



Antimicrobial Resistance (AMR) Quarterly NewsLetter

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Multisectoral Coordination Meeting on AMR Surveillance

A consultative meeting of multiple stakeholders involved in AMR surveillance was conducted by the Fleming Fund Country Grant Pakistan in collaboration with NIH, on 8 September, 2021, at Ramada Hotel, Islamabad. The meeting was chaired by Dr Muhammad Salman (Chief, PHLD) attended by focal persons of the Ministry of National Health Services & Regulation (MoNHS&R), Ministry of National Food Security and Research (MoNFS&R), Allied Departments, and International organisation representatives (Fleming Fund Country Grant, Centre for Disease Control and Prevention (CDC) and Public Health England (PHE)). The participants discussed the multi-sectoral coordination mechanisms for AMR surveillance strategy and shared feedback for the finalization of existing strategies (human and animal sector) and roll out.

Major General Dr Aamer Ikram

Executive Director, NIH

There is a need for consultative efforts on AMR under the One Health context through relevant stakeholder engagement from human, animal and environment sectors.

Dr Abdul Rasheed

Director Pharmacovigilance and Pharmacy services, DRAP

The key initiatives to reduce irrational use of antimicrobials includes the introduction of policy that no antimicrobial can be sold without prescription from a registered medical practitioner.

Dr Agha Waqar

Director General, National Veterinary Labs

A surveillance strategy needs to be formulated for aqua culture, and animal feed component must be included in AMR activities as feed formulations often contain pre-mixed antimicrobials.



MEETINGS

Visit and Provincial Coordination Meeting of the NIH team with the Health Department in Quetta, Balochistan



Coordination meeting was held with the Health Department Quetta to implement AMR & IPC at the province on 29 June, 2021. DG Health Quetta chaired the meeting. There was representation from public sector hospitals, livestock department, environment sector and WHO. The meeting was concluded with consensus on mutual coordination between NIH and Health Directorate Balochistan to work on the strategic planning on AMR

Consultative meeting on the establishment of Provincial AMR Multisectoral Coordination Unit (MCU) Sindh Province

The Health Department Government of Sindh in collaboration with the Fleming Fund Country Grant conducted a joint consultative meeting of line departments, partners, and other stakeholders in Karachi, Sindh on 22 June, 2021.

All the key stakeholders endorsed and finalized the AMR Surveillance Plan and the Term of references (ToRs) on AMR Multi-sectoral Coordination Unit in the Sindh province. This will be formally shared with the provincial health department for final approval and notification by the Fleming Fund team.



Consultative Meeting for Enhancing Passive Surveillance Data Sharing from Peripheral to Federal Laboratories in the Animal Health Sector

In a consultative meeting held on 11 June, 2021, at Islamabad by the Ministry of National Food Security & Research, with support from the Fleming Fund Country Grant the representatives from federal and provincial stakeholders provided their inputs into the expansion of the national antimicrobial resistance (AMR) surveillance strategy to include clinical isolates from diseased animals by identifying the priority species of animals and priority pathogens.

Meeting with FAO Pakistan to Discuss Potential Areas of Collaboration to Combat AMR in the Animal Health Sector

In a meeting held at Country Office, Food and Agriculture Organization of the United Nations, Islamabad on 5 July, 2021 the FAO Pakistan agreed to collaborate with the Fleming Fund Country Grant Pakistan under the leadership of Animal Husbandry Commissioner (AHC), MoNFS&R, for diagnostic harmonization, capacity strengthening trainings, AMR coordination unit at AHC.

AMR and AMU Knowledge, Attitudes and Practices (KAP) Surveys of the Field Veterinarians and Dairy Farmers

The Fleming Fund is conducting knowledge, attitude, and practices (KAP) surveys of veterinary practitioners and farmers regarding antimicrobial resistance and usage to develop future policies and an antimicrobial stewardship program. Following activities have been conducted for the desired accurate data collection:

- Training of data collectors for KAP Survey
- Pretesting of AMR and AMU Knowledge, Attitude and Practices (KAP) Surveys Questionnaire
- Kick-Off meetings for the field implementation of KAP Surveys in the Animal Health Sector



Foreign, Commonwealth & Development Office (FCDO) Visit to Multan

The Fleming Fund Country Grant organized a site visit for the Foreign, Commonwealth and Development Office (FCDO) delegation to the Nishtar Medical University, Multan, Punjab. The Nishtar Medical University is one of the sites selected under Fleming Fund Country Grant for clinical engagement, including laboratory refurbishment to improve AMR surveillance. The design layout, including the refurbishment plan of the sentinel lab located at the Nishtar Medical University (NMU) were shared with the FCDO team.

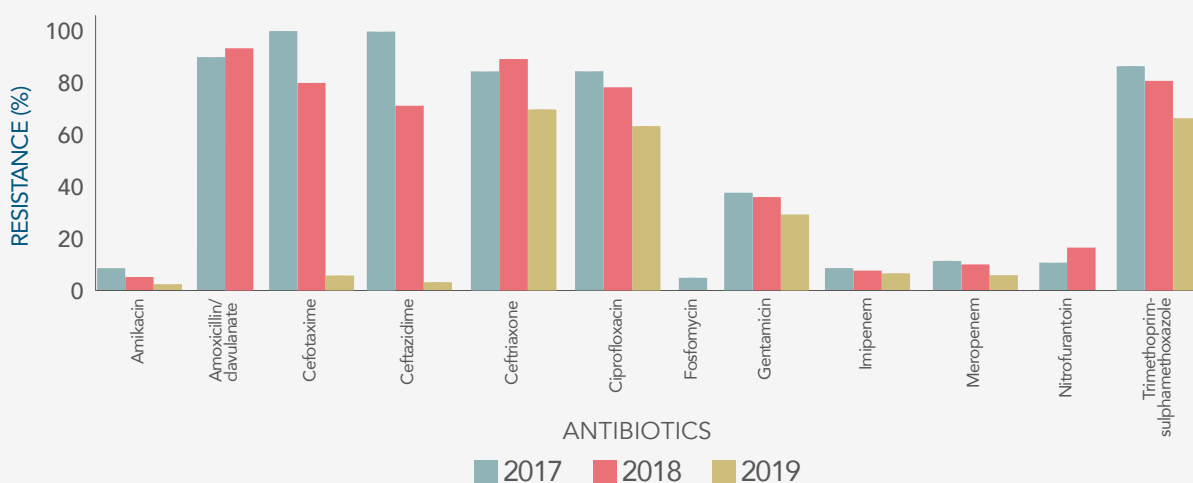


SURVEILLANCE

AMR Surveillance Data- Human Health

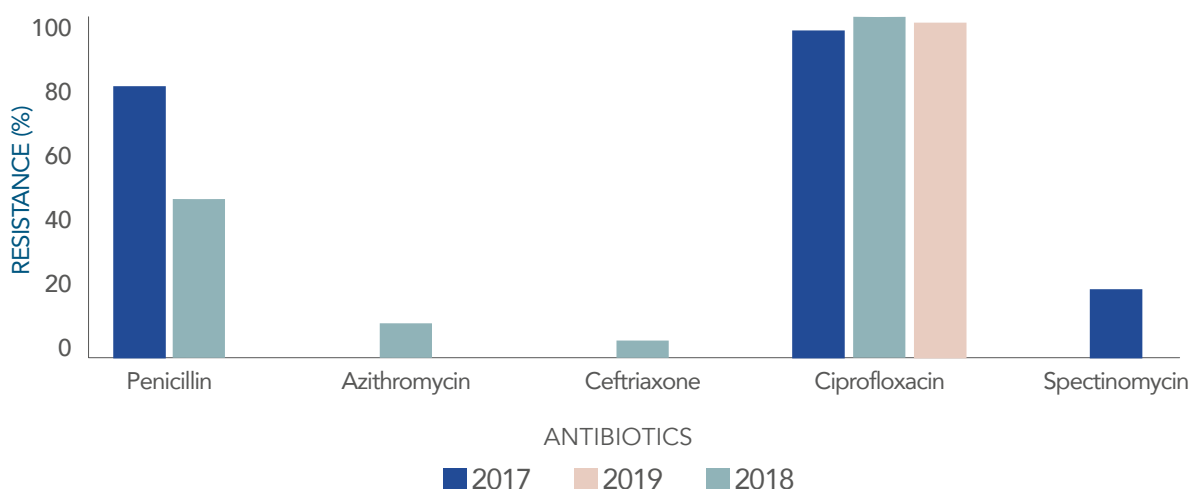
Pakistan AMR Surveillance System (PASS) established at the NIH aims to collect data from microbiology laboratories on all pathogens from AMR designated sentinel sites, followed by data analysis and dissemination to relevant stakeholders since 2019. The number of sites has been expanded to 47 sites/laboratories. Three years (2017-2019) antibiotics susceptibility data comparison is presented for *Escherichia coli* causing urinary tract infections. The next steps in surveillance will seek to enhance data quality, completeness, and representativeness, and provide estimates of the impact of AMR on human health.

Resistance Pattern of *Escherichia coli* in Urine Samples



- Ciprofloxacin, ceftriaxone, and trimethoprim sulfamethoxazole remained resistant to >50% of the isolates during 2017-2019.
- Amoxicillin-clavulanic acid was resistant to >75% of the isolates during 2017-2018.

Resistance Pattern of *Neisseria gonorrhoeae* in Genital Samples



Ciprofloxacin found resistant to >90% of the *Neisseria gonorrhoeae* isolates detected during 2017 to 2019.

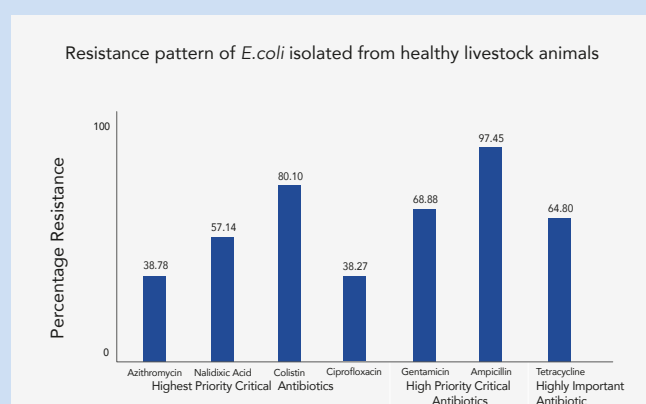
Surveillance and Monitoring of AMR Animal Health

National Surveillance Strategy for AMR in Healthy Food Animals

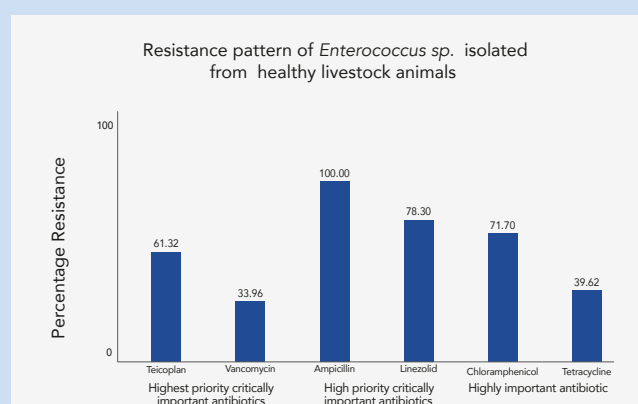
Fleming Fund Country Grant Pakistan has supported Animal Husbandry Commission, MoNFS&R to develop the National Surveillance Strategy for AMR in Healthy Food Animals. There are ongoing surveillance activities at the national level in which two national AMR reference laboratories i.e., National Veterinary Laboratories (NVL), Islamabad and National Reference Laboratory for Poultry Diseases (NRLPD) are participating.

Resistance Pattern in Livestock Animals

Samples from healthy livestock animals were collected and results were analyzed according to the WHO guidelines at the National Veterinary Laboratories, Islamabad from January to June 2021, have shown the following resistance pattern for *E. coli* and *Enterococcus sp.*



- The highest resistance has been seen against ampicillin and colistin (caution is advised in interpreting results of colistin since recommended AST method by CLSI is Broth Microdilution)
- Nalidixic acid and tetracycline have even shown >50% resistance.
- The least resistance is seen against Azithromycin and Ciprofloxacin.
- Caution should be exercised in the interpretation and generalization of these results since these isolates have been obtained from conveniently selected faecal samples of cattle and buffalo at slaughterhouses across Pakistan.



- *Enterococcus* has shown 100% resistance towards ampicillin, and nearly 80% towards linezolid; both are high priority critically important antibiotics
- *Enterococcus sp.* has shown >50% resistance against teicoplanin and chloramphenicol.
- The least resistance has been shown against vancomycin and tetracycline
- Caution should be exercised in interpretation and generalization of these results since these isolates have been obtained from conveniently selected Faecal samples of cattle and buffalo at slaughterhouses across Pakistan



Clinical Engagement

Improving Healthcare Together

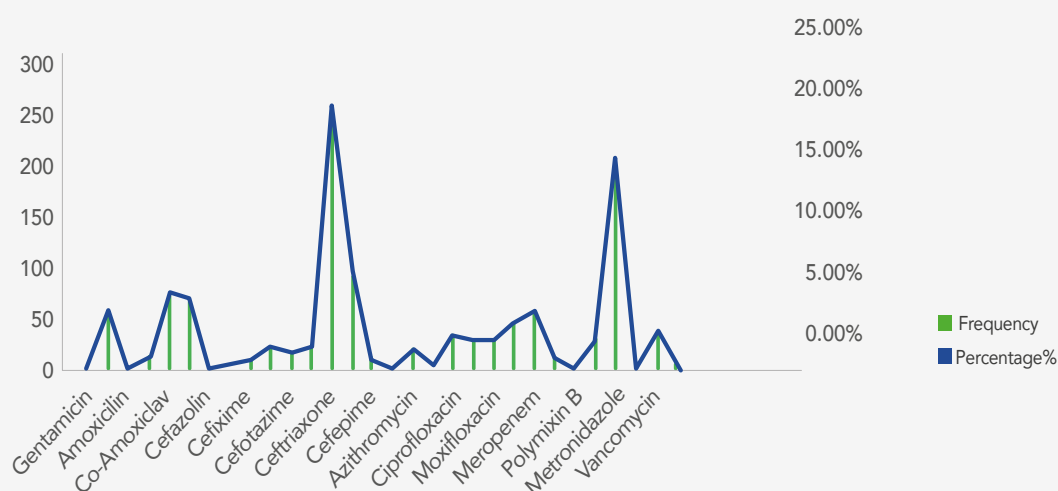
A baseline survey was conducted during Jan-March 2021 in collaboration with the Fleming Fund Country Grant II at six sentinel sites using the WHO-PPS protocol to evaluate the gaps in clinical practice. The forms for data collection were adopted from a WHO validated methodology for low and middle-income countries for assessment of antimicrobial prescribing practices in the hospitals. The data was collected at three levels: hospital, wards, and patient level. Wards such as medical, surgical, intensive care units, high-risk

wards, burns, paediatrics etc., were included in the data collection process.

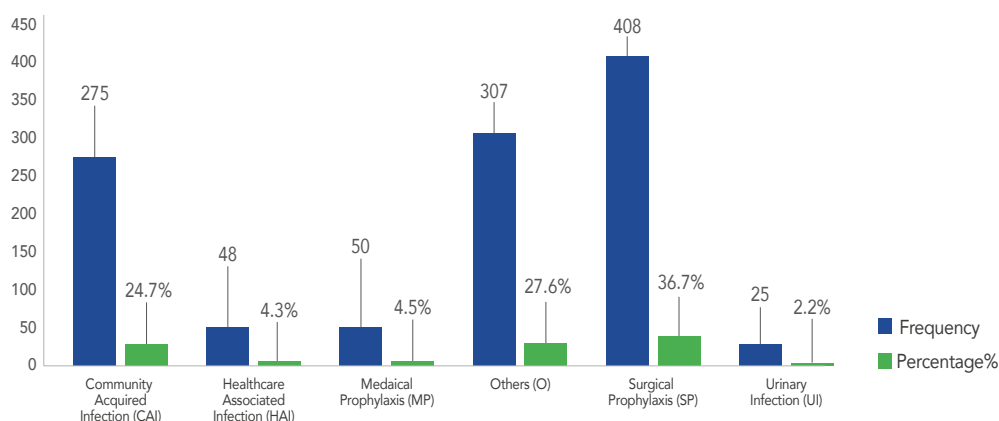
From April to June 2021, four teaching sessions for six clinical engagement sites were conducted, with a focus on antibiotic use, evidence-based prescription practice and antibiotic timeout. The sessions also emphasized GLASS pathogens and their treatment.

Name of sentinel site	No. of Teaching Sessions	No. of Trainers	No. of Participants for Each Session
Dr. Ruth K. M. Pfau Hospital, Karachi	4	2	65-70
Jinnah Post Graduate Medical Centre, Karachi	4	2	70-75
Sheikh Zayed Hospital, Lahore	4	2	50-60
Nishtar Medical University Hospital Multan	4	2	50-55
Provincial Headquarters Hospital, Gilgit	4	2	35-40
Hayatabad Medical Complex Peshawar	4	2	40-50

Frequency of Antimicrobial Consumption
(Jan-March 2021)

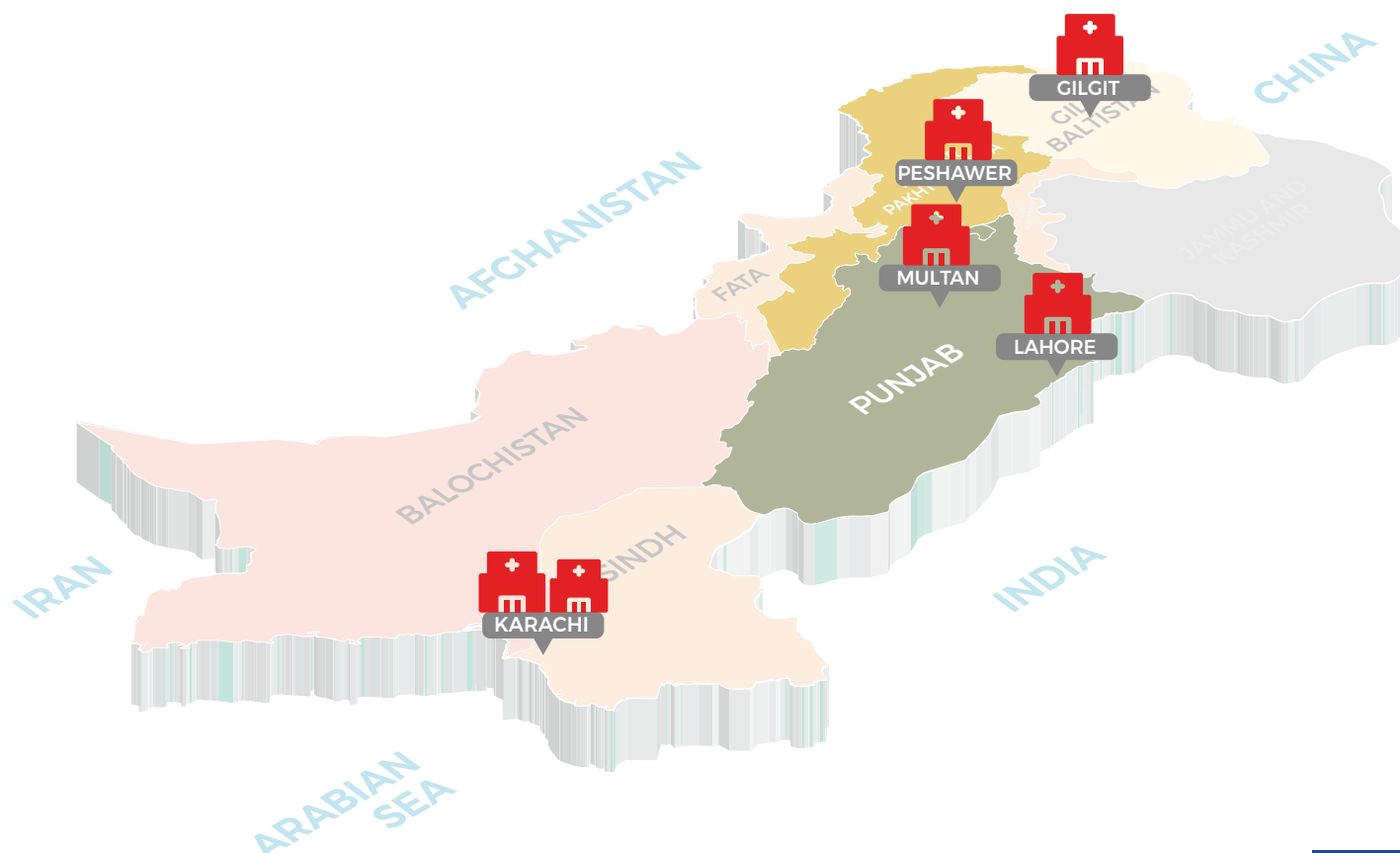


Frequency of Antibiotic prescription by type of infection



Key Findings of the Survey

- A total of **837** patients were surveyed from the six public sector hospitals across Pakistan.
- The most widely prescribed antimicrobials were ceftriaxone (**21.7%**), metronidazole (**17.3%**), cefoperazone/sulbactam (**8.4 %**), co-amoxiclav (**6.3 %**), piperacillin/tazobactam (**5.9 %**).
- Overall, the antimicrobials were prescribed to **78.5%** of the surveyed patients. The frequency of antibiotic prescriptions to children was high (**89.7%**) in the surveyed patients.
- 47% recorded use of one antimicrobial, **40%** recorded use of two and 13% recorded use of three or more.
- The antibiotics were mostly prescribed in surgical prophylaxis (**36.7%**) followed by community-acquired infections (**24.7%**).
- The antibiotic use in post-surgical prophylaxis was quite high. About **75%** of patients with surgical prophylaxis were prescribed more than 1 dose of antimicrobials in more than 24 hours after the surgery.



JOURNAL CLUB

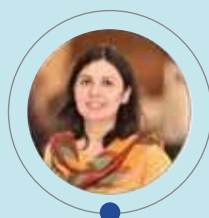
1st Virtual Workshop on Zoonotic Diseases

The First Virtual Workshop on Zoonotic Diseases was collectively organised by the NIH and the American Society of Microbiology (ASM) on 22 June, 2021 to bring awareness on six zoonotic diseases (Brucellosis, Salmonellosis, Avian Influenza, Rabies, CCHF, Anthrax) at the community and professional level. A total of 90 participants including medical doctors, livestock and allied health professionals, medical and university students attended the session. This workshop helped to develop a better understanding on biosafety & biosecurity, transmission and prevention of priority zoonotic diseases, as well as the burden of AMR.

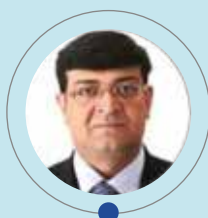
1st Virtual Workshop on Zoonotic Diseases: One Health Aspects on AMR



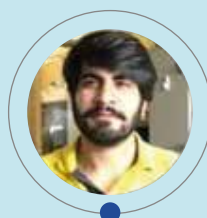
Dr. Muhammad Kashif Maan
Lecturer
UVAS



Dr. Afreenish Amir
Technical Officer
AMR NIH



Dr. Muhammad Sulman
Chief PHLD
NIH



Dr. Taimoor Hamid
Senior Scientist
NIH



Katherine Heitz
Program specialist
ASM



Date:
22 June, 2021



Time:
6:30pm - 8:00pm (PST)



AMERICAN
SOCIETY FOR
MICROBIOLOGY

Registration Link:

<http://echo.zoom.us/meeting/register/tJotd06rT8pEtTMu55de8KI5CBTXv3iScRN>

TRAININGS

Training of the NIH Staff on VITEK 2.0

A four-day workshop was conducted to train the NIH laboratory personnel on the VITEK 2.0 instrument from 13 - 16 July, 2021 at the newly refurbished lab of the NIH, by the Aga Khan University (AKU). The training was designed for the laboratory managers and technical staff, a total of 10 participants ranging from early to mid-career laboratory professionals of the NIH microbiology laboratory attended the training. This training focused on:

- Developing understanding of the VITEK 2.0 instrument and its functioning for performing bacterial and yeast identifications, and Antimicrobial Sensitivity Testing (AST).
- Training to interpret and review VITEK 2.0 results.



Hands-On Training on the Analysis of AMR Data Using WHONET

Capturing data on Antimicrobial resistance Patterns and Trends in Use in Regions of Asia (CAPTURA), International Vaccine Institute (IVI) of the Fleming Fund Regional Grants for South and Southeast Asian region continues to support Pakistan's AMR containment efforts through collaboration with country stakeholders. The AMR Secretariat NIH with the support of the Fleming Fund Country Grant and the CAPTURA Grant organised a hands-on training on the use of WHONET for Antimicrobial resistance data analysis for one health key stakeholders. A total of 17 participants were trained on from animal and human health sectors, including the National Institute of Health (NIH) Islamabad, the National Veterinary Laboratories (NVL) Islamabad, the National Reference Laboratory for Poultry Diseases (NRLPD) and the Animal Health Program (AHP) from the National Agricultural Research Centre (NARC) Islamabad.



Training by the AMR Surveillance Fellows under the Fleming Fund Fellowship Program

Training at the Microbiology Department of Saidu Group of Teaching Hospitals

The training was organised and facilitated by Fleming Fund AMR Surveillance Fellows under Fleming Fund Fellowship program during 11 - 12 August, 2021. A total of 15 participants including laboratory manager, assistant professors, laboratory technicians and IT personnel attended the training.

Training on Microbiology Laboratory Techniques, Laboratory Quality Management System and AMR Data Analysis using WHONET

The National Institutes of Health Fleming Fund fellows in liaison with FF Fellowship Program and American Society for Microbiology (ASM) conducted subject training workshop during 6 - 10 September, 2021. The first session of the training focused on basic microbiology techniques including identification and antimicrobial susceptibility testing (AST) and Laboratory Quality Management System. The second session was about AMR data analysis using WHONET software.



Hands-On Training on Basic Microbiology and Laboratory Biosafety

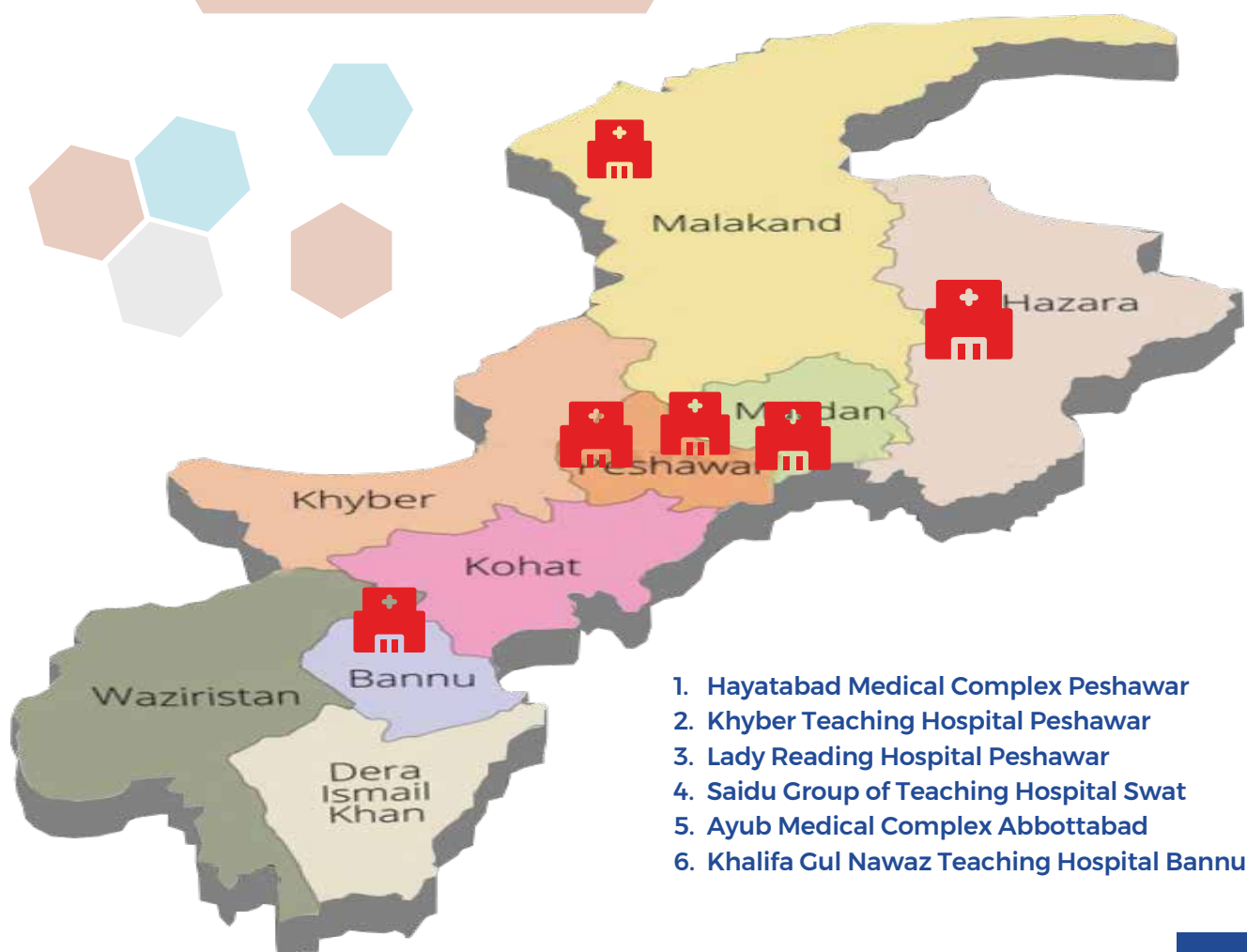
The National Veterinary Laboratories (NVL), Islamabad through the support of Fleming Fund Country Grant Pakistan has organised a 5 days hands-on training session on "Basic Microbiology and Laboratory Biosafety" dated 21 - 25 June, 2021. The purpose of this training was to strengthen the AMR surveillance program through capacity building of human resources, working at different veterinary sentinel laboratories. A total of 17 laboratory veterinarians/technicians were skilled with basic microbiological techniques used in AMR surveillance and laboratory biosafety along with the introduction of AMR data management.



Point Prevalence Survey Training Workshop at Peshawar-KP

The Fleming Fund Pakistan in collaboration with the Department of Health, KP organised a three days Training Workshop on Point Prevalence Survey (PPS) for medical staff of 6 Medical Teaching Institutions of Khyber Pakhtunkhwa during 5-7 July 2021. A total of 60 medical staff of government Medical Teaching Institutions (MTIs) and hospitals, comprised of assistant professors, microbiologists, medical doctors, pharmacists, nurses, laboratory technicians actively participated in the workshop.

The training enabled participants to monitor the rate of antimicrobial prescription and resistant microbes in the nominated hospitals, identify targets to improve the quality of antimicrobial prescribing, design hospital interventions to promote prudent antimicrobial use (Antimicrobial Stewardship) and improve patient health, assess effectiveness of interventions through repeated PPS.



1. Hayatabad Medical Complex Peshawar
2. Khyber Teaching Hospital Peshawar
3. Lady Reading Hospital Peshawar
4. Saidu Group of Teaching Hospital Swat
5. Ayub Medical Complex Abbottabad
6. Khalifa Gul Nawaz Teaching Hospital Bannu



MESSAGE

**AMR FOCAL PERSON
AZAD JAMMU KASHMIR
(AJK) - HUMAN HEALTH**

Antimicrobial resistance is fast becoming a global concern with rapid increase in Multidrug-resistant bacteria. The emergence of MDR bacteria is an increasing problematic cause of health care associated infections limiting the choice of antimicrobials for treatment. These resistance patterns reflect our first concern, which is the end of our current pharmacopoeia. AMR has become a global problem that requires bold and decisive actions.

The Health department of Azad Jammu & Kashmir being the part of National AMR Strategic Framework, is committed to work on the issues of AMR in the locality. Microbiology Lab has been established and capacity building of the technical staff and doctors working on AMR has been done with cooperation of the National Institute of Health, WHO and the Fleming Fund Country Grant. Similarly, other divisional labs were also upgraded to work on AMR. AMR Surveillance Plan has also been developed at the directorate level. Avoiding over-prescribing, limiting overuse of antibiotics in dairy and livestock and implementation of Infection Prevention & Control strategies are the key measures to control AMR.

Prof Dr Mumtaz Ahmad (*Tamgha-e-Imtiaz*)
HOD Pathology, Abbas Institute of Medical Sciences,
Muzaffarabad
AMR Focal Person Human Health - AJK



MESSAGE

**AMR FOCAL PERSON
KHYBER PAKHTUNKHWA
(KP) - ANIMAL HEALTH**

During the last few decades rising of antimicrobial resistance is considered as one of the biggest challenges for public and animal health. To decelerate the spread of antimicrobial resistance, the provincial governments have equal responsibility, parallel to federal government, to develop their AMR containment programs in line with the guidelines provided in National Action Plan of Pakistan.

Government of Khyber Pakhtunkhwa (KP) has a strong will towards reducing the impact of AMR in animal health sector. In this regard, the KP government has developed the provincial AMR Surveillance Plan in animal health sector as well as identified and assessed the sentinel laboratories. The other achievements in the province are establishment of disease diagnostic network for livestock diseases and implementation of point prevalence survey on antimicrobial use in food animals. The Fleming Fund Country Grant Pakistan is providing continuous support in Provincial AMR Surveillance Plan in Animal Health Sector in Khyber Pakhtunkhwa and establishing AMR testing facilities in this province.

Dr Syed Asad Ali Shah
Epidemiologist - KP Livestock &
Dairy Development Department (Extension)
AMR Focal Person Animal Health - KP



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