

# ANTIMICROBIAL STEWARDSHIP: STAY TUNED

Saad Ali, Wajid Hussain, Muhammad Tahir Khadim, Gohar Zaman, Bushra Jamil

Armed Force Institute of Pathology, Pakistan

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Escalating antibiotic resistance has warranted to develop strategies for appropriate use of antibiotics. Antimicrobial stewardship (AMS) seems therefore a need of the hour. Misuse, abuse and overuse of available antimicrobials is the pivotal cause of decline in antibiotics' efficiency. Development of resistance to treatment of last resort have forced clinicians to change their prescription behaviors [1]. The issue of antimicrobial resistance, world's most pressing public health problem these days, can effectively be tackled only through adoption of certain safe measures. Infectious organisms adapt to the antimicrobials designed to kill them. People infected with multidrug resistant (MDR) pathogens are expected to have extended hospital stays with fatal aftermath. It is apprehended that it may take us to post antibiotic era. Post Antibiotic Era refers to the time when resistance to antibiotics will make them useless and mild diseases may lead to mortality due to unavailability of any effective antibiotic. There have been reports from all over the world regarding pan-drug resistant bacteria causing increased morbidity and mortality. The future of antibiotics is therefore dependent on AMS. Antimicrobial stewardship is a coordinated program that reduces further development of resistance by encouraging appropriate use of antimicrobials [2].

The term AMS was first invented by John McGowan and Dale Gerding. Both were internists at Emory University School of Medicine. Subsequently, in 2007, Infectious Diseases Society of America (IDSA) and Society for Healthcare Epidemiology of America published guidelines for developing an AMS program. In 2014, the Centers for Disease Control and Prevention (CDC) recommended that all United States hospitals must have an antibiotic stewardship program [3,4]. Against that backdrop, National Antimicrobial Resistance Action Plan was formulated in 2017 by Ministry of National Health Services Regulations & Coordination, Pakistan [5].

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**Correspondence:** Dr. Bushra Jamil, Department of Microbiology, Armed Forces Institute of Pathology, Rawalpindi, Pakistan

Email: [bushrajamil2000@gmail.com](mailto:bushrajamil2000@gmail.com)

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The foundation of AMS lies on the cornerstone of six "Ds" i.e., exact diagnosis, debridement or drainage, right drug, right dose, right duration and de-escalation. Antibiotics should only be prescribed after making exact diagnosis. Use of antibiotics in viral infection is deplorably the highest misuse of antibiotic. Likewise, their application in non-infectious processes and other small skin abscesses that can easily be resolved with incision and drainage is also a misuse. Similarly, bacterial colonizers do not require antibiotics. Besides that, inappropriate samples and sampling techniques can also lead to false diagnosis. In case of an abscess, pus swab is an inappropriate sample and often misleading. Only pure pus or tissue culture is indicative of true pathogen. Drainage or Debridement pertains to drainage of abscesses and removal of necrotic tissue or foreign material when required. It may often get contaminated with skin flora or other colonizers and does not reveal the underlying pathogen causing infection. The significance of right drug in right dose for the right duration is indisputable. For instance, the use of intravenous colistin in meningitis or encephalitis is not beneficial owing to very low permeability of colistin to cross blood brain barrier. However, intrathecal mode is effective. Similarly, role of tigecycline in treating urinary tract infection has not been established. De-escalation refers to switching of broad-spectrum antibiotics to narrow spectrum or from changing the dosage form i.e., from intravenous route to oral route or discontinuation of treatment [6].

Furthermore, clinicians are to be informed about emergence of unusual pattern of drug sensitivity. It is necessary to provide, revise and publicize annual cumulative susceptibility reports. Consequently, a multipronged strategy of AMS should be adopted to control antimicrobial resistance. Constant and refreshing education of medical students, physicians and pharmacists is required. Multidisciplinary approach to AMS program is essential for its implementation and success. It is generally believed that sole responsibility lies on hospitals to address the problem because the antibiotics are prescribed there but at the same time

AMS needs to be adhered to at all levels to get optimal benefit from this program. AMS ought to be practiced in hospitals, long-term care facilities, and community in order to effectively curb a public health crisis.

To sum up, for an effective AMS, leadership commitment, prescriber accountability, drug expertise and education of clinicians and patients are essential and mandatory [7].

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