

# Antibiotic Stewardship: Easy to Preach, Difficult to Practice

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*Indian Journal of Critical Care Medicine* (2021): 10.5005/jp-journals-10071-23884

The Merriam-Webster dictionary defines catchphrase as: “a word or expression that is used repeatedly and conveniently to represent or characterize a person, group, idea, or point of view.”<sup>1</sup>

The term “antimicrobial stewardship” (AMS) first used by McGowan and Gerding in 1996 from the USA has now become a catchphrase.<sup>2</sup>

While it is convenient to repeatedly talk and write about antibiotic stewardship, its actual implementation is a different proposition altogether.

According to the Centers for Disease Control and Prevention, there are seven core elements of an Antimicrobial Stewardship Program (AMSP):<sup>3</sup>

- **Leadership commitment:** The Hospital Administration should be willing to allocate the resources needed (both human and financial) for this activity.
- **Accountability:** A leader (usually a physician) must be in charge of the AMSP and must be made accountable
- **Drug expertise:** A clinical pharmacist must be given the responsibility of improving antibiotic use
- **Action:** Certain actions that can improve antibiotic use (e.g., de-escalation, pk/pd, antibiotic lockout) must be recommended and must be implemented
- **Tracking:** Antibiotic prescriptions and resistance patterns should be tracked regularly
- **Reporting:** Regular information about antibiotic resistance within that institution should be given to the relevant health-care providers
- **Education:** Clinicians should be regularly educated about optimal prescribing of antibiotics

If a hospital wishes to implement an ideal AMSP incorporating all these core elements, an AMS committee needs to be constituted. This AMS committee should ideally comprise of representatives from (i) Administration, (ii) Infectious Diseases, (iii) Infection Control, (iv) Microbiology, (v) Intensive Care, (vi) Nursing, (vii) Surgery, (viii) Operation Theater, and (ix) Pharmacy.

Unfortunately, most Hospital Administrators in India are unwilling to spend too much (money and commitment) on an AMSP. In India, (at least in the private sector), the patient has to bear not only the health consequences of antimicrobial resistance but also bears the financial costs. The institution does not directly suffer any direct loss as a consequence of antimicrobial resistance. There is, therefore, no incentive for the Hospital Administration to promote appropriate antibiotic use and to decrease the incidence of antimicrobial resistance.

Agarwal et al.<sup>4</sup> must, therefore, be complimented for trying to implement some of the elements of AMS in their hospital. The strategies they used for improving antibiotic use were:

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**How to cite this article:** Hegde A. Antibiotic Stewardship: Easy to Preach, Difficult to Practice. *Indian J Crit Care Med* 2021;25(6):608–609.

**Source of support:** Nil

**Conflict of interest:** None

- Appointing a full-time intensivist [who hopefully was solely responsible for prescribing antibiotics for all the patients in the intensive care unit (ICU)]. When the number of clinicians prescribing antibiotics is limited to a few people who are better trained in their use, the proportion of appropriate antibiotic prescriptions obviously improves.<sup>5</sup>
- Presence of a microbiologist on ICU rounds ensured constant communication between the intensivist and microbiologist.
- Improvement in Lab Diagnosis:<sup>6</sup> As the authors have mentioned, one reason why patients are overprescribed antibiotics in the ICU is that clinicians are scared. They are scared of missing out on covering a potential bug in a critically ill patient. Identification of the organism and subsequent determination of antibiotic sensitivity take 3–4 days on average (Agarwal et al. were fortunate to have an average turnaround time of only 24–48 hours), and until this time, the patient is often on a combination of high antibiotics.

Rapid identification of the organism using matrix-assisted laser desorption ionization time-of-flight or polymerase chain reaction-based techniques and rapid identification of resistance mechanisms using blood culture identification or Xpert Carba will go a long way in rapid optimization of therapy.<sup>7</sup>

Of course, rapid diagnostics will only work if clinicians are willing to de-escalate.

It is, however, chastening to note that in spite of all these measures, though there was a statistically significant increase in the sensitivity of most of the antibiotics, this increase did not translate into clinical significance—the sensitivity did not increase to a level where lower antibiotics could be safely prescribed as empiric therapy. It is, therefore, difficult to explain how the overall consumption of antibiotics still decreased in spite of an overall increase in the number of positive blood cultures. It would have been interesting to learn from the authors whether the overall decrease in antibiotic consumption

was because of increased de-escalation or because of the decreased duration of use.

This study also underscores the point that to make a significant impact on the incidence of antibiotic resistance, a concerted effort is needed.

Execution of all the seven core elements of AMSP, however, involves a lot of hard work and takes up a lot of time. Unless the members of the AMSP are adequately compensated for their time and effort, their devotion to running a successful AMSP wanes over time.

In reality, it will be difficult to implement every step of an ideal AMSP. The few simple measures such as has been practiced by Agarwal et al.—Restricting the number of antibiotic prescribers, greater dependence on microbiologists and microbiology labs, and good communication among clinicians will unfortunately be just one tiny weapon in our war against antimicrobial resistance.<sup>8</sup> A war we are in danger of losing.

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