

## Editorial



# Call to Start Antimicrobial Stewardship Program

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It has been alarmingly emerging antibiotic resistant organisms throughout the world resulting in higher mortality and morbidity in human than before. It is our moral responsibility to stop the premature death and reduce suffering of patients from chronic infection by combating the development of antimicrobial resistance (AMR). Now it is a general humanitarian obligation of health care provider to participate in antimicrobial stewardship program (ASP). This article is presented to make aware, motivate to participate in the noble duty is to ensure proper use of antimicrobials within the health care system through the development of a formal, interdisciplinary team of health service delivery.

It has been evidence through study not only in our country<sup>1,2</sup> but in the developed country like USA where antibiotic is prescribed in acute infection which is common and often unwarranted. Most of the half of hospitalized patients receive at least one antibiotic and in up to 50 percent of these patients, antibiotics are unjustified or inappropriate.<sup>3</sup> Such antibiotic misuse cause not only to adverse drug reactions, like *C. difficile* colitis, but to the emergence of multidrug resistant (MDR) organisms, such as methicillin-resistant *Staphylococcus aureus* (MRSA), extended-spectrum  $\beta$ -lactamase (ESBL) producing organism, vancomycin-resistant enterococci (VRE), and carbapenem-resistant Enterobacteriaceae (CRE).<sup>4</sup>

Internationally importance of antimicrobial resistance of microbes were realized seriously by the World Health Assembly and endorsed the Global Action Plan on AMR in May 2015.<sup>5</sup> Three year later the Political Declaration of the High-Level Meeting of the General Assembly on AMR held in September 2017 and recognize AMR as a global threat to public health. These accepted policy initiatives acknowledge the emergence of antibiotic resistant organisms (AROs) has been linked to the inappropriate and over use of antibiotics. They also felt a need to optimize the use of antimicrobials. The importance of stewardship in the animal setting is also recognized as in the "One Health" approach to ASP and recommended by WHO, FAO and OIE.<sup>6</sup>

The Global Action Plan on AMR sets out five strategic objectives as a blueprint for countries in developing national action plans (NAPs) on AMR:

- Objective 1: Awareness and understanding improvement in AMR through effective communication, education and training.
- Objective 2: Surveillance and research work to strengthen the evidence-based knowledge.
- Objective 3: Effective sanitation, hygiene and infection prevention measures to reduce incidence of infection.
- Objective 4: Optimize the use of antimicrobial medicine in human and animal health.
- Objective 5: Sustainable investment development of the economic scope in new antibiotics, diagnostic tools, vaccines and other interventions.

The 4<sup>th</sup> objective in the Global Action Plan on AMR to implement is known as ASP in the human health sector at the national health-care facility level. Now it is not a new concept, but it is a well discussed topic and properly practiced in different countries in the context of governance of the health sector as a whole, taking responsibility for the health and well-being of the population and guiding health systems at the national and global level.<sup>7</sup> The proven benefits of ASP have led to increasing calls for their implementation in all hospitals. The ASP interventions study in Singapore showed significantly shorter average length of stay and reduction in re-infection rates in hospital.<sup>8</sup>

In today's world, medical therapists are dealing with a global challenge of MDROs such as *Enterococcus faecium*, *Staphylococcus aureus* (*S. aureus*), *K. pneumoniae*, *Acinetobacter* sp, *P. aeruginosa*, and *Enterobacter* species (ESKAPE), better known as "bugs without borders" through implementing ASP. Its success stems from being a joint collaborative team effort among. clinical pharmacist, ii. clinician, iii. Infection control nurse, iv. clinical microbiologist, and v. information technologist.<sup>9</sup>

The objective of ASP is to provide guidance and ensure justified use of antimicrobial agents which means i. the right drug, ii. in the right dose, iii. at the right time and iv. for the right duration.<sup>10</sup> This will reduce the development of multidrug-resistant organisms (MDROs), adverse drug events like antibiotic-associated diarrhea and renal toxicity, hospital length of stay, collateral damage by *Clostridium difficile*, and health care costs. Review of the literature has shown the ASP reduces hospital stays and readmission rates among patients with acute bacterial-skin

infections along with drug resistant chronic infections.<sup>11</sup> These benefits of ASP should be focused through different media in the hope to generate support for stewardship among patients, policy makers, and clinicians.

## References:

1. Ahmed AA, Hossain MS, Aktar MB, Juyee NA, Hasan SAM. Prevalence of Methicillin Resistant Staphylococcus aureus in Khwaja Yunus Ali Medical College Hospital. KYAMC Journal. July 2016; 7 (1): 673-677.
2. Ahmed AA, Hossain MS, Aktar B, Juyee NA, Hasan SAM. Detection of Extended spectrum beta lactamases (ESBL) producing pathogens in Khwaja Yunus Ali Medical College Hospital. KYAU Journal. December 2017; 2 (1): 1-6.
3. Fridkin S, Baggs J, Fagan R, Magill S, Pollack LA, Malpedi P, et al. (2014). Vital signs: improving antibiotic use among hospitalized patients. MMWR Morbidity & Mortality Weekly Report, 63:194-200.
4. Marston, HD, Dixon, DD, Knisely JM, Palmore, TN, & Fauci, AS. (2016). Antimicrobial resistance. The JAMA Network, 316(11):1193-1204.
5. Resolution WHA 68-7. Global action plan on antimicrobial resistance. In Sixty-eighth World Health Assembly, Geneva, 26 May 2015. Annex 3. Geneva: World Health Organization; 2015.
6. Political declaration of the high-level meeting of the General Assembly on antimicrobial resistance. New York: United Nations; 2016.
7. Towards better stewardship: concepts and critical issues. Geneva: World Health Organization; 2002
8. Valiquette L et al. Clin. Infect. Dis.2007;45:112-121
9. Pyrek K. Bugs without borders: the global challenge of MDROs. Infect Control Today. 2013;17(2):1-8
10. U.S. Department of Veterans Affairs, Veterans Health Administration. Antimicrobial Stewardship Programs (ASP). VHA Directive 1031. U.S. Department of Veterans Affairs. available at <http://www.va.gov/vhapublications/ViewPublication.asp> pub ID = 2964. Updated January 22, 2014. Accessed August 4, 2015.
11. Centers for Disease Control and Prevention. Antibiotic Resistance Threats in the United States,2013. Centers for Disease Control and Prevention. available at <http://www.cdc.gov/drugresistance/threat-report-2013/pdf/ar-threats-2013-508.pdf>. Published April 23, 2013. Accessed August 4, 2015

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