25 Efflux pumps genes in 800 MTB isolates. The data and its phenotypic drug susceptibility testing (DST) information were identified using ReSeqTB platform and extracted the SRA numbers of these isolates which were than download from ENA database. We developed customized pipeline to identify efflux gene targeted variants.
Results: In the preliminary analysis, we were able to get a total of 39 SNPs and 4 INDELS (ranging from 10 – 47bp). The SNPS were then further annotated using TBVAR that identified a deleterious mutation (G/C) on 228168 position in Rv0194 (multidrug ABC transporter) in three of the isolates that were from MDR, Pre-XDR and XDR datasets and a novel SNP on position 228069(G/A). Further, in this work we will analyse four sets of MTB phenotypes (Susceptible, multidrug resistant-MDR, Extensively drug resistant XDR, and MDR fluoroquinolone resistant – Pre-XDR) comprising of n=800 isolates from all 7 lineages
Conclusion: Through this we will establish a novel bioinformatics pipeline to analyse MTB genomes for SNPs in the genes of interest. The same can be applied to other pathogens. The future for rapid diagnosis and treatment of drug resistant TB is the combination of WGS based diagnostics with personalized medicines to treat TB.
Keywords: bioinformatics, AMR, mutations, efflux pumps, MTB

Abstract ID: PP-20

A comprehensive bioinformatics analysis and deep learning model for Mycobacterium Tuberculosis
Safina Razzak Abdul , Kamran Azim, Zahra Hasan

The progression in the development of next-generation sequencing (NGS) technologies has been revolutionized due to the decrease in the sequencing cost and latest bench-top availability of the sequencing NGS instrument. As a result, it has increased the chances of whole-genome sequencing (WGS) technology to be used for bacterial strain characterization and identification

as a routine tool in laboratory testing (Walker et al., 2017). This advancement has significantly prompted the epidemiological reconnaissance of substantial pathogens, for example, the Mycobacterium tuberculosis (MTB) (Dheda et al., 2017; Merker et al., 2017; Walker et al., 2018; Zignol et al., 2018). In 2017, TB remains one of the major concern and one of the 10 leading causes of death worldwide, with 10 million new cases due to the constant rise of multidrug resistant MTB strains (MDR-TB) (WHO, 2018). This project aims for the development of a variant calling pipeline for targeted genes to characterize genome variation in MTB by determine SNPs associated with drug resistance in four first line anti-tuberculosis drugs that includes Isoniazid (INH), Rifampicin (RIF), Ethambutol (EMB) and Streptomycin (STR). As well it will also develop a deep leaning resistance prediction model for genes that makes the MTB strain resistant against EMB anti-TB drug. An automated pipeline for MTB NGS data analysis along with a gene resistance prediction model will help clinical reporting of tuberculosis and its resistance against the drugs for better prognosis and treatments.
Keywords: bioinformatics, AMR, MTB, ML

Abstract ID: PP-23

PREVALANCE OF ANXIETY AMONG MEDICAL AND ENGINEERING STUDENTS OF KARACHI

Sarfraz Ahmed, Kiran Abdullah, Abdul Ghani

Background: Anxiety is an emotion characterized by feelings of tension, worried thoughts and physical changes such as palpitations of heart consistent with panic attacks, sweating, dizziness, nausea and sometimes chest pain. Anxiety is different from fear. Anxiety serves as the body's warning system, the brain's way of telling the body that something bad could happen. This response relates to but is distinct from fear which alarm us when something actually dangerous is happening or just about to happen. The fear of today can lead to the anxiety of tomorrow. The aim of objective is to determine the causes of anxiety among students.

Methodology: A cross sectional study was carried out among students of different medical & engineering universities of Karachi in August 2018. The participants including both males and females students were composed of 250 medical students and 150 engineering students. A simple stratified sample was used for sampling. Data was collected using questionnaire in written form. The questionnaire was categorized in demographic pattern.

Results: Findings showed that total of 64% medical students suffering from depression/anxiety in which 49% of medical students suffering moderately from depression and 14% suffering from severe depression. On the other hand total of 36% engineering students suffering from depression/anxiety in which 28% from moderate depression and only 8% of them on high rate of severe depression. Medical students (49%) are also more susceptible to higher anxiety then engineering students (28%).The significance relation between depression was formed including the non-significance relation between anxiety.

Conclusion: The results showed that most medical students were depressed and they are suffering from anxiety than those of engineering students. Moreover anxiety can be prevented among medical and engineering students by different psychological therapies and physical activities rather to avoid use of drugs to overcome anxiety. Yoga, physical exercises and other

stress management techniques should be taught to students at their younger age and be motivated to follow the same

Keywords: anxiety, medical engineering students

Abstract ID: PP-25

CHIKUNGUNYA ENCEPHALITIS: EXPECT THE UNEXPECTED!!!
Muhammad Owais Hashmat, Durreshahwar, Iffat Khanum

Chikungunya is an arboviral infection caused by chikungunya virus transmitted by Aedes mosquito worldwide. It usually manifests as self-limiting acute febrile illness with rash, body ache and arthalgia; and in some patients symptoms persisting to months or even years. Neurological manifestations are uncommon. In recent years Pakistan and adjoining neighboring region has been hit several times by its epidemics. We are reporting a case of middle aged male presented in our hospital with acute febrile illness along with neurological manifestations. Extensive laboratory investigations were done and serology was IgM+ for chikungunya virus. He was treated symptomatically and patient recovered without any complication. Although previously cases of chikungunya meningoencephlitis have been reported in Pakistan during epidemics; however; such cases have not been reported as non-epidemic so far .
Keywords: meningoencephalitis, fever, seizure

Abstract ID: PP-26

Cerebral amyloid angiopathy: A rare cause of intracerebral bleed among younger patients
Muhammad Owais Hashmat, Saad Shafqat, Arfa Amjad

Cerebral amyloid angiopathy (CAA) is a disorder characterized by amyloid deposition in the walls of leptomeningeal and cortical arteries, arterioles, and less often capillaries and veins of the central nervous system. It occurs mostly as a sporadic condition in the elderly, its incidence associating with advancing age1. CAA and Alzheimer disease frequently co-exist. CAA may also be associated with a vascular dementia. Hereditary forms of CAA are generally familial (and therefore rare in the general population), more severe and earlier in onset. Sporadic cases with earlier onset are even rarer. We report a case of a younger patient presented with intracerebral bleed with no prior history of ICH or similar event in family.
Keywords: intracerebral bleed, cerebral amyloid angiopathy

Abstract ID: PP-27

Antibiotic Stewardship Model- Financial impact with maximized patient safety in Surgical-ICU of resource limited country

Kashif Hussain, Faisal Khan, Gul Ambreen, Syed Shamim Raza

Background and Learning Objective: Antibiotic resistance (ABX-R) is more alarming in lower/middle-income countries (LMICs), with existing challenges of over/misuse of antibiotics, infection prevention and control and lower vaccination rate Higher antibiotics use in ICU is due to high admission rate of sepsis (healthcare-associated infections/prophylaxis in the perioperative period) a key-factor in ABX-R development. Implementing stewardship and optimizing antibiotic use by improving the effectiveness of interventions through a range of implementation strategies. Target Audience: Physicians, Pharmacists, Nurses

Method: A Customized Multidisciplinary-team driven ASP pilot project based on prior authorization, prospective-audit-with-feedback was conducted in the open-multidisciplinary adult surgical intensive care unit. Supplemental strategies were employed before starting ASP, like infectious disease (ID)-training of the pharmacist, educational sessions for practitioners. The team consisted of Intensivist, ID pharmacist, critical care nurse, microbiologist, and ID-physician. Study duration of 4 months (April-July2018).ID-pharmacist recorded the interventions. Antibiotic use measured in terms of defined daily dose (DDD), mean duration and cost of therapy. Result: 123 and 125 patients were in historical control and intervention group respectively.

Results: compared with historical control. Total 90 interventions were done by the stewardship team. The largest reduction was observed in the DDD of Ceftriaxone and cefazolin

Keywords: antibiotics, evidence, guidelines, stewardship

Abstract ID: PP-28

Clinical isolates of Candida albicans impair neutrophil extracellular traps (NETs)

Hamayail Ansari, Chad J. Johnson, Jeniel E. Nett

The immune system functions to combat foreign pathogenic species in the human body by preventing or limiting infection through complex and pervasive methods. One such antimicrobial method involves capture and inactivation of microbes through neutrophil extracellular traps (NETs) that are comprised of chromatin, histones and granule proteins. Neutrophils are an integral component of the immune system for controlling fungal infections and release of NETs acts as defense against pathogens, including Candida albicans. Fungal species such as those of the Candida genus often reside on the surfaces of human skin and mucous membranes. In an immunocompromised host, they may rapidly develop from harmless commensal organisms into invasive, life-threatening infectious agents. Past studies have found Candida albicans form surface adherent communities called biofilms that increase resistance to the immune response due to the protected niche created by the matrices for the microorganisms. Biofilm formation results in impaired release of NETs and improved fungal survival. In this study, we examined interactions between neutrophils and the clinical isolates of C. albicans with

distinctly varied morphology. These studies illustrate impaired NET release in response to biofilm for a variety of C. albicans strains.

Keywords: medical microbiology, immunology, candida albicans, biofilm

Abstract ID: PP-32

Audit of methods for Direct Susceptibility Testing of blood culture isolates: Effect of dilution of inoculum on susceptibility results
Ghazala Shaheen, Asima Shahid, Sidra Laiq, Shumaila Taifiq, Erum Khan, Sadia Shakoor

Background: Direct susceptibility testing (DST) from blood cultures (BCs) reduces time to appropriate antibiotic administration, and identification of resistance. Previous studies have observed over 90% agreement between DST and standardized testing with 0.5 McFarland (ST). Several methods are proposed for DST. For gram negative organisms, the American Society for Microbiology (ASM) proposes inoculum (BCs broth) dilution in Tryptic Soy Broth (TSB) as DST method. However, direct inoculation saves time and effort and circumvents the problem of laboratory-introduced contamination.
Objectives: To ascertain the percentage of very major, major and minor errors and categorical agreement for DST without dilution (DSTWD) and ASM method with ST from positive BCs. Methods: Three DST methods were compared in parallel from positive BCs. After 18+2 hours of incubation, zone diameters were measured and interpreted as per CLSI 2016 guidelines. Standard 0.5 McFarland of organisms were prepared and ST was performed and results were recorded after 18+2 hours. Results of DSTWD, and ASM method were compared with ST.
Results: Overall, 34965 results were obtained, entered into MS Excel for analysis. Excellent agreements were obtained between the direct method and standard method. Acceptable levels of 3%, 3% and 10% minor errors were observed for Salmonella spp against ciprofloxacin, for imipenem and piperacillin/ tazobactam against Enterobacteriaceae respectively. Unacceptable Very Major Errors 33.3% (n=2) were observed for amikacin against P.aeruginosa. Conclusion: DSTWD from positive BCs is acceptable and reduces turnaround time and contamination. Results should be repeated by ST for amikacin against P.aeruginosa.

Keywords: blood cultures, direct susceptibility, dilution

Abstract ID: PP-33

A blueprint for developing an Individualized Quality Assurance Plan (IQCP) for antimicrobial susceptibility testing in laboratories situated in resource limited settings
Asima Shahid, Sadia Shakoor

Background: Antimicrobial Susceptibility Testing (AST) requires stringent quality control (QC) and quality assurance (QA) measures to avoid errors and to ensure that any commercial products or systems are functioning as claimed by the manufacturer. From 2016, the College of American Pathologists requires laboratories to implement Individualized Quality Assurance Plans (IQCP) as QA process. Exercises recommended include validation/ verification, daily or weekly quality control, competency assessment, and proficiency testing. Since these exercises require

availability of reference material and trained personnel to monitor, these are often compromised in resource limited settings.

Objective: To devise a cost-effective strategic planning tool for AST QA and ongoing validation for microbiology laboratories in low resource settings.

Methods: We adapted the Logical Framework Matrix (LFM) for developing a flexible tool for microbiology laboratories to use for individualized QA. We used the Clinical Laboratory Standards Institute and the European Standards (EUCAST) recommendations for Objectively Verifiable Indicators (OVI), Means of Verification (MOV), and Important Assumptions (IA). Results: A brainstorming exercise was undertaken to develop the project planning LFM. Microbiologists with experience of local supply chains and laboratory technical process were involved in the process. The resulting LFM highlighted the following as key areas for IQCP in AST: verified reagents, validated methods, competent personnel, inventory management, equipment maintenance, and availability of biomedical services. OVI, MOV, and IA are described in the Table. Conclusions: LFM are effective tools to develop individualized plans for QA. LFMs can then be used as a blueprint to inform more technical IQCPs. In resource limited settings, validation of low cost reagents and supply chain management should be a part of IQCPs to ensure quality is not compromised for cost and supply interruption does not result in service interruption.

Keywords: IQCP, logic framework matrix, quality assurance

Abstract ID: PP-36

Resistance Patterns of Acinetobacter spp and Klebsiella spp from clinical specimens from Sindh Institute of Urology and Transplantation
Sunil Dodani, Asma Nasim, Zaheer Udin Babar,

Objectives: Infections with multidrug resistant gram negative organisms have become a major cause of morbidity and mortality in tertiary care hospitals worldwide. It is important to find the resistant pattern of these organisms for appropriate empirical antibiotics before the culture results. Our objective is to determine the resistance pattern of Acinetobacter spp and Klebsiella spp from different clinical specimens in our setting.

Methods: Sindh Institute of Urology and Transplantation (SIUT) is a tertiary care hospital in Karachi, Pakistan. It includes variety of services like urology, nephrology, transplant, oncology and medical and surgical ICUs The computerized data of blood, respiratory isolates (Sputum, BAL, tracheal) and urine cultures were retrieve in 2016. The data of Acinetobacter spp and Klebsiella spp was taken. The resistance pattern of ceftriaxone (only Klebsiella), piperacillin-tazobactam, ciprofloxacin, amikacin and imipenem were compared between different samples.

Results: In Klebsiella, ceftriaxone resistance was 78% in respiratory specimen, 80% in blood and 70% in urine. Piperacillin-tazobactam resistance was 45% in blood culture isolates whereas it was 58.5% in respiratory isolates and it was 38% in urinary isolates. Imipenem resistance was 28% in blood whereas it was 46% in respiratory isolates and in urine it was 22%. Acinetobacter was resistant to most antibiotics in all isolates as compared to Klebsiella. Piperacillin-Tazobactam and Imipenem resistance was 44% and 44% in blood samples and 54% and 53% in urine. Both Piperacillin-Tazobactam and Imipenem resistance were 99% in respiratory isolates. Conclusion: Resistance to broad spectrum antimicrobials has been higher for both organisms

with an almost 100% carbapenem resistance in respiratory isolates in Acinetobacter spp. We need better infection control measures to contain these.

Keywords: multidrug resistant gram negative organism

Abstract ID: PP-37

PREVALENCE OF MALNUTRITION IN TEHSIL CHAGAI DISTRICT CHAGAI BALOCHISTAN

Sarfaraz Ahmed, Safi Ullah, Kiran Abdullah

Introduction: Malnutrition refers to deficiencies, excess or imbalance in person's intake of energy and nutrients. Malnutrition is widely recognized as a major public health problem in developing countries of the world include Pakistan. Based on United Nations Children's funds reports (UNICF). Malnutrition in early childhood has serious, long term consequences because it delays motor, sensory, cognitive social and emotional.

Methodology: The survey was conducted by Food For Peace Project (FFPP) in their screening survey camps of malnutrition in tehsil Chagai district Chagai Balochistan.The screening was measured by Mid Upper Arm Circumference (MUAC) is circumference of the left upper arm, measured at the mid-point between the tip of the shoulder and tip of the elbow.This is used for assessment of nutritional status. Its normal range is (13.5). Between 11.5 and 13.5.severe acute malnutrition (SAM) and below this range they are chronic severe malnutrition (CSM).Total 1052 children was screened from December 2018 to May 2019 between 6 months to 2 years children and total male children were 674 and female children were 378. **Result:** Based on MUAC the overall prevalence of malnutrition among children of tehsil chagai district Chagai was 37% and out total figure malnutrition male were 18% and female 69%. Malnutrition's were divided in three groups SAM 74%, CSM 11% and Hilly areas 15%. The prevalence of SAM was with higher prevalence as compared to CSM and well nourished. The prevalence of SAM was with higher prevalence in Hilly areas as compared Urban areas of tehsil Dalbandin. The significant was seen between Malnutrition and gender of children,birth order,social catagries to Hilly tribes,literacy status of parents and type of family. **Conclusion:**Malnutrition is an health emergency and its serious condition.The prevalence of SAM is with higher prevalence. The mother should breast feed their children for 1 year because their mothers are also deficits in nutrients. .The UNICF, WHO and health department should work in Hilly areas of tehsil Chagai because there is higher prevalence of malnutrition they provide dry milks, foods and helped them. And specially Government of Balochistan thanks to FFPP team they are working day night for malnutrition children in overall district. Keywords MUAC=Mid Upper Arm Circumference, CSM=Chronic Severe Malnutrition, SAM=Severe Acute Malnutrition, FFPP=Food for Peace Project, WHO=World Health Organization, UNICF=United Nation Children Fund.

Keywords: MUAC=mid upper arm circumference, CSM=chronic severe malnutrition, SAM=severe acute malnutrition, FFPP=food for peace project, WHO=world health organization, UNICF=united nation children fund.

Abstract ID: PP-38

Extensively Drug Resistant Typhoid- Clinical Data from a Tertairy Care Hospital
Zaheer Babar, Maliha Azmi, Asma Nasim, Sunil Dodani

Introduction: In wake of the ongoing outbreak of XDR typhoid fever, we reviewed 28 cases from January- October 2018 who tested positive for extensively drug resistant salmonella typhoid to see trend in clinical presentation, treatment outcomes and demographic variables.
Results: A total of 28 cases were treated and followed, 1 patient died before he was diagnosed. Seventy percent of our cases belonged to Karachi and majority was from Karachi East and west followed by South. Half the patients had received empirical antibiotics commonly cefixime and co- amoxiclavulanate. 32% of patients were less than 5 years of age. Majority of patients had symptom duration of up to 2 weeks to a month. While malaise, fever and diarrhea were common symptoms 11% of patients had acute renal injury and needed dialysis. Furthermore, 2 patients presented with gut perforation, 1 with appendicitis and 1 with rectal bleeding. We found drinking water to be a common cause and the percentage from various sources in given in table. Regarding the treatment, 21% of patients were treated with carbapenem and 32% with azithromycin while 46% with both antibiotics. Average time to fever defervescence was 7 days and average hospitalization of 7 days. All our complicated cases required prolonged hospitalization and were treated with carbapenem alone with recovery except 1 patient with colonic ulcers who was given combination due to persistent fever on day 14. Conclusion: Stable patients who can tolerate orally can be started on azithromycin while patients with complications, aged less than 5 who are unable to tolerate orally or are hypotensive should be treated with intravenous carbapanem. Although combination is not needed it may be important in countering possibility of resistance to azithromycin in future.
Keywords: extensively drug resistant , typhoid

Abstract ID: PP-39

Resistance to Serious infections.
Muhammad Farooq, Muslehuddin Paracha

Introduction: Antimicrobial Resistance arises when the microorganisms which cause infection are able to survive treatment by medicine that would normally kill them.AMR is serious, shared global problem.Resistance is a natural process, exacerbated by widespread therapeutic use of With in this, antibiotics resistance is ability of bacteria to grow in the presence of an antibiotic that is usually sufficient to kill bacteria of that species.
Methodology: WHO's new Global Antimicrobial surveillance system (GLASS) reveals widespread occurrence of antibiotics resistance among 500000 people with suspected bacterial infection across 22 countries. Who is encouraging all countries to set up good surveillance system for detecting drugs resistance that can provide data to this Global system.52 countries are enrolled in WHO's Global Antimicrobial Surveillance system.for the first report,,40countries provided information about their national surveillance system and 22 countries also provided data on level of antibiotic resistance. The most commonly reported resistance bateria were E.Coli, klebsiella, pneumonia, staphylococcus aureus, streptococcus pneumonia followed by

salmonella.however,Who is supporting more countries to set up national Antimicrobial resistance surveillance system that can produce reliable, meaningful data .GLASS is helping to strandardize the way that countries collect data and enable a more complete picture about Antimicrobial resistance pattern .

Conclusion: Among patient with suspected infection,the most commonly used antibiotics ranged tremendously between different countries from zero to 82%. Resistance to penicillin-the medicine used for decades world wide to treat pneumonia-ranged from zero to 51% among reporting countries.Moreever, between 81%to 65% of E.coli associated with urinary tract infections presented resistance to ciprofiloxin,an antibiotic commonly used to treat this condition. Solid drugs resistance surveillance programmes in TB,HIV and malaria have been functioning for many years and have helped estimate disease burden, plan diagnostic and treatment services , monitor the effectiveness of control intervention and design effective treatment regimen and prevent future resistance.

Keywords: sheikh

Abstract ID: PP-41

ANTIMICROBIAL ACTIVITY OF FOSFOMYCIN AGAINST MULTI-DRUG RESISTANT URINARY ISOLATES

Muhammad Atique, Farhan Rasheed, Amir Razzaq, Muhammad Ilyas

Introduction: Urinary tract infections (UTIs) are among the most commonly occurring human infections. UTI is caused by various Gram-positive and Gram-negative bacteria. MDR was defined as resistance to at least one agent of three or more antibiotic classes. Fosfomycin has been introduced for the treatment of UTIs and systemic infections caused by MDR Gram-negative bacteria and Gram-positive bacteria, especially Enterobacteriaceae that are resistant to traditional antimicrobial agents. Fosfomycin is a broad-spectrum bactericidal antibiotic that interferes with cell wall synthesis in both Gram-negative and Gram-positive bacteria.

Materials and Method: Patients with confirmed with MDR isolates from July 2017 – January 2018 were recruited to the study. Their urine culture and antibiotic susceptibility reports were evaluated after obtaining informed written consent.

Results: A total of 351 Multi-drug resistant isolates were recovered from the urine samples. On balance 283 of them were sensitive (80.6%) and only 68 were resistant (19.4) to Fosfomycin. MDR isolates were grouped as Gram-negative rods (80.6%) and Gram-positive cocci (19.4%). The most frequently isolated organism in the urine samples of patients is Escherichia coli (51.3%), Klebsiella species (16.2%), Enterococcus species (14.8%), Pseudomonas species (6.0%), Staphylococcus saprophyticus (2.3%) Staphylococcus aureus (2.3%), Acinetobacter species (3.4%), and Proteus species (2.3%) . Susceptibility to Fosfomycin Escherichia coli (55.0%), Enterococcus species (16.3%), Klebsiella species (15.5%), Pseudomonas species (5.1%), Coagulase Positive Staphylococcus (2.8%), Coagulase Negative Staphylococcus (2.4%), Proteus species (1.7%) and Acinetobacter species (1.0%) respectively.   Conclusion: Our study showed that 82% of MDR urinary isolates from urine samples were susceptible to Fosfomycin.

Keywords: UTI: urinary tract infection, MDR: multi-drug resistance.

Abstract ID: PP-43

Becoming my child's doctor: A qualitative phenomenology of parents' perception on use of antibiotics on their own

Shelina Bhamani, Hasanain Faisal Ghazi, Lumaan Sheikh, Rukhsana Naushad & Shirin Irfan Bhimani

One of the most contributing factors to antimicrobial resistance is the unstructured, unguided, and access use of antibiotics. It is observed in many countries that usually people take antibiotics & over the counter medications on their own without any doctor's consultation. Even when visiting doctors, the preference is to have antibiotics prescribed for a quick recovery and prevention of encountering it again. This is also a noticeable trend in the parents of young children, specifically, in urban setups. This research study aimed at exploring the practices and perceptions of parents regarding the use of antibiotics and over the counter medicines for their children's health and wellbeing. The study administered a qualitative research paradigm using phenomenological design, using a non-purposive sampling method, a total number of 10 parents were approached to be a part of this study with a preset inclusion criterion from which 8 willingly agreed to become part of it. The data was collected using semi-structured interview guide for in-depth interviews from each of the participants. The major themes emerged from the study entails that urban parents usually use medications without doctor's prescription, parents expect doctors to prescribe antibiotics for quick recovery, parents not trusting the medical stores for quality and expiry of medications, medications prescribed are expensive so alternatives are proposed, antibiotics provision without prescriptions in drug stores go unpunished, and general perception of wasting money for same advice by the child's doctor. These underlying perceptions calls in for action by the health practitioners of raising stakeholders knowledge, conducting association studies to build strong evidences of factors that determine antimicrobial resistance in young children, and proposing critical legal implications on policy for antibiotic prescription and its access to the general public.
Keywords: AMR resistance, education AMR, practices in AMR

Abstract ID: PP-44

Culture Proven Prescribing of Restricted antimicrobials in stewardship at tertiary care hospital

Mahreen Muzammil, Kashif Hussain, Zainab Qadir,

Background: Antibiotic stewardship program (asp) has coordinated interventions designed to improve and measure the appropriate use of agents by promoting the selection of the optimal antibiotic regimen including dose, duration of therapy, and route of administration. It results in decrease resistance. Most strong intervention of asp is prior authorization from trained infectious disease clinicians or Pharmacists. Purpose: To determine prior authorization implementation within hospital, trend of sending cultures and positive results for cultures.

Method: All antibiotics which are defined as restricted in hospital stewardship protocol that is linezolid, fosfomycin intravenous, septran intravenous, caspofungin, tigecycline were checked for approval from infectious diseases and culture sensitivity.

Results: In one month period (May-19) total 39 patients were prescribed restricted antibiotics after approval from infectious diseases expert, cultures were sent for all patients and 74% cultures reported to be positive.

Keywords: restricted antibiotics, culture, antibiotic stewardship

Abstract ID: PP-48

Unawareness toward Tuberculosis is still a Frightening Aspect for Accelerating the Risk of this Contagious Health Problem in Pakistan

Shamim A Qureshi, Rabia Haq, Faryal Gul

Background: Awareness of tuberculosis (TB) is as important as its diagnosis and treatment. It is one of the 10 main causes of death worldwide as more than 1.6 million deaths were in its account in past year. Pakistan is also a big victim of this infection as 70,000 lives are losing annually with more than 400,000 new cases are reporting every year. Despite the fact that the government of Pakistan is running an effective World Health Organization (WHO) funded TB control program that include cost free treatment and trying to have 100% access to TB patients but still life style of people living in few under privileged areas of Pakistan, unawareness among them and multidrug resistant are accelerating the severity of this curable health problem.

Objective: A cross-sectional questionnaire based study was conducted to assess the perception towards TB among patients visiting family medicine clinic of tertiary care hospital in Karachi, Pakistan from December 2017 to June 2018.

Results: A total of 507 persons (183 males and 324 females) visiting family medicine clinic including patients and their care takers were enrolled. Most of them were uneducated, married and belonged to rural area with below average income status. Smoking was common in males while use of beetle nuts was observed more in females. Beside diagnosed TB patients, 150 visiting persons with or without symptoms were also found TB positive.

Conclusion: It was found life style, nutritional & addiction status, negligibility of taking precautions during infection & healthy diet to prevent its recurrence, cultural restrictions, shyness to share and of course these are all because of unawareness towards TB which stopping people to seek help and falling prey to this deadliest infection.

Keywords: cross-sectional study, family medicine clinic, unawareness, tuberculosis

Abstract ID: PP-49

Optimum time for antibiotic prophylaxis prior to surgical incision in open heart surgery in adults

Nabeel Sheikh, Khwaja Muhammad Talha, Aleezay Asghar, Nabeel Ashfaque Sheikh

Introduction: Surgical site infection (SSI) is the most common hospital acquired infections in surgical patients. To reduce the burden of SSIs, several preventative measures have been recommended, including antibiotic prophylaxis. According National Surgical Infection Prevention Project (NSIPP), patients should be given intravenous antibiotics prophylaxis within

one hour before incision and research is being done to ascertain whether greater precision would further diminish the risk of SSIs.

Objectives: Our primary objective is to determine whether the time at which antibiotic prophylaxis is given pre-operatively has a correlation with the incidence of SSIs in patients undergoing open heart surgeries and if so, what is the optimum time for antibiotic administration. The secondary objective of this study is to determine whether the NSIPP guidelines regarding antibiotic prophylaxis are being implemented in the Aga Khan University Hospital (AKUH).

Methods: We conducted a retrospective cohort study with 410 patients undergoing open heart surgeries in 2016. We excluded cases involving the pediatric age group, reopening of surgical sites and patients with low cardiac output syndrome. Additionally, we took note of possible confounders such as age, BMI and comorbidities such as diabetes, hypertension and lung disease. Any significant pre-, peri- and postoperative findings were also recorded. Results: Of the 410 subjects included, 29 (7.1%) acquired an SSI. The male to female ratio in the patient was approximately 3:1 with 305 males (74.4%) and 105 females (25.6%). A similar gender distribution was observed in the subset that acquired an SSI. The mean age of the patients was 58.01 years The median Body Mass Index (BMI) was 26.6 which falls in the Pre Obese category according to the WHO BMI cut offs for Asian populations. The median duration of surgeries was 4 h25 m. The median time interval between administration of antibiotics and the start of surgery (time of incision) was 70 minutes (1 h 10 m). The antibiotic was administered according to NSIPP guidelines in only 132 cases (compliance= 32.3%).The results were tabulated and analysed using SPSS. No significant risk of acquiring an SSI was noted in patients receiving antibiotic prophylaxis up to 90min prior to surgery; the risk increased thereon. (P=0.104, <0.05). A significant positive correlation was noted between the risk of developing an SSI and the incidence of hypertension (P= 0.044, <0.05), diabetes (P= 0.014, <0.05). Or both (P=0.048, <0.05). No significant correlation was found between the incidence of SSI and BMI, duration of surgery, cross clamp time, CP bypass time, or the types of procedure.

Conclusion: The most appropriate time to administer prophylactic antibiotics before an open heart surgery is within 90 minutes of the first incision. Our study shows that the previous guidelines according to NSIPP mentioned 60 minutes as the standard which can be safely extended to 90 minutes

Keywords: antibiotic prophylaxis, surgical site infection, open heart surgery, anesthesia

<u>**Abstract ID: PP-50**</u>

Qualitative and Quantitative Assessments of Anaemia in Female Medical Students of Karachi, Pakistan
Arisha Sohail, Muhammad Bilal Azmi, Shamim A. Qureshi

Background: According to the annual Global Burden of Disease (GBD), Pakistanis on average lose more than 34 thousand years due to iron-deficiency anaemia and it was the number one cause of years lived disability in Pakistan in 2005 too and remains the number one cause over a decade later in 2016. Health care students tend to be at risk of anemia especially females due to their physiological responses to challenging situations, menstrual losses and because of their inadequate food intake. Most of the proposals and policies to address anaemia mainly emphasize pregnant women and children, while female students should also be targeted for intervention

before the onset of childbearing as maternal anemia is the strongest predictor of anemia and its adverse consequences in children.

Objective: A cross-sectional questionnaire-based study was conducted from January 2016 to August 2016 to assess self-reported signs & symptoms of anaemia and dietary habits among female medical students of public sector Health University in Karachi, Pakistan which also accompanied by their complete blood profile (CBP) analysis.

Results: A total of 216 female students were enrolled, out of which 160 students were analyzed for CBP. The prevalence rate of anaemia following WHO classification was 37.6% among which 21.3, 12.5 and 3.8 % were mild, moderate and severe. The self-perception of anaemia was reported by 2.0 % of the students compared with 1.8% of the non-anemic ones. Most of the severely anaemic participants were overweight (p= 0.009), risk of anaemia for students with age of 2(p= 0.001), low dietary intake of eggs/poultry and meat (p=0.001) and cereals/whole grains (p= 0.004) was more than those with no anaemia. Conclusion: The anaemia was moderate public health problem among female medical students and being overweight, lower birth order and poor dietary habits contribute significantly towards anaemia prevalence.

Keywords: anaemia, female medical students, complete blood profile, cross-sectional study, questionnaire.

Abstract ID: PP-51

Avena Fatua (Wild Oats) Inhibits Platelets Aggregation Induced by Anti-tuberculosis Drug
Shamim A Qureshi, Hamna Khan, Samreen Ahmed, Shamim A. Qureshi (Co-author 5)

Objective: First line combinational treatment of tuberculosis with anti-tuberculosis drugs regimen diminished infection effectively caused by Mycobacterium tuberculosis. Unfortunately this therapy has so many side effects. Its increases oxidative stress and causes alteration in hematological parameters and platelats aggregation. The aim of the present study is to evaluate anti-platelets aggregation property of ethanolic seeds extract of Avena fatua (wild oats) in rats intoxicated by anti-tuberculosis drug.

Materials and Methods: Anti-tuberculosis drug (ATD) named "Rimstar" (900 mg/kg) which is a combination of rifampicin (150 mg), isoniazid (75 mg), pyrazinamide (400 mg) and ethambutol hydrochloride (275 mg) was orally administrated in rats (170-220 g) for 26 days consecutively and divided them into three groups (6/each) including ATD control (distilled water 1 ml/kg), ATD positive control (silymarin 200mg/kg), ATD test (ESEt 800mg/kg) groups. Beside theses, a normal control (distilled water 1ml/kg) group was also run. After 24 hr of last dose of each treatment, rats were decapitated to collect blood and measurement of hematological parameters were done.

Results: Seeds extract of Avena fatua reversed the alteration in hematological parameters such as hemoglobin, hematocrit, Mean Cell Volume, Mean Cell Hemoglobin, Mean Cell Hemoglobin Concentration, White Blood Cells and platelets in test group which were disturbed in ATD control group. Especially platelets aggregation was decreased in test group as compared to ATD control group. ATD facilitated the platelets aggregation by intensifying oxidative effect in vivo. Conclusion: Avena fatua seeds extract have shown inhibitory effects on abnormal platelets aggregation by minimizing oxidative stress.

Keywords: avena fatua (wild oat), anti-tuberculosis drug, hematological parameters, platelets

Abstract ID: PP-53

Streptococcus pyogenes emm typing and antibiotic susceptibility patterns from cases of postpartum endometritis and young infant sepsis

Furqan Kabir, Sadia Shakoor (MBBS), Velusamy Srinivasan (PhD), Bernard Beall (PhD)

Background: Group A streptococci (GAS) carry a broad assortment of virulence and adhesion associated genes. Diverse GAS strains cause a broad variety of infections, ranging s from mild sore throat to life-threatening invasive infections. Post-infectious GAS infection sequelae (acute rheumatic fever, rheumatic heart disease and acute post-streptococcal glomerulonephritis) cause a tremendous global impact. Every year663,000 new invasive cases arise with an annual death toll of 163,000. In resource-limited countries, there is a scarcity of data, due to limited diagnostic abilities and trained personnel. Understanding the population structure and strain typing of GAS is expected to impact two activities: first, that of vaccine development, and secondly, to investigate outbreaks. M proteins are extractable antigens from cell surface of GAS that have formed the basis for M protein (or M protein gene emm) typing **Aim:**We have identified and compared prevalent emm types and antibiotic susceptibility patterns of S. pyogenes isolated from cases of postpartum endometritis and young infant sepsis in lower Sindh, Pakistan.
Methods: Bacterial isolates were revived and sub cultured followed by antibiotic susceptibility testing. DNA extraction by suspending a loop-full of fresh growth in 300 µL of 0.9% sodium chloride, incubation at 70˚C, re-suspension in TE buffer with mutanolysin, and hyaluronidas. PCR were done as per CDC protocols. PCR product purified by mixing 5 µL product with 2 µL of ExoSAP-IT, and incubation in the thermal-cycler for 15 minutes each at 37˚C and 80 ˚C respectively. Sequencing carried out with the sequencing primer emmseq2, emm types were assigned using CDC emm database. **Results**:25 different emm types were identified in 30 cases of endometritis.. Eleven (11) different emm types were identified from (n=15) cases of young infant sepsis. The sepsis and endometritis cases were not paired i.e. did not belong to mother-infant dyads. Concurrent emm types in postpartum endometritis and young infant sepsis were 18.12, 28.5, 106.0 and 183.1. All GAS strains were susceptible to penicillin, and 15.5% (n= 7), 13.3% (n=6) were resistant to erythromycin and clindamycin respectively (inducible resistance). Subsequent genomic sequencing of these isolates revealed broad genetic diversity. Although new emm types were not observed, numerous newly encountered strain types were observed (based upon multilocus sequence typing). The accessory gene dfrG was present in 31% of the isolates, associated with trimethoprim-resistance. Two of these strains additionally carried mutations within the core gene folP associated with sulfamethoxazole-resistance.
Conclusion:GAS emm types prevalent in endometritis and young infant sepsis are highly diverse. Although some emm types were observed in both endometritis and infants with sepsis, a causative association (mother to infant transmission) cannot be established and further study of mother-infant dyads is required.
Keywords: streptococcus pyogenes , emm typing , postpartum endometritis , infant sepsis, antibiotic susceptibility .

Abstract ID: PP-56

In Vitro Antibacterial Activity of Commonly Prescribed Probiotics (Lactobacilli paracasei, Lactobacillus acidophilus & Saccharomyces boulardii) against Enteric Isolates Causing Infectious Diarrhea in Pediatric Population

Samiya Kainat, Ghulam Fatima, Faiza Quraishi, Shahana Urooj Kazmi

Background: Diarrheal diseases account for the second most common cause of death of every 1 in 9 children under the age of 5 worldwide. Nowadays the irrational use of antibiotics for treating infectious diarrhea in children has also resulted in increased resistance and several toxicities, including alteration of the normal gut flora. Evidence from the literature suggested the clinical use of probiotics for the treatment of bacterial gastroenteritis but their direct effects have not been studied yet. Therefore, we planned to study the inhibitory activities of commonly prescribed commercially available probiotics Lactobacillus paracasei/ Lactobacillus acidophilus and Saccharomyces boulardii in vitro against our pediatric enteric isolates.

Methods: A total of 152 enteric isolates were collected from 325 stool specimens of children under 5 year of age that were presented with clinical signs and symptoms of diarrhea to the pediatric diarrhea unit of Dr. Ruth K. Pfau Civil Hospital Karachi from December 2017 till May 2018. All stool samples were processed as per standard protocols. Antibiotic susceptibility pattern were studied according to the CLSI guidelines. While antibacterial activities of probiotics were evaluated by means of Dried Modification method with slight modifications. Statistical analysis of data was done on SPSS version 19.0. Results: Out of 152 enteric isolates, majority were E. coli (60%) followed by Klebsiella species (27%), Proteus species (9%), Salmonella species (3%) and other (2%). The antibiotic susceptibility pattern of E.coli was amikacin (96%), gentamycin (95%) and imipenem (95%), piperacillin/tazobactam (84%), nalidixic acid (47%) whereas isolates of Klebsiella species have showed the highest susceptibilities against imipenem (98%), amikacin (94%), piperacillin/tazobactam (92%), gentamycin (89%) and nalidixic acid (56%). The % inhibition of probiotic 1 was 28%, 25% and 25% while probiotic 2 has shown 37%, 32% and 25% inhibition against enteric isolates of E.coli, Klebsiella species and Salmonella typhi respectively.

Conclusions: Probiotics for the treatment of bacterial gastroenteritis have been hypothesized to be favorable in promoting the health benefits, and at the same time they are also beneficial in increasing the stability of the intestinal flora. The results of the present study highlighted that though probiotics had low sensitivities as compared to routinely prescribed antibiotics but they are more safer and well-tolerated option among children less than five years of age with acute diarrhea.

Keywords: infectious diarrhea, probiotics, antibacterial activity, lactobacilli, saccharomyces boulardii

Abstract ID: PP-57

XDR Typhoid: An Experience from a Tertiary Care Hospital, Karachi, Pakistan

Ghulam Fatima, Samiya Kainat, Shahana Urooj Kazmi,

Background: Typhoid fever is a systemic infection caused by Salmonella enterica serotype typhi (S. typhi) usually through ingestion of contaminated food or water. Symptoms are often non-specific and clinically it is not distinguishable from other febrile illnesses. Severity of the illness varies and may lead to serious complications or even death. Typhoid is endemic in many countries and Pakistan is one of them. Since November 2016, the province of Sindh in Pakistan has been facing an outbreak of extensively drug resistant (XDR) typhoid fever.
Methods: In the current study, a total of 17081 & 20910 blood cultures were done on BACTEC 9240 during the year 2017 and 2018 respectively from the patients with history of high grade fever visiting Dr. Ruth K. M. Pfau Civil Hospital, Karachi. Positive culture bottles were processed according to CLSI guidelines (sub-cultured on Blood and MacConkey's agar and non-lactose fermenting colonies were biochemically tested and confirmed by Salmonella specific anti-sera. Antibiotic sensitivity was done using Kirby Bauer disc diffusion technique). Demographic data including age, gender, socioeconomic status and duration of fever were also recorded. **Results:** In 2017, 151 blood cultures tested positive for Salmonella typhi, out of which 94 (62%) were MDR, 37 (25%) were XDR, while in 2018, total 566 blood cultures were positive for Salmonella typhi, 118 (21%) were MDR, 402 (71%) were XDR. Rest were non-MDR. All isolates exhibited high level of resistance to co-trimaxazole (47 & 84%), chloramphenicol (50 & 85%), ampicillin (49 & 87%), ciprofloxacin (59 & 89%), ceftriaxone 25 & 85%), cefixime (25 & 75%) resistant in 2017 & 2018 respectively. All XDR typhoid isolates were sensitive to azithromycin, carbapenems and piperacillin/ tazobactum. The most affected age group were children under the age of 10 years, and males (62%) were affected more than females (38%). In 2017 XDR typhoid cases were reported from August to October i-e during post rainy season but in 2018 cases started rising from March till December with peak from May to October, indicating that disease has become endemic. **Conclusions:** Such high level of resistance (25-65 % XDR - MDR strains) in human pathogen Salmonella typhi calls for immediate measures to improved sanitation and water treatment to limit the rate of transmission in Pakistan and public awareness campaigns as well as Vaccination against typhoid to reduce the burden of disease. Over the counter sale of antibiotics should also be restricted.
Keywords: XDR; MDR; salmonella typhi; antibiotic resistance

Abstract ID: PP-58

ANTIBIOTIC PRESCRIBING PRACTICES IN EMERGENCY DEPARTMENT (ED)

Areeba Nayab, Humaira Qasim Ali, Haleema Noor, Kashif Hussain

Background/Objective: Antimicrobial resistance is a global problem due to various reasons, in particular inappropriate frequency, missed doses and delays led to inquire emergency care practices and ratio of correlation to their antibiotic administration when patient gets admitted to inpatient department. The vision behind this study was to assess improper practices followed while antibiotic ordering and administration in emergency care.

Methodology: It is a retrospective study carried out on 270 patients admitted in the month of January 2019 in ED of tertiary care Hospital. Those patients in which antibiotic was administered on admission were included further for the study. Data was collected and analyzed for missed doses, frequency of antibiotics followed or not, average delay in antibiotic duration and need of renal adjustment. Result: It was observed that 49.62% patient (134 out of 270) received only stat doses and then antibiotics were not continued till patient discharged. 18.51 % patients (50 out of 270) received irrational regimen that includes piperacillin-tazobactam and ceftriaxone, meropenem and ceftriaxone, clindamycin and piperacillin-tazobactam. Appropriate frequency of antibiotics was not followed on 19.25 % patients (52 out of 270). Average delay in administration was about 4.9 hrs.72 out of 270 patients require renal adjustment of antibiotics however in 38.88 % patient (28 out of 72) antibiotics were not appropriately adjusted according to creatinine clearance. Antibiotics were not continued in 32.96% of patients (89 out of 270) when patient admitted to inpatient facility.

Conclusion: Results show that due to fast-paced nature of ED, antimicrobial prescribing practice is somehow compromised and need attention. It is rational to expand the antimicrobial stewardship program (ASP), implement computerized physician order entry and ED-specific antibiogram. Furthermore, a dedicated ED specific clinical pharmacist must be assigned to reduce antibiotic related medication errors on admission and when patient shifted from ED to inpatient facility.

Keywords: emergency care, prescribing practice, antibiotic stewardship, antibiogram, antimicrobial resistance, renal adjustment

Abstract ID: PP-59

PREVALENCE OF THALASSEMIA AMONG THE CHILDREN OF DALBANDIN DISTRICT CHAGAI BALOCHISTAN

Sarfaraz Ahmed , Safi Ullah, Kiran Abdullah

Introduction: Thalassemia is an inherited blood disorder in which the body makes an abnormal form of hemoglobin. Hemoglobin is the protein molecule in red blood cells that carries oxygen. The disorder results in excessive destruction of red blood cells, which leads to anemia. It's caused by either a genetic mutation or a deletion of certain key gene fragments.

Methodology: The cross-sectional study was carried out among the children of Prince Fahad Bin Sultan Hospital Dalbandin and Bolan Blood Bank Dalbandin district Chagai Balochistan from January to March 2019. The data was collected using questionnaire in written form among the anemic patients in pediatric wards. The questionnaire was further on categorized in demographic pattern. Results: Total numbers of 325 inpatients admitted in pediatric wards during the period from January to March 2019. Out of that 93 patients were confirmed with Thalassemia. From 93 patients, 70 were male children and 23 were female children. The prevalence rates of Thalassemia in pediatric inpatients wards were 28.6%.

Conclusion: The prevalence of Thalassemia is common in district Chagai, there is need for complete and detailed study collecting baseline data of tribal children with Thalassemia. The data obtained from such a study can be used by Governmental authorities to prepare an appropriate action plan for reducing the burden of disease and providing treatment and support to people already suffering from Thalassemia.

Keywords: thalassemia, prevalence, chgai

Abstract ID: PP-66

Multicenter National survey on Cardiopulmonary bypass (CPB) Perfusion Practices during adult cardiac surgery
Muhammad Saad Yousuf , Mohammad Irfan Akhtar

Objective: To describe the multicenter variations in perfusionist practices, which persists nationally, and to highlight the non-evidence based practice variations. Study Design: Multicenter National web-based survey.
Methodology: The web-based questionnaire of the survey was sent to 24 adult cardiac anesthesiologists working in different cardiac centers nationally.
Results: The response rate was 62.5% (15/24). Sixty percent of the respondents were practicing in heart centers. The survey demonstrated that 66.6% (10/15) of the respondents used goal directed perfusion during CPB, with more than 80% (13/15) of the perfusionists used aseptic measures during handling CPB machine, consulted with the cardiac anesthesiologist in critical decision making and treatment of complications, and used protocol for trouble shooting during CPB. Sixty percent (9/15) perfusionists did not monitor continuous arterial blood gases and acid base balance. About 73% (11/15) monitor serum Lactate level while most of perfusionists did not monitor the continuous venous and cerebral oxygen saturation. Eighty-six percent (13/15) transfused Packed red blood cells (PRBC) if hemoglobin ≤7g/dl. Only 33% (5/15) of the centers used the scavenging system to avoid pollution by using volatile agents. Conventional Polyvinylchloride (PVC) circuits were used in 87% (13/15) centers and heparin coated silicon circuits were used by only 13% (2/15) of the respondents.
Conclusion: The survey revealed that most of the perfusionist practices reflect updated guidelines and they try to maintain standards in their institution. Key Words: Cardiopulmonary bypass; Adult cardiac surgery; Perfusion practice; Survey.
Keywords: cardiopulmonary bypass; adult cardiac surgery; perfusion practice; survey.

Abstract ID: PP-68

Anesthetic management of stab wound in right ventricle of heart
Muhammad Saad Yousuf, Hameedullah

Stab wound in right ventricle of heart requires a prompt and focused surgical intervention. Cardiac tamponade is a common fi nding when dealing with stabbed hearts, which must be diagnosed and treated in a timely fashion. We report a case of 28-year-old man who presented in emergency department following accidental stab trauma during a religious ceremony. The challenges faced in the perioperative period were the management of impending cardiac tamponade and hemodynamic stability.
Keywords: stab wound, cardiac tamponade, hemorrhage

Abstract ID: PP-71

knowledge, attitude and practices of Emergency health care professionals regarding sepsis and septic shock
Madiha Ismail, Umaira Aftab, Badar Afzal, Kiran Azizi

Objective: To assess the knowledge, attitude and practices of Emergency health care professionals regarding sepsis and septic shock according to three hour's sepsis bundle in a Lower middle Income country (LMIC). Design: KAP Survey (Knowledge attitude and practice), cross sectional study Place & Duration Of Study: Emergency Department, Aga khan university hospital Karachi **Methodology:** Knowledge, attitude and practice survey assessing sepsis and its management were distributed to health care providers at Aga Khan University Hospital emergency Department, The target population was physicians, residents and nursing staff working in Emergency department.
Results: A total of 53 health care providers participated in the study. Overall, 79.3% of participants demonstrated correct knowledge of sepsis bundle including 75% PGMT, 83.3% ED physician and 84.6% nurses. The most common reason reported for noncompliance of sepsis bundle by majority of participants is shortage of staff (62%), followed by delayed presentation of patient to ED (58%) and ED overcrowding (42%). On the other hand, better staffing is perceived by majority of participant (60%) to improve care to septic patients followed by protocol compliance (28%), knowledge awareness (23%) and reduction in ED crowding (11%).
Conclusion: Providers reported adequate knowledge but lesser compliance in implementation of 3 hour sepsis bundle participant reported that shortage of staff, delayed presentation of sepsis patients in ED and ED overcrowding severely hinder optimal management of sepsis in this setting.
Keywords: sepsis, septic shock, knowledge, attitude and practice (kap) survey, knowledge emergency department, ed, physicians , nurses.

Abstract ID: PP-73

Zoonotic Threat of Antibiotic Resistant and Virulent Avian Pathogenic Escherichia coli
Hafiz Iftikhar Hussain, Haihong Hao, Mujahid Iqbal, Amjid Islam Aqib

Background: One of the worst universal risk of today is antimicrobial resistance because of irrational usage of antimicrobials, which is not only limited to human but also in animals to improve their health and production. Consequently, Escherichia coli (E. coli) commensal bacteria of human and animals have developed multidrug resistance (MDR). Presence of resistance genes have been studied both in food producing animals and human. Inter transmission of MDR and virulent E. coli clones have been studied between poultry and humans.
Aim: Several studies have been performed to sort out the prevalence of pathogenic E. coli in poultry; however, inadequate data are accessible concerning the resistance and virulence profile. This study was designed to observe the resistance and virulence of poultry E. coli having zoonotic importance.
Material and Methods: A total of 225 clinical pathogenic E. coli were isolated from broiler farms. Antibiotic susceptibility, β-lactamase detection, resistant and virulent genes detection,

biofilm formation and adhesion, invasion and intracellular survivability assays in Raw 264.7 cell lines were performed. Results: Antibiotic susceptibility test showed, most of the strains were MDR, and resistance was noted against all classes of antibiotics. Highest resistance was found against ciprofloxacin (74.67 %) followed by ofloxacin (66.22 %) and imipenem (62.67 %). Of them 24.89%, isolates were screened as β-lactamase positive by double-disk synergy test and polymerase chain reaction, and the prevalent β-lactamase genes were, CTX-M, CTX-M-1, CTX-M3, TEM-1 and OXA. Furthermore, the MDR isolates were containing most of resistant and virulent genes, aac(3)-IV, cat-A1, cml-A, sul-1, tet-A, tet-B, and pap-C, fim-C, fim-H, iuc-D, irp-2, tra-T, iro-N, iut-A respectively. These pathogenic MDR poultry E. coli were moderate to strong biofilm producers and had strong characteristics of the adhesion, invasion and intracellular survivability.

Conclusion: These findings provide evidence that most of poultry E. coli are MDR, β-lactamase producers and highly pathogenic and virulent, which is a great zoonotic threat.

Keywords: antibiotic resistance, virulence, β-lactamase, adhesion and invasion

Abstract ID: PP-74

Epidemiology and incidence of sepsis in a tertiary care hospital of Pakistan, a cross sectional study based on ICD 9 coding

Amber Sabeen Ahmed, Sohail Haleem, Erfan Hussain, Asad Latif , Naila

Introduction: Sepsis remains a leading cause of death in hospitalized patients throughout the world. 85% of the global burden of sepsis,is in low to middle income countries ,but , there are limited epidemiological studies from those countries (1,2,3,4)on the incidence and outcome of sepsis.

Objectives: A sound, detailed and careful analysis was therefore needed to estimate the true incidence of sepsis, risk factor for development, progression of disease and its outcome, in our country.

Methods: An analysis was undertaken of retrospective data from electronic discharge records of all patients aged 17 or above ,admitted with sepsis in year 2013- 2014,at Agha Khan university hospital which is a JCIA accredited, tertiary care hospital.A validated method requiring combination of two ICD-9 codes(international classification of diseases,ninth revision,clinical modification) representing infections and acute organ dysfunction ,based on Angus and Martin(5,6)methodology ,along with ICD-9codes for sepsis, severe sepsis and septic shock ,was used to abstract data. **Results:** An overall 8759 patients were identified to have sepsis or severe sepsis,out of total 31,111,admissions in year 2013-14. Out of these cases, 61.25% (5,365) had sepsis while 38.75% (3,394) had more severe form of disease that is severe sepsis or septic shock. Out of the total 8,759 patients, 58.10% (5,089) remained in the ward . 31.93% (2,797) utilized the Special Care Unit (SCU) while 9.97% (873) utilized the Intensive Care Unit (ICU). The overall mortality with sepsis, in our study, was found to be 9.8% and mortality from more severe form of disease that is with septic shock to be around 22.8%.The most common comorbidities were Diabetes (22.8%), Renal Disease (14.7%) and COPD (14.7%).The most common organ dysfunctions were renal, respiratory and hematologic dysfunction. The highest odds of mortality among the specific organ dysfunctions was of hematologic dysfunction (OR 25.09) followed by respiratory dysfunction (OR 19.62) and cardiovascular dysfunction (OR

17.72). Sepsis was commonly seen in the young age group of 33-49 years (33%) while severe sepsis was mostly observed in the elderly , more than 65 years of age (47%). More females were affected by sepsis (53%) while more males were affected by severe sepsis (53%). The mean length of hospital stay was shorter in the sepsis group; 3.7 days compared to 7.5 days,in svere sepsis and septic shock group . The Charlson's comorbidity score was higher in the severe sepsis group with more than 53% having a Charlson's score of 3 or more. In the sepsis group only 13% had a Charlson's score of 3 or more The Kaplan-Meier's analysis for in-hospital survival showed a survival of 93% at day 30 for patients who had sepsis compared to 39.7% for patients who had severe sepsis at the same time. **Conclusions:** This study is first, ICD -9 coding based study ,from our country on incidence and outcome of sepsis .It is signifying high burden of disease in our country

Keywords: epidemiology of sepsis

Abstract ID: PP-77

Loperamide as drug to be re-purposed in AMR strains of Acanthamoeba spp.
Abdul Mannan Baig, Fizza Nazim, Areeba Khaleeq, Preet Katyara

Background: Pathogenic strains of Acanthamoeba spp. that causes ocular keratitis resulting in blindness and encephalitis which is fatal in 96% cases. Acanthamoeba spp. is known to be exhibit AMR towards the anti-parasitic drugs used against them. Anti-parasitic therapy failures has been reported due to AMR in this protist pathogen.
Aims and objectives: To explore the effects of loperamide used in non-infectious disease that have the potential to target AMR mediating MDR pumps like ACBC-1 in order overcome resistance developed against antibiotics. Method: Acanthamoeba castellanii trophozoites were exposed to loperamide in doses of 200-400 µg/ml and in controls with routinely used anti-parasitic drugs to observe amoebistatic and amoebicidal effects of loperamide. The drugs against which Acanthamoeba shows AMR were also given along with loperamide in in-vitro assays to see the effects of inhibition of ACBC-1 drug efflux pumps.
Results: Loperamide in combination with fluconazole caused amoebicidal and amoebistatic effects. The combination of loperamide with fluconazole showed that loperamide makes the fluconazole effects possible by probably inhibiting the drug efflux ACBC-1pumps. Conclusion: The ACBC-1 inhibiting drugs like loperamide when co-administered with antibiotics and anti-parasitic drugs could allow to overcome AMR in infections caused by microbial pathogens.
Keywords: AMR, encephalitis, ACBC-1, drug efflux pumps, acanthamoeba spp

Abstract ID: PP-79

Influence of Nasal Profile on Cephalometric Soft tissue Analysis
Tania Arshad Siddiqui , Rashna H. Sukhia, Ahmad Hasan,

Learning Outcomes:- Increased nasal prominence during growth requires the lower one third of the face to grow in harmony to create a balanced face profile. However, growth discrepancies affect this balance, as variations in horizontal and vertical face patterns influence decisions for

extractions and adjunctive procedures. To date there is no objective research to verify the effect of nasal profiles on cephalometric soft tissue analysis. Hence, the objective of the present study is to assess the correlation of nasal profiles with cephalometric soft tissue analysis. Target Audience:- Orthodontists, Oral and maxillofacial surgeons, Otolaryngologists and Plastic Surgeons **Methodology:-** Pretreatment cephalograms of 131 patients were traced. Adult patients, aged 18 to 25, presenting to the outpatient clinic with no prior history of orthodontic treatment and craniofacial anomalies and syndromes were included in the study. The sample size was divided into three vertical and two horizontal groups. **Results:** were analyzed using One-way ANOVA and independent sample t-test for comparison of groups. Chi- square test was used to assess the level of correlation between nasal profiles and soft tissue analysis. **Conclusion:-** A weak correlation was obtained between nasal profiles and soft tissue analysis. Nasal profile does not influence soft tissue cephalometric analysis. Although, increased nasal prominence does require prominence of lips in order to improve profile balance, this remains a subjective phenomenon, dependant on perception of care giver and patient.

Keywords: nasal profile, cephalometric soft tissue analysis, soft tissue profile

Abstract ID: 81

Knowledge, Attitude and Perception of Mothers of Under-Five Towards Vaccination During Supplementary Immunization Activities in Ibadan North-West Local Government Area, Ibadan, Oyo State, Nigeria
Abimbola Solagbade, Titiloye Musibau

Supplementary Immunization Activities (SIAs) campaigns provide children with an additional dose of oral polio vaccine and deliver other interventions. However, there is dearth of information on knowledge, attitude and perception of mothers of under-five towards vaccination during Supplementary Immunization Activities. A descriptive cross-sectional study which employed multistage sampling technique was designed to fill this gap. Four wards were randomly selected from eleven wards in Ibadan North-West Local Government Area and houses were enumerated from the selected wards, systematic random sampling was used to select houses and then respondents. A pre-tested semi-structured interviewer administered questionnaire was used to elicit information on three hundred and five respondents. Knowledge scores of ≤4, 5-8, ≥ 9 were rated poor, fair and good respectively, Attitude scores of ≤5 and >5 were rated negative and positive attitude respectively while perception scores ≤4 and >4 were rated negative and positive perception respectively. Data was analyzed with SPSS version 25 using descriptive statistics and Chi-square test at 5% level of significance. The mean age of respondents was 30.6±6.1 years, 54.4% were Christians, the highest level of education for most of the respondents was secondary school (68.5%) and majority are traders (45.2%) with 1.9±0.9 as mean years of marriage. Their mean parity and number of under-five were 2.5±1.4, 1.2±0.4 respectively. Knowledge of was generally poor, more than half (53.1%) had poor knowledge, majority (85.3%) have positive attitude while 78.1% have a positive perception. One-fourth (24.6%) and one-fifth are of the opinion that frequent vaccination will make the vaccine ineffective and overload immune system respectively. One-fifth see no need for vaccination if the child is healthy. However, occupation, parity, and type of marriage was significantly associated

respectively. There was generally poor knowledge of Supplementary Immunizations, mothers need to be educated on the importance of this Immunizations by all stakeholders.

Keywords: immunization: supplementary immunization activities; mothers of under-five; vaccination, nigeria.

Abstract ID: PP-82

Management of spinal-induced hypotension for elective cesarean delivery: A survey of practices among anesthesiologists from a developing country
Muhammad Sohaib, Samina Ismail

Background: In developing countries, more than half of the anaesthesia-related maternal deaths are related to spinal hypotension.
Objective: To determine practice of management strategies for spinal induced hypotension among anesthesiologists from a developing country.**Methods:** After institutional ethics committee approval, an online questionnaire on management strategies for spinal-induced hypotension was sent to 433 anesthesiologists registered with the Pakistan Society of Anesthesiologists.
Results: The response rate was 36%, majority from academic institution (62.8%). For prophylaxis 39.1% respondents did not use vasopressors, 32.7% used fluid preloading with crystalloids as fluid of choice followed by combination of co-loading and vasopressor. Phenylephrine was the vasopressor of choice for both prophylaxes (33.1%) and treatment (57%). Attending anesthesiologist used a combination of fluid co-loading and vasopressors for prophylaxis as compared to trainee anesthesiologists (37.2% vs. 17.9%; P=0.035) and based the choice of vasopressors according to the patient's heart rate (33.3% vs. 19.5%; p=0.05). Prophylactic phenylephrine was used more by respondents from academic institutions (p=0.023).Fluid co-loading was used more by respondents with <30 % of clinical responsibility to obstetric anaesthesia (P<0.05).**Conclusions:** Phenylephrine as the vasopressor of choice indicates growing awareness among anesthesiologists from developing countries but there is a need to increase its use for prophylaxis
Keywords: spinal anesthesia; hypotension; cesarean delivery; vasopressors; clinical practice

Abstract ID: PP-83

Incidence of multi-drug resistant organisms in a tertiary care hospital over six months
Fizza Farooqui, Hina Qureshi, Fazle Subhan, Cecllia Anthony

Learning outcomes: To realize the increasing the incidence of MDRO rates and understand the impact of antimicrobial resistance on patients and hospital. Target audience: Infection control teams, microbiologists, physicians, trainee doctors, medical students.
Methodology: Retrospective laboratory data of six months was collected from The Kidney Centre Postgraduate Training Institute, Karachi. The data consisted of monthly records of the number of patients in the hospital having multi-drug resistant organisms infecting or colonizing them who were subjected to transmission based precautions based on the type of infection they had. Frequency was calculated in numbers and trend of monthly rates was also seen.

Conclusion: Antimicrobial resistance is an alarming presence in the current environment. Hospitals must take measures to contain infections with multi-drug resistance organisms and laboratories must be vigilant in identifying and alerting the hospital to them.
Keywords: multi drug resistant organisms, incidence, carbapenem resistant enterobacteriaceae, methicilin resistant staphylococcus aureus

Abstract ID: PP-84

Antimicrobial Resistance in Salmonella spp. isolated from poultry birds of Sindh, Pakistan
Uzma Munir, Nazeer Hussain Kalhoro, Munazza Ajaz

Salmonella spp causes major public health problems world wide and it has remained leading cause of food poisoning in humans. A study was carried out on the isolation, identification, prevalence and antibiogram analysis of Salmonella spp in poultry birds reared in Sindh province of Pakistan. A total of 1960 samples were collected from diseased birds as well as apparently healthy birds from different districts of Sindh during the period of October 2016 to November 2017 under the supervision of field veterinarians. These samples were cultured on Nutrient agar and selective media (BSA, S.S agar, Mac, TSIA, XLD agar) and further identified through Gram's Staining ,biochemical tests & remel TM RapID one System kit. The identified isolates were subjected to antibiogram study using the Disk diffusion method. Salmonella spp were seen as Gram negative, cocco bacilli single or pairs under 100x Objective. Salmonella spp produced colourless yellowish brown colonies with black centre on SS agar, pale colorless colonies on Mac agar, black colonies on BSA .In TSIA Produce acidic slant/ butt with H2S gas production. The overall prevalence of Salmonella isolates were found to be 63 % (1243/1960) in Sindh Province, where as district wise prevalence from collected samples was observed as 78.57% (220/ 280) in Karachi, 51.42% (144/280) in Sukkur, 75.357% (211/280) in Mithi Tharparkar, 50.3% (141/280) in Hyderabad, 69.28% (194/280) in Larkana, 94.64% (265/280) in Thatta, 24.28% (68/280) in Mirpurkhas. All the Salmonella isolates displayed 100% resistance to Tetracycline, Oxytetracycline, Pencillin G, Ampicillin whereas 90% to Chloramphenicol, 70% to Streptomycin, 40 % to Neomycin, 20% to Enrofloxacin, Gemifloxacin. MDR was also detected in some isolates of S. typhi.
Keywords: salmonella spp, poultry, amr, sindh

Abstract ID: PP-85

Systematic Non-communicable Disease Surveillance Systems can be instrumental in identifying infectious diseases in populations- a study from Pakistan
Nazish Jabeen, Sajid Malik

Background: The advancement in the healthcare systems have significantly shifted the pattern of diseases in many parts of the world (1). Consequently, congenital anomalies (CA) and non-communicable diseases (NCDs) which previously contributed only a minor fraction have emerged as the most common causes of morbidity and mortality (2, 3). In Pakistan, systematic health surveillance registry for CA and NCDs is inadequate, especially in the Azad Jammu and

Kashmir (AJK) region (4, 5). We performed systematic surveillance of morbidity profiles of the adult women in Bhimber District of AJK.

Methods: In order to look into the disease profile of Bhimber population, a cross-sectional clinico-epidemiological study was carried out. There were a total of 24 different sampling sites (towns/villages) in three tehsils of Bhimber District. Each recruited subject was interviewed and physically examined to access the disease status. Photographs depicting the phenotypic detail and relevant medical record were obtained from the subjects with any kind of morbidity. Multiple anomalies presented in a subject were accounted for separately. Prevalence was estimated in the total sample and represented as per 1,000 subjects. Descriptive summaries were generated and the departure from random distributions was evaluated with χ^2 test and Fisher's exact test statistics with 0.05 significance level. Spearman's linear correlation was calculated to assess the relationships between some variables.

Results: A total of 1,731 female subjects of age 12-75 year originating from Bhimber were recruited. This study observed 74 cases (and 15 types) of CA with a prevalence estimate of 43/1,000 and there were 104 cases (and 21 types) of NCDs (prevalence 60/1,000). This study also witnessed several categories of infectious/communicable diseases of public health importance. A total of 5 cases of infectious diseases including hepatitis C (n=4, prevalence 2.31/1000) and spinal tuberculosis (n=1, prevalence 0.58/1000) were identified in the current study. **Conclusion:** This study establishes the importance of disease surveillance system to reveal disease trends in the population. Moreover, we have shown that NCD surveillance systems can be instrumental in identifying infectious illnesses. We therefore recommend that public health programs should be integrated to enhance surveillance, and that NCD surveillance programs should identify referral strategies for detected cases of communicable diseases. Integrated surveillance systems promise better intervention packages to promote health of populations.

Keywords: surveillance systems, infectious diseases, non-communicable anomalies, epidemiology

Abstract ID: PP-87

Occurrence of extended spectrum β-lactamase E. coli (ESBL Ec) in slaughtered animals of Pakistan

Hamid Irshad, Aitezaz Ahsan, Armaghan Shahzad, Naowarat Kanchanakhan

Extended spectrum β-lactamase E. coli (ESBL Ec) have been isolated from food animals and humans indicating an emerging veterinary public health issue resulting in high morbidity, mortality and treatment cost. In addition ESBL Ec are also responsible for development of further AMR because ESBL Ec are resistant to most of the antibiotics therefore, the antibiotics of last resort such as carbapenems have to be given to affected patients which may results in Carbapenem-Resistant Enterobacteriaceae (CRE). Very limited information is available about the prevalence of ESBL Ec in food animals and their role in transmission of AMR bacteria to humans in Pakistan. Therefore, a study is proposed with aim to estimate the prevalence, antimicrobial resistance and molecular characterisation of ESBL Ec in slaughtered animals of Pakistan. Recto-anal mucosal swab (RAMS) samples (n= 109) were collected from cattle (n= 39) and buffaloes (n= 70) slaughter in slaughter house of Islamabad. The samples were enriched in

buffered peptone water at 37 °C for 24 hours. Enriched samples were inoculated on MacConkey agar supplemented with 4µg/ml cefotaxime. ESBL Ec colonies (purple/red in colour) were confirmed using various biochemical tests, double disc diffusion and double disc synergy on Muller Hinton agar. Antimicrobial susceptibility test of these isolates was conducted following Clinical and Laboratory Standards Institute standards to determine the antibiotic susceptibility pattern of these isolates. Overall prevalence of ESBL Ec in RAMS was 44.9% (49/109). Higher prevalence of ESBL Ec was observed in buffaloes (32/70; 45.7%) compared to cattle (17/39; 43.5%). The results indicated that healthy cattle and buffaloes slaughter in slaughter house of Islamabad, Pakistan are asymptomatic carrier of ESBL EC therefore may represent an important source of infection to humans.
Keywords: ESBL E. coli, ruminants, AMR

Abstract ID: PP-88

Antimicrobial action of Olive Leaves (Olea europaea) extract and its interaction with antibiotic in S. gallinarum infected broiler chicks
Shah Nawaz Malik , Farzana Rizvi, Muhammad Wasim Usmani, Ayesha Ramzan, M. Shahzad Shafiq, M. Asif, Zeshan Ahmad Bhutta, Fakhar-e-Alam Kulyar, M. Jawad Iqbal

Ethanolic extract of olive (Olea europaea) leaves contains phenolic compounds, oleuropein and ligstroside. Current study was designed to investigate antibacterial property of Olea europaea leaves extract (OLE) (orally 10ml/l) alone and in combination with antibiotic in S. gallinarum infected broiler chicks. A total of 100 day old chicks were divided into 4 equal groups (25 in each). Two groups were kept as negative and positive control while others were supplemented with OLE and OLE + antibiotic respectively. On 14th day, experimental birds were infected with field isolate of S. gallinarum (8.5×108 CFU/ml). After bacterial inoculation, birds were kept under observation up to 35th day of age. Statistical evaluation by analysis of variance test along with least significant difference test post-infection, showed that morbidity and mortality rate was significantly lower in OLE supplemented groups than that of non-supplemented groups. While there was a significant increase in body weight, erythrocytic count, hemoglobin concentration and pack cell volume in OLE supplemented groups than that of non-supplemented groups. From this experimental study it can be concluded that OLE has antimicrobial activity against S. gallinarum, because of decreased rate of morbidity, mortality and also in-vitro zone of inhibition (18mm) of OLE against this bacterium. There was also a positive impact of OLE supplementation on total protein, albumin and globulin concentration than that of the rest of the groups.
Keywords: olive leave extract, s. gallinarum, antimicrobial activity, broiler chicks

Abstract ID: PP-89

Determination of MICs and resistance pattern of Floroquinones drugs in MDR-TB among Pakistani population
Sarah Ehtesham

Background: Fluoroquinolones (FQ) are actively used against Multidrug resistant tuberculosis (MDR-TB) which are resistant to "first-line" drugs. Pakistan being country with increasing multidrug resistant tuberculosis is alarming to world health regulatory. Drug regimens to reduced MDR-TB burden needs to be assessed.
Aim: To determine MIC and resistance pattern of Floroquinones drugs (ofloxacin, levofloxacin and moxifloxacin) in MDR-TB among Pakistani population.
Method: Total of 404 strains were taken from a period of 4 years (1 January 2015 to 31 December 2018). Antimicrobial susceptibility testing was performed using the Sensititre MIC frozen panels manufactured by Thermo Fisher containing pre-diluted 2X drugs in 2X (7H9 broth/OADC).The drug dilution ranges for the Broth Micro dilution methods were LVX(0.06 – 4),OFX(0.12 – 8) and MFX(0.06 – 4).Inoculated frozen plates were incubated at 37ºC. MICs were then read by visual inspection at Day 7, Day 10 and Day 14.
Results: For LVX maximum strains showed MIC at 0.5 µg/ml 148/404(36.6%), followed by 0.25 µg/ml 97/404 (24%) in all four year. However highest MIC >4 µg/ml was observed in year 2015 20/404(4.9%) which then declined in year 2016-2017 but raised in 2018 31/404 (7.6%).Similarly for OFX maximum strains showed MIC at 1 µg/ml 171/404(42.3%), followed by 0.5 µg/ml 102/404 (25.2%) in all four year. Isolates showed highest MIC for OFX which >8 µg/ml in year 2015 23/404(5.7%) and 2018 33/404(8.1%).Unlike both drugs maximum isolates exhibited MIC for MXF at ≤0.06 µg/ml which was 125/404 (31%) followed by 0.12 µg/ml 100/404(24.7%). **Conclusion:** MDR-TB, has been a serious public health problem in Pakistan .A gradual increase in resistance pattern in second line drugs like Floroquinones will greatly affect TB control strategies. Implementation of more restrictive policies for rational use of fluoroquinolones should be adopted in both public and private sectors.
Keywords: multidrug resistant tuberculosis (MDR-TB), fluoroquinolones (FQ), minimal inhibitory concentration (MIC).

Abstract ID: PP-93

Exploring effective therapeutic options against Extensively Drug Resistant (XDR) S. Typhi infections
Dania Saeed, Ghazala Shaheen, Asima Shahid

Background: In November 2016, an outbreak of ceftriaxone resistant Salmonella enterica serovar Typhi was detected in children from Hyderabad, Pakistan, by the Microbiology laboratory in Aga Khan University, Karachi. Subsequent molecular analysis of the isolates at the Sanger Institute, U.K., revealed that the S. Typhi H58 haplotype had acquired an Inc Y plasmid encoding resistance against third-generation cephalosporins such as ceftriaxone, commonly prescribed against multi-drug resistant (MDR) S. Typhi. Although, vaccination against S. Typhi

is the ideal strategy of effectively dealing with XDR and limiting its spread in the community, especially children, accessibility of the available conjugate vaccine will be limited by economic factors and social misapprehensions in low-middle income countries. Therefore, it is imperative that therapeutic options for effectively treating extensively drug resistant (XDR) S. Typhi cases be determined. The study herein aims to explore antimicrobials that can be used as effective therapeutic options to manage XDR S. Typhi infections.**Methods:** Phenotypic resistance profile of 208 XDR S. Typhi isolates from the Hyderabad outbreak were determined by retrospectively analysing Minimum Inhibitory Concentrations (MICs; µg/mL), obtained from VITEK laboratory records. MICs against the following antibacterials were obtained: ampicillin, ceftazidime, cefepime, ciprofloxacin, levofloxacin, meropenem, ertapenem, and trimethoprim sulfamethoxazole. Additionally, susceptibility against imipenem was determined using disc diffusion test. Of these 208 XDR isolates, 48 were isolates that had been characterized by whole genome sequencing. Azithromycin MICs were determined for 40 isolates by E-test (bioMereiux). **Results:** Consistent with susceptibility profile of MDR S. Typhi, the XDR isolates also showed complete resistance against ampicillin (MIC90 >=32 µg/mL) , ceftazidime (MIC90 >=64 µg/mL), cefepime (MIC90 >=64 µg/mL) and trimethoprim sulfamethoxazole (>=16/304µg/mL). All isolates were resistant to ciprofloxacin and levofloxacin, with MIC50 2 µg/mL & MIC90 4 µg/mLfor both antibiotics. All isolates were susceptible to ertapenem (n=205, MIC50 and MIC90 of <0.5 µg/mL, meropenem (n=206, MIC50 and MIC90 0.3 µg/mL). Azithromycin and imipenem disc susceptibility testing was performed on all 206 isolates with 100% susceptibility. Etest for azithromycin showed MIC50 and MIC90 of 4 µg/mL (n=40). **Conclusion:**Azithromycin, ertapenem, meropenem and imipenem are effective therapeutic options on the basis of in vitro testing. Ongoing surveillance and monitoring of MDR and XDR S.Typhi strains against these antibiotics is essential to identify emerging resistance and to guide future strategies in drug development for treatment of enteric fever.
Keywords: extensively drug resistant S. Typhi, hyderabad outbreak, antimicrobial susceptibility testing

Abstract ID: PP-97

Human papillomavirus-associated anal intraepithelial lesions in HIV infected and uninfected men who have sex with men and transgender in Karachi Pakistan: Implications for screening and prevention
Muslima Ejaz, M Mubarak, Tazeen Saeed Ali, Anna Mia Ekstorm

Background: In recent decades, the incidence of human papilloma virus (HPV) related anal cancer has increased in sexually active men who have sex with men (MSM) in several settings. However, the prevalence of HPV and anal intraepithelial lesions among Asian MSM in general and in Pakistan in particular, is poorly known, and HPV vaccination and Pap smear (Papanicolaou test) screening has not been implemented. Our aim was to evaluate the prevalence of HPV related anal cytological abnormalities among high risk MSM, and transgender women, with and without infection, to help further policy development on HPV vaccination and interventions for screening and early detection in this highly stigmatized and hard to reach population in Pakistan.

Methods: A cross-sectional study was conducted among MSM and transgender women aged 18 and above and who reported having had anal sex in the preceding 6 months, were recruited from the Sexual Health Clinic and antiretroviral therapy (ART) center run by National AIDS Control Program in Karachi, Pakistan. Anal Pap smear samples were collected using Dacron Swabs for both liquid-based cytology and HPV type testing by polymerase chain reaction. Data on sociodemographic and sexual behaviors were collected through face-to face interviews using a validated questionnaire including 45 questions. The prevalence of anal intraepithelial neoplasia and 95% confidence intervals (CIs) were calculated. The associations between biological and behavioral risk factors and a cytologically identified anal squamous intraepithelial lesion (ASIL) were analyzed using the Cox regression hazard model algorithm and reported as prevalence ratios (PR) and corresponding 95% Cis.**Results:** A total of 298 participants were recruited out of which 27 were excluded as their samples were not sufficient for cytological assessment. The mean age was 28.8 (±8) years. Overall 65% had detectable HPV DNA, and almost 35% of these had some anal abnormal cytology out of which 83% were infected with at least one oncogenic HPV type (16/18/31/33/35/45/52/58), with HPV 16 being the most prevalent (39%). Low grade squamous intraepithelial lesions (LSIL) was the most prevalent anal intraepithelial lesion. As compared to HIV negative, MSM and transgender women living with HIV were significantly more often infected with HPV (58.8%), more likely to have an oncogenic HPV type (64.8%) and to have an abnormal anal cytology (53.8%). Any oncogenic HPV type (PR 3.04; 95% CI 1.75-5.26), a concurrent sexually transmitted infections (STI) (PR; 2.13, 95% CI 1.28–3.55) and HIV+/HPV+ coinfection (PR 1.75; 95% CI 1.07-2.88) were independent risk factors for the prevalence of anal abnormal cytology. None of the sociodemographic or risk behavioural factors remained significant in the multivariate model

Conclusion: Over one third of MSM and transgender women at sexual health clinics in Karachi had abnormal anal cytology, strongly associated with oncogenic HPV types (HPV 16 in particular), concurrent STI and HIV infection. This evidence further complement the growing global evidence to support the introduction of programs for vaccination and anal Pap smear screening among high risk MSM and transgender in Pakistan and beyond

Keywords: anal cytology, anal cancer, ASIL, LSIL, pap smear, vaccination, HPV infection, HIV, men who have sex with men, transgender, Pakistan

Abstract ID: PP-99

Protocol for and preliminary findings from surveillance stage of community-based RSV (respiratory-syncytial virus) mortality study in Karachi, Pakistan
Waliyah Mughis, Momin Kazi, Saima Jamal, Saad bin Omer

Introduction: RSV is a respiratory pathogen with potentially moderate to high disease burden in LMICs – it is estimated to annually cause 34 million episodes and over 3 million hospitalizations. This pathogen is a potential target for maternal immunization strategies to prevent disease and early death in young infants. However, due to lack of evidence, the role of RSV in early mortality in young infants and neonates in LMICs is not confirmed. Since most current studies estimate the burden of disease in terms of hospital-based deaths, there is a knowledge gap regarding the proportion of community-based deaths due to RSV. The primary study objectives are (1) to assess and analyze the burden and determinants of RSV mortality in

infants in 4 low-income settlements of Karachi and (2) to provide a cause of death consultation for the enrolled families of deceased neonates.

Methodology: This is an observational surveillance study, with primary outcome measures including a laboratory (rPT-PCR) confirmed RSV and pertussis infection report for the nasopharyngeal swab sample collected from the deceased infant. The field team consists of nurses, field site supervisors, site-specific community health workers and mobilizers. Following a 3-month formative phase, the project is currently in its 12-month scale-up surveillance phase. Upon receiving a death alert from key community partners, the RSV team mobilizes to approach a household where an infant under 6 months of age has expired. With the parents' consent, the nurse collects a nasopharyngeal specimen from the infant.

Findings: Between August 2018 and July 2019, out of 244 households approached, 160 specimens have been successfully collected from the 4 catchment areas of Ibrahim Hyderi, Ali Akbar Shah Goth, Bhains Colony and Rehri Goth. Out of 144 specimens tested so far, 4 are positive for RSV, which implies a burden of 27.8 infant deaths per 1000 due to RSV. Controlling for stillbirths, 4/90 = 44.4 deaths per 1000. Surveillance continues through the monsoon season to December 2019.

Conclusion: There are many challenges in generating evidence for the burden of disease, specifically for RSV, such as lack of resources for hospital and community surveillance and diagnostics, and difficulty in obtaining specimens. Community acceptance and religious approval of the study procedure, along with other services provided for enrolled parents by the RSV project (such as grief counseling home visits and a cause of death report provided for the infant) have facilitated in the successful obtainment of consent and specimens.

Keywords: surveillance; protocol; infant mortality; respiratory syncytial virus

Abstract ID: PP-101

The outcome of Ketamine and Propofol for Procedural Sedation and Analgesia (PSA) in Pediatric Patients in the Emergency Department
Bushra Qureshi

Background: Children often require relief of pain and anxiety when undergoing diagnostic or therapeutic procedures in the emergency department. In order to humanely achieve this, sedation with adequate analgesia is required with an agent that not only has rapid induction and a smooth recovery period, but also provides adequate cardiovascular and respiratory function, amnesia, anxiolysis and motor control throughout the procedure. Propofol combined with Ketamine has become standard practice for procedural sedation in a conscious patient in the emergency department. Few studies have looked at the overall success and incidence of complications of Propofol and Ketamine combined sedation as performed by non-anesthesiologists in the pediatric patients.

Objectives: To determine the outcome (procedural time, sedation efficacy, recovery, complications) of Ketamine and Propofol for Procedural Sedation and Analgesia (PSA) in pediatric patients in the emergency department **Methods:** We conducted a descriptive, cross-sectional study on a non-probability consecutive sample including 179 patients, aged below 16 years presenting to the ED of Aga Khan University Hospital, Karachi within 6 months (22 January 2019 to 22 July 2019), who received Ketamine and Propofol for PSA, performed by

certified Pediatric Advanced Life Support and PSA personnel. The subjects were observed throughout the ED stay for any complications including apnea, hypoxia, seizure, arrhythmia, laryngospasm, stridor, hypotension, bradycardia, rash, vomiting, aspiration or any other. A written informed consent was taken from parents before including in the study. Ketamine IV 1 to 2 mg/kg followed by Propofol IV 1 mg/kg then IV 0.25 to 0.5 mg/kg every 3 to 5 minutes was used as required. Patients with known allergy to Ketamine, Propofol, egg and soy; low blood pressure or hemodynamic instability were excluded from the study. Data was entered and analyzed using IBM SPSS software version 22. Frequency and percentage was calculated for qualitative variables like gender and complications. Mean and standard deviation was calculated for age, sedation and recovery time. Effect modifiers like age and gender controlled through stratification. Post stratification chi-square test was applied by taking $p \leq 0.05$ as significant.
Results: In this study 179 patients underwent PSA in emergency department for evaluation of outcome of Ketamine and Propofol combination, out of which 102 (57.0%) patients were male and 77 (43.0%) were female with mean age of 3.91 ± 2.80 years. Most affected age group of children was 1-5 years 144 (80.4%) patients, followed by 6-10 years 28 (15.6%) patients, and 11-16 years with 7 (3.9%) patients. Lower incidence of complication was observed such as; tachypnea 51 (28.5%) hypotension 40 (22.3%), tachycardia 39 (21.8%), bradycardia 4 (2.2%) and hypoxia 2 (1.1%).
Conclusion: PSA in children by using combination of Ketamine and Propofol is safe, effective and associated with lower complications
Keywords: ketamine, propofol, procedural sedation, pediatrics, ketofol

Abstract ID: PP-102

Role of Salmonella specific bacteriophages as antibacterial agents in Salmonella gallinarum infected broiler chickens
Muhammad Shahzad Shafiq , Farzana Rizvi1, Shah Nawaz, Qaisar Amin, M. Zulqarnain Shakir,
M. Waseem Usmani, Nasir Mahmood.

Antibiotics have remained treatment of choice against many bacterial infections in humans and animals. Their preventive role in controlling bacterial infections is also admirable. But their excessive and irrational use has enabled bacteria to develop resistance. To date, a number of gram positive and gram negative bacterial species have developed antibiotic resistance. Hence, there is an immense need to develop some antibiotic alternatives to minimize antibiotic use and prevent antibiotic resistance. Bacteriophages are natural antibacterial agents which infect and kill bacterial cells. They are equipped with some major antibacterial proteins like endolysins, hollins and Peptidoglycan hydrolases. Bacteriophages infect bacteria by lytic and lysogenic lifecycles. In lytic lifecycle they lyse a bacterial cell while in lysogenic lifecycle they incorporate their genome with bacterial chromatin and multiplied in bacterial generations. Whenever a bacterium undergoes stress, the lysogenic cycle converts to lytic cycle. The efficiency of bacteriophages as antibacterial agents was investigated in Salmonella infected broiler chickens in an experimental trial. The chickens were experimentally infected with Salmonella gallinarum bacterial broth via oral route followed by Salmonella specific bacteriophages supplementation in feed. The body weight gain in phage supplemented chickens was significantly higher as compared to untreated

chickens which indicated growth promotion potential of bacteriphages. Morbidity and mortality percentage was markedly reduced in bacteriophage treated birds. The total erythrocyte count, hemoglobin concentration and hematocrit percentage were also significantly higher in bactriophage treated birds as compared to untreated birds. The untreated birds showed enlarged liver and spleen on postmortem examination while their size remained unaffected in phage supplemented chickens. Following these experimental findings, bacteriophages can be concluded as efficient preventive and therapeutic antibacterial agents against Salmonellosis.

Keywords: antibiotic, bacteriophages, salmonella, chickens

Abstract ID: PP-103

The rising trend of extensively drug resistant (XDR) positive cases for enteric fever at tertiary care hospitals in Karachi

Yasmin Ladak, Neelam Sadruddin, Irum Fatima, Muhammed Tahir Yousafzai, Faizan Ali, Aneeta Hotwani, Hasina Wajid, Farah naz qamar, Najeeb Rahman

Background: Enteric fever is a major public health problem in Africa and South Asia. A large proportion of the population lacks access to safe water, sanitation, and hygiene infrastructure. SEAP was aimed to assess the burden of enteric fever in South Asia. Here we report the trend of XDR enteric fever identified from October 2016 to May 2019 SEAP at tertiary care hospitals in Karachi, Pakistan.

Methodology: A multi-country surveillance of enteric fever in Asia project (SEAP) was initiated in October 2016 in Pakistan, Nepal and Bangladesh. In Pakistan, blood culture confirmed patients with enteric fever were enrolled from outpatient, inpatient and laboratory of Aga khan University Hospital (AKUH) Karachi, and Kharadar General Hospital (KGH). Inclusion criteria for enrollments at outpatient department included self-reported fever of at least 3 days, blood culture test advised by the doctor and residence within the selected catchment area of the respective hospitals. At inpatient, suspected or culture confirmed diagnosis of enteric fever patients were enrolled. Blood-culture confirmed cases from the clinical laboratory of AKUH and KGH, not enrolled from outpatient or inpatient were also enrolled. Antimicrobial susceptibility testing was performed using the disc diffusion method. Data on sociodemographic and clinical characteristics were collected using standard questionnaire.

Results: During Oct 2016-May 2019, 1565 cases of culture confirmed cases of typhoid were enrolled. Out of 1565, 518 (33.09%) from KGH and 1047(66.9%) were enrolled from AKUH. There were 283/518(54.6%) from KGH and 338/1047(32.2%) from AKUH were reported as XDR. Out of 283, 117 were females and 166 were males from KGH. Similarly, out of 338, 145 were females and 193 males among the data from AKUH.

Conclusion: XDR Typhoid is a challenge for the treatment of typhoid cases. Introduction of vaccine against typhoid in routine immunization is essential. Promotion of water hygiene and sanitation interventions are also required.

Keywords: enteric fever, extremely drug resistance, hospital surveillance, karachi

Abstract ID: PP-104

Antibiotic prescription patterns of Pakistani dentists and its contribution to rise in antimicrobial resistance; a national survey
Sana Rauf, Waqar Ali

Objective: Antibiotic prescribing practices among dentists and dental specialists in Pakistan remains poorly understood. The purpose of this study is to assess knowledge, prescribing patterns and awareness of antibiotic resistance among the dentists of Pakistan. Materials and **Methods:** A pilot study of randomly selected 75 Pakistani dentists were conducted for preliminary results. A validated, self-administered questionnaire with open ended and close ended questions was prepared. Information like demographic data and antibiotic prescription pattern among dentists were recorded. Responses were analyzed and expressed as absolute frequencies. Results: 47.0 % of the dentists correctly recognized the need to prescribe antibiotics only when there was systemic involvement. However, 52.9% of the dentists prescribed antibiotics even when there was no obvious need or any systemic involvement. An alarming 81.3% of the dentists' prescriptions were influenced by non-clinical factors, like, patients' expectation and insistence of a prescription, work pressure, lack of time for both the dentist and patient, as well as uncertainty in diagnosis.
Conclusions: The present study shows antibiotics are prescribed indiscriminately, inappropriately and injudiciously by Pakistani dentists, to manage the oral diseases which are mainly because of local factors. The mere removal of the local causative factors reduces the need for prescribing antibiotics considerably. It is of paramount importance that antibiotics are used in conjunction with; never as the first line of treatment modality. Despite the awareness on antibiotic resistance, dentists show lack of concern in curbing this grave public health problem. Furthermore, the public needs to be educated against self-medication with antibiotics and its consequences. Only then can we hope to battle antibiotic resistance to a greater extent and prevent it from becoming a menace.
Keywords: antibiotic resistance, dental surgeons, dentists, epidemiology, pakistan, knowledge, rational use of medicines

Abstract ID: PP-106

Prevalence of transmitted and acquired drug resistance mutations in HIV-1 infected Pakistani cohort
Dilsha Zahid, Uroosa Tariq, Sharaf Ali Shah, Ayesha Iftikhar, Faisal Sultan, Syed Ali, Faisal Mahmood, Syed Hani Abidi

Background: Antiretroviral drugs have greatly increased the survival of most HIV patients. However, this is greatly threatened by increasing rates of antiretroviral dug resistance, which may eventually lead to suboptimal treatment outcomes. The objective of this study was to characterize currently occurring antiretroviral drug resistance mutations among drug-naive and drug-experienced HIV-1infeted Pakistani patients.
Methods: A total of 134 samples were collected from the treatment-naïve and -experienced patients, and pol gene was sequenced from these samples. The genotyping, recombination and

drug resistance analysis was performed to identify the infecting HIV strain and characterize the drug resistance mutations (DRMs) in each patient-derived sequence.

Results: In our study cohort, HIV-1 subtype A1 was the predominant subtype, followed by subtypes C, D, G, B and CRF-02AG, and 35AD. The Prevalence of DRMs against Protease inhibitors (PIs), Nucleoside reverse transcriptase inhibitors (NRTIs) and non-NRTIs in treatment-naïve and treatment-experienced group was 5.7%, 42.8%, and 57%, and 6%, 31%, and 66.6%, respectively. Furthermore, prevalence of dual- and multi-DRM was more in drug-experienced patients than in drug-naïve patients. DRMs E138A, K103N, G190A and V90I (DRM against NNRTIs) and I84V, L10V/I, K20R/I and V82I (DRM against PIs) were the most prevalent DRMs in our study cohort. **Conclusion:** The study revealed high prevalence of both transmitted and acquired drug resistance mutations in our study cohort, which can have profound impact on the antiretroviral treatment strategy. This study also warrants the need for efforts to improve compliance to antiretroviral therapy and reduce transmitted resistance rates, which will greatly ensure the therapeutic efficacy of antiretroviral drugs.

Keywords: antiretroviral drugs, naïve, experienced, transmitted drug resistance, acquired drug resistance, POL gene, HIV-1

Abstract ID: PP-107

Anesthetic management in a patient with Deep brain stimulation device
Mohammad Arham, Waleed Bin Ghaffar, Irfan Ul Haq, M Sohaib

Introduction: Deep brain Stimulation has been used as treatment modality for conditions like Parkinson's disease, dystonia and essential tremor. However, in addition to its effects on motor symptoms, there are additional effects on pain modulation, psychiatric disturbances and cardiovascular function. The presence of the DBS devices may have further implications on the management of these patients.

Case Description: We report a case of patient with criggler najjar type 2 disease with history of DBS device implant for dystonia. She underwent total abdominal hysterectomy with bilateral salpingo-opherectomy. We used general anesthesia with transversus abdominis plane block. Her DBS device was turned off preoperatively precautionary to avoid any possible damage or interaction with electrosurgical equipment. In addition to standard perioperative management challenges we also faced exaggerated cardiovascular response for which patient was managed with multiple antihypertensive medications. Postoperatively patient was found to be agitated with constant screaming. Analgesics were ineffective. However, when DBS was turned on not only she became calm but also her blood pressure normalized as well.

Conclusion: Anesthesia in patients with DBS device is challenging and is something we don't encounter on daily basis. It's not commonly used in low-middle income countries like ours, which attracted us to write this case report. This will help us and others in terms of general orientation with the device, better perioperative patient outcomes and its effects on autonomic function.

Keywords: deep brain stimulation, general anesthesia, perioperative management, autonomic function

Abstract ID: PP-108

An invincible XDR typhoid fever has infiltrated Pakistan
Sumaira Khadim, Nudrat Fatima

Background: Typhoid is a bacterial infection caused by bacteria Salmonella typhi. The bacterium lives in the intestine and bloodstream of human, and spread through the direct contact with the feaces of infected persons. But now due to enzymatic and genetic changes the bacterium has developed resistance to oral first line antibiotics (ampicillin and flouroquinolones) and oral third line antibiotics (chloramphenicol). Due to this it has become a wide disaster for Pakistan especially for two big cities of Sindh Province i.e. Karachi and Hyderabad. This Extreme Drug Resistant typhoid fever is now given the terminology "XDR typhoid fever". **Objective:** An epidemic XDR typhoid fever has taken the world including Pakistan, by storm with its vivid target of engulfing the mortals and resist towards countless medical therapies. Here, a set of medical regime with precautions are being posed to let the steam out and control the disease. **Methodology:** Diverse variety of journals with articles over the subject disease have been scrutinized to get a clear picture of the epidemic disease from 2007-2019. Following credible databases have been probed: Pub med, ASM Journal, NEJM organization, Oxford Academy, Cidrap, ReAct, Sciencemeg, New England Journal of Medicine. **Conclusion:** 5,372 cases have been reported in Pakistan regarding XDR typhoid among which 2000 cases are reported to be fatal. The only treatment available and affordable by Pakistan is Azithromycin and Carbapanem while many other drugs with increase immunity and better treatment are available but Pakistan can't afford it. To avoid antibiotics resistance diseases, Pakistan should start antimicrobial resistance program (AMR program) and antimicrobial stewardship program (ASP). Due to threatening storm typhoid in Pakistan, US center of disease control and prevention (CDC) issued health warning that travellers to Pakistan are at high risk of XDR typhoid, so they should be properly vaccinated before travelling to Pakistan.
Keywords: XDR typhoid fever, Cephalosporin, Ciprofloxacin, Azithromycin, Carbapenem, Sindh Pakistan

Abstract ID: PP-113

Antimicrobial susceptibility profiling of Methicillin Resistant S. aureus (MRSA) from nares and mobile phones of health care workers and isolation of its Bacteriophages
Nishat Zafar Iqbal, Mehak Nayyar, Muhammad Aamir Aslam, Muhammad Tariq Javid, Abdullah Zafar

Methicillin-resistant Staphylococcus aureus is a main nosocomial pathogen globally ad has appeared as a risk factor not only for patients but also for the staff working in the hospital. Some strains i.e. Methicillin-resistant S. aureus (MRSA) have acquired a gene which makes it resistant to all beta-lactam antibiotics known as mecA gene. It is carried asymptomatically in the human body and hospital-associated strains are serious nosocomial pathogens that can cause infections. A total of 50 samples were collected by sterilized cotton swab each from nares and mobile phone devices used by diagnostic laboratory technicians and healthcare workers in different areas of hospitals like OPDs and children ward (Allied and District Head Quarter hospitals Faisalabad).

From 15 samples, Staphylococcus aureus was isolated from mobile phone devices and 25 were isolated from nares of health care workers. Bacteriophages were isolated against MRSA through the agar overlay method and its lytic activity was examined through spot test technique. To reveal the antibiotic resistance profile, the isolates were subjected to antibiogram study against nine antibiotics. The study revealed that 100% of the S. aureus isolates were resistant to Oxacillin, Amoxicillin, Meropenem, and Ampicillin while all the strains were sensitive to linezolid. Findings of this study revealed that mobile phone devices and nares of these occupational groups may serve as a reservoir of antibiotic-resistant S. aureus. Bacteriophages can be used as potential biocontrol agents to control antibiotic-resistant S. aureus.

Keywords: antimicrobial resistance, methicillin-resistant s. aureus, bacteriophages

Abstract ID: PP-115

Herbal Nutraceuticals; An Alternative Choice for Antibiotics in Upper Respiratory Ailments

Saleeha Israr Ul Haq, Tehseen Quds, Maha Adeel Hashmi, Bushra Nasir, Komal siddique

Introduction: A bacterial infection is a proliferation of harmful strains of bacteria on or inside the body. Bacteria can infect any area of the body. Particular examples include pneumonia, tuberculosis, upper respiratory tract infection, gastritis, food poisoning etc. Antimicrobial drugs include all drugs that work against a variety of microorganisms, such as bacteria, viruses, fungi, and parasites. An antibiotic drug is effective against bacteria. All antibiotics are antimicrobials, but not all antimicrobials are antibiotics. Antimicrobial resistance is when bacteria or other microbes become resistant to the effects of a drug after being exposed to it. This means that the drug, and similar drugs, will no longer be effective against those microbes. Antibiotic resistance is an emerging problem and herbal drugs are best alternative, particularly Licorice which is native to the Mediterranean, southern and central Russia, and Asia Minor to Iran. Licorice is proved effective for treating sore throat, bronchitis, cough, and other infections caused by bacteria or viruses. Ginger has long been used for culinary and medicinal purpose. Possible health benefits include reducing nausea, pain, motion sickness and inflammation. Aim of study: To prevent the use of antibiotics by using herbal nutraceuticals such as licorice, ginger and honey.

Methodology: Ginger and Licorice tea in combination with honey is prepared and standardized to treat gastrointestinal infection and upper respiratory tract ailments caused by bacteria and viruses. Result: Intake of the herbal nutraceuticals instead of antibiotics to treat common cold and other bacterial infections prevent antibiotic resistance.

Conclusion: Unnecessary and misuse of antibiotics have been found in common cold and some bacterial infections which is the major cause of antibiotic resistance. Future research should be focused on the use of nutraceuticals derived from natural ingredients that produce less adverse effects and proved effective to fight against bacterial resistance.

Keywords: antibiotic resistance, alternative therapy for antibiotics, prevention of antibiotic resistance, nutraceuticals for bacterial infections.

Abstract ID: PP-116

Can the pediatric appendicitis score accurately predict acute appendicitis in children presenting to an emergency department in Pakistan?
Syed Maaz Salahuddin , Dr Asad Mian, Omair Ayaz, Mehtab Jaffer

Background: Appendicitis is commonly encountered in children presenting with acute abdominal pain to the Emergency Department (ED). The Pediatric Appendicitis Score (PAS) is a readily applicable tool that can reduce unnecessary radiation exposure in children. It may be particularly beneficial for EDs that are resource-limited.
Objective: To determine diagnostic accuracy of PAS in predicting appendicitis in children presenting with acute abdominal pain to the ED of a Low-Middle Income Country (LMIC).
Methods: This validation study was through retrospective chart review of children between 4-18 years of age with clinical suspicion of acute appendicitis, presenting to the ED of the Aga Khan University Hospital, Karachi, Pakistan, between January 2010 and December 2012. Basic demographics, relevant clinical information and components of the PAS were gathered from patient charts. Data analysis was done using SPSS v21. Diagnostic accuracy was determined through a combination of sensitivity, specificity, predictive values, and area under the curve (AUC). Results: A total of 104 children with mean age 10.9 years (SD $\pm$ 3.5 years), of whom 76% were male, met eligibility criteria. Around ¾ of the patients initially presented with right lower quadrant (RLQ) abdominal pain. Migratory pain, nausea or vomiting, and RLQ tenderness were commonly elicited historical or clinical findings (those features are also components of the PAS). The majority of patients had moderate to high PAS (n=95, 91 %, score of $\geq$ 4) and biopsy-proven appendicitis (n=99, 95%). Diagnostic accuracy of an equivocal PAS (score 4-6) in predicting acute appendicitis in our patients showed sensitivity of 96.8%, specificity 80%, positive predictive value 98.9% and AUC 0.84.
Conclusion: The PAS showed good diagnostic accuracy in predicting acute appendicitis in children presenting to the ED of an LMIC. Potential exists to incorporate the PAS into evidence-based, patient-centric, quality and safety initiatives to improve clinical outcomes in the resource-limited ED.
Keywords: PAS (pediatric appendicitis score), acute appendicitis, emergency department (ED), low middle income country, alvarado score

Abstract ID: PP-117

Use of Antibiotics in Paediatrics
Fakhsheena Anjum, Saima Mahmood Malhi, Saleeha Israr, Fariha Jawaid, Rabia Malik, Nadia Batool, Mariya Amin

Introduction: Antibiotics are medications that may destroy or inhibit the growth of bacteria but they cannot be used to treat viral infections like cold, flu, etc. Bacteria have become resistant to antimicrobial agents as a result of chromosomal changes or the exchange of genetic material via plasmids and transposons. Many broad spectrum antibiotics are prescribed to children of age between 2-12 years; if prescribed irrationally then these antibiotics may cause increased number

of resistant population in later ages. The pediatric age is the growing age where the immunity is in developmental stages and is weak.

Aim of study: To assess the antibiotic use in children of age between 02- 12 years. Methodology: Around 200 hospital elicited prescriptions having information about the age, gender, pathologic condition, antibiotic treatment given and duration of treatment to patients of age between 2 to 12 years were collected from different areas of Karachi. The collected data were then statistically analysed using SPSS version 16.0. Results: There were 58% male and 42% female children that were prescribed antibiotics for their treatment. The antibiotics such as cefixime, entamizole and azithromycin were mostly prescribed to the patients to treat diarrhea, cough and common cold including other upper respiratory tract disorders. It was found that at different stages the protocols of treatment deviated from WHO treatment guidelines.

Conclusion: The extensive and unnecessary use of antibiotics among paediatrics can lead to antibiotic resistance. Campaigns for antibiotic control, better hygiene, and synthesis of agents with improved antimicrobial activity need to be adopted so as to limit bacterial resistance and promote rational use of antibiotics.

Keywords: antibiotics, antibiotics in children, antibiotic resistance, diarrhea, common cold.

Abstract ID: PP-118

Febrile neutropenia assessment and management practices in the emergency department: a clinical audit
Syed Maaz Salahuddin, Asad Mian, Omair Ayaz, Mehtab Jaffer

Background: Febrile neutropenia is an Oncology emergency. In suspected neutropenic septic patients the door to needle time is significantly delayed. There is limited data regarding patients with febrile neutropenia, their management and risk stratification in our part of the world, hence it is important to set guidelines which should be immediately implemented once a patient is received with febrile neutropenia in Emergency Department. Aim: In the current audit we aim to assess the assessment, management and disposition practices that are followed in the emergency department in patients with febrile neutropenia. Methods: Study design: Cross sectional, Study duration: Six months audit, Participants: Oncology patients who had received chemotherapy in last 6 months, Study setting: Department of Emergency Medicine, Aga Khan University Hospital. Conclusion: We should locally implement evidence based, patient-centric, clinically effective strategies for patients presenting to Emergency Department with febrile neutropenia. Clinical audits should be frequently conducted to ensure quality, safety and clinical outcomes of the patients, and then retrospectively reviewed.
Keywords: febrile neutropenia, oncology emergency

Abstract ID: PP-120

Anaesthetic management of cerebral arteriovenous malformation (AVM) excision using awake craniotomy: A case series of two patients.
Waleed Ghaffar, Khalid Ahsan, Faraz Shafiq, Ather Enam

This case series summarizes the successful management of two cases with cerebral arterio-venous malformation excision using awake through out approach of craniotomy. The anaesthetic management was helpful in conducting intraoperative neurological monitoring and hemodynamic stability. The postoperative period showed adequate pain management, shorter length of stay in hospital.
Keywords: anaesthesia, intracranial arteriovenous malformation, craniotomy, wakefulness

Abstract ID: PP-121

Isolation of phages against Pseudomonas aeruginosa isolated from burn patient
Muhammad Tariq Javaid, Shahnila Nadeem, Muhammad Aamir Aslam, Nishat Zafar, Abdullah Zafar

Bacteriophages are being explored as antimicrobial agents in the wake of increasing antibiotic resistance worldwide. P. aeruginosa has become an important cause of infection in immune compromised patients and especially in hospitalized patients that cause the nosocomial infection as well cystic fibrosis (CF) in patient's lungs.
The objective of this study was to isolate P. aeruginosa from wounds of burn patients, determined its antibiogram pattern and isolate lytic bacteriophages. A total of 15 burn wound samples had been taken from the unit of burn patients at Allied Hospital Faisalabad. For the confirmation of bacteria biochemical tests were performed. According to the guidelines of CLSI, the antibiotic sensitivity testing was done by using disc diffusion method on MHA medium. By agar overlay method, the bacteriophages were isolated against P. aeruginosa. Out of 15 burn wound samples, 11 were positive for P. aeruginosa presence, antibiotic profiles of these P. aeruginosa strains were analyzed. The highest percentage of resistance was found against Amikacin and Ciprofloxacin while highest percentage of sensitivity was found against Colistin and Meropenem. These strains were further analyzed for isolation of bacteriophages from pooled sewage water samples. The isolated phages showed positive results by forming clear zones (plaques). This shows that phages can be used as potential biocontrol agents against P. aeruginosa infections..
Keywords: bacteriophage, p. aeruginosa, antimicrobial resistance

Abstract ID: PP-123

Depression among Adult Patients with Primary Brain Tumor: A Cross-Sectional Study of Risk Factors in a Low-Middle Income Country
Anum Sadruddin Pidani , Rehana Siddiqui, Mr. Iqbal Azam, Shahzad shamim

Objective: The prevalence of depression among primary brain tumor patients ranges from 15% to 40% globally. Several individual and clinical factors contribute in the development of depression. However, their association with depression in Pakistani setting has not yet been assessed. Thus, we aim to study the factors associated with depression among adult primary brain tumor patients at a tertiary care hospital in Karachi, Pakistan.
Method: This study included 132 patients with biopsy proven primary brain tumor in various stages of treatment at a tertiary care hospital in Karachi, Pakistan. Patients completed a set of pre-structured questionnaire evaluating patient-related, tumor-related, and treatment-related factors. Scores of 10 to 27 on Patient Health Questionnaire-9 (PHQ-9) were indicative of screen positive for depression. Cox algorithm regression assessed association between patient-related, tumor-related, and treatment-related factors and depression. Propensity scores were computed to examine the factors associated with impaired functional status.
Results: Fifty one (39%) patients in our study screened positive for depression on PHQ-9. There was significant association between depression and KPS scores (Prevalence Ratio: 3.25 and Confidence Interval: 1.87-5.62) after controlling covariates. Propensity scores predicted positive association between KPS (functional status) and unemployment, treatment stage, and tumor recurrence. Tumor-related and treatment related factors including tumor grade, location, type, and hemispheric lateralization were found insignificant.
Conclusion: Depression is common in patients with primary brain tumor. Impaired functional status has direct impact on depression in these patients. Incorporating psychosocial domain earlier in the course of treatment needs to be considered for better neuro-oncology management of primary brain tumor patients.
Keywords: brain tumor, depression, psycho social factors

Abstract ID: PP-126

Association of Bruxism with Occlusal interferences. A Case- control study
Tayyaba Arshad, Farhan Raza Khan, Masood Kadir

Background: The increasing prevalence of bruxism ($8 - 35\%$ globally) is impairing the quality of life of affected individuals. Studies have shown the association of some occlusal factors with bruxism in developed countries but information is lacking from Pakistani context.
Objective: We aimed to determine the association between occlusal interferences and bruxism.
Method: We conducted a matched case- control study by enrolling 106 cases of bruxism and 106 controls; matched on age (18-40 years within ☐5 years) from January to June 2017 at Dental clinic, AKUH Karachi-Pakistan. We diagnosed cases of bruxism on dental examination and occlusal interferences (mediotrusive and laterotrusive) were identified with excursive movement of the jaw using colored articulating paper. Cases had generalized attrition wheareas controls did not. Crude and adjusted matched-odds ratio with 95% confidence intervals were reported to explore the association.

Result: Twenty-four percent bruxers presented with severe anxiety as compared to 19% of non-bruxers; assessed through Hospital anxiety scoring scale (HADS). We found strong association between mediotrusive occlusal interference and bruxism (aMOR=3.4; 95% CI=1.6-7.1) by adjusting all other variables in the model when matched for age. Furthermore, the odds of having group function guidance among bruxers were nearly 2.7 times (aMOR=2.7; 95% CI=1.3-5.5) that of non-bruxers. Conclusions: On the basis of strong association; we conclude that it would be useful to identify and manage occlusal interferences among bruxers to an early stage to avoid dental and temporomandibular problems.

Keywords: bruxism, occlussal interference, tooth wear, attrittion.

Abstract ID: PP-130

THE EPIDEMIOLOGICAL STUDY AND PHTHIRAPTERAN ECTOPARASITES (PHTHIRAPTERA: AMBLYCERA AND ISCHNOCERA) FOUND ON THE WILD PARTRIDGES (GALLIFORMES: PHASIANIDAE) OF SINDH, PAKISTAN
Jasarat Ilyas Jokhio

The 21 partridges species of Francolinus are present in world while as 05 species are found from Pakistan. Coturnix, commonly known as Quail or Batair has total 08 species globally while as 04 and 02 of them are found abundantly in Pakistan and Sindh, respectively The partridge meat is rich in micronutrients, its allergy free with low cholesterol values, nutritious, tender and tasty. It is gaining popularity as a table delicacy globally. Doctors recommend it for those who want to maintain their cholesterol level (Nasar et. al. 2016). Coturnix is affected by different types of viral, bacterial, fungal and protozoan microbial diseases (Balarabe Rabiu Mohammad and Charles Ejiofor, 2015) which may cause great economic loss to the poultry industry due to malnutrition, decreased feed conversion and mortality ratio, weight loss and lowered egg production. (Puttalakshmamma et. al. 2008) Parasitological studies reveal that lice infestation caused by the external parasites suck blood which often causes anemia in birds or even death in severe cases (Graham, 1986) In health and nutritional uses, quail eggs have nutritional value which is three to four times much greater than that of the chicken eggs, very rich in protein, vitamins and lipids (Lawal, et. al. 2017). That is why Chinese use quail eggs to help treat the TB, Asthma and Diabetes even. Different stones in Kidney, Gallbladder and Liver are also prevented by using Quail eggs in the daily diet (Lawal, et. al. 2017). Louseness on Coturnix may be considered as the most abundant morbidity ratio globally which is characterized by irritation, anorexia, fatigued and lethargic conditions (Balarabe Rabiu Mohammad and Charles Ejiofor, 2015). Ectoparasitic infestations may also cause endoparasitic helminthic infections (Linardi, 2001). For the ectoparasites processing, the collected lice (through DDT powder on feathers and shuffling thoroughly the live birds in field and lab) were preserved in 70% ethanol, prior to slide preparation using KOH and passing from ethanol series and mounted in the Canada Balsam using standard method for the identification of species forth. During the present study, different species of the family Philopteridae (Ischnocera) and family Menoponidae (Amblycera) were obtained from various species of Partridges. Finally the taxonomic perspectives were applied to study them. The seven Phthirapteran species found from different bird species of Coturnix genus belonging to Sindh.

Keywords: epidemiology, francolins, chewing lice, sindh, pakistan

Abstract ID: PP-131

Harmful constituents of commercial, broiler chicken feed and the presence of these constituents in their meat can develop antibiotic resistance in human consumers
Saara Ahmad Muddasir Khan, Rehana Rehman, Asra Khan

Objectives: Harmful constituents of commercial, broiler chicken feed and the presence of these constituents in their meat can develop antibiotic resistance in human consumers.
Methods: The experimental study was conducted at the Pakistan Council of Scientific and Industrial Research laboratory, Karachi. Samples of commercial broiler chicken feed and meat were collected in 2015 from a large poultry farm that supplies chicken meat to various suburban areas of the city. Another set of organic chickens were bred in an animal house. The samples of feed, meat and droppings were then analyzed for the estimation of basic constituents and additives in the laboratory. Data was analyzed using SPSS 20.0.
Results: The constituents were measured in 26 samples of chicken meat from each group. Calories ($p<0.01$), amount of protein ($p<0.01$), total fats ($p<0.05$), cholesterol ($p<0.01$), saturated fats ($p<0.01$), monounsaturated ($p<0.05$) and polyunsaturated fats ($p<0.01$) were significantly increased in commercial broiler chicken compared to that of organic chicken meat. The commercial chicken feed was found to contain crude carbohydrate, crude protein, crude fat, crude fiber, antibiotics, toxicities of roxarsone, melamine, steriods and pesticides, vitamins, amino acids, premixes of vitamins. Additive constituents were also present in the commercial chicken meat. These components were absent in organic chicken meat and droppings which suggests that they were absent in their feeding contents. Conclusion: Toxicities present in the chicken meat resultant from chicken feed may result in antibiotic resistance in human consumers
Keywords: antibiotics, chicken feed, conventional caged chicken meat, melamine, organic chicken meat, roxarsone, steroids

Abstract ID: PP-133

Increasing the performance of Antibody Lymphocyte Supernatant (ALS) Assay Using CD19+ Sorted B Cells
Areeba Tariq, Kumail Ahmed, Zia Mujahid, Najeeha Talat Iqbal

Background: Pakistan has 5th highest burden of both adult and childhood TB [1]. The numbers for pediatric TB only reflects a small fraction of 10-15% of diagnosed TB cases. A vast majority of TB cases in children are considered as missed opportunity to be diagnosed timely and efficiently. Previously ALS assay performed well in pediatric population with sensitivity and specificity of 78% and 86% respectively. In a modified version of ALS assay, CD19+ B cells were used for quantification of B cells using ELISA and ELISPOT methodology.
Methods: In a case control study (case=22; control=20), GeneXpert +ve children (1-18 years) were enrolled. IgG optical density was measured in supernatants collected at 48 & 72 hours from PBMCs ($5x10^6$ cells/ml) and CD19+ B cells. Later culture supernatants were tested in an in-house ELISA assay. Similar approach of concentrating B cells was employed in ELISPOT assay for enumeration of spot forming units (SFU) to compare which of the tests demonstrate better

diagnostic algorithm for children. Mann Whitney U test was applied for the comparison of groups using SPSS 17.0.

Results: We found significant differences in cases (PBMCs $=0.961\pm0.613$; CD19+$=0.521\pm0.472$) vs control (PBMCs$=0.323\pm0.229$; CD19+$=0.04\pm0.11$) (MWU; p=0.003). Compared to PBMCs (Mean=1.15 ± 0.348) we observed -0.3 fold lower response in the CD19+ sorted (mean=0.804 ± 0.485). Conclusion: Preliminary results support ALS as an emerging biomarker of TB. Further analysis with a larger sample size will confirm the diagnostic accuracy of both tests and suitability for large scale testing.

Keywords: tuberculosis, paediatrics, b cells

Abstract ID: PP-137

Mortality attributed to ileal perforations: Prospective data from a multi-centers enteric fever surveillance project in Pakistan

Saqib Qazi, Farheen Pardhan, Tahir Yousaf Zai, Irum Fatima, Faizan Ali, Najeeb Rahman, Aneeta Hotwani, Nasir Saddul, Farah Naz Qamar

Introduction: Surveillance of enteric fever in Asia project (SEAP) is a prospective study design to estimate burden of enteric fever in Pakistan, Nepal and Bangladesh. Culture proven enteric fever patients and patients with non-traumatic ileal perforations are enrolled from the selected hospitals in each country. Data on clinical manifestation, severity of illness, anti-microbial resistance pattern and cost of illness are obtained. Here we report the data of patients with ileal perforations from Pakistan who were enrolled in the study and died during or post-operatively.

Methods: Surgical data was collected from Aga Khan University hospital (AKUH), Jinnah Post Graduate Medical Center (JPMH), Kharadar General Hospital (KGH) and National Institute of Child Health (NICH) Karachi. Cases of ileal perforation with or without blood/tissue culture proven S.typhi were eligible to enroll. Ileal perforations due to TB, or trauma or any other etiology were excluded. A trained full time research nurse and research assistant under the supervision of a surgeon screened and enrolled the participants. Data was recorded using a structured electronic questionnaire in tablets. Results: During October 2016 to June 2019, a total of 237 cases of ileal perforation were enrolled from AKUH, KGH, JPMC and NICH. All cases underwent surgery and 100% recovered at KGH (n=1) and AKUH (n=19). Out of 102 patients with perforations from NICH, 9 died (9/102; 8.82%) due to post-surgical complications. The average length of hospital stay ranged from 03 days to 57 days in these four hospitals. At JPMC the surveillance was initiated on 01 April 2018 and total 115 cases of ileal perforations were enrolled until June 2019. Out of 115, 05 (4.34%) patients died post operatively. The length of hospital stay ranged from 01 to 27 days at JPMC. At NICH, the age of children who died ranged from 6 month to 11 years and at JPMC, it ranged between 12-50 years. Almost all the patients who died belonged to the remote areas of interior Sindh rather than Karachi city. The most common post-operative complications were hemodynamic instability, wound infection and pulmonary complications.

Conclusion: Ileal perforation due to suspected enteric fever is not un-common in Pakistan. Patients with ileal perforation are at high risk of mortality due to post-operative complications. Introduction of typhoid vaccine in national program, availability of safe drinking water and environmental sanitation are recommended.

Keywords: prospective study, ileal perforation, enteric fever

Abstract ID: PP-139

Quantitative Analysis of Iron content in Dry dates and Fresh dates

Sara Hudani, Ali Mohammad Rahim, Sahar Jessani, Zahra Maqsood and Laiba Asif

Background: Iron is an important mineral for the production of hemoglobin by erythroblasts and it also helps in transporting oxygen to body tissues. Iron deficiency is a major cause of anemia and is more prevalent in developing countries, posing additional burden on health care systems, in the presence of scarcity of resources. The high-risk group consists of females and children. Furthermore, dates are best source of Iron.

Purpose: To do quantitative analysis by identifying and comparing the iron content in two classes of dates I-e dry dates and fresh dates and to explore the richest source of iron from the two classes of dates which can play crucial role in Iron deficient patients (anemic) and will boost their immunity which can help them to fight dangerous infections and diseases.

Methodology: Firstly, the iron samples of dry dates and wet dates were taken in separate flask and distilled water and sulfuric acid were added in both the samples to prepare their solutions. Additionally, these iron solutions were titrated against $KMNO4$ until first appearance of permanent pale pink color.

Results: The redox titration highlighted that iron content is found in both dry dates and fresh dates. When both the dates were compared it was evident that dry dates are the richest source of Iron as compared to fresh dates because the sample of dry dates was neutralized when titrant was added in a large quantity demonstrating greater concentration of iron in dry dates. Conclusion: Dry dates are plenty source of iron which can help in fulfilling Iron deficiency. Iron also boost immunity which can help patients to fight infectious disease. Moreover, Anemia can lead to multiple adverse outcomes, which can be prevented by doing appropriate cost-effective interventions on time.

Keywords: quantitative analysis, immunity, redox titration, cost-effective interventions

Abstract ID: PP-141

Azithromycin resistant Shigella sonnei in Karachi, Pakistan- A case series from single center.

Salima Rattani, Syed Mohammad Zeeshan, Hira Irfan,

Shigella species are a major cause of diarrheal diseases accounting for 5–10% of bacillary dysentery throughout the world. Annually, 165 million cases of shigellosis are reported of which 163 million are in developing countries, with highest incidence among children. Shigella sonnei (S. sonnei) is now emerging as a cause of dysentery in developing countries with an increase in incidence from 15.4 % to 39%. Third-generation cephalosporin and fluoroquinolones are an effective treatment option for symptomatic patients. Azithromycin is recommended by the American Academy of Pediatrics as the first-line empirical antimicrobial treatment for multidrug-resistant (MDR) Shigella spp. among children and as a second-line treatment for adults. **Objective:** Antibiotic-resistant strains have emerged all over the world with multidrug

resistant Shigella being resistant to third generation cephalosporin, fluoroquinolones, and also azithromycin. We have reported 5 cases of Azithromycin resistant MDR S. sonnei.

Methodology: This was a retrospective, observational study conducted at Aga Khan Clinical Microbiology Laboratory in 2019. Patients in whom MDR S. sonnei resistant to Azithromycin was isolated from stool samples were included for detailed history of symptoms, socioeconomic status and nutrition.

Results: During 2019, Azithromycin resistant MDR Shigella sonnei was isolated from four patient specimens resistant to ampicillin, trimethoprim/sulmethoxazole, ciprofloxacin, ceftriaxone and cefixime and susceptible only Imipenem. Azithromycin minimum inhibitory concentrations (MIC) for all the isolates was >256 µg/ml. All patients belonged to the pediatric age group of less than 5 years of age, had a history of fever and loose stools and were residing in Karachi when they developed diarrheal symptoms. One patient had an episode of blood in stool. All patients improved on Oral Rehydration and use of probiotics with one being prescribed antibiotics. **Conclusion:** Due to poor water and sanitation and excessive antibiotic usage XDR Salmonella Typhi has emerged in our population with a high probability for emergence of some other water borne extreme drug resistant pathogen. Resistance in Shigella species with cephalosporin is on rise, azithromycin resistance can make situation worst.

Keywords: shigella sonnei, azithromycin resistant, gastroenteritis

Abstract ID: PP-143

Antimicrobial resistance: Understanding mechanism and causes of antibiotic resistance
Salman Ranani, Ahmer Adnan, Salman Muhammad Soomar1

Antibiotic discovery revolutionized medical practice and played a fundamental role in treating infectious agents for over a century (1). Antibiotic resistance is a growing health concern that results in increased morbidity and mortality and increased health care financial cost (2). Misuse of antibiotic and failure to apply effective infection control and prevention measures are well established key drivers for antibiotic resistance (3). In order to reduce the antibiotic resistance understanding the mechanisms of antimicrobial resistance and detailed knowledge of reservoirs is required; in particular "we need to broaden our understanding of the natural selection and transmission patterns of antibiotic-resistant bacteria", which threaten health-care delivery and effect on public health (4). Statistics show that due to multidrug resistant bacterial infections estimated 25,000 people in Europe die each year and annually more than 2 million people in the United States are infected with antibiotic resistant bacteria, that results in 23,000 deaths and some estimates indicate the attributable mortality could reach up to 10 million by 2050 (5). To further understand about the causes of antimicrobial resistance we should know the sequential details of antibiotics from production till consumption, the flaw in this process can lead to resistance(6). Drug resistance depends a lot on drug quality specially in developing countries where poor temperature control and reduced drug potency together causes major problem, increasing local temperature as well as population density are associated with increasing antibiotic resistance in common pathogens (7). The purpose is to emphasize the need for researchers to use standard data collection tool and protocols in studies for identifying and reporting on risk factors of antibiotic resistance in humans. This will also assist health policy

makers shaping policies on maintaining drug quality and temperature with proper dispense of antibiotics, also allowing research funding agencies for proper resource allocation.
Keywords: antibiotic, antibiotic resistance, antimicrobial resistance, multidrug resistance**-**

Abstract ID: PP-144

Azithromycin resistant Salmonella Typhi- A case report
Salima Rattani, Afia Zafar, Najma Shaheen,

Introduction: Enteric fever, caused by Salmonella Typhi and Salmonella Paratyphi A is an endemic disease in Pakistan. Many antibiotics including ampicillin, chloramphenicol, trimethoprim/sulfamethoxazole, flouroquinolone, and third generation cephalosporins are available for its treatment. The recent emergence of extensively drug resistant (XDR) Salmonella Typhi in Pakistan, which by definition is resistant to first line as well as second line antibiotics, led to an increase in the use of Azithromycin for the treatment of enteric fever. Here we report a case of complicated typhoid fever caused by Azithromycin resistant XDR S. Typhi.
Case Presentation: A 19 year old male presented to the emergency department with complains of fever since 2 weeks associated with loose stools and per rectal bleeding since 2 days. On admission, he was anemic with a hemoglobin of 3.4g/dl, hematocrit of 11%, TLC of 6.0 x 109/L with 66.7% neutrophils and 27.2% lymphocytes and a platelet count of 100 x 109/L. Blood culture, both aerobic and anaerobic bottles had growth of gram negative rods. The aerobic bottle had XDR Salmonella Typhi, confirmed on the basis of serologic testing and API 20 E (biomerieux) which was resistant to first line and second line antibiotics along with ciprofloxacin, as well as azithromycin and susceptible only to imipenem and meropenem. However, the organism isolated from the anaerobic bottle showed similar identification susceptible to both meropenem and azithromycin. Azithromycin minimum inhibitory concentrations (MIC) for the resistant isolate was >256 mcg/ml. CT scan abdomen showed extravasation of contrast in the distal ileum and caecum representing active bleeding along with mesenteric, para-aortic and paracolic lymphadenopathy which was most likely reactive. A CT angiogram revealed active extravasation from branch of ileocolic artery into the terminal ileum, which was successfully embolized. Other tests done showed Hepatitis A virus antibodies as positive, Entamoeba histolytica IHA titre as equivocal and stool for parasite showed Ascaris lumbricoides while HIV, Anti HCV, HepBsAg, AntiHEV, MPICT, dengue antigen, brucella serology, RPR and CCHF PCR serology were negative. The patient was treated with Meropenem and Azithromycin. **Discussion:** Antibiotics for the treatment of XDR S. Typhi are limited with either azithromycin or meropenem/imipenem as available options. S. Typhi strains resistant to azithromycin have been reported from India since 2011 with resistance ranging from 21.3 % to 31%. The increasing use of azithromycin for a variety of bacterial infections including upper respiratory tract and genital infections, community acquired pneumonia, and lately enteric fever has led to an increase in resistance to this antibiotic. We report the first case of Azithromycin resistant XDR Salmonella Typhi from Pakistan.
Keywords: XDR salmonella typhi, enteric fever, azithromycin resistance

Abstract ID: PP-145

EVALUATING POTENTIAL OF NATURAL PLANT EMBELIA RIBES TO COMBAT RESISTANT MICROORGANISMS
Mahreen Muzammil, Somia Gul, Humera Khatoon

Background: Herbalism is renowned to be traditional use of plants as medicine or folk medicine by using plant parts or extracts of plants. Embelia Ribes (Family: Myrsinaceae) is a traditional ancient medicinal plant which accounts significant pharmacological properties cultivated worldwide. Plants and natural products have been utilized as promising source for the cure of diseases. Use of medicinal plants to treat diseases and maintenance of public health is prevalent among the people of different countries and culture.
Objective: This study demonstrated the antibacterial activity of E.ribes with ethanolic extract and hexane against different micro-organisms Methodology: :ATCC MSSA 25293 & MRSA 43300 were used as reference strains, HA-MRSA, VRSA collected from clinical source. Modified paper disk diffusion method and well plate method with 250,500,750 and 100 μg/ml of ethanolic extract and hexane extract and zone of inhibition noted.
Result: The extracts showed activity against these organisms found to be siginificant when compared with standaed statistically.
Conclusion: This study concluded that extract of E.ribes seeds has the activities against MRSA and VRSA.
Keywords: embelia antimicrobeal MRSA

Abstract ID: PP-146

Molecular surveillance of drug resistance in Plasmodium falciparum malaria using Targeted amplicon deep sequencing (NGS)
Najia Ghanchi, Mohammad Asim Beg, Bushra Qureshi,

Objective: We describe presence of SNPs in Plasmodium falciparum drug resistance genes (crt, mdr1, k13, dhps, dhfr, and cytochrome b from Pakistani population using a fully integrated end-to-end Illumina-based TADS and bioinformatics pipeline for molecular surveillance. Study design Prospective observational Study Methodology Samples (N=50) were collected from patients with microscopy confirmed P.falciparum malaria attending Aga Khan University Hospital. DNA was isolated using the whole blood protocol for the QIAmp DNA Blood Kit. The targeted amplicon deep sequencing (TADS) protocol follows six steps: Sample quality check and species confirmation, target gene PCR enrichment, amplicon purification and pooling, amplicon indexing and library generation, sequencing and data analysis.
Results: The pfcrt wild type CVMNK and double mutant SVMNT haplotypes were found in 30% and 70% of samples. The C350S polymorphism was not found in Pakistani isolates. The mdr1 gene, N86Y and Y184F polymorphism was found in 26% and 85% isolates respectively. In dhfr, the triple mutant IRN haplotype was identified in 13% of samples. In the artemisinin resistance associated gene k13, the K189T polymorphisms was found at an allele frequency of 100% in 2 isolates. In sulfadoxine resistance associated dhps gene, the A437G polymorphism was found in A437G in 89% and K540E in 11% samples. Some novel variants were also identified in mdr, K13 and dhfr gene.

Conclusion: This approach can provide an integrated system for characterization and tracking of antimalarial drug resistance and provide a detailed drug resistance profile for. Adaptation of this method for monitoring of molecular markers of malaria drug resistance at national level will help guide appropriate prophylaxis and treatment recommendations.
Keywords: p.falciparum, malaria, drug resistance

Abstract ID: PP-147

Molecular surveillance of drug resistance: Plasmodium falciparum artemisinin resistance SNPs in Kelch protein propeller domain from southern Pakistan
Najia Ghanchi, Mohammad Asim Beg, Bushra Qureshi, Talyha Khalid

Objective: We describe genotyping of point mutations in Kelch protein propeller domain of Plasmodium falciparum associated with artemisinin resistance Study design Prospective observational Study **Methodology:** Samples (N=116) were collected from patients with microscopy confirmed P.falciparum malaria attending Aga Khan University Hospital during September 2015-December 2017. DNA was isolated using the whole blood protocol for the QIAmp DNA Blood Kit. The K13-propeller gene (K13) was amplified using nested PCR. Double-strand sequencing of PCR products was performed using Sanger sequencing methodology. Sequences were analyzed with MEGA 6 and Bioedit software to identify specific SNP combinations. **Results:** All isolates analyzed for K13-propeller allele were observed as wild-type in samples collected post implementation of ACT in Pakistan. C580Y, A675V, Y493H and R539T variants associated with reduced susceptibility to ACT were not found. K189T polymorphisms was found in 2 isolates not significantly associated with Artemisinin resistance. **Conclusion:** K13-propeller polymorphism are useful molecular marker for tracking the emergence and spread of ART-resistance in P. falciparum. C580Y polymorphism is reported from Cambodia and Ghana with rapid invasion of the population and almost near fixation in south East Asia. Surveillance of K13 polymorphism is necessary as recommended partner drug for Pakistan sulfadoxine–pyrimethamine (SP) has shown reduces susceptibility which will compromise the efficacy of fast acting ACT. Surveillance of anti-malarial drug resistance to detect its emergence and spread need to be strengthened in Pakistan.
Keywords: K13, drug resistance, malaria

Abstract ID: PP-154

Spectrum of invasive yeast infections in children in Pakistan over the last five years: 2015-2019
Joveria Farooqi, Faheem Naqvi, Afia Zafar, Kauser Jabeen

Objectives: We aim to describe here the changing spectrum of invasive yeast infections in children in the last 5 years in Pakistan, using retrospective laboratory data from 2015-May 2019
Methods: Records of archived yeast isolates from Jan 2015-May 2019 kept at the Aga Khan University Clinical Laboratories, section of Microbiology in Karachi, were retrieved for analysis. A total of 1119 non-duplicate isolates were identified, of which 992 were invasive specimens

from blood (833), CSF (51), wounds (47), intraabdominal collections (36), Central venous lines (17) and other sterile fluids (8). The patients were divided into neonates (259), paediatric age group (253) and adults (477). Frequencies of different Candida and non-Candida species isolated over the last 5 years were computed and compared for age groups using chi-square test. Hypothesis of a change in the spectrum over the years among each age group was also tested.

Results: Candida species made up 87.4% and 86.6% of all invasive yeasts in neonates and children, respectively. The most common group in neonates was a diverse group of rare Candida species (including C. lusitaniae, C. guilliermondii and C. pelliculosa to name a few) at 45.4%, followed by C. tropicalis (24%) and C. parapsilosis (15.7%); Ustilago species were the most common non-Candida yeasts at 9.2%. In children, the most common species was C. tropicalis (32%), followed by rare Candida species as described above (22.8%) and C. albicans (15.1%). Ustilago was again the most common non-Candida yeast at 11.1%.There was a statistically significant difference in the distribution of invasive yeasts between neonatal and paediatric age groups (p<0.001). The change in spectrum of invasive yeast over the years was significant for infants and children (p=0.035) and adults (p=0.029); however, we could not demonstrate a significant difference in neonatal (p=0.096) and elderly (p=0.270) spectrum of invasive yeast infections over the years.Fluconazole resistance in yeasts isolated from neonates was found to be 8.2% while it was 22.8% in infants and children, possibly due to an emergence of C. auris infections in children (12.8%) versus neonates (1.3%).

Conclusions: We conclude that it is essential to monitor the spectrum of yeast infections in neonates and children as they are the population where there is greatest diversity of invasive species, not limited to Candida species. Emerging pathogens are most likely to arise from this population, including resistant strains, hence, it is also important to monitor resistance trends

Keywords: candidiasis, paediatric, age, candida albicans, non-c. albicans, ustilago

Abstract ID: PP-155

Implementation of Internalised Quality Control Plan for antibiotic susceptibility testing on Vitek2 system
Samia Tariq, Joveria Farooqi, Shumaila Taufiq, Sadia Shakoor

Background: The Individualized Quality Control Plan (IQCP) is the Clinical Laboratory Improvement Amendments (CLIA) Quality Control (QC) policy that can be an alternative QC option. An IQCP permits the laboratory to customize its QC plan according to organism being tested, reagent, environment, testing personnel and test system, providing equivalent quality testing. It defines QC frequency, identifies weaknesses in our processes where errors can occur and uncover discrepancies in workflow to improve efficiencies in pre-analytic, analytic, and post-analytic phases of the entire testing process.

Objective: To evaluate whether we reduced our errors since the time of introduction of IQCP (Individualized Quality Control Plan) at the clinical microbiology laboratory at Aga Khan University Hospital, Karachi. Methodology: We evaluated three areas where most of the errors occurred in our setting in the first year of Vitek IQCP implementation and determined whether there was any change in status in the next two years. The areas evaluated were organism (proportion of inconsistent results when isolate is not pure or is incorrectly identified), test system (number of quality control failure events due to QC strain deterioration or reagent, card,

or equipment error), and testing personnel (inoculation errors and termination rates when suspension is not homogenized). A t-test was run to compare the indicators at the beginning and after a few months of IQCP implementation.

Results: Above mentioned IQCP indicators from May-Dec 2017 were compared to those from Jan 2018-Apr 2019. The proportion of inconsistent results reduced by 1.8% points (95%CI: -0.48-4.11, p=0.0579), number of QC failures by 1.75 (-21.69-25.19, p=0.4392) and termination rates by 0.2% (-0.03-0.43, p=0.0406). We were able to reduce the risk of erroneous results by a variety of actions, tailored to address the specific problems. Conclusion: IQCP is necessary to ensure laboratory systems run smoothly. However, some parameters, as in the case of QC failure, may never be lowered to a low risk level, since a single factor may result in a large error, even when easy to mitigate.

Keywords: internalised quality control plan, vitek2, inconsistent, QC, termination

Abstract ID: PP-157

Evaluating self-medication practices with antibiotics in University students of Karachi
Salman Ranani , Sarmad Muhammad Soomar

Introduction: Antibiotic resistance is a growing health concern that results in increased morbidity and mortality with increased health care financial cost (1). Misuse of antibiotic and failure to apply effective infection control and prevention measures are well established key factors for antibiotic resistance (2). Multidrug resistant bacterial infections cause annually estimated 25,000 deaths in Europe, 23,000 deaths in United States and some estimates indicate that the mortality could reach up to 10 million by 2050 worldwide (3). Self-medication is obtaining medicines without a prescription or doctors' advice, it is a most common leading cause and contributing factor of antibiotic resistance identified internationally (4).

Objective: to determine self-medication practices with antibiotics in University students of Karachi.

Methods: Study design: Cross sectional An online survey will be conducted at Aga Khan University (AKU), main campus stadium road Karachi, which includes students of medical, nursing and other programs using a pretested questionnaire (https://www.wjx.cn/jq/757672.aspx) to evaluate self-medication practices of antibiotics (5). Expected sample size of 200. Ethical approval: Study will proceed after approval of Ethical review committee of Aga Khan University. Expected results: Majority of the participants agrees on taking self-medication antibiotics with prior knowledge of symptoms of infection or disease beside visiting doctor. (The results can be different on basis of actual survey)

Conclusion and recommendations: There is evidence that self-medication antibiotic practices leads to antibiotic resistance hence it should be avoided. Further to create awareness avoiding self-medication practices, an education based intervention or software program tool can be used to inform participants regarding use of self-medication and antibiotic resistance.

Keywords: Keywords: Self-medication, antibiotic, antibiotic resistance, multidrug resistance-

Abstract ID: PP-158

COMPARATIVE ANALYSIS OF SEALING ABILITY OF BIODENTINE, MINERAL TRIOXIDE AGGREGATE (MTA) AND INTERMEDIATE RESTORATIVE MATERIAL (IRM) IN FURCAL PERFORATION: An In-vitro study
Kamil Zafar, Robia Ghafoor

Objective: To compare the sealing abilities (Microleakage in mm) of Biodentine, MTA and IRM in repair of furcal perforation.
Materials and Methods: An in-vitro study was performed in Aga Khan University Hospital dental clinics. A total of 120 extracted teeth were evaluated and then randomly divided into three equal groups. An endodontic access cavity will be prepared in each molar with straight fissure bur. The artificial perforation will be created in the center of furcation area using a round bur #2(1mm) in a high speed hand piece and then repaired with Biodentine, MTA, and IRM. One-way ANOVA was used to assess the difference among the sealing abilities of Biodentine, MTA and IRM. Post-hoc Tukey test was applied for pairwise comparison among these groups. Level of significance was kept at ≤0.05.
Results: Mean sealing ability turned out to be 0.52 ± 0.47, 0.57 ± 0.59 and 2.75 ± 0.50 for Biodentine, MTA and IRM, respectively. Statistically significant difference was noted among the experimental groups (biodentine, IRM and MTA) in sealing the furcal perforation (p-value <0.001). There was statistically significant difference when IRM was compared with Biodentine and MTA. IRM appeared to be the poorest among the groups in sealing the perforation defects. Whereas MTA and biodentine performed similar in sealing the furcation perforations. However, we failed to find any such difference between Biodentine and MTA.
Conclusion: Biodentine and MTA appeared similar in sealing ability of furcal perforation defects. However, sealing ability of IRM was significantly inadequate when compared to biodentine and MTA
Keywords: intermediate restorative material; biodentine; mineral trioxide aggregate

Abstract ID: PP-159

Changing trends of antimicrobial resistance of Escherichia coli (Ecoli) isolated in mid-stream urine cultures of patients with uncomplicated cystitis- A report from Hyderabad
Yusra Shafquat Ikram din Ujjan

Introduction: Uncomplicated cystitis is common infection. Globally the prevalence is found to be 0.7%. The common risk factors include old age, prior history of UTI, sexual activity and diabetes mellitus. Community acquired uncomplicated infection is mostly caused by Escherichia coli (E.coli) (80%). The mainstay of diagnosis is urine culture which takes 48-72 hours, so the therapy is started empirically. OBJECTIVE: To determine trends of antimicrobial resistance of E.coli isolated in urine cultures in patients with uncomplicated cystitis.
Materials And Methods: The susceptibility data of Ecoli isolated from midstream urine culture samples of patients presenting in outpatient department of Liaquat University Hospital with uncomplicated cystitis, in June 2019 was collected prospectively from the laboratory database of Diagnostic and Research Laboratory, Liaquat University of Medical and Health sciences. Culture

was performed on Cysteine Lactose Electrolyte deficient Agar (CLED). E.coli was identified using biochemical tests. Antibiotic susceptibility was performed on Mueller-Hinton Agar (MHA). Results were interpreted using Clinical Laboratory Standards Institute (CLSI). RESULTS: A total of 100 clinical midstream urine samples were included in this study, 66% of which were of females. Mean age was 37 years. 81% of the cases were resistant to ampicillin, 65% to ciprofloxacin and ceftriaxone, 37% to Amoxicillin/clavulanic acid and cotrimoxazole, 27% to gentamicin, 25% fosfomycin, 15% to piperacillin/tazobactam and nitrofurantoin and 7% to amikacin and meropenem.

Conclusion: Our study shows resistance to antibiotics that are used to treat UTI empirically. Our study also highlights the increased isolation of ESBL producing Ecoli in uncomplicated cystitis. Considering the increasing antimicrobial resistance, there is need of accurate and updated antimicrobial susceptibility surveillance data. This information will aid physicians in selection of appropriate empiric therapy for UTI.

Keywords: uncomplicated cystitis, ecoli, antimicrobial resistance

Abstract ID: PP-160

Abdominal actinomycosis in an elderly diabetic: Case report
Riyasat Ahmed Memon, Yusra Shafquat, Nausheen Yaqoob

Background: Actinomycosis is a rare disease that presents as three entities, cervico-facial, abdominal and genital, with cervico-facial being the commonest. Due to its subacute presentation and indolent course, abdominal actinomycosis is difficult to diagnose and is often confused with malignancy.

Case: We present a case of an elderly diabetic with no known other risk factors of the disease with complaints of right sided abdominal swelling. On CT scan of abdomen and pelvis, a large soft tissue enhancing lesion, measuring 8.0 x 2.4 x 8.8 cm was noted to be arising from the mesentery and involving right lateral abdominal wall laterally and lateral wall of ascending colon extending up to the hepatic flexure medially, along with reactive adjacent wall thickening of colon. Small bowel, cecum, appendix, ascending colon and hepatic flexure mass were received in a formalin containing container in Department of Histopathology, the Indus Hospital, Karachi. Grossly the peri-colonic fat of cecum and ascending colon showed an ulcerated nodular lesion measuring 10 x 9 x 7 cm. Sections examined reveal large bowel wall mesentery exhibiting a fibrotic area with dense lymphoplasmacytic and neutrophilic infiltrate along-with granulation tissue formation with centrally placed colonies of Actinomycetes composed of basophilic radial filaments, highlighted on special stain Gomori Methenamine Silver (GMS) stain Periodic acid–Schiff (PAS). Features were compatible with Actinomycosis.

Conclusion: Abdominal actinomycosis should be considered in differentials in cases with abdominal masses. Diabetes Mellitus is not an established risk factor for development of abdominal actinomycosis. Studies are required to link its association with the disease.

Keywords: abdominal actinomycosis, elderly diabetic

Abstract ID: PP-162

Evaluation and comparison of three disinfectants efficacy against environmental microorganisms

Alina Hasan, Shazia Perveen, Fatima Aziz, Najeeha Iqbal

Rationale: To determine the effect of different concentrations of three different disinfectants (70% ethanol, Cavicide, 10% Sodium Hypochlorite) against two different species of non-pathogenic environmental bacteria (Staphylococcus.aureus, Bacillus specie) on two different surfaces such as BioSaftey Cabinet, Working Bench Surface.

Methods: Bacterial isolates were grown and cultured on Sheep Blood Agar (Oxoid). Suspensions of 0.5 Mc Farland were then prepared using saline and colonies grown on blood agar. Disinfectants used were commercially prepared Cavicide, 70% ethanol, 10% sodium hypochlorite. Distilled water was used as control. All other factors such as exposed area of working surface, volume of suspension, volume of disinfectant and exposure time between suspension and working surface were kept the same. Different concentrations (1:10, 1:100, 1:1000) of disinfectants (70% ethanol, 10% sodium hypochlorite and cavacide) were made by serial dilution. 0.5 ml of microbial suspension was added to an area of 25sqcm and left for 5 minutes. Different concentrations of disinfectants of same volume was spread on the bacterial suspension for different time intervals (0min, 2min, 5min). Templates were then swabbed and each swab was vortex in a tube containing 5ml of BHI. 100 microliters of each of the dilutions were dropped and spread on Sheep Blood Agar. Incubation at 37°C was done for 24 hours. After 24 hours of incubation, no. of colonies were counted from the plate and CFUs were calculated using the following formula: CFU/ml = no.of colonies x dilution factor/volume plated in ml. We checked the effect of different disinfectants on different working surfaces at different concentrations and at different time intervals. Hence, our experiment was both time dependent and concentration dependent. We optimized this experiment using distilled water as our control and kept exposed area of working surface, volume of suspension, volume of disinfectant and exposure time between suspension and working surface constant. We then compared the results with control and different concentrations of the same disinfectant. We also compared results of the same disinfectant at the same concentration at different exposure times. We also compared the effect of different disinfectants at the same concentration on the same working surface against the same organism. We also compared the effect of same disinfectant on different working surfaces and against different species of bacteria Results and Conclusion: More the exposure time of disinfectant and the suspension, the less the colony forming unit per ml were found as expected. The more dilute the disinfectant, higher the CFU. On working bench surface, Cavicide seemed to be the most effective followed by ethanol which is followed by Sodium Hypochlorite. On biosafety cabinet, Cavicide seems to be the most effective followed by ethanol. Bacillus is more sensitive to the use of disinfectants as compared to Staphylococcus species

Keywords: cavicide, ethanol, sodium hypochlorite, biosafety cabinet, working bench surface, bacillus, staphylococcus, disinfectants

Abstract ID: PP-163

Effects of a Single Oral Dose of Azithromycin 2 gram in Laboring Women and Antimicrobial Resistance (AMR) Monitoring
Saleem Jessani, Sarah Saleem, Farnaz Naqvi, Seemab Naqvi, Shiyam Sunder

Introduction: Maternal and neonatal infections are among the most frequent causes of maternal and neonatal deaths, and current antibiotic strategies have not been effective in preventing many of these deaths. Emerging data suggest that intrapartum azithromycin reduces maternal and neonatal infection; however, it is not known if deaths could be prevented. Therefore, a randomized controlled trial has been planned to launch in seven countries including Pakistan to evaluate the role of a single oral dose of 2g azithromycin to prevent maternal death or peripartum sepsis and intrapartum/neonatal death or sepsis in laboring women. An ongoing concern for peripartum and perinatal antibiotic prophylaxis is the selection of resistant organisms including azithromycin-resistant organisms leading to resistant infections, and there is concern that disruption of gut and other flora (microbiome) in women and particularly in neonates may lead adverse events including increased allergic reactions, rash and childhood asthma. In this regard, the findings of two studies following a single oral dose of azithromycin during labor and use of adjunctive azithromycin for cesarean sections are very promising; however, it requires further evaluation. Therefore, a sub-study has been planned along with the main trial to monitor antimicrobial resistance and maternal and newborn microbiome effects of the single dose of prophylactic azithromycin.
Methods: Randomized and treated mothers or their babies diagnosed with infections up to 6 weeks after delivery will have clinical culture and sensitivity testing sent, including azithromycin resistance for clinical isolates. The appropriate samples will be obtained according to the type of infection, i.e. wound swab in case of surgical infection or perineal infection. In addition, a subset of maternal-infant dyads regardless of clinical infections will be randomly selected and serially monitored for development of antimicrobial resistance in selected flora locations. It will be done via nasopharyngeal and rectal swabs in mothers and babies. Moreover, same subset will have maternal and infant specimens collected and stored for future microbiome analysis including 16S/metagenomics and metatranscriptomics studies.
Analytic Approach: The identified pathogens will be summarized overall by treatment arm. The susceptibility vs. resistance to azithromycin will also be summarized overall by treatment arm as well as by site. The overall prevalence (95% CI) will be estimated for the occurrence of azithromycin resistance from any organism at any time point for either the mother or infant of the dyad. Discussion If the present trial confirms the clinical benefits of intrapartum azithromycin in consis
Keywords: antimicrobial resistance, azithromycin, laboring women

Abstract ID: PP-164

What does whole genome sequencing reveal about phenotypically susceptible M. tuberculosis clinical isolates?

Zahra Hasan, Safina Razzak, Rumina Hasan, Sadia Shakoor

Introduction: Whole genome based sequencing data of Mycobacterium tuberculosis strains has revealed insights about genetic variants associated with drug resistance. Rapid whole genome sequence (WGS) based diagnostics are being sought for specific and sensitive identification of drug resistance in MTB strains. To fully understand genotypes of MTB resistant strains, publically available databases allow free access of MTB genome data. Further, bioinformatics software are available for analysis of MTB genotypes. We analysed WGS datasets from MTB strains classified as drug susceptible in freely available database using public bioinformatics tools.

Methods: WGS data for 1526 M. tuberculosis isolates was downloaded from the ReSeqTB database. All FASTQ files were uploaded to TB Profiler for variant calling. Single nucleotide polymorphism (SNP)s associated with resistance to specific anti-tuberculous drugs were sub-divided into different drugs. Those associated with Rifampicin (RIF), Isoniazid (INH) and Flouroquinolone (FLQ) have been analysed here **Results:** Bioinformatic analysis of MTB WGS data using TB profiler revealed that 96 of the 1526 isolates previously classified as phenotypically susceptible had SNPs associated with drug resistance to one or more anti-tuberculous drugs. Seven strains had SNPs in rpoB gene associated with RIF resistance and four of these were high confidence mutations (HCM). Seventeen strains had SNPs associated with INH resistance; four had katG mutations of which 2 were HCM and 2 were low confidence mutations (LCM), one had an inhA promoter mutations and 12 strains had fabG promoter mutations. Fourteen strains had mutations in the gyrA gene which were associated with FLQ resistance; four of these were HCM and ten were LCM. **Conclusions:** MTB strains classified as phenotypically susceptible can be found to be genotypically resistant to both first line and second line drugs. This highlights the possibility of misclassifying MTB strains based on drug susceptibility testing. Publicly available whole genome data it may lead to misclassifications if sufficient data checks are not put in place.

Keywords: WGS; MTB; drug resistance

Abstract ID: PP-166

Anti Microbial Resistance (AMR) and experience of FJ hospital Quetta

Farooq Uyghorv, Shereen Khan, Fouzia Raza, Nasir Azeem

Introduction: Antimicrobial agents or antibiotics have transformed human lives since their discovery in 20th century. Since then modern therapies like organ transplantation, surgeries and cancer treatments achieved highest success rates. But these benefits of antibiotics are feared to be overshadowed by the problem of Anti-Microbial Resistance (AMR). WHO announced global antibiotics emergency in 2014 and declared the world is facing the end of antibiotics era.

Therefore, it seemed rationale to look at the AMR pattern in Quetta Pakistan where awareness and healthcare resources are inadequate, both being risk factors for AMR.

Methods: This study is part of the Antibiotics Stewardship Program (ASP) at FJ chest hospital Quetta. All patients having respiratory infections seen at this hospital are enrolled. Samples of appropriate respiratory secretions (sputum, pleural fluid, BAL) are sent, as per guidelines of local ASP, for microbiological cultures and sensitivity testing. A preset proforma is filled in for demographics of patients, type and quantity of microorganism isolated from the sample along with antibiotics sensitivity pattern reported. Data is entered and analyzed by SPSS version 21. Results Data of 125 culture positive patients and samples are analyzed so far. Out of these 125 samples, 48.8% are of sputum, 25.6% are of pleural fluid/pus and 19.2% are of Broncho Alveolar Lavage. Pseudomonas Aeruginosa (35.2%), Streptococcus Pneumonia (13.6%), Staphylococcus Aureus (12%), ESBL K Pneumonia (12.4%) and E coli (9.6%) were isolated from these samples respectively (Fig 1). Out of pseudomonas isolates, 47.8% were resistant to Ciprofloxacin, 34% resistant to Cabapenems, 29.6% resistant to Ceftazidime and 25% resistant to Piperacillin-Tazobactam and Amikacin (Fig 2). 67% of Staphylococcus isolates showed resistance to Methicilline (Fig 3).

Conclusion: This study suggest that every third patient is infected with a Multi Drug Resistant organism, which underscores the importance of AMR and ASP. Further data are required to gauge the burden of AMR in our part of the world. Fig 1 Fig 2 Fig 3

Keywords: anti microbial resistance (AMR). antobiotics stewardship program (ASP)

Abstract ID: PP-168

Maternal immunization history and association with vaccination status of children of 12-23 months of age living in the peri-urban areas of Karachi- A cross sectional study.
Muddassir Altaf Bosan, Rehana Siddiqui, Syed Iqbal Azam, Imran Nisar

Background: Vaccination is a cost-effective method in protecting children from eight deadly diseases targeted by EPI. Mother's role is central in the completion of the child's vaccination. During past five years vaccination coverage till 1st dose of measles among 12-23 months children has improved from 54% to 66% in Pakistan, however, this needs to be improved further to achieve the target of reaching 90% by the GAVI Action Plan.

Objective: To identify the relationship of maternal TT vaccination and factors influencing complete vaccination of children in 12-23 months old children living in Ibrahim Hyderi Extension, Karachi, Pakistan Methods: A cross-sectional community-based study was conducted in Ibrahim Hyderi, Karachi, from June 2019 to July 2019. Systematic sampling technique identified the households having mothers of children aged 12-23 months. Data was collected by using electronic-based pre-tested structured interview questionnaire. Mothers were inquired for obtaining TT vaccine during the index pregnancy and for the vaccination status of the youngest child between ages 12-23 months.

Results: Of the 680 consented mothers 77.4% of them were vaccinated with at least one dose of TT vaccine during the index pregnancy, and 53% of their children were completely vaccinated up to 1st dose of measles vaccine. Cox proportional hazards Algorithm showed significant relationship with completion of child vaccination and maternal TT vaccination status (PR (95%CI): (3.59 (2.44 – 5.27)) , parity of 1-2 (1.59 (1.12 – 2.25), parity of 3-4 (1.47 (1.02 – 2.11))

compared to parity of 5 and more), community based advice for immunizing children (1.34 (1.07 – 1.68)), adjusted for maternal ethnicity (2.01 (1.51 – 2.70)) and maternal literacy (1.64 (1.18 – 2.28)).

Conclusion: Immunization coverage of children living in Ibrahim hyderi, for completing vaccination till 1st dose of measles is low. Maternal education and TT vaccination, low parity, community-based health education, and maternal literacy were important predictors of childhood vaccination.

Keywords: immunization coverage, immunization determinants, vaccination, tetanus toxoid immunization, demographic health survey, pakistan

Abstract ID: PP-169

Antibiotic prescription patterns of Family Physicians at a tertiary care hospital in Karachi Pakistan

Maleeha Naseem, Rafay Iqbal, Mayera Tufail, Rehana Siddiqui , Iqbal Azam, Sobiya Sawani

Introduction: Development of antimicrobial resistance (AMR) is a complex and challenging phenomenon that has evolved to become an emerging public health concern. Pakistan developed a national action plan to combat AMR by raising its awareness as an emerging threat in public and healthcare practitioners; by discouraging empiric antimicrobial use by focusing on improvement in diagnosis; enhanced awareness of users; and improving prescription practices of health care professionals. Due to emergence of AMR against Typhoid and Urinary tract infections, we will evaluate prescription practices for treating these infections in primary care physicians working at AKU.

Objectives: Primary: To identify prescription patterns of family physicians from a tertiary care hospital in Karachi by using World Health Organization's International Network of Rational Use of Drugs (WHO/INRUD) indicators. Secondary: To determine prescription patterns for Empiric Treatment of UTI's and Enteric Fever. Methods: Records of 2000 clinic visits by patients seen by Family physicians over a period of one year by all age and sex groups from (1st June 2018-31st May 2019) will be included, excluding chronic illnesses like tuberculosis, HIV, stroke, cancers etc. Using WHO guidelines as a reference we expect 20 % antibiotic prescriptions. A Systematic Sampling Strategy will be used and data will be recorded in the form of a structured Questionnaire. Descriptive statistics will be calculated for sociodemographic characteristics of study participants included in study. Prescriptions will be analyzed for frequency, dosage, duration, and seasonal variation. Parametric and non-parametric statistical tests of significance will be applied considering the distribution of variables. We will model antibiotic prescriptions and justifiable determinants using logistic regression technique, reporting crude and adjusted Odds ratio with 95% confidence intervals.

Conclusion: There is a strong need to optimize prescription patterns by health care providers to minimize the cost associated with irrational use of available antibiotics and to reduce the phenomenon of AMR.

Keywords: antimicrobial resistance, prescription patterns

Abstract ID: PP-170

Anti-microbial susceptibility patterns in aerobic microbial isolates from sputum samples.
Muhammad Ali, Shahid Abbasi, Muhammad Junaid Qadir, Salman Faris Bukhari, Ahmed Khakwani, Fatima Kaleem

Introduction: The discovery of antibiotics, the "wonder drugs" in early part of 20th century showed spectacular success in combating infections and deaths over the past seven decades however, this success was overshadowed by progressive rise in antimicrobial resistance. Now these infectious diseases remain a major cause for worsening of living conditions of millions of people. Due to the worldwide overuse of these drugs and lack of development of new antibiotic agents by pharmaceutical companies, the resistance crisis is global now. More than 50 % isolates of staphylococcus aureus in hospital settings are now methicillin resistant. In study in Pakistan, the frequency of MDR Pseudomonas aeruginosa was found to be 22.7 %. This burden of Antimicrobial resistance worldwide is likely to grow in the future.
Objective: Our objective was to determine the frequency and antimicrobial susceptibility patterns of aerobic microbial isolates from sputum samples in FFH. Methods and Materials A cross-sectional, descriptive study of routine clinical sputum specimens, obtained from patients of both sexes, all ages for a period of 6 months i.e. from July 2018 to December 2018, that were subjected to standard microbiological procedures and the antibiotic susceptibility was determined by Kirby Bauer Disc diffusion method in FFH laboratory. Results Total 148 specimens were dealt with, out of which most prevalent organism isolated was Pseudomonas aeruginosa. MRSA was found in 8.5% samples. Augmentin and Co-trimoxazole were found most ineffective antimicrobials against respiratory pathogens. Doxycycline, Gentamicin and Carbapenems were most sensitive to Haemophilus influenza and Morexella catarhallis. Polymyxin B had highest invitro efficacy against respiratory pseudomonas isolates.
Conclusion: A statistical data on this regard would change the public attitude towards overuse of antibiotics and help doctors to devise an effective empirical treatment and caution them using antibiotics against specific high risk organisms.
Keywords: antimicrobial susceptibility, multi-drug resistant (MDR), sputum, microbial isolates.punjab

Abstract ID: PP-171

Awareness regarding risks of self-medication among people visiting community pharmacies
Devi Das, Syed Zulfqar Hyder Naqvi, Syed Imtiaz Ahamed Jafri

Objective: To determine the knowledge, attitude and practice regarding self-medications in persons visiting the pharmacies of Gulistan-e-johar Block-13 Karachi.
Methods: A KAP study was conducted in four pharmacies of Gulistan-e-joahar Block-13 Karachi. Total 395 participants were interviewed that met the inclusion criteria. Their written consent was taken. The data were collected by the principal investigator through a structured questionnaire specifically designed for the study. The duration of study was 6 months.

Results: Study results showed that only 23.5% of them had adequate knowledge, 72.9% of them had adequate attitude , after analyzing results statistically it has been observed that there is an association between demographic variables education level (p<0.001),monthly income (p=0.016), and type of family system (p=.003) with knowledge While determining association between demographic factors and adequateness of attitude, it was revealed that education level (p<0.001), monthly income (p<0.001) and type of family system (p=0.031) had strong association with adequateness of attitude. Meanwhile, other demographic variables didn't have strong association.

Conclusion: Significant association was found between demographic variables, education level, monthly income, and type of family system with adequateness of knowledge. Similarly, significant association was found between demographic variables, education level, monthly income and type of family system with adequateness of attitude. In this connection serious efforts from all the stake holders should be carried out, mainly by pharmaceuticals companies, Public health specialist and other health care provider agencies

Keywords: knowledge, attitude, practice, self-medication, pharmacies.

Abstract ID: PP-172

Knowledge and practices for antibiotic use by parents of children < 5 years of age in urban rural communities in Karachi: Preliminary Findings
Syed Iqbal Azam, Amna Rehana Siddiqui, Sobiya Sawani, Maleeha Nassem

Background: Knowledge and practices of parents on antibiotic use is a global priority due to emerging phenomenon of Antimicrobial resistance (AMR), that is driven by misuse of antibiotics, poor sanitation, poverty, and dense populations.

Objectives: We report the preliminary results of an ongoing cross sectional survey for assessing knowledge and practices on antibiotic use by parents of children < 5 years of age from urban and rural communities of Karachi.

Methods: We interviewed 155 couples individually in Sultanabad and Rehri Goth where community-based health management teams conduct primary health care activities. Knowledge was ascertained by 38 questions (score range 0-76) for, common conditions where antibiotics are used, identifying an antibiotic, routes of administration, and antimicrobial resistance. Practices had seven question (score range 0-14) on antibiotic use regarding doses, frequency, leftovers, and self-medication. A Cronbach's alpha showed internal consistency of these questions on knowledge and practices.

Results: Of the 155 pairs 56.13% were rural, husbands and wives mean ages respectively were 32.8+ 8.1 and 27.68+ 5.94 years. Urban couples were found to be more literate, and reported higher income, than rural couples. Since the samples were interrelated being husband and wives, repeated measures ANOVA analysis was performed. Overall mean scores for knowledge did not differ between husbands and wives (p<0.30), but differed by urban and rural residence respectively for husbands (41.35+ 4.22 vs 34.40 +3.22; p<0.001) and wives (40.88+5.28 vs 34.01+ 3.32; p<0.001) Practices related to antibiotic use differed significantly between area of residence (p<0.03) and between couples (p<0.001). (Fig 1a and 1b). **Conclusion:** Our preliminary findings show that couples had similar knowledge scores; though mothers had

significantly better attitudes and practices than fathers on using antibiotics in both rural and urban areas of residence

Keywords: couples, attitude & practice, antibiotic use, urban & rural community

Abstract ID: PP-173

Serratia Outbreak in special care units at The Aga Khan University Hospital
Faiza Urooj, Faisal Mahmood, Nosheen Nasir, Mujtaba Khalil

Serratia marcescens a Gram-negative bacillus is anaerobic, motile and encapsulated. It belongs to the Serratia species in the Enterobacteriaceae family. Commonly found in the environment in water, soil, plants, food, and garbage, this opportunistic pathogen usually causes nosocomial infections, such as lung and genitourinary infections, sinusitis, otitis, endocarditis, and sepsis. Serratia marcescens was not considered a human pathogen until the mid-1960s, in fact, the organisms in this genus were considered nonpathogenic for a very long time. The organisms in this genus, particularly S. marcescens, were long thought to be nonpathogenic. After extensive medical and military experimentation and human clinical infection history Serratia marcescens and Serratia liquefaciens were isolated as causative agents of numerous outbreaks and opportunistic infections within hospitalized patients. These outbreaks were largely associated with individual sources such as catheters, IV lines and medical devices used for treatment in hospitalized patients. Antibiotic-resistant strains of Serratia marcescens, especially those resistant to multiple drug therapies are the reason for an increased number of nosocomial outbreaks thus increasing the danger to hospitalized patients. Healthcare providers should be attentive towards possible sources of these organisms in order to prevent nosocomial outbreaks due to Serratia marcescens, and other probable species in the genus which also carry several antibiotic resistance determinants and are also capable of acquiring resistance genes. Outbreaks are associated but not limited to the equipment used by healthcare providers, individuals tending to multiple patients in one unit, such as an ICU can also be a source along with improper hygiene habits such as handwashing. Our goal is to identify some of these risk factors which may be probable sources of infection with Serratia Marcescens in our hospital.

Keywords: antimicrobial resistance, outbreak, carbapenem-resistant

Abstract ID: PP-175

Susceptibility pattern of Salmonella enterica serovar typhi over an eleven- year period at the Indus Health Network, Karachi Pakistan.
Nazia Khursheed, Palwasha Khan, Fareeha Adnan, Shakir Hussain

Objective: To determine Antimicrobial resistance pattern of Salmonella enterica serovar typhi and Demographic pattern of patients.
Methods:This was a descriptive, cross-sectional study (February 2008 to December2018). The culture and sensitivity test were performed by using standard protocols of American Society of Microbiology and Clinical Laboratory Standards Institute. Positve samples of Salmonella

enterica serovertyphi isolated from blood were reviewed by retrieving the data from the Hospital Management Information System. Analysis was performed using SPSS version 24. Mean ± SD or median (IQR) were reported as appropriate for age. Percentage was computed for gender and drug resistance.

Results: A total of 3112 strains of Salmonella enterica serover typhi were isolated. The age group most commonly affected was 6-15 years and with median of 7 years. Male gender suffered more (58%) than female (42%). Throughout the period there is 00% resistance for azithromycin. The range of resistance to ciprofloxacin was from <1% to 98%, Ampicillin; 55.2 to 79.2, chloramphenicol; 54% to75%, Co-trimaxazole;54 to74.7, ceftriaxone and cefixime; 0.5 to 59.5% and Meropenem; 00 to 0.07%. The resistance of ceftriaxone changed significantly; from the period 2008-2016 (0.0-0.6 %) to 2017 (18.9%) and in 2018 (59.5 %) it showed significant change

Conclusion: There is gradually rising resistance pattern of first line antibiotics. The sudden rise of resistance to third generation cephalosporin is alarming. Continuous surveillance is required to provide resistance profiles to the physicians for empirical therapy. The demographic studies with regards to age will help in developing guidelines for vaccination in endemic area

Keywords: salmonella enterica serovar typhi, antimicrobial resistance, demographic pattern.

Abstract ID: PP-176

Diagnosis of high risk Human papiloma virus in routine cervical specimens: importance of HPV screening
Kiran Iqbal Masood, Zoya Rani, Abdur Rehman, zahra Hasan

Introduction: Human papillomavirus (HPV) causes cervical cancer, which is the fourth most common cancer in women. Approximately 266,000 deaths and 528,000 new cases have been reported globally. Around 85% of the global burden occurs in the less developed regions, where it accounts for almost 12% of all female cancers. HPV types 16 and 18 are most prevalent of the 13 known high risk HPV types. In Pakistan, 5233 cervical cancer cases were reported in 2017 but the association with HPV is unknown. Globally, routine screening for women of reproductive age includes regular Pap smear and HPV screening every 3 − 5 years. However, there is limited awareness about reproductive health screening for women in Pakistan. We examined the rates of HPV diagnosed in cervical specimens submitted for HPV DNA testing.

Aims: This study was designed to determine the trend of HPV infection in Pakistan between the period of 2017 to 2019. Settings and Design: Retrospective study design

Methods and Material: This retrospective study was performed to determine the prevalence of HPV infection in cervical specimens received for routine testing at the Clinical Laboratory, Department of Pathology and Laboratory Medicine, The Aga Khan University, Pakistan. The cervical swabs collected from the patients were tested for HPV DNA using Digene HC2 HPV DNA kit (QIAGEN). Results of Pap smear were compared where available. Statistical analysis used: Data of patients who came for testing of HPV infection at The Aga Khan University Hospital (AKUH) upon physician's recommendation was collected. Frequencies with percentages were computed to determine the positive trend for laboratory confirmed HPV cases at AKUH

Results: A total of 379 HPV samples were tested from the clinical specimens received between the period of 2017 - 2019. We observed that out of 379 specimens, 11.9% were positive for HPV DNA while 88.1% were negative for HPV DNA. The majority of samples positive for high risk HPV types were associated with neoplasia as indicated by a positive Pap smear result. **Conclusions:** High risk HPV infection was found to be present in 12% of cervical samples submitted for HPV DNA testing. This indicates the important need for HPV screening as part of routine reproductive health. Early diagnosis of HPV infection would allow earlier management and treatment of HPV associated cervical cancer.
Keywords: HPV, diagnosis, cervical cancer

Abstract ID: PP-177

Role of Increased Mycobacterium tuberculosis antigen-induced gene expression and protein secretion of pro-inflammatory cytokines in diabetics latently infected with TB
Kiran Iqbal Masood, Martin E Rottenberg, Zahra Hasan

Introduction: Pakistan ranks fifth in high tuberculosis (TB)-burden countries and seventh among countries with high prevalence rates of diabetes mellitus (DM). DM is a risk factor for TB and worsens disease outcomes. Furthermore, Mycobacterium tuberculosis (MTB) infection can induce glucose intolerance and worsen glycemic control in diabetes. Suppressor of cytokine signaling (SOCS)-1 and -3 molecules regulate cytokine signaling and are important in maintaining an immune balance. In TB, interleukin (IL)-6 up-regulation induces SOCS3, which is also a negative regulator of insulin signaling.
Objective: To investigate the effect of MTB infection on immune responses of DM patient with specific impact on host cytokines required for mycobacterial clearance.
Methods: Gene expression by RT-PCR for SOCS1, SOCS3, interferon-gamma (IFN-γ), IL-6, and tumor necrosis factor alpha (TNFα) was performed using MTB antigen (PPD) stimulated whole blood stimulated from DM (n = 21) and healthy controls (EC, n =24) with and without latent TB infection (LTB) and TB patients (TB, N=17).
Secretion levels of IFN-γ, IL-2, IL-4, IL-5, IL-6, IL-12, IL-13, and TNFα were determined by Th1/Th2 Cytokine Human ProcartaPlex™ kit.
Results: Gene expression data showed that PPD induced IFNγ was down-regulated in ECs as compared to TB (p=0.002). SOCS1 was up-regulated in DM as compared with EC (p=0.0127), IL6 was up-regulated in DM-LTB and TB as compared with EC (p=<0.001) and also in DM-LTB as compared with DM (p=0.025). TNFα was increased in DM-LTB as compared with DM (p=0.0152).
Cytokine secretion data in response to PPD showed that IFNγ was increased in DM-LTB as compared with TB (p=0.03), DM (p=0.01), LTB (p=0.03) and EC (p=0.01), IL12 and IL6 were increased in DM-LTB as compared with TB, DM and LTB, IL2 was increased in DM-LTB as compared with DM (p=0.02), LTB (p=0.01) and EC (p=P<0.001) and also in DM as compared with EC (p=0.03).TNFα and IL13 were increased in DM-LTB as compared with DM, LTB and EC.
Conclusions: We observed increased pro-inflammatory cytokines in DM-LTB group. This indicates predisposition to inflammatory response increasing the likelihood of disease progression

Abstract ID: PP-179

Hydatid cystic disease of the lungs presenting as Thoracic Outlet Syndrome.
Muhammad Ali, Ali bin Abdul Jabbar, Abdullah Arain, Saulat Fatmi

Objective: To present a case of massive hydatid cysts in hemi-thorax presenting as Tension hydatothorax and thoracic outlet syndrome. Clinical presentation: a 25-year-old male presented with progressive dyspnea and swelling of facial, neck and arm veins (of right side, showing signs and symptoms of venous type of TOS) along with typical signs and symptoms of pulmonary hydatid disease. The patient had refused treatment at initial diagnosis at a different hospital and had only presented to us once his symptoms had fairly progressed. CXR showed opacification of the right side of the thorax with a massive mediastinal shift to the left, therefore radiologically suggestive of tension hydatothorax and mass effect. CT scan revealed multiple cystic lesions with daughter cysts in the right hemi-thorax with the combined size of the cyst being 183 X 209.5 X 333 mm confirming the fact that had opted for treatment late and that the disease process had been going on for quite sometimes. A median sternotomy was performed, and innumerable hydatid cysts were removed. The lung expanded to more than 80%, chest was irrigated with 80% L NS and chest was closed. The patient was placed on albendazole for 12 months and post-operative follow-ups up to 3 years after surgery showed no disease on CXR. Conclusion: Giant Hydatid cyst of lung can present as venous thoracic outlet syndrome if left untreated at initial stages of the disease.
Keywords: rare presentation, hydatid cystic disease, thoracic outlet syndrome, TOS sindh

Abstract ID: PP-180

Antibiotic Stewardship Model- Financial impact with maximized patient safety in Surgical-ICU of resource-limited country
Kashif Hussain

Background and Learning Objective: Antibiotic resistance (ABX-R) is more alarming in lower/middle-income countries (LMICs), with existing challenges of over/misuse of antibiotics, infection prevention and control and lower vaccination rate Higher antibiotics use in ICU is due to high admission rate of sepsis (healthcare-associated infections/prophylaxis in the perioperative period) a key-factor in ABX-R development. Implementing stewardship and optimizing antibiotic use by improving the effectiveness of interventions through a range of implementation strategies.
Target Audience: Physicians, Pharmacists, Nurses
Method: A Customized Multidisciplinary-team driven ASP pilot project based on prior authorization, prospective-audit-with-feedback was conducted in the open-multidisciplinary adult surgical intensive care unit. Supplemental strategies were employed before starting ASP, like infectious disease (ID)-training of the pharmacist, educational sessions for practitioners. The team consisted of Intensivist, ID pharmacist, critical care nurse, microbiologist, and ID-

physician. Study duration of 4 months (April-July2018).ID-pharmacist recorded the interventions. Antibiotic use measured in terms of defined daily dose (DDD), mean duration and cost of therapy.

Result: 123 and 125 patients were in historical control and intervention group respectively. Results compared with historical control. Total 90 interventions were done by the stewardship team. The largest reduction was observed in the DDD of Ceftriaxone and cefazolin (p<0.01) and Piperacillin/tazobactam (p= 0.035).Mean duration of all antibiotics use decreased significantly (p<0.01). The overall interventions result in a 30% cost saving with around US$ 24,000 annual saving. Length of SICU stays reduced from 5.2 ± 3.1 days to 4.7 ± 3.0days with the reduced mortality rate from 17% to 14%.

Conclusion: We can summarize that implementation of customized-ASP with supplemental efforts can reduce the resistance pattern, hospital acquired infections, antimicrobials use and is a cost effective approach as well. Source-control-documentation is very important in surgical patients its 100% compliance can improve the ABXs practices to minimize the ABX-R in surgical patients

Keywords: stewardship ,resistance, financial

Abstract ID: PP-182
NIPAH-A Deadliest Virus
Sidra Zafar, Zareen Fatima, Muneeza Ekram,

Nipah virus is highly pathogenic virus recently emerged from Paramyxoviridae family, of the order Mononegavirales. The virus is harbored by Pteropus fruit bats and transmitted to pigs via partially eaten fruits or direct exposure to infectious bat secretions. It is responsible for scattered outbreaks of metastasis and encephalitic ill health in Southeast Asia. The multiplied urbanization and dynamic climate have led to rising in epidemics with incidences of recent diseases disturbing human health per annum. It has the capability to cause devastating morbidity and mortality rate among the human populations. Viral determinants that contribute to Nipah virus infection include V and W proteins where W protein plays a more prominent role. It is Known for causing severe and rapidly progressive encephalitis and thus classified among BSL-4 organisms due to its high mortality rate and lack of vaccines and drugs. Due to wide spread primary host the potential for outbreaks to occur in new regions remains significant and suggests a serious potential for larger epidemics in the future. Therefore proper management and preventive measures are needed to be implemented by health care workers, as well as at the government level.

Keywords: paramyxoviridae family, mononegavirales, nipah virus, BSL-4 , encephalitis

Abstract ID: PP-183

Burden and outcome of puerperal sepsis among post-partum women admitted at a public tertiary health facility in Karachi, Pakistan: A prospective cohort study

Sana Sheikh , Rahat Qureshi, Haleema Yasmin, Shereen Bhutta, Beth Payne, Dustin Dunsmuir3, Sumedha Sharma, Domena Tu, Marianne Vidler, Larry Li, Imran Ahmed, Sana Younus, Laura Magee, Peter von Dadelszen

Background: Puerperal sepsis is defined as the infection of the genital tract occurring at labour or within 42 days of the postpartum period. According to Pakistan Demographic Health Survey (PDHS) 2006, 13.7% of maternal mortality is attributed to puerperal sepsis and is the second leading cause of maternal mortality in Pakistan. It can also cause serious morbidity like shock, chronic infection and infertility. Early diagnosis and early referral is the key to improve outcome of women suffering from puerperal sepsis. Postpartum care seeking in Pakistan is 60% which suggest many women are missed at the early stage of the disease. We aim to estimate the burden and outcome of puerperal sepsis among women admitted during postpartum period at an urban public tertiary health facility.

Methods: In a prospective cohort study, 4,680 women were recruited who delivered or presented within 40 days of delivery to Jinnah Post Graduate Medical Center (JPMC), Karachi, Pakistan from June-December 2016. Data on socio-demographics, clinical signs and symptoms, laboratory markers, and maternal morbidity and mortality was collected in handheld devices. Data was entered in REDCap and analyzed through STATA version 15. Quick Sequential Organ Failure Assessment Score (qSOFA) was also applied to determine proportion of cases at risk of adverse maternal outcome. qSOFA criteria include respiratory rate (RR $\geq$ 22 breaths/minute), systolic blood pressure (sBP < 100 mm Hg) and glasgow coma scale (GCS < 15). It labels high risk case if 2/3 criteria are met. Mean with standard deviations and proportions were calculated for continuous and categorical variables. Univariate analysis using student's t-test and chi-square were conducted keeping p-value <0.05.

Results: Out of 4680 women, 14 (0.29%) were labeled with suspected puerperal sepsis. Among these 14 women, 4 were admitted at the study hospital for delivery and 10 were admitted due to other complains during postpartum period. Three-fourth (78.5%) of these women was not educated, 28.5% were Sindhi and another quarter was Pashtun (21.4%). About one out of four women with suspected sepsis was transferred after being initially treated at some other hospital and only two women had received antibiotic before coming to the study hospital. Nine out of 14 sepsis patients delivered vaginally and all had live birth. Among clinical signs, women with suspected sepsis have higher RR (Mean difference +2.6 breaths/minute; p-value <0.01), higher heart rate (p-value <0.01), and have mean sBP of 11.7 mmHg less compared to normal women (p-value <0.01). There was no difference in mean temperature, blood glucose levels, and oxygen saturation between two groups. 3/14 (21%) women with suspected sepsis were at high risk of adverse outcome as per qSOFA criteria. Out of these three women, 2 suffered from shock. No other adverse maternal outcome recorded.

Conclusion: We found that one in seven women with suspected sepsis suffered from adverse outcome. Time is the key in averting morbidity and mortality in puerperal sepsis but we observed that a quarter of women were referred from other facility and only few of them received antibiotic. We recommend that health staff at all levels should be trained to early diagnose and

provide emergency treatment to the suspected patients before referring them to other health facility.

Abstract ID: PP-185

Antibiotics prescription pattern for treating dental infections or causing antimicrobial resistance in children

M.Zafar Iqbal Hydrie , Sadaf Ahsan, Syed M.Zulfiqar Hydr Naqvi, Munir Ahmed Shaikh, Syed Imtiaz Ahmed Jafry

Background: Antibiotics are regularly prescribed by dental professionals in their practice, for dental treatment as well as prevention of infection. Inappropriate use of antibiotics is a significant factor in the rise of antibiotic resistance resulting in an urgent need to improve awareness of prescribing guidelines and polices to encourage the rational use of antibiotic medications in dentistry.

Objective: The aim of this study was to identify antibiotics prescription pattern for treating dental infections in children among dental practitioners and dental specialists in teaching institutions of Karachi, Pakistan and whether they are adhering to the prescribed international guidelines.

Method: A cross-sectional study was conducted in private/public dental colleges of Karachi. After taking informed consent, a total of 380 participants were interviewed using a pre-designed validated questionnaire which included demographic profile and clinical case scenarios. Data was analyzed on SPSS version 20. Inferential analysis was performed using chi-square test. The significance level was set at 0.05.

Result: All 380 questionnaires were completed with a response rate of 100%. The mean age of the respondents was 25.12 ± 3.4 years. Of the 380 subjects, 338 (88.9%) were general practitioners while 42 (11.1%) were dental specialists. The overall adherence to the professional guidelines ranged from 26.1% to 44.2% with high antibiotic prescribing practices amongst dental practitioners (88.9%), while female dentists were more likely to be adherent to professional antibiotic guidelines (69.7%).

Conclusions: This study shows that a majority of dental practitioners and dental specialists lack adherence to professional guidelines for prescribing antibiotics. Since there seem to be a lack of harmony between the recommended professional guidelines and the antibiotic prescribing pattern of dentists, regular updates and continuing medical education for the health professionals regarding comprehensible and specific professional guidelines are needed to improve adherence of antibiotics prescription amongst dentists.

Keywords: antibiotics, antimicrobial resistance, clinical scenarios, children, AAPD guidelines

Abstract ID: PP-187

A Systematic review on Factors contributing antimicrobial resistance in United Arab Emirates (UAE); a multiethnic society.
Mahin Gulzar Ahmed, Syed Wasif Gillani

Introduction: Antibiotics resistance has been rising threat for the world, as some of the microorganism least susceptible to antibiotics due to excessive or inappropriate use. In UAE, the Antibiotics consumption counts for over 200 AED million to the economy of the country.
Objective: This systematic review aimed to identify the factors contributing antimicrobial resistance in the multiethnic society of UAE.
Methods: This study analyzed 21 articles identified and selected according to the study criteria. PRISMA guidelines were used for identification and screening of literature. Data search covered several primary databases, including Pubmed, Wiley library, Scopus, Clinical Trial Registry, etc.
Result and Findings: The study identified several contributing factors related to Drug related problems (DRPs) including non-indicated use of Antibiotics for upper respiratory tract infection have a proportion of 26.6% in the population of UAE. It was also found that 44.2% (approx.) of antibiotic consumption by self-medication in cold and runny nose. This shows that people were having very low knowledge about the use of antibiotics. The ethnic distribution suggested majority of patients from Asia or Middle East origin. It was also found that there was a poor adherence (only 32.1%) to hospital guideline for surgical prophylaxis use of antibiotics in healthcare settings. Drug related problems also contributed to antimicrobial resistance, this study found 40.8% cases with wrong selection of antibiotics, wrong dose of antibiotics 19.9%, wrong duration was 18.9% and duplicate therapy of antibiotics were up to 18.1%. It was also found that government hospitals in UAE presented increasing trend of microbial resistance with reduced susceptibility to antibiotics with 23.9% over last couple of years.
Conclusion: The findings indicated that several factors are affecting the microbial pattern in UAE. Most of them related to drug related problems and malpractices. This study also suggests the antimicrobial stewardship model implication in the governmental hospitals. Further studies are required to explore the patient behavior in subject to self-medication practices.
Keywords: antibiotics, microbial resistance, drug related problems, malpractices, UAE.

Abstract ID: PP-188

Pattern of organisms causing central nervous system shunt related infections and their antibiotic susceptibility profile in a tertiary care setup
Imran Khan, Rafia Irfan, Jahangir,Gohar Zaman,Wajid Hussain, Luqman Satti,Irfan Ali Mirza, Tahir khadim

Objectives: To determine the frequency and antimicrobial susceptibility pattern of various pathogens isolated from central nervous system shunt related infections
Study design: Descriptive, Cross-sectional study
Settings: Department of microbiology / Armed Forces Institute of Pathology Rawalpindi in collaboration with Neurosurgical department of Combined Military Hospital Rawalpindi
Study duration: From 1st Aug,2018 to 31st January 2019.

Materials & Methods: A total of 95 CSF samples obtained via direct aspiration from CSF shunt or ventricular tap or lumbar puncture were included. Contaminated specimens showing growth of more than two organisms were excluded. All specimens were inoculated on Blood agar, MacConkey's agar, Chocolate agar, Sabourad's agar and anaerobic media culture plates. Antimicrobial susceptibility discs appropriate for different isolated pathogens according to Clinical Laboratory Standard Institute (CLSI) document 2017 were applied by Kirby-Bauer disc diffusion method. Staphylococcus ATCC 25923, Escherichia coli ATCC 25922 and Pseudomonas aeruginosa ATCC 27853 were used as control organisms.

Results: The frequency of various pathogens isolated from central nervous system shunt related infections were found to be; Staphylococcus spp. in 28 (29.47%), Escherichia coli in 16 (16.84%), Acinetobacter baumanii in 13(13.68%), Klebsiella pneumoniae in 10 (10.53%), Pseudomonas spp in 08 (8.42%), Enterococcus spp in 07 (7.37%), Morganella morganii in 02 (2.11%), Enterobacter cloacae in 02 (2.11%), Candida spp in 02 (2.11%) Stenotrophomonas maltophila in 1(1.05%) and mixed infection in 06 (6.32%) patients. The antimicrobial susceptibility pattern of various pathogens isolated from central nervous system shunt related infections was 54.74% to ceftriaxone, 34.74% to Ampicillin, 49.47% to Cefipime, 93.68% to Meropenem 100.0% to vancomycin, 34.74% to Gentamicin and 92.63% to Polymyxin B.

Conclusion: The high proportion of Gram-negative isolates differ from data in western literature. This study concluded that Escherichia coli, Acinetobacter baumanii, Klebsiella pneumoniae and Pseudomonas aeruginosa were the most common Gram negative rods isolated from central nervous system shunt related infections followed by Staphylococcus spp with Meropenem, Vancomycin and Polymyxin B the most sensitive antibiotics.

Keywords: central nervous system shunt related infections, meropenem, *staphylococcus aureus*.

SUPPORTERS

Gold

Silver

Bronze