Anitmicrobial Stewardship – An urgent need of Pakistan.

Antimicrobials were used for management of microbial infections in ancient time worldwide. Alexander Fleming discovered penicillin in 1928 and antimicrobial resistance was major concerned even at that time, which was later evident in 1940.[1] Initial elation which came with a discovery of many antibiotics and antifungal agents in succeeding years was overcome by emergence and propagations of resistant bacterial strains, some of them are now resistant to all available antibiotics. At least 23,000 people die and at least 2 million people become infected as a direct result of multidrug resistant bacteria in United States.[2] Many more people die from other conditions that were complicated by an antibiotic-resistant infection. Though it is difficult to calculate the full social and economic costs of AMR, the combined impact of disability and death, loss of labor productivity, cost to health systems, and the burden of care on communities has extensive consequences. A recent review estimated that 700,000 deaths occur each year worldwide due to AMR. If appropriate action is not taken now, then by 2040 AMR will kill 300 million people worldwide. This figure is higher than todays' cancer death and the estimated cost is 100 trillion US dollars.[3]

There are many factors responsible for increasing resistant of antimicrobial among microorganisms like irrational or inappropriate use of antimicrobial agents, lack of awareness about proper use and antibiotics resistance, easy availability of all the antimicrobial over the counter without prescription, absence of policies on manufacturing and utilization of antimicrobial and use of antibiotics in animal food and agriculture. Poor infection control practices both in health care as well as in community leads to rapid spread of these deadly organisms not even between countries but also across glob. During the past few decades, development of new antibiotics has slowed considerably and our options for treating increasing resistant infections are becoming more and more limited. CDC estimates that 30 percent of all antibiotics prescribed in outpatient clinics and in hospitals in United States are unnecessary. Using appropriate and identifying best combination is essential. A targeted approach towards pathogen and drug sensitivity is the key using first-line drugs recommended by national guidelines.[4] A coordinated approach including all stakeholders to improve the judicial use of antibiotics can only be achieved through antibiotic stewardship. Antimicrobial stewardship has been defined as "the optimal selection, dosage, and duration of antimicrobial treatment that results in the best clinical outcome for the treatment or prevention of infection, with minimal toxicity to the patient and minimal impact on subsequent resistance".[5] Joseph and Rodvold wrote about the "4 D's of optimal antimicrobial therapy": right Drug, right Dose, De-escalation to pathogen-directed therapy, and right Duration of therapy.[6] The world health assembly as endorsed a global action plan to tackle the issue of antimicrobial resistance in 2015. The goal of the plan is to ensure continuity of successful treatment and prevention of infectious diseases with effective and safe medicines that are quality assured, used in a responsible way and accessible to all who need them.[7] It has provided framework to develop their nation action plan to battle AMR .

Pakistan is also facing challenges of increase spread of multidrug resistance organisms, in healthcare setting as well as in community, and antimicrobial resistance with major contributions made by antibiotics misuse and lack of national health policies. From ESBL enterobacteriaceae and drugresistance Salmonella in last decade, to carbapenem resistance enterobacteriaceae , multidrug resistant salmonella, MDR TB and MRSA , problems has now become very frightening.[7,8] There is lack of national policies to optimize use of antimicrobial therapy through antimicrobial stewardship. Although few initiative has been taking for increasing awareness about antibiotics stewardship at individual level, there is need of national action plan for AMR which can be implemented in all healthcare facilities and sectors across Pakistan. There should be policies for infection control, improved diagnostic facilities at all level, antibiotics policies including its use in animal and agriculture industries, pharmacy regulation for over the counter availability of all type of antimicrobials, national antimicrobial resistant network, plans to increase awareness and education of not only healthcare professional but also at community level and support for ASP from public and private sectors.

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