

Misuse of Antimicrobials

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Antimicrobials are natural or synthetic drug substances that are used against various infections. They are one of the greatest invention of the 19th century and played significant role in combating serious health care problems, nevertheless their misuse has untoward effects on public health in the form of antimicrobial resistance (AMR).¹ AMR is the ability of a bacteria, virus, fungi and parasites to stop an antimicrobial such as antibiotics, antivirals, antifungals and antiparasitic from working against it, as a result, standard treatments end up in failures, infections persists and this resistance may spread to others and the environment. Antibiotics use have an enormous potential for selective pressures and damages the normal flora and can make the person more prone to life threatening infections such as *Clostridium difficile* associated diarrhea (CDAD).^{2,3} Adverse drug reactions (ADR) incurred with the use of antibiotics can be mild, moderate, reversible or even fatal.⁴ One of a leading factor for antimicrobials to develop AMR is its injudicious use.⁵ Practices such as self-medication, over the counter availability, lack of implementation of existing laws on sale controls, irrational prescribing, lack of knowledge of prescribers, lack of supportive microbiology laboratories, fear based and personal experiences based therapies not knowing the importance of cultures and resistance patterns and dispensing are contributing factors to develop AMR. They affect the quality of life and health negatively by raising burden of treatment cost and recurrent infections.^{6,7} Patients having infection due to antibiotic resistant bacteria are at much more risk of facing complications and death rates are higher in this category. It is estimated that by the year 2050, ten million people will die due to AMR.⁸ Due to the frequent, rapid and abrupt incidences of antibiotic resistance and the ease of transmission due to

globalization, populations across the world are at risk to face serious public health consequences. This issue led the World Health Organization (WHO) to endorse a global action plan for combating antimicrobial resistance in May 2015.⁹ Pakistan is also struggling to tackle antimicrobial resistance through a platform of Pakistan Global Antibiotic Resistance Partnership (GARP) and has published its first report on the situation analysis of AMR in Pakistan in the April, 2018.¹⁰ However, efforts are needed to prevent antibiotic resistance by controlling the sale of antibiotics over the counter without prescription, developing strict regulatory framework and clinical guidelines for prescribing antibiotics with clear indications. Mass media awareness campaign about the rational use of antibiotics for public using every single communication tools i.e. television, radio, newspapers, magazines, short message service (sms), electronic mails (e-mails), etc would have a greater impact on minimizing the sale and consumption of antibiotics. Another way to tackle misuse of antibiotics in healthcare settings are to develop and carry out antibiotic stewardship programs (ASP), that is a collaborative effort and which involves multiple decision making staff such as infectious disease (ID) Physician (the team leader), clinical pharmacist, nurse, hospital administrator, infection preventionist, microbiologist and policy makers. Establishing quality microbiology and molecular laboratories in hospitals that will provide hospital based anti-biogram data, from which the attending physician will be confident enough to carefully prescribe antibiotics. Supervising and monitoring the drug promotional activities by the medical representatives of different pharmaceutical business sectors in hospital and private clinics will be another bold step to lessen the misuse and overuse of antibiotics. Restricting the use of antibiotics by

establishing hospital formulary system that allows only a limited number of antibiotics and that also has automatic stop order policy for some specific antibiotics. This strategy along with conducting prospective audit of prescriptions for antibiotics could be an effective strategy to promote rational antibiotic use and minimize its long term potential hazards.

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