



Antimicrobial Resistance (AMR)

Newsletter

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Greetings from the Executive Director National Institute of Health

These are challenging times globally, given the COVID-19 pandemic and emerging crises. While we all stand united to fight against its spread, NIH is continuing efforts in other pertinent domains at the same time. We are pleased to release our first newsletter on antimicrobial resistance (AMR). This newsletter shows that we are diligently involved in all that is our responsibility and beyond. It is a fact not yet well known to the public that antibiotics need to be used in an appropriate manner to prevent the emergence of the resistant bugs.

We need to introduce massive changes to present practice of the use of antimicrobial agents in human, animal and environmental health sectors under a collective, One Health approach.

AMR is an integral part of our National Action Plan, and we at the NIH are committed to play our part in global disease control programs most effectively and stand alongside the global community in the effort to reduce the burden of AMR. We are grateful for the support from the government, as well as from our development and technical partners.

Through this quarterly AMR newsletter, we will keep stakeholders updated on our plans and programs, new developments, guidelines, statistical analyses and interesting stories that we encounter on our journey.

We are all committed to strive much harder to strengthen our public health surveillance and quality of care, and to be able to better serve the people of Pakistan. During the challenging COVID-19 pandemic and for the future, I pray for the safety and well-being of humanity.

**Major General
Prof Aamer Ikram, SI (M)**

Executive Director National Institute of Health

Antimicrobial Resistance (AMR)

In recent decades, the world has encountered accelerated emergence of antimicrobial resistance (AMR), mostly associated with misuse of antibiotics. Addressing AMR requires an all-inclusive, multisectoral approach involving key stakeholders from the human, animal and environmental health sectors. In light of the global importance of AMR, the World Health Organization (WHO) in 2015 developed a Global Action Plan (GAP) on AMR, which was endorsed by the World Health Assembly (WHA68.7). Subsequently, Pakistan developed a National Strategic Framework for AMR Containment in 2016 followed by a National Action Plan (NAP) on AMR in 2017. Since then, the AMR-NAP has been the landmark policy document and way forward for the country in its efforts against antimicrobial resistance.

AMR Coordination in Pakistan

The Government of Pakistan through Ministry of National Health Services, Regulations and Coordination (MoNHSRC) has nominated the National Institute of Health (NIH), as the national focal point for AMR. The NIH serves as a national AMR coordinating center and leads Pakistan's efforts to contain AMR in the country.

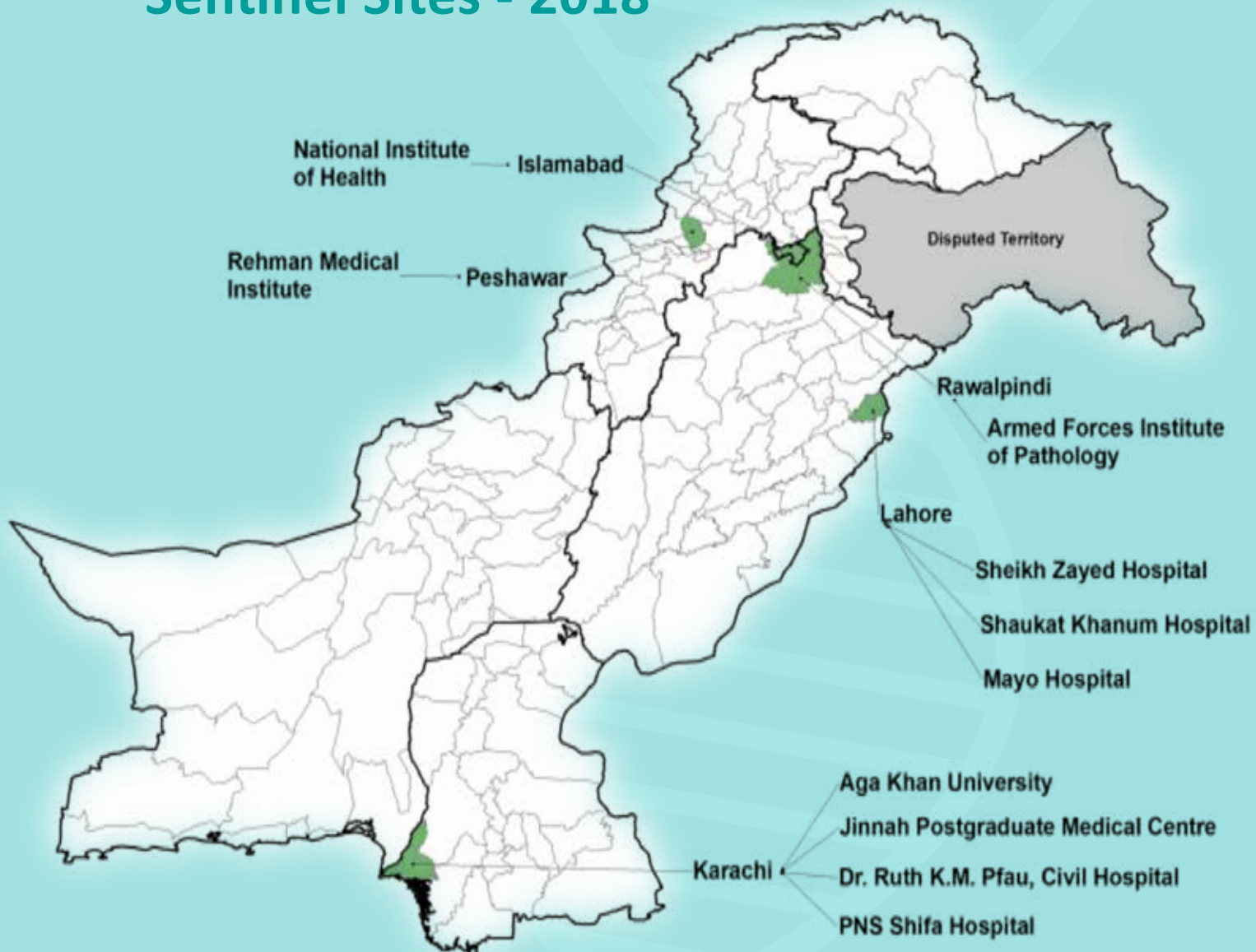
The salient achievements of the National Institute of Health on AMR are as follows:

- Meaningful engagement of the Ministry of National Food Security and Research (MoNFS&R), Ministry of Climate Change (MoCC) and other key stakeholders in the consultative process
- Ensuring 361.960 Million PKR indigenous funding from GoP through PC-1
- Nomination of National Veterinary Laboratory (NVL) and National Reference Laboratory for Poultry Diseases (NRLPD) to function as potential reference laboratories from the animal health sector
- Establishment of an "AMR-Infection Prevention and Control (IPC) Secretariat" at the NIH to coordinate and collaborate with key stakeholders at the national and provincial levels
- Ongoing consultations for the development of provincial action plans on AMR

AMR Surveillance in Pakistan

Pakistan enrolled in the WHO GLASS (Global Antimicrobial Resistance Surveillance System) program in 2017. The country prepared a National AMR Surveillance Plan in 2019 with the aim 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”. Under the national AMR surveillance network, NIH enrolled key healthcare facilities and public health laboratories across provinces and regions to serve as sentinel sites. Specimens collected from inpatients are submitted for pathogen identification and antibiotic susceptibility testing (AST). Laboratory results are entered in an existing laboratory information management system (LIMS). At set intervals, requested surveillance data elements are exported to an agreed database file which is then transmitted to National Coordinating Centre (NCC). The NCC generates national AMR surveillance reports and submits aggregated data to GLASS. However, this network comprises only human health facilities. To include animal health in AMR surveillance, efforts are underway to prepare a similar National AMR Surveillance Plan for the animal health, connecting these two networks under NIH supervision.

AMR Sentinel Sites - 2018



AMR Developments in Human Health

- **Launch of Fleming Fund Country Grant:** The Fleming Fund is one of the key organizations working on AMR worldwide. The country grant was launched in Pakistan in mid-2019, with a formal announcement made by Thomas Drew CMG, the British High Commissioner, when he visited the NIH along with a UK delegation on September 19, 2019. The purpose of the visit was to strengthen the bilateral relationship and technical support to Pakistan with the Fleming Fund for capacity building on AMR.

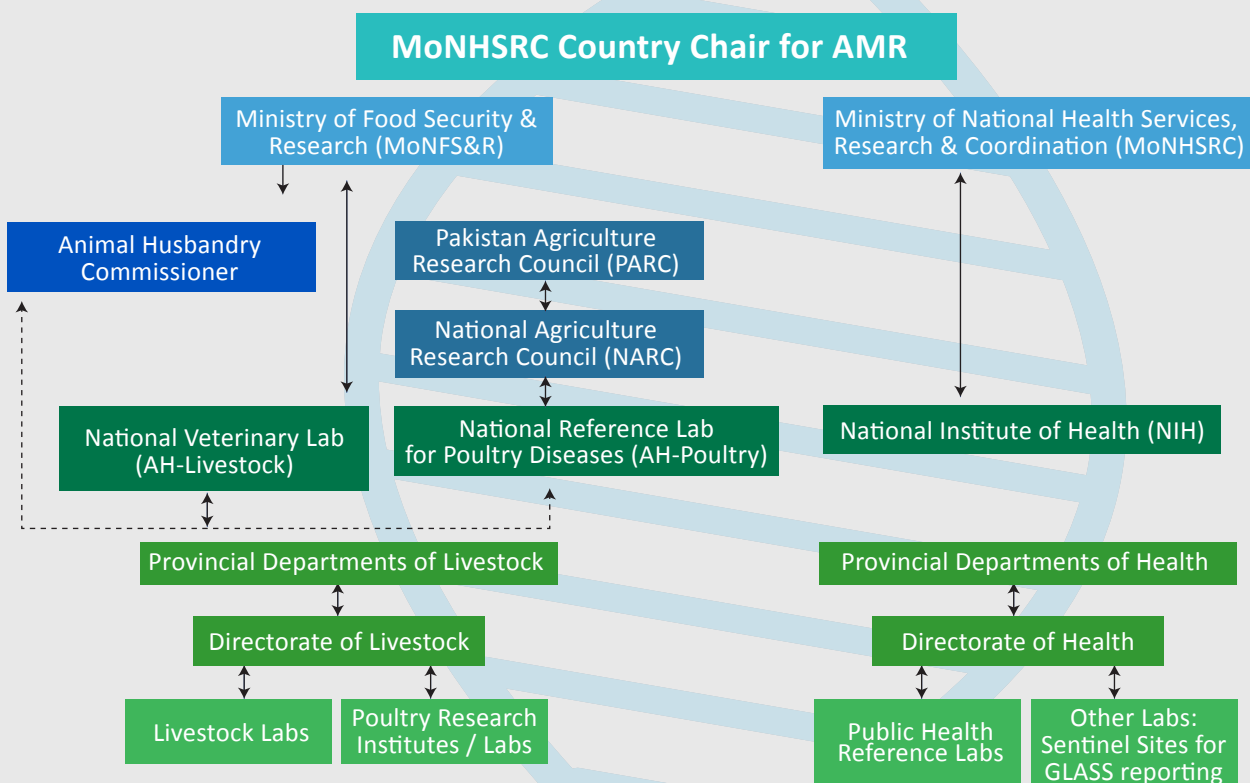


Presentation of a Souvenir to his Excellency Thomas Drew (British High Commissioner to Pakistan) by the Executive Director of the National Institute of Health

- **Political Economy Analysis:** The NIH, with technical support from the Fleming Fund, carried out a political economy analysis to map the current AMR situation in Pakistan. This exercise included in-depth interviews of key stakeholders at the national and sub-national levels. As a result of the exercise, the following gaps have been identified, and mitigation measures to bridge these gaps have been proposed.

- Creating a multisectoral bay
- Providing resources for NAP Implementation
- Strengthening data collection mechanisms
- Strengthening legislation

- **One Health Coordination Framework on AMR:** The Fleming Fund provided technical assistance to the Government of Pakistan to develop a 'One health' coordination mechanism. Guidelines have been developed on this mechanism for AMR including Terms of Reference for AMR focal persons.



- **Pakistan AMR National Action Plan, Pakistan – Cost Estimates:** The Fleming Fund engaged a technical expert to work with the public sector agencies (human health and animal health sectors), including donors, to estimate the finances needed to execute the AMR-NAP at the national level. A Summary of the cost estimates is as follows:

- ▶ The aggregate cost for the AMR-NAP is PKR 1,726.90 Million (GBP 8.68 Million)
- ▶ Year 1 and Year 2 of the NAP have higher cost estimates as compared to other years because of capital investments such as procurement and civil works for laboratories, baseline assessments and initial set up

Sr. No.	Categories	Cost Estimates					Total PKR	Total GBP m
		Year I	Year II	Year III	Year IV	Year V		
1	Improve awareness and understanding of antimicrobial resistance through effective communication, education and training	77.88	72.50	66.54	81.61	79.44	377.96	1.90
2	Strengthen the knowledge and evidence base through surveillance and research	564.37	106.24	42.73	39.50	42.01	794.86	3.99
3	Reduce the incidence of infection through effective sanitation, hygiene and infection prevention measures	98.46	94.28	84.85	77.25	84.72	442.56	2.22
4	Optimize the use of antimicrobial medicines in human and animal health	13.60	20.45	18.70	8.00	7.00	77.75	0.39
5	Develop the economic case for sustainable investment based on country needs and increase investment in new vaccines, diagnostics and other interventions	3.60	12.16	12.33	2.80	2.88	33.76	0.17
	Total Cost	757.91	305.62	225.15	209.16	216.06	1726.90	8.68

Summary Cost by Objectives

- **Landscape Meetings:** The National Institute of Health hosted several landscape meetings of key national stakeholder and partners to align AMR activities at the national level.
- **AMR Awareness Week Activities:** Education and awareness of public and professionals is a key objective of AMR-NAP. In recent years, the NIH has successfully organized a series of awareness seminars and workshops throughout Pakistan. In 2019, an AMR awareness poster competition was also organized.
- **NEQAS (National External Quality Assurance Program):** The NIH is providing external quality assurance support to peripheral labs enrolled under the surveillance network for bacterial identification and Antimicrobial Sensitivity Testing (AST) for all GLASS pathogens.
- **Infection Prevention and Control:** The NIH Infection Prevention and Control (IPC) team has conducted training in various healthcare facilities of Pakistan including the Pakistan Institute of Medical Sciences, Polyclinic Hospital, the National Institute of Rehabilitation Services and the Federal Government Hospital. The team has trained different cadres of healthcare staff i.e. doctors, nurses, paramedics, technicians and housekeeping staff, on salient IPC components including hand hygiene, personal protective equipment (PPE), aseptic technique, safe injection practice, environmental cleaning, bundles of good clinical practice, healthcare waste management, sterilization and disinfection.



Antimicrobial Resistance awareness walk at Aga Khan Hospital Gilgit



IPC Training conducted at the Pakistan Institute of Medical Sciences by NIH Staff

AMR Developments in Animal Health

Addressing the ever-increasing threat of AMR requires a 'One Health' approach since some of the antimicrobials used to treat various infectious diseases in animals may be similar to the ones used in humans. Therefore, it is very unrealistic to combat AMR without meaningful engagement of the animal health sector alongside human health.

The salient activities conducted in the animal health sector in recent past are as follows:

- **Laboratory Biosafety and Biosecurity Training Workshop:**

The National Veterinary Laboratory in collaboration with Fleming Fund team carried out a hands-on training workshop for the staff of national referral labs of both human and animal health sector.

- **National AMR Surveillance Plan for Animal Health Sector:**

The Fleming Fund country grant is providing technical assistance for the development of a National AMR Surveillance Plan for healthy food animals. The initial draft of the strategic plan was developed in consultation with key stakeholders.



Discussions on Outlines of AMR Surveillance Plan for Animal Health

- **AMR Surveillance Pilot:**

While the National AMR Surveillance Plan is under development, the Fleming Fund team is working with the NRLs of the animal health sector to start active surveillance of AMR in a phased approach to establish AMR network. The purpose of the pilot is to initiate a monitoring and surveillance program for AMR from selected production systems of clinically healthy animals. A sampling strategy has been prepared in consultation with NVL and NRLPD. Its implementation is in process.

- **Workshop on AMU Surveillance:**

The Fleming Fund country grant supported the Ministry of National Food Security and Research (MoNFS&R) and the World Organization of Animal Health (OIE) to carry out a workshop on **"Monitoring of the Quantities and Usage Patterns of Antimicrobial Agents in Animals"**. A wide audience including key government stakeholders at the national level, provincial livestock departments, poultry, dairy and pharmaceutical associations as well as various donor organizations attended this workshop. This workshop provided an opportunity to take the AMU surveillance forward and prepare a plan in consultation with key stakeholders.



Group Photo of the Workshop Participants

AMR Partners

- **The Fleming Fund** is a £265 million UK aid programme helping to tackle AMR in low and middle-income countries around the world. The programme is led by the UK's Department for Health and Social Care (DHSC) with Mott MacDonald as the management agent of the funds.
- **The Fleming Fund country grant** is being implemented through **DAI Pakistan**, the lead partner of a consortium that includes the Liverpool School of Tropical Medicine, the Aga Khan University and Health Security Partners. The country grant team is working in collaboration with the Government of Pakistan to strengthen AMR surveillance systems in the human and animal health sectors. The Fleming Fund has provided technical support to the Government of Pakistan to carry out a political economy analysis, develop a costed national action plan, prepare guidelines on a One Health coordination mechanism for AMR and develop the terms of reference for AMR focal persons. Support was also provided to carry out assessments of three national referral laboratories and 22 peripheral (sentinel) labs in both the human and animal health sectors. Continued support is being extended for the development of a comprehensive AMR Surveillance Plan and pilot activity for the animal health sector.
- **Fleming Fund Fellowships** are another independent initiative to address the priority areas of surveillance for AMR and antimicrobial use (AMU), AMR epidemiology and laboratory quality management in AMR. Six fellows, three from human health and three from the animal health sector, have been selected from Pakistan under this fellowship program.
- **World Health Organization (WHO), Pakistan** has provided a wide range of technical support to the Government of Pakistan to strengthen the knowledge and evidence base through surveillance and research including establishment of an integrated national AMR surveillance system (human, animal usage and resistance monitoring). WHO is actively involved in activities related to AMR surveillance and stewardship.
- **United States Agency for International Development (USAID)** is actively working on some activities defined in the AMR-NAP at the federal and provincial levels. It is also working to improve regulation and oversight to reduce falsified and substandard medicines. USAID provided support to prepare key policy documents, including a national strategic framework for the containment of AMR and a national medicine policy. USAID also provided technical assistance in preparing key PC-1 documents to help secure indigenous funding.
- **The Centers for Disease Control and Prevention (CDC)** works in collaboration with NIH and other public health institutions in Pakistan to strengthen capacity and infrastructure for key public health issues including workforce development, surveillance plans on AMR and hepatitis and polio eradication programs. The CDC has provided technical support for the development of a national surveillance plan on AMR in human health sector, improving laboratory quality management systems and development of Mycotic Diseases Surveillance Program.
- **Public Health England (PHE)** is working with the Government of Punjab and the Department for International Development to help Pakistan improve its ability to deal with current and emergent public health threats. PHE has been providing technical support to progressing International Health Regulations compliance, particularly regarding the Global Health Security Agenda (GHSA) and Integrated Disease Surveillance and Response (IDSR).