Antimicrobial Stewardship: An Indian Perspective.

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Abstract
Antimicrobial stewardship (AMS) is one of the key strategies to prevent the emergence of antimicrobial resistance and decrease preventable healthcare-associated infections. But more than 50% of hospitals in India do not have an AMS program. The common barriers identified for implementation of AMS were lack of funding and human resource, lack of information technology, higher priorities, lack of awareness of administration and prescriber opposition. This paper analyses the possible solutions to overcome above barriers and promote effective implementation of AMS in India.

Key Words: Antimicrobial stewardship, Barriers, India, Solutions.

Antimicrobial resistance (AMR) has emerged as a global health challenge due to the lack of new antibiotics in the pipeline and ever-increasing burden of infections caused by multi-drug resistant pathogens.[1,2] AMR accounts for longer, expensive hospital stays and deaths among infected; adverse effects without any clinical benefits and spread of resistant organisms, thereby jeopardizing the health of people who are not even exposed to them.[2] The Centres for Disease Control and Prevention (CDC) estimates more than two million people are infected with antibiotic-resistant organisms, resulting in approximately 23000 deaths annually.[2,3] Hence, promoting an efficient antimicrobial stewardship (AMS) program at all levels of healthcare is a global priority.

Antimicrobial stewardship (AMS) refers to coordinated interventions designed to improve and measure the appropriate use of antimicrobials by promoting the selection of the optimal antimicrobial regimen, dose, duration of therapy and route of administration. The ultimate aim is to achieve optimal clinical outcomes related to antimicrobial use with minimal toxicity and other adverse events; reduce healthcare costs for infections and limit the selection for antimicrobial strains.[1,4] It is one of the key strategies to prevent the emergence of antimicrobial resistance and decrease preventable healthcare-associated infections. The antimicrobial stewardship criterion requires that all healthcare services have an antimicrobial stewardship program (ASP) in practice.[1,5] The first global survey by Howard P et al on implementation of antimicrobial stewardship activities worldwide reports 53% coverage in Asia.[1] A survey of infection control programs in hospitals in India revealed that ASP was not available in more than 50% of the hospitals.[6] This status despite India’s commitment to combat antimicrobial resistance by publishing the landmark document “Chennai declaration” reflects the various challenges to be faced.[7] The common barriers as identified by Howard P et al study were lack of funding and human resource, lack of information technology, higher priorities, lack of awareness of administration and prescriber opposition.[1]

Table 1 summarises the potential solutions to the above barriers in implementation of AMS program in India. Any policy to be successful requires community participation. Healthcare professional should commit themselves to explain the prescription to all the patients encountered. The community should be educated with respect to the following: to use medicines only when prescribed by a qualified health care personnel, to complete the full prescription even if symptomatically cured, to never share antibiotics with others or use leftover prescriptions, to always follow up with the clinician to ensure complete cure.[10] The public should be strictly discouraged from self-medication practices and from availing and using drugs over-the-counter (OTC).
Lack of funding[1]

- Simple, locally developed clinical protocols
- Development of indigenously developed low-cost diagnostic tools[3]
- Formulary restrictions[1,3,8]
- Early intravenous (IV) to oral conversion[1,3,8]
- Antibiotic cycling[1,3,8]
- Alloting dedicated resources[9]
- Public-private partnerships to offer refresher trainings, share diagnostic tools and community surveillance studies

Lack of human resource[1]

- Approved postgraduate courses in Infectious diseases
- Dedicated infectious disease (ID) physicians for all hospitals to guide the team[1,3,8]
- Public-private partnerships to involve ID physicians in remote and resource-constrained settings
- Multi-stakeholder engagement[3,8]
- Active involvement of clinical pharmacist and clinical microbiologist[3,8]

Lack of information technology[1]

- Easy-to-use computer assisted program[3,8]
- Use of mobile applications[3]

Higher priorities[1]

- Creating awareness among administrators and the health team on AMR and AMS[3]

Lack of awareness among administrators[1]

- Providing necessary information and organising discussions and workshops for hospital administrators[3,9]
- Involving administrators in educational and planning programmes
- AMS as a requirement for approval and renewal processes
- Wider sharing of surveillance data on AMR[9]
- AMS as part of accreditation process

Prescriber opposition[1]

- Prescriber education adapted to their background with separate modules for undergraduates, postgraduates, practitioners and other professionals[1]
- Refresher training and workshops[3]
- Evidence based guidelines[1,3,8]
- Incorporating sections on prescription guidelines and common prescription errors in journals
- Standard Antibiotic prescription chart
- Incorporating diagnosis and indications for antimicrobials[3]
- Restricting fixed-dose-combinations unless approved to be therapeutically beneficial[9]
- Handbooks and handouts with educational materials[1,3]
- Frequent reminders on guidelines through electronic mails (emails) and short messaging services (SMS)[3]
- Prescription audits[1,3,8]
- Use of recent innovative mobile applications for education, information and evaluation purposes[3,8,9]

Successful implementation of AMS requires dedicated partnership involving all members of AMS team and community healthcare providers to ensure that right drug is provided to the right patient, in the right time, in the right dose, by right route with minimal or no harm to the patient and future patients.[1] Efficient AMS program results in sustainable long-term outcomes related to improved prescription practices for therapeutic and prophylactic purposes, improved quality of patient care, increased infection cure rates, reduced hospitalisation rates, reduced treatment costs, improved healthcare savings and a healthy human resource capital.[3]

Concluding, implementation of AMS in all hospitals and community healthcare facilities is of utmost importance in India. There is a need for encouraging research to assess impact of various components of AMS such as evaluation of educational activities, prescription practices, quantitative and qualitative antimicrobial use indicators, newer diagnostic tools, antimicrobial resistance patterns and health care expenditure.

References


Table 1: Barriers in implementation of AMS activities in developing countries and potential solutions

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