



Combatting the escalating threat of antimicrobial resistance in Pakistan: urgent call for prioritization and commitment in decision-making

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An eighteen years old boy, who underwent atrial septal defect closure and patent ductus arteriosus ligation eight months ago at a tertiary care facility, is roaming from one clinic to another for the treatment of an un-resolving infection. This year is 2023 and a significant portion of all the tertiary care facilities don't have either a proper clinical microbiology laboratory or a properly trained clinical microbiologist for proper diagnostic support to these clinicians. These undiagnosed infections or substandard reports from laboratories further push for the use of a variety of antibiotics without indications, promoting antimicrobial resistance (AMR), adding cost to the care and poor outcomes.

The global burden of AMR is rising at an alarming pace and accounts for 700,000 deaths annually. The situation will be worse in low- and middle-income countries (LMICs) where its spread has more favourable conditions.¹

The complexity of the issue extends beyond its apparent simplicity, reflecting the culmination of years of inadequate patients' safety planning. This has resulted in deficiencies in education, infrastructure, equipment, resources, and workforce, exacerbating the challenges at hand.

In May 2015, a global action plan on AMR was adopted by World Health Assembly during its 68th session and urged its member states to implement the suggested action plan and adapt to their national priorities.² Like other countries, Pakistan took the initiative by developing National Strategic Framework for Containment of AMR in 2016. This was followed by development of AMR National Action

Plan of Pakistan in 2017,³ but unfortunately the federating units have yet to take concrete steps on ground in most instances for its successful implementation.

Health care associated infections is becoming the most serious threat to all the patients who are requiring surgeries, intensive care or any sort of inpatient care and unfortunately almost all of these infections are caused by pathogens which are highly resistant and the risk of mortality is increased many folds.⁴

Similarly, due to poor water, sanitation and hygiene (WASH) arrangements in the communities, uncontrolled use of antibiotics in veterinary and agriculture multidrug resistance pathogens are increasing at an alarming rate.⁵ The extensive drug resistance (XDR) salmonella spread in different cities of the country is a living example where even communities living in the so-called posh townships are affected and is still ongoing with ever increasing numbers infected on daily basis.⁶

The true picture of the whole situation in LMICs is further blurred due to poor surveillance systems in the community, public sector and private health care facilities. Collecting the data and sharing it with decision makers is an uphill task due to lack of commitment and sustainable solution to the problem, the donor funded projects lack mechanisms to internalize the support to make it a continuous process and usually vanish away with time.

The fate of many high-tech procedures and treatment modalities is grossly compromised due to poor infection prevention and control practices,

spread of multidrug organisms and non-availability of antimicrobials. Sepsis related mortality is the highest in poor countries and the contributory factors are many but the most important factor is lack of diagnostic microbiology support in many instances followed by lack of appropriate guidance for management.

The concern over potential complications arising from these infections has progressively influenced the prescribing practices of healthcare providers, leading them to increasingly rely on broad-spectrum antibiotics even for minor ailments. However, this unintended use is exacerbating selective evolutionary pressure and fostering the proliferation of antimicrobial resistance among microorganisms.⁷

One of the modalities that is in use for many years in the developed world is the institutional antibiotic stewardship program that has shown to contain AMR but requires stronger organizational cultures for compliance across the board and a well-equipped microbiology support. In LMICs the best options to start with is to follow the WHO AWaRe (Access, Watch and Reserve)⁸ classification during antibiotics prescription in true spirit and implement it in the health care.

Clinical microbiology laboratories play a critical role by providing essential information for accurately diagnosing and treating patients with infectious diseases in a timely manner, conduct surveillance on local AMR trends among microbial pathogens and helps in developing regional antibiogram. These regional antibiogram are important for developing clinical practice guidelines based on local data and there are

chances of significant variation between the regions hence can't be substituted for each other.

There is also a misconception about the public health laboratories vs clinical laboratories in the country, most of the policy makers and managers believe that these are the same and are focusing primarily on the public health laboratories and assume as if these are clinical laboratories as well.⁹ This has grossly compromised our approach towards strengthening of the clinical laboratories in the healthcare system. Both of these laboratories are having separate mandates and importance and should be kept separate. The clinical laboratory helps a clinician in managing an individual and the public health lab guide about the prevention and control, epidemiologic investigations and serves as reference infectious disease labs for the clinical laboratories.

The field of AMR is so fluid that it's always challenging for physicians to manage infections due to multidrug resistance organisms and constantly new recommendations are added¹⁰ hence it's recommended that the National Action Plan be implemented in each region, develop proper diagnostic laboratories at each tertiary care facility which is accredited and subsidise the costs by provision of disposable supplies and fixing the price, develop local evidence based Antibiotic stewardship modalities and seek infectious disease consultation where ever available for proper guidance. The acute shortage of the human resource for these specialties can be improved by telemedicine in short-term and incentivising these specialties as other rare specialties in the long-term.

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CONFLICT OF INTEREST

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