Antibiotic Resistance: Global Crisis

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Antimicrobial resistance is the ability of a microorganism (like bacteria, viruses, and some parasites) to stop an antimicrobial (such as antibiotics, antiviral and antimalarial) from working against it. As a result, standard treatments become ineffective, infections persist and may spread to others. Antibiotic resistance occurs when bacteria or other organisms, change in response to the irrational use of these medicines. These resistant bacteria when infect any human, results in infection which is difficult to treat. Antibiotic resistance will remain a major public health issue until we change our antibiotic prescription and use behavior.

Antibiotic treatment is one of the main approaches of modern medicine which is used to combat infections. The "golden era" of antibiotics ranged from the 1930s to 1960s which gave rise to many antibiotics. Unfortunately, this era ended because researchers were unable to maintain the pace of antibiotic discovery in the face of emerging resistant pathogens. WHO Global Antimicrobial Surveillance System (GLASS) reported antibiotic resistance among 500,000 people with suspected bacterial infections globally and its burden varies among the countries.[1,2] Each year in the United States, at least 2.8 million people get an antibiotic-resistant infection, and more than 35,000 people die.[3] The most commonly reported resistant bacteria are Escherichia coli, Klebsiella pneumoniae, Staphylococcus aureus, Streptococcus pneumoniae, Salmonella spp and Mycobacterium tuberculosis.[2]

Antibiotic resistance is rising to dangerously high levels in all parts of the world. New resistance mechanisms are emerging and spreading globally. In countries where antibiotics can be bought for human or animal use without a prescription, the emergence and spread of antibiotic resistance is worse.[4] Similarly, in countries without standard treatment guidelines, antibiotics are often over-prescribed by health workers and veterinarians and over-used by the public. The main causes of the emergence, spread, and persistence of multidrug-resistant (MDR) globally are multiple which make its control and prevention complicated. It includes overpopulation, enhanced global migration, increased and improper use of antibiotics, poor sanitation and poor sewerage disposal system. Persistent failure to develop or discover new antibiotics and non judicious use of antibiotics are the predisposing factors associated with the emergence of antibiotic resistance. Antimicrobial resistance (AMR) poses a serious global threat of growing concern to human, animal, and environment health.[5]

Pakistan is among countries which has highest predicted antimicrobial resistance (AMR) in the world. Pakistan is currently struggling to deal with several drug resistant epidemics, including an outbreak of Extensively Drug Resistant (XDR) Typhoid which has now gripped the entire country, endemic Multi-Drug Resistant (MDR) Tuberculosis and several strains of drug-resistant fungi and other microorganisms.

Pakistan, with the support of WHO, has recently completed the development of a national action plan to address antimicrobial resistance, which will now be translated into provincial operational plans on a priority basis. Antibiotic resistance is accelerated by the misuse and overuse of antibiotics, as well as poor infection prevention and control. Steps can be taken at all levels of society to reduce the impact and limit the spread of resistance. To prevent and control the spread of antibiotic resistance; only use antibiotics when prescribed by a certified health professional, by regularly washing hands, preparing food hygienically, avoiding close contact with sick people, practicing safer sex, and getting vaccinations done timely. Policy makers must ensure that there is a robust national action plan, with strong surveillance system to tackle antibiotic resistance in place.

Health professionals can play their role for prevention of infections by ensuring clean hands, instruments, and environment. They have to make sure that they prescribe and dispense antibiotics when needed and

are according to current guidelines, report any antibiotic-resistant infections to surveillance teams and counsel the patients about antibiotic resistance. There must be more investments in research and development of new antibiotics, vaccines, diagnostics and other tools.

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