NATIONAL INSTITUTE OF HEALTH
ISLAMIC REPUBLIC OF PAKISTAN

Quarterly Antimicrobial Resistance (AMR) Newsletter

2021
Volume V

AMBITION TO ACTION

Supporting Surveillance Capacity for Antimicrobial Resistance

The Executive Vice President, DAI Global, Mr. Zan Northrip, visited the National Reference Laboratory at the National Institute of Health, refurbished with the support of the Fleming Fund Country Grant Pakistan. Zan expressed the need to strengthen Pakistan's healthcare system through an improved integrated disease surveillance program.

Government Support to Tackle AMR

On 10th February 2021, a delegation of the UK aid Fleming Fund Grant led by the British High Commissioner, Dr Christian Turner, called on President at Aiwan-e-Sadr. Dr Ayesha Rasheed, Team Lead Fleming Fund Country Grant Pakistan, DAI, presented the contributions and support, made by Fleming Fund, for strengthening the healthcare system(s) in Pakistan. President of Pakistan, Dr Arif Alvi, called for changing current practices of frequent use of anti-microbial agents in human, animal and environmental sectors. The President committed to the delegates that the government of Pakistan including all provincial health and livestock departments is committed to be a part of the global disease control program and stand with the global community to tackle the issue of AMR.

Capacity Developments of NRLS; NIH & NRLPD

Development of infrastructure and capacity building are the key requirements for the (implementation of) National AMR framework plan. Therefore, with the support of the Fleming Fund Country Grant Pakistan, refurbishments were made to the AMR laboratory of the National Institute of Health (NIH) for Human Health in January 2021 and National Reference Laboratory for Poultry Disease (NRLPD) for Animal health in February 2021.

The requirements for equipment and refurbishment were defined based on the assessments carried out by a team of experts from Liverpool School of Tropical Medicine (LSTM), NIH, NVL, NRLPD, Aga Khan University (AKU) and Health Security Partners (HSP) in September 2019. Refurbishments in the National Reference laboratories have served as a benchmark for the state-of-the-art lab facilities in Pakistan for future developments.

NIH Construction

NRLPD Construction

Follow-up Meeting on IHR - GHSA

On December 17, 2021 a follow-up meeting was held with the Public Health England (PHE) Pakistan, Centers for Disease Control and Prevention (CDC), DAI, John Snow Inc. (JSI) Pakistan, USAID, Jhpiego, Chemonics Pakistan and World Bank in the NIH, to align all activities of the National Action Plan from the government as well as international partners. The meeting allowed for an understanding of their core capacities and plan future steps to strengthen different areas of the International Health Regulations-Global Health Security Agenda (IHR-GHSA).

Promoting Appropriate Antimicrobial Consumption Practices

On March 2021, a Consultative Workshop was organized to build the technical capacity of the Drug Regulatory Authority of Pakistan's (DRAP) staff on AMR, supported by the Fleming Fund Country Grant Pakistan - DAI. It was highlighted that recording data of antimicrobial usage and consumption are key in tackling AMR. A Point Prevalence Survey was conducted at national level. 61 participants were trained on antimicrobial consumption data analysis. The point prevalence survey methodology was adopted from the WHO and IQIVIA and using the point prevalence survey methodology. This workshop will have a significant impact on streamlining systematic antimicrobial data management at the national level.

"We cannot succeed without visibility and strengthening of our governance system. For that we are introducing a centralize system for all the provinces while ensuring the continuous liaison and training of the professionals."

Mr. Asim Rauf, Chief Executive Officer DRAP

Promoting Cooperation Between the Ministry of National Food Security & Research

The Ministry of National Food Security signed the Memorandum of Understanding with the Fleming Fund Country Grant Pakistan. This is a landmark achievement, demonstrating the Government of Pakistan's commitment to protect human, animal and environmental health against AMR. The support of federal bodies paves the way for the development of evidence-based policies and in turn implementation of AMR containment interventions in the animal health sector.

AMR Awareness Seminar AH Sector - Peshawar

On January 6, 2021, the Disease Investigation Laboratory (DIL), Peshawar of the Livestock and Dairy Development Department, Khyber Pakhtunkhwa (L&DD-KP) with the support of Fleming Fund Country Grant, organized a one-day AMR awareness seminar in Peshawar. This was the first provincial seminar organized by the animal health sector, the seminar was semi-virtual, with participation from local and international speakers and participants.

A total of 65 participants attended the semi-virtual seminar including: senior government officials such as Dr Muhammad Israr (Secretory, Agriculture, Livestock, Fisheries and Cooperative, Government of KP), Dr Alam Zeb (Director General, L&DD KP), Dr Khurshid Ahmad (Animal Husbandry Commissioner, Ministry of National Food Security and Research, Government of Pakistan).

> "THE LIVESTOCK AND DAIRY DEVELOPMENT DEPARTMENT WILL PROVIDE FULL SUPPORT FOR AMR/AMU ACTIVITIES IN THE ANIMAL HEALTH SECTOR OF KP"
>
> DR ALAM ZEB,
> DIRECTOR GENERAL, L&DD, KP.

Speakers included international experts such as Dr Mo Salman (Professor of Infectious Animal Diseases and Preventive Medicine, Animal Population Health Institute, Colorado State University, USA), Dr Sangeeta Rao (Associate Professor, Epidemiology and Biostatistics, Animal Population Health Institute, Colorado State University, USA) and Russell Dacombe, Research Associate, Liverpool School of Tropical Medicine, UK; and national experts such as Dr. Khalid Naeem, One Health Consultant.

The AMR Secretariat

The National Institute of Health has been designated as the AMR coordinating center, with the aim to lead AMR related interventions as envisaged under the National Action Plan for AMR. Under the PC-1 to through the goverment own resourses, an AMR secretariat has been established at the NIH for coordination and collaboration with key stakeholders at the national and provincial levels. The AMR Secretariat is functioning as a unit in the center for Occupational and Patient Safety. NIH since March 2020.

Achievements

01 Facilitated coordination and information sharing on AMR activities from the NIH

02 Supported multiple channels of communication to key stakeholders
- o The AMR Membership Network of NIH as "AMR Connect"
- o The publication of four volumes of the AMR Quarterly Newsletter shared in local print and electronic media,
- o Emails to relevant stakeholders to ensure updates, invitations to key AMR activities

03 Assisted in reporting AMR Surveillance data trends in both HH & AH sectors in Pakistan to all stakeholders

04 Facilitated in the implementation of advocacy events with the NIH team and international partners, such as World Antibiotic Awareness Week:
- o A Panel Discussion Session with experts on the theme "One Health Approach for AMR Surveillance in Pakistan – Strengths, Gaps and Opportunities"
- o An Article Competition for Students on the topic "Antimicrobials Handle with Care" followed by a Prize-Winning Ceremony for the Winners of the Article Competition

05 Supported public hospitals for capacity development for AMR detection and surveillance such as conducting mentorship and support visits at the Dr Ruth Pfau Civil Hospital Karachi (CHK) and the Jinnah Postgraduate Medical Center (JPMC).

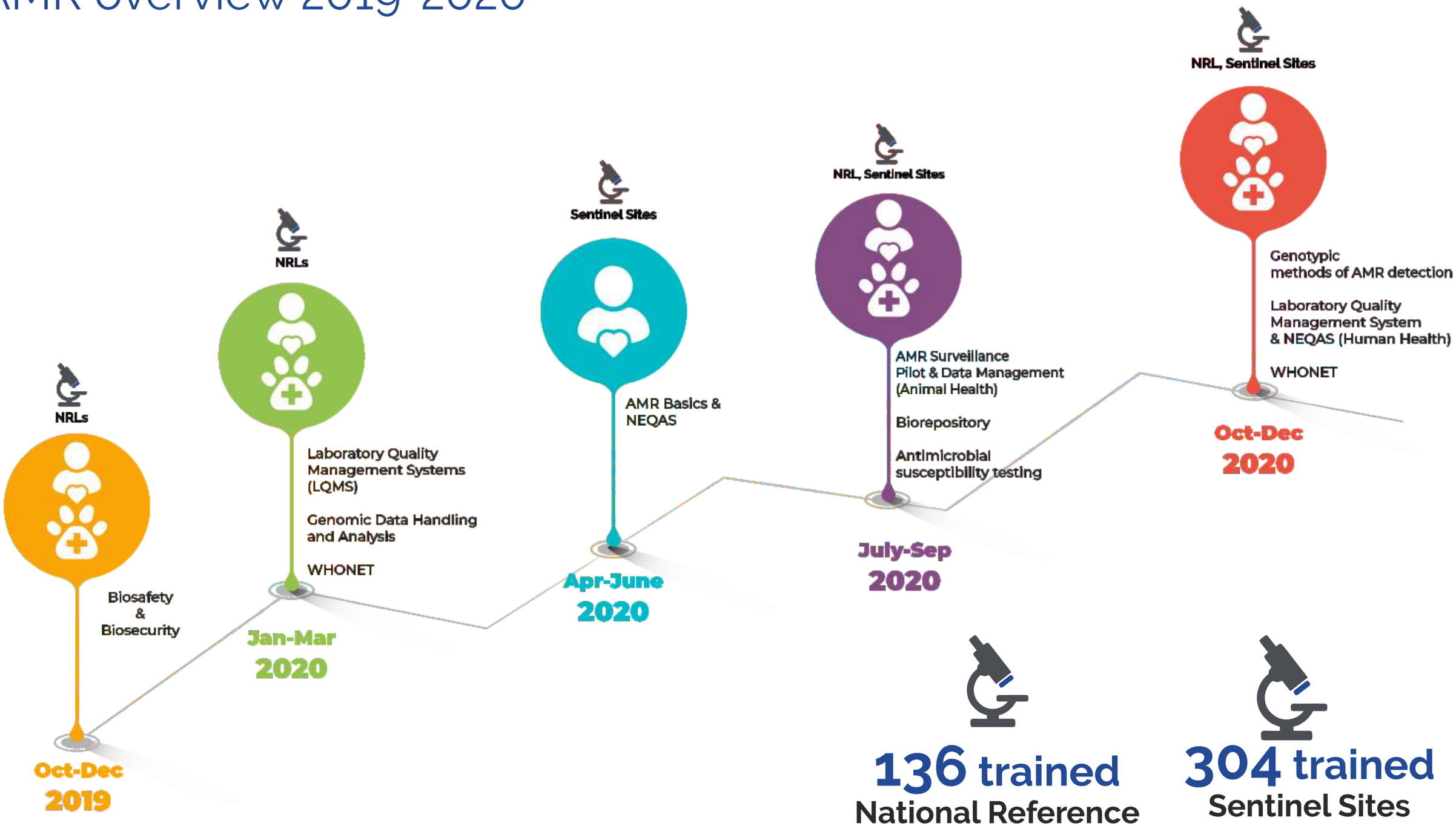
06 Provided support and coordination for trainings such as AMR Basics and Advanced trainings, as well as the use of WHONET for AMR Data Management for capacity building of the NIH lab staff

Coordinator

Dr Munnaza Sarfraz is leading the secretariat for horizontal and vertical coordination for AMR / AMC / AMU surveillance with relevant stakeholders.

Trainings

AMR overview 2019-2020



136 trained
National Reference Laboratories (NRLs)

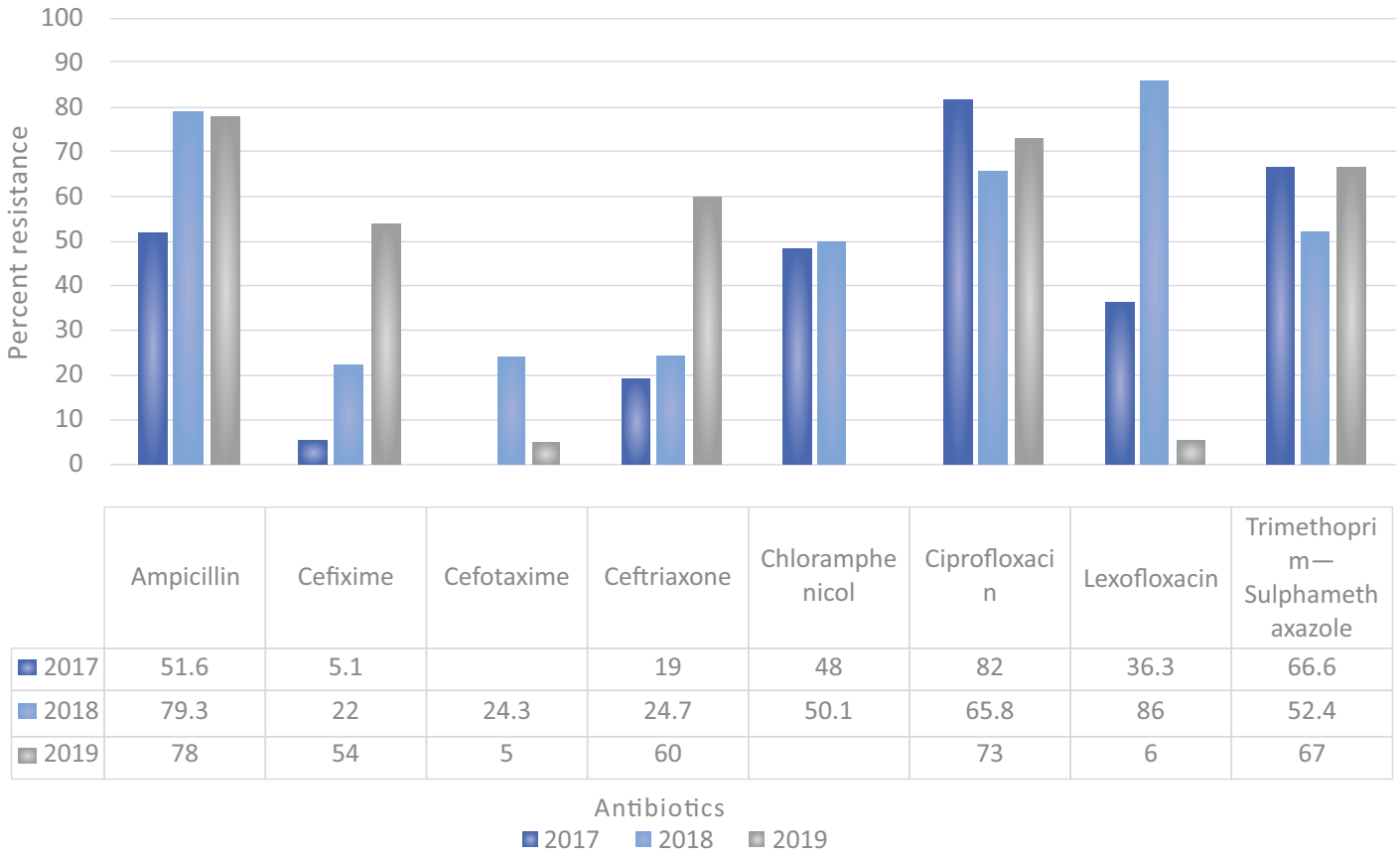
304 trained
Sentinel Sites

Surveillance

Ongoing Surveillance on AMR in Human Health

Surveillance of antimicrobial resistance (AMR) tracks changes in microbial populations, permits the early detection of resistant strains of public health importance, and supports the prompt notification and investigation of outbreaks. Surveillance findings are needed to inform clinical therapy decisions, to guide policy recommendations, and to assess the impact of resistance containment interventions.

Resistance Profiles of *Salmonella Typhi* in Blood Samples



	Ampicillin	Cefixime	Cefotaxime	Ceftriaxone	Chloramphenicol	Ciprofloxacin	Lexofloxacin	Trimethoprim—Sulphamethaxazole
2017	51.6	5.1		19	48	82	36.3	66.6
2018	79.3	22	24.3	24.7	50.1	65.8	86	52.4
2019	78	54	5	60		73	6	67

The AMR Surveillance Workflow in Pakistan enables to standardize the data into single format and categorize into types of specimen collected, gender, antibiotic and susceptibility testing. Frequency analysis of the data was done by WHONET.

The temporal trend in the resistance of *Salmonella Typhi* against panel of antimicrobials from 2017 to 2019 shows:

- An increase in resistance against key antimicrobials i.e. ampicillin, cefixime, ceftriaxone and trimethoprim- sulfamethoxazole.
- Resistance against cefotaxime, ciprofloxacin and levofloxacin decreased over the same period.

EXTENSIVE DRUG RESISTANT TYPHOID DURING RECENT YEARS IS AN ALARMING PUBLIC HEALTH CONCERN WHICH NEEDS MORE ATTENTION.

Surveillance Pilot for AMR in Healthy Food Animals

The Pilot was initiated in July 2020, two federal reference laboratories and nine provincial sentinel laboratories are now engaged in the surveillance network.

Target population

The target population for the AMR surveillance pilot include healthy "commercial broilers" and "cattle and buffalo" intended for human consumption.

Source population

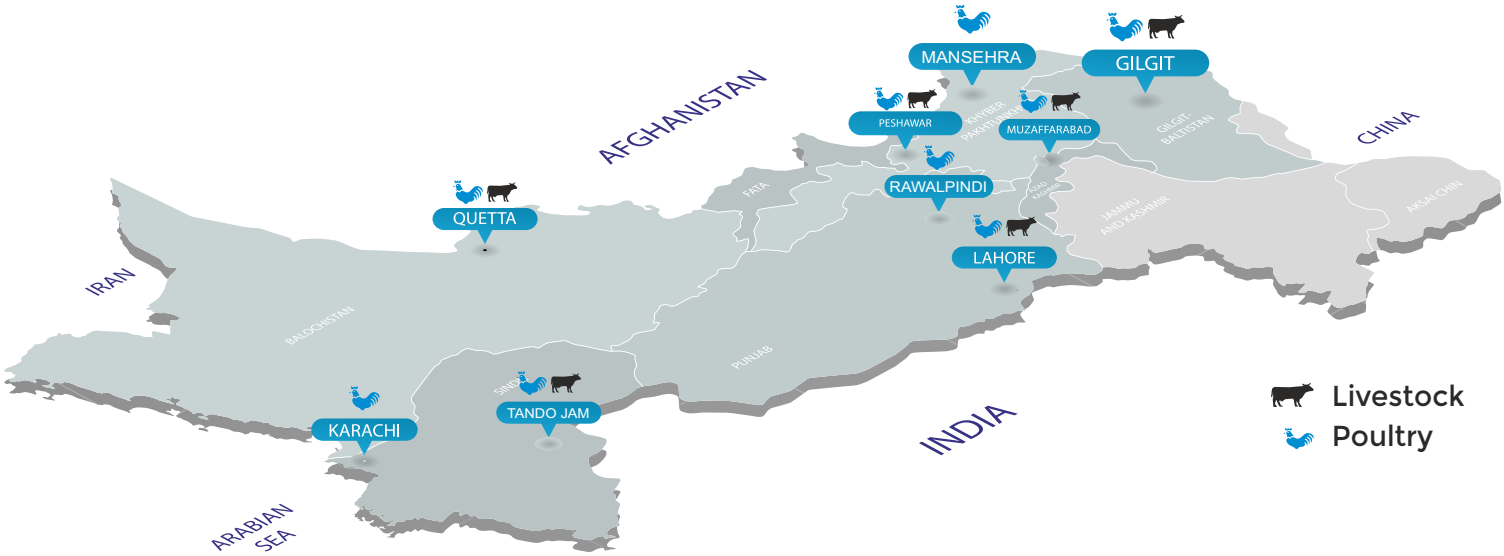
The source population for the pilot is healthy poultry at slaughter shops and cattle and buffalo slaughtered at the slaughterhouses.

Target bacteria

The AMR surveillance pilot focuses on two commensal bacteria, i.e., Escherichia coli *(E. coli)*, Enterococcus spp. (E. faecium and E. faecalis) and one zoonotic foodborne bacterium, i.e., *Salmonella spp*.

Biological samples

Considering the ecology and epidemiology of AMR and target bacteria, the cecal/fecal contents from slaughtered poultry and cattle/buffalo are the required biological samples.



As of February 28, 2021:

863 pooled poultry caecal samples have been collected from poultry with 630 *E. coli* and 285 *Salmonella spp.* isolations.

792 individual fecal samples have been collected from cattle/buffalo at slaughterhouses with 641 *E. coli.*

National PPS Human Health

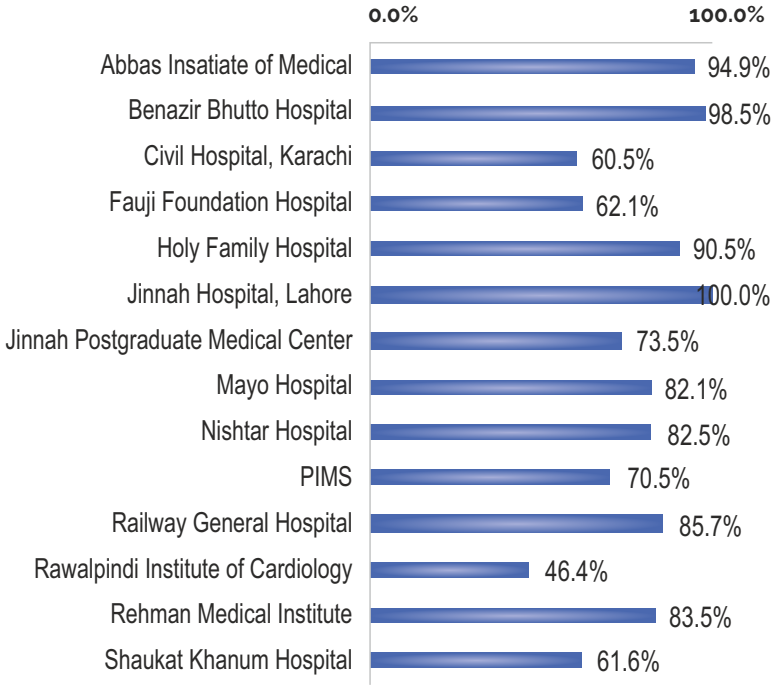
This multicenter point prevalence survey (PPS) designed by the National Institute of Health (NIH) was conducted in the following 14 public and private sector tertiary care hospitals among seven different cities of Pakistan

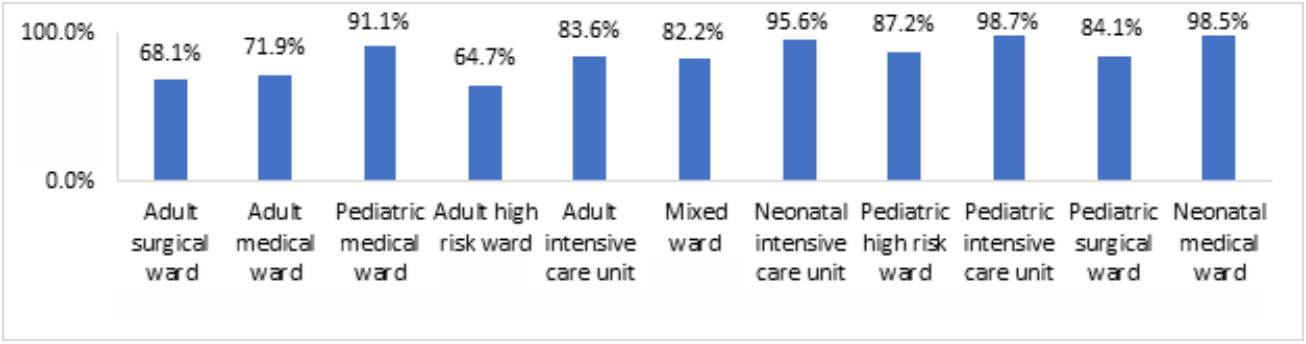
Key Findings of the PPS Survey

587 medical records from 14 hospitals were included in the survey. Antimicrobial use was reported 75.2% of patients:

- ·59% recorded use of one antimicrobial, 32% recorded use of two and 9% recorded use of three or more. For majority (92%) antimicrobials were administered parenterally.
- ·Third generation cephalosporins were the most prescribed antimicrobials, followed by penicillin/beta-lactamase inhibitors and Imidazole derivatives.
- ·Antimicrobials were majorly prescribed for prophylaxis, followed by community-acquired or hospital-acquired infections
- ·Only 24.5% of the prescribed antimicrobials were compliant to policies/ guidelines adopted by the participating hospitals
- ·24% of the antimicrobials prescribed for treating infections did not match the results of the corresponding microbiological investigations
- The prevalence of antimicrobial use was higher in pediatric wards (Range: 84.1-98.7%) compared to adult wards (Range: 64.7-83.6%)

Prevalance of Antimicrobial Use by Hospital (n=3587)





Antimicrobial Use by Ward Type

ISO accreditation

ISO Preparedness for NIH Microbiology System

National Institute of Health (NIH) being the focal point for AMR has launched several initiatives to cater the issue of AMR. The microbiology department of the NIH, in collaboration with the Fleming Fund Country Grant Pakistan, is driving to achieve the required ISO preparedness. The progress of this is detailed below:

Pertaining to accreditation for Medical Laboratories - requirement for quality and competence (ISO 15189 : 2012), a desktop document review was conducted by the Pakistan National Accreditation Council (PNAC) on 8th March 2021 to prepare the microbiology section for the final audit.

The quality laboratory data is a vital component of AMR surveillance. The National External Quality Assurance scheme (NEQAS) for medical microbiology labs is one of the areas NIH has been working on since 2016. The Microbiology National External Quality Assurance Scheme NIH (Micro-NEQAS NIH) works as both the organizer and proficiency testing provider for bacteriology. The Micro NEQAS NIH with support from the Fleming Fund Country Grant is preparing for ISO 17043:2010 (Conformity Assessment-General requirement for Proficiency Testing). In this regard a technical working group (TAG) has been notified. The first meeting of TAG was conducted at NIH. A training was held in March for all sentinel labs to walk them through the updated NEQAS scheme.

Provincial AMR Focal Person

Message - AMR Focal Person Khyber Pakhtunkhwa (KPK)

The increasing global trend of Antimicrobial Resistance has gradually emerged as a major public health challenge for the entire world. The growing burden of AMR in KP requires an action plan as a commitment to following the guidelines of the National Action Plan and the World Health Assembly Resolution 2015 (WHA68.7) to tackle the issue of AMR through a 'One Health' approach.

The KPK government is diligently working on AMR containment and has taken concrete steps towards this global issue. I would like to express my gratitude to the Ministry of Health and the National Institute of Health for their wonderful support. I would also like to thank the Department of Health, UK Aid and the Fleming Fund Program for providing a grant to establish an AMR Secretariat that will serve as a coordinating center for AMR and for providing support to enhance the human and animal health laboratory and sentinel sites capacity in terms of physical infrastructure and technical assistance.

I must add that the war against diseases is largely won through health education and health promotion, thus leading to observing healthy lifestyles and healthy societies. In a country like Pakistan where infectious diseases are endemic, the issue of AMR development is a significant threat to Public Health. The need of the hour is to improve and enhance government focus on containment of AMR through 'One Health' approach based plans, regulation of drug use through amendments in drug acts that prohibit over-the-counter sale of antibiotics and promote rational use of antibiotics not only in human health but in veterinary practice as well as agriculture. I strongly believe that being committed to a cause is the most important index of excellence and if all stakeholders remain committed to handle AMR, nothing can stop us from achieving excellence and success against AMR.

Dr Atta Ullah Khan
Coordinator-II HSRU
Focal Person AMR- KPK

The Fleming Fund

UKaid from the British people

AMR Membership Network NIH
Please click on the link for AMR Membership form
https://www.nih.org.pk/amr-membership/.

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