Message from Chief, Public Health Laboratory Division National Institute of Health (NIH)

Fragile health systems struggle to cope with the additional burden. We, therefore, need to introduce changes to the use of antimicrobial agents in human, animal and environmental health sectors; under the 'One Health' approach
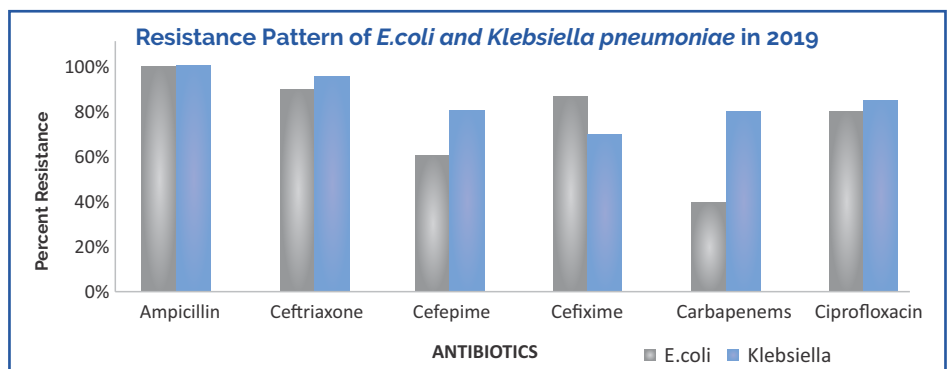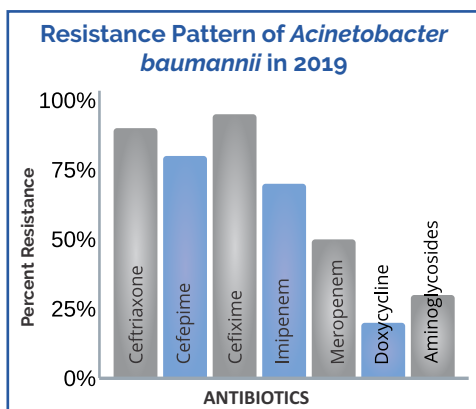
On behalf of the National Institute of Health, I am very pleased to present the second edition of the AMR Quarterly Newsletter for Pakistan. The COVID-19 pandemic, that is rampant across the globe and in Pakistan, has further highlighted the importance of ensuring that infection prevention measures are instituted and that antimicrobials continue to offer treatment for illnesses. As the national focal point for AMR response in Pakistan, the NIH remains firmly committed to the cause and, despite these challenging outcomes, will continue its work for AMR containment.

AMR is a complex and multi-dimensional issue. The presence of resistant bugs in our environment is a growing concern, as drugs that we have relied on to cure infections are rapidly becoming ineffective. Bacterial co-infections cause significant morbidity and mortality during viral infections and the COVID-19 pandemic has reinforced the need to understand the connections between viruses and bacteria. Furthermore, antibiotics are being extensively used in COVID-19 affected people as the world struggles to find a definitive solution. There are, however, some positive developments in recent times such as the emphasis and recognition of hand and personal hygiene, an infection prevention among the public and medical community. These are equally effective strategies and critical to reduce the emergence of resistant bugs.

The Public Health Laboratories Division of the NIH, at the center of response on AMR and as the apex national reference laboratory in Pakistan, provides laboratory support to public and private sectors for timely detection, prevention and control of infectious diseases during outbreaks and epidemics. We are currently further upgrading our laboratories to enhance our capacity for testing and to improve the quality of our services to the public. To this end, we are ensuring that our staff is adequately trained and provided with state-of-the-art materials, equipment and mechanisms for assuring high quality testing.

I would also like to mention here that our AMR surveillance strategies should reflect our scientific and public health objectives, resources and available technical capacity for testing, and sustainability. We are therefore actively engaged with relevant national and provincial ministries and other stakeholders to ensure continuous improvements in government capacities at all levels for monitoring and reporting the emergence of resistant bugs.

The current newsletter is intended to cover the progress in AMR surveillance and advancements in human and animal health sectors and provide a view on upcoming activities. I am hopeful that we will emerge from COVID-19 pandemic with a renewed conviction to better serve our nation and contribute positively to the global community.

Dr. Muhammad Salman
Chief, Public Health Laboratory Division, NIH
AMR Focal Person

Resistance Pattern of *E.coli* and *Klebsiella pneumoniae* in 2019

Resistance Pattern of *Acinetobacter baumannii* in 2019

The data shows:
High resistance patterns in isolates of Acinetobacter, Klebsiella pneumoniae and Extended-Spectrum Beta Lactamase (ESBL) E coli.
Increased number of Multidrug Resistant strains (MDRs).
Increased resistance against antimicrobials such as Cephalosporins and Carbapenems.

Achievements

Human Health Sector

Point Prevalence Survey (PPS) to Estimate Antimicrobial use in Human Health

The NIH is being supported in this survey by the Fleming Fund Country Grant, the WHO Country and Regional Offices. The survey will use standardised WHO PPS methodology. The results will illustrate antibiotic prescribing practices in hospitals and facilitate comparisons of antibiotic use overtime.

AJK
Abbasi Institute
of Medical Sciences

Islamabad
PIMS
Rawal General Hospital

Peshawar
CMH Peshawar
RMI

Rawalpindi
Holy Family Hospital
AFIP
Fauji Foundation Hospital
Railway Hospital
Benazir Bhutto Hospital

Lahore
Mayo Hospital
Sheikh Zahid International Hospital
Shaukat Khanum Hospital
Jinnah Hospital

Multan
CMH Multan
Nishtar Hospital

Karachi
Agha Khan University
PNS Shifa
Civil Hospital
JPMC

Support Visits to AMR Sentinel Sites

The NIH is committed to expanding the AMR surveillance network. In 2020, eleven more sites were enrolled in the network in line with the recommendations of the WHO Eastern Mediterranean Regional Office (EMRO). Earlier this year, the NIH team visited two sites in Peshawar: CMH Peshawar and Rehman Medical Institute Peshawar.

The site visit involved a meeting with the Microbiology laboratory team to inquire about their routine activities and collect feedback. The quality of data entered in the Laboratory Information Management System (LIMS) of sentinel sites directly influences the data presented under the Pakistan AMR Surveillance System (PASS). Therefore, the LIMS of the sites were specifically assessed during the support visit.
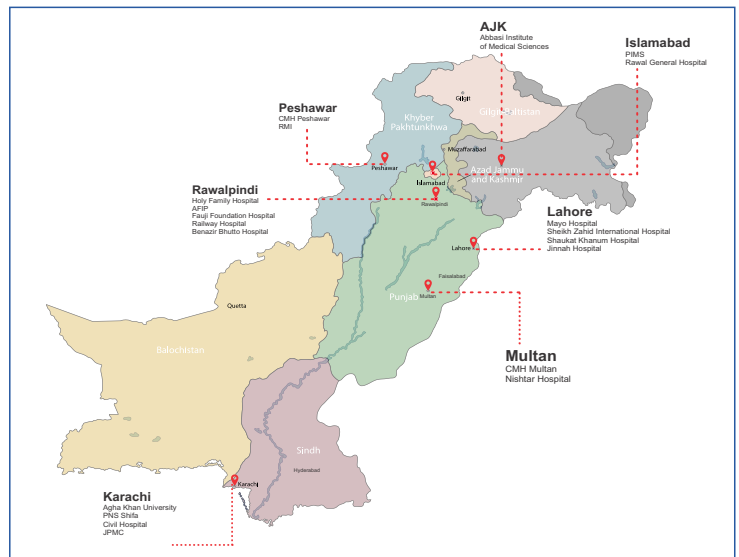
Animal Health Sector

National AMR Surveillance Strategy for Food Animals

The Animal Husbandry Commissioner Officer under the Ministry of National Food Security and Research (MoNFSR), with technical support from the Fleming Fund Country Grant, finalized the national AMR Surveillance Strategy for food animals. The strategy has been formally shared with provincial counterparts for their input. This is a landmark milestone for the establishment of the AMR surveillance network in the animal health sector of Pakistan.

National AMR Surveillance Pilot in Food Animals

In order to implement the National AMR Surveillance Strategy, a small-scale AMR surveillance pilot has been initiated. This pilot focuses on AMR surveillance from commercial poultry and dairy farms of selected areas in all provinces and the federal capital.

Key pathogens of veterinary and public health importance including E. coli, Salmonella and Enterococcus; their antimicrobial susceptibility patterns will be investigated during this pilot phase.

The AMR surveillance pilot will help establish an AMR surveillance network in the animal health sector of Pakistan.

NIH Executive Director at IPC Launch

" IPC Practices will improve patient safety and reduce HAIs "

AMR Developments in Human Health

National Infection Prevention and Control (IPC) Guidelines - Two federal structures have been proposed. Guidelines were launched on 22nd April 2020 and developed in collaboration with the WHO and a national technical working group.

National IPC/ AMR Steering Committee – Aims to provide technical guidance and oversee the standardization and implementation of IPC policies and standards.

National IPC Unit -
A formal IPC structure at the federal level; responsible for the coordination of IPC activities at the federal and provincial levels.

National External Quality Assurance Scheme

Highlights:

- Established in 2016 by the NIH with support from the World Health Organisation.
- Aims to create a system with reliable testing and results with laboratories enrolled under the National External Quality Assurance Scheme (NEQAS) programme.
- One of the key elements for assessing the quality of the AMR Surveillance at the sentinel sites.
- Provides bi-annual, qualitative Proficiency Testing (PT) services to laboratories enrolled in the NEQAS programme.
- Each panel consists of five samples of various sample types (simulated samples, isolates on agar slants and slides).
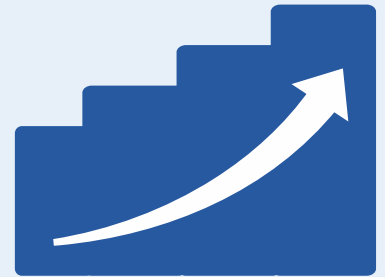
Labs enrolled in the EQA program have increased from 10 to 25 since its launch.
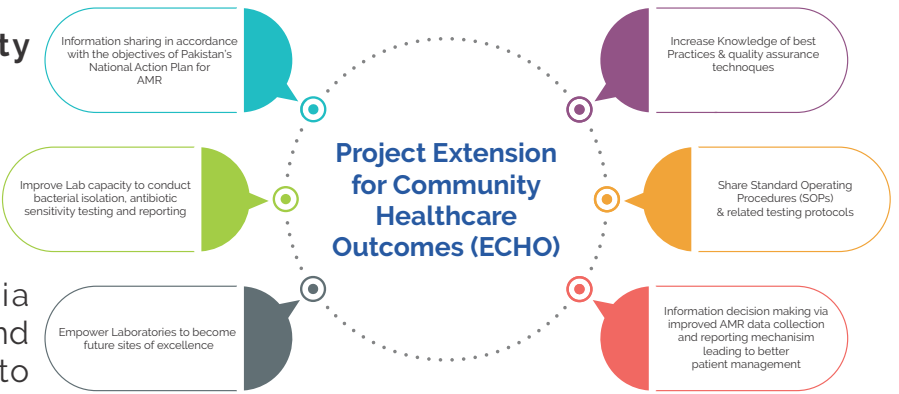
AMR ECHO Pakistan

Project ECHO (Extension for Community Healthcare Outcomes) is an innovative tele-mentoring program designed to create virtual communities of learners. Bringing together healthcare providers and subject matter experts using videoconferencing technology, brief lecturing presentation, and case-based learning, fosters an "all learn, all teach" approach. It is being implemented by the NIH in Pakistan with the support of the Health Security Partners (HSP) and the CDC.
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NIH ECHO platform supports the AMR Surveillance Sentinel Sites on data quality management, GLASS data generation and LIMS system

strengthening. Regular training sessions have been conducted with sites discussing the importance of collecting and sharing data. This provides an understanding regarding standard microbiological techniques at the sentinel sites. Dr Asim, an experienced Pathologist / Medical Microbiologist, is leading this project.

Project Extension for Community Healthcare Outcomes (ECHO):

- Share Standard Operating Procedures (SOPs) & related testing protocols.
- Information decision making via improved AMR data collection and reporting mechanisms leading to better patient management.
- Empower laboratories to become future sites of excellence.
- Improve lab capacity to conduct bacterial isolation, antibiotic sensitivity testing and reporting.
- Information sharing under the objectives of Pakistan's National Action Plan for AMR.
- Increase knowledge of best practices & quality assurance techniques.

Information sharing in accordance with the objectives of Pakistan's National Action Plan for AMR

Increase Knowledge of best Practices & quality assurance technoques

Improve Lab capacity to conduct bacterial isolation, antibiotic sensitivity testing and reporting

Project Extension for Community Healthcare Outcomes (ECHO)

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Empower Laboratories to become future sites of excellence

Information decision making via improved AMR data collection and reporting mechanisim leading to better patient management
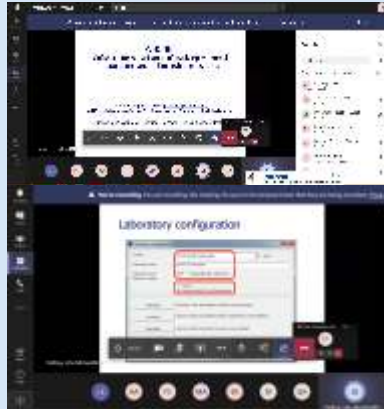
Trainings

AMR Advanced 1 Training

Thirteen senior laboratory personnel from the NIH, NVL and NRLPD participated in training workshops to strengthen their capacities and support these labs in achieving readiness for ISO certification.

The activities were in line with the WHO-AFRO established framework for Stepwise Laboratory Quality Improvement Process towards Accreditation (SLIPTA). The workshop trained lab staff in performing advanced methods of antimicrobial susceptibility testing. The virtual workshop was awarded a total of 12 accredited hours by the American Council for Continuing Medical Education (ACCME).

WHONET Training for AMR National Reference Laboratories

Virtual orientation and training were conducted by the NIH in collaboration with the Fleming Fund Grant and the World Health Organization (WHO) Collaborating Centre for Surveillance of Antimicrobial Resistance USA. The participants followed a detailed lecture on data recording and analysis on the WHONET software. The training was conducted for the NIH lab personnel, The National Veterinary Lab and the National Reference Lab for Poultry Diseases.

Training on Genomic Data

The Fleming Fund Country Grant supported training on genomic data handling and analysis for the staff of the NIH, NVL and NRLPD. Nineteen participants were trained. The training covered various aspects of bioinformatics, genome sequencing, handling the sequencing data and its analysis

regarding AMR.
The training will enable technical staff to go beyond routine microbiological testing and do focused research on the underlying mechanisms of AMR.

The Fleming Fund

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