Assessing the Performance of the Anti-Microbial Stewardship (AMS) Program in a leading private Healthcare facility in Sri Lanka.

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Abstract: *Antimicrobial resistance (AMR), as defined by the WHO, refers to the ability of a microorganism to resist an antimicrobial agent (drug) that was previously effective in treating an infection caused by that microorganism. It represents a significant crisis within the healthcare system, leading to high morbidity, and mortality, as well as imposing a substantial economic burden. Hence, AMR is currently considered as a global health priority. The Anti-Microbial Stewardship (AMS) Program that ensures the responsible use of antimicrobials was identified as a key strategy for combating AMR. One of the leading private healthcare institutions in Sri Lanka introduced the AMS program into their hospital a few years back and this study aimed to determine the performance of the AMS program in the above private healthcare facility.*

Under the AMS program, institutional guidelines have been developed for different dimensions including for rational prescription. The study revealed that the prescriber's compliance with the institutional guidelines was not satisfactory causing unfavorable outcomes for the program. Post Prescription Review and Feedback (PPRF) is one of the key strategies in antimicrobial stewardship program that ensure the compliance of rational prescription. However, this strategy has not been comprehensively implemented in the institution and it was identified as the key deficiency. Establishing a robust PPRE mechanism was recommended to improve the performance of the AMS program in the Hospital to minimize antimicrobial resistance and thereby improve the clinical outcomes and institutional economic advantage.

INTRODUCTION

Antimicrobials are specific medications for treating infectious diseases and have saved millions of lives across the globe. However, irrational use of antibiotics leads to the emergence and spread of antimicrobial resistance (AMR). It takes contemporary medical practice back to the pre-antibiotic era which with high morbidity and mortality. Further, it incurs huge costs to the government, individuals, and society at large. Hence, the AMR crisis must be managed with the utmost urgency. Therefore, AMR is now considered a global health priority.

World Health Organization (WHO) defines antimicrobial stewardship as "A coherent set of actions which promote the responsible use of antimicrobials(Toolkit, 2019). It describes the activities at the "individual, national, and global level, and across human health, animal

health, and the environment". According to the Center for Disease Control and Prevention (CDC), improving antibiotic stewardship has been identified as one of the key strategies for combating AMR (Liyanapathirana & Thevanesam, 2016).

The institutional AMS program relies on six fundamental elements to promote the rational use of antimicrobials. These encompass leadership and commitment, accountability and responsibilities, antimicrobial stewardship actions, education and training, monitoring and surveillance, and reporting and feedback (Toolkit, 2019). On this ground, a prominent multi-specialty tertiary care private healthcare institution in Sri Lanka has implemented an AMS program focusing on identifying locally relevant issues that drive AMR and addressing them promptly. The antimicrobial stewardship committee which was the decision-making body consisted of hospital administration, clinical experts, and heads of the departments in the hospital. Many functions including the preparation of an action plan, establishing an AMS team, Identifying the AMS champions, collaborating with the infection control unit, and regularly updating the standard treatment guidelines have been planned and implemented with the contribution of the stakeholders. The infection prevention and control team and clinical pharmacists perform monitoring of the program by collecting and analyzing the relevant data regularly. Quarterly, the antimicrobial stewardship committee discusses the identified issues and recommends the duly needed corrective actions to minimize the inappropriate use of antimicrobials within the hospital.

OBJECTIVE

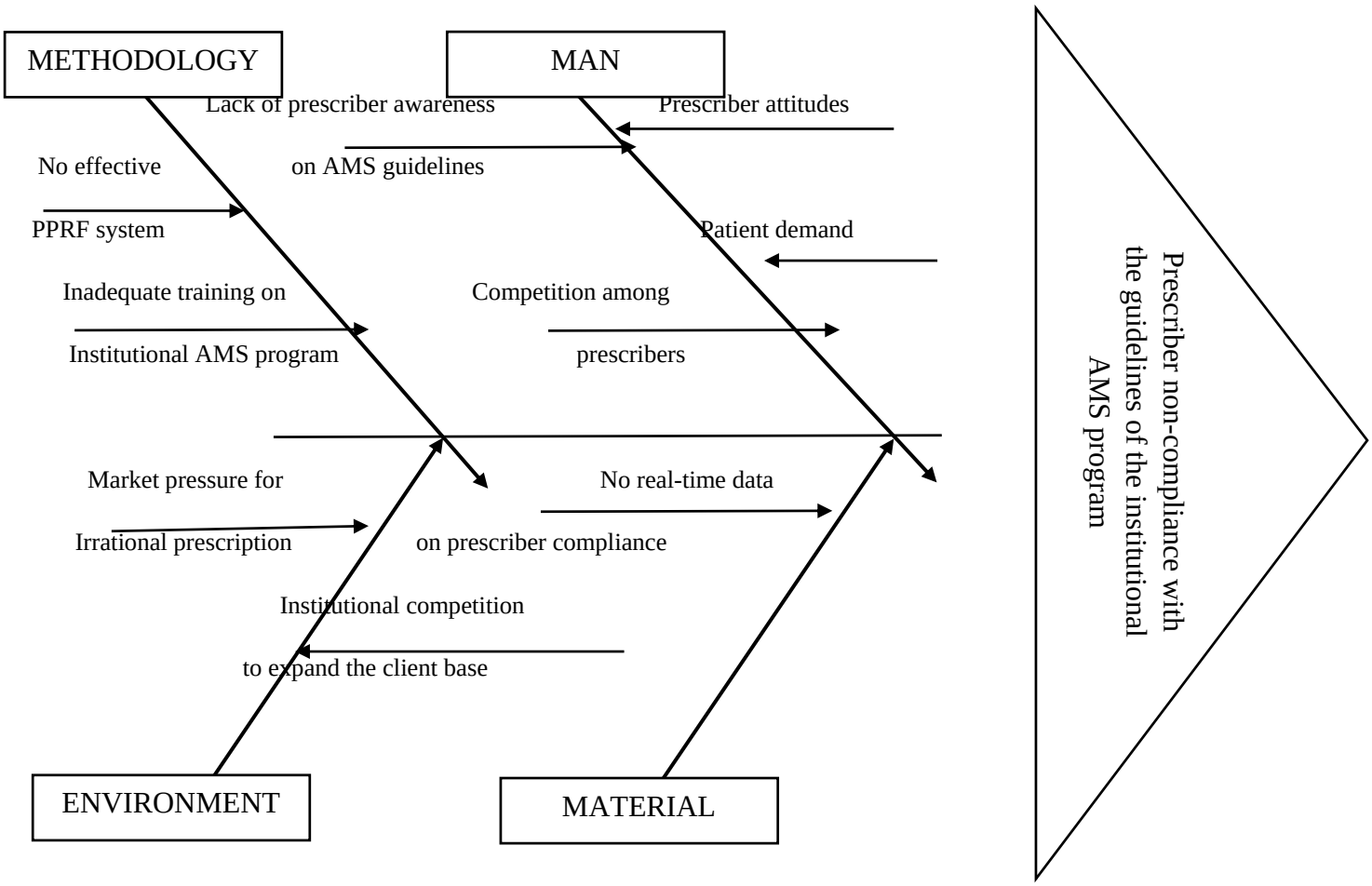
To assess the performance of the Antimicrobial Stewardship Program in a leading private healthcare facility in Sri Lanka.

METHODOLOGY

A hospital-based descriptive study was conducted in the chosen private healthcare facility. All the relevant documents were reviewed and secondary data were obtained to find the gaps in the program. Empirical data were gathered through Key Informant Interviews (KII) with the Infection control nursing officer, clinical pharmacist, medical officer of the infection control unit, Consultant microbiologist, physician, and the medical administrator of the hospital. It was expected to find the major gap/s in the AMS program and to explore them in detail. Moreover, they were involved in prioritizing the vital causes responsible. Finally, the possible interventions to overcome the identified gaps were chosen via the interview data and the data gathered from the related literature reviews.

PROBLEM ANALYSIS

Among the several activities relevant to the AMS program, rational prescription of antimicrobials according to the institutional guidelines was essentially expected from the prescribers. For instance, indications mentioned in the institutional guideline for prescribing antimicrobials should be followed. Further, red light antibiotics (reserve group) can be prescribed by the consultant responsible for the care of the patient but that should be authorized by a consultant microbiologist within 3 days of use. However, qualitative and quantitative data highlighted that the **prescriber compliance with the guidelines of the institutional AMS program was not satisfactory** and it has negatively affected the performance of the antimicrobial stewardship program. Further analysis of this problem to identify the root causes, was performed via a fishbone diagram (Figure 1).

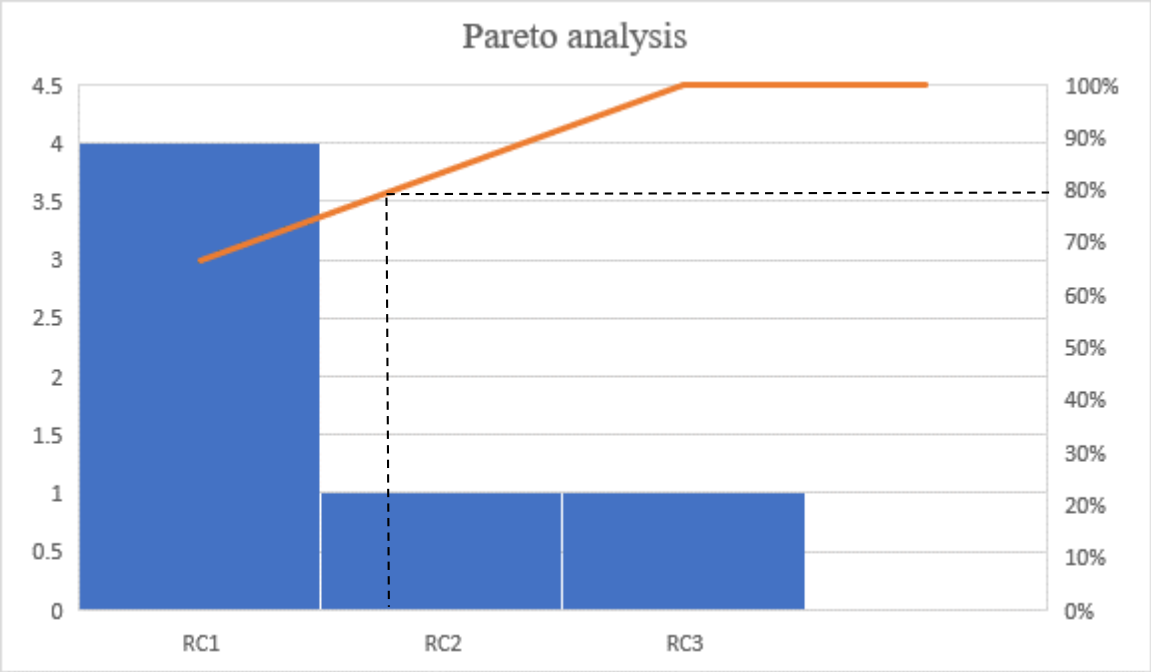


PPRF- Post Prescription Review and Feedback: AMS - Antimicrobial Stewardship

Figure 01: Fishbone diagram to show the cause-and-effect relationship of Prescriber non-compliance with the guidelines of the institutional AMS program.

Lack of prescriber awareness of institutional guidelines was identified as an important cause for non-compliance. Negative prescriber attitudes towards institutional guidelines also led to irrational prescriptions. Competition among prescribers may find shortcuts to treating patients with inappropriate antimicrobials. Patient demand cannot also be ignored for bypassing institutional guidelines. Though there was an AMS program monitoring and evaluation mechanism in the institution, post-prescription review and feedback were not effectively operating. Hence, the irrational prescription could not be tracked instantaneously. Training on the AMS program has not been arranged regularly for the health staff. It has created a knowledge gap among the staff. The influence of the pharmaceutical companies on prescribers may be an important factor in deviating them from the guidelines. Moreover, rivalry among competitors to

expand their client base may also promote irrational prescription. Of these several root causes, the vital few causes needed to be recognized. Pareto analysis (Figure 02) was performed to prioritize the most relevant causes for this issue.



RC – Root Cause: PPRF- Post Prescription Review and Feedback: AMS – Antimicrobial Stewardship

RC1- No robust PPRF system

RC2- Inadequate training on institutional AMS program

RC3- Patient demand

Figure 02: Pareto analysis to prioritize the causes of prescriber noncompliance with guidelines of the institutional AMS program.

PROPOSAL

Rational prescription of antimicrobials is essential for better performance of the antimicrobial stewardship program of an institution. Guidelines issued by the hospital for rational prescription are not adhered to by their prescribers affecting the overall performance of the program. The introduction of a robust PPRF system, increasing the number of training programs on AMR, and reducing the patient demand on antimicrobials by patient education, are the alternative solutions identified to overcome the above issue.

Post Prescription Review and Feedback (PPRF) would be a better approach to improve the program's performance and ensure a rational prescription culture. Because it closely monitors whether the prescribers adhere to the guideline or not. However, this is a highly labor-intensive exercise that may affect the day-to-day routines of the healthcare facility.

Improving the prescriber's awareness and knowledge of AMR may be another alternative for adhering to the rational prescription guidelines. Though it is a straightforward endeavor, its effectiveness may be questionable. Because factors that facilitate the antimicrobial demanding behaviors may be more powerful than their awareness of AMR.

Patient awareness that may hinder the patient demand for antimicrobials also can be considered as an alternative. However, the effectiveness of it to improve compliance for rational prescription may be uncertain.

RECOMMENDATION

Adopting the robust PPRF system was recommended as the solution to improve prescriber compliance with the antimicrobial prescription guidelines. Post-prescription review and feedback (PPRF) is one of the core strategies in the AMS program (Takamatsu et al., 2020) and it alone or limited activities showed effectiveness in reducing the irrational prescription of antimicrobials (Honda et al., 2018). Though already there are some PPRF activities in the hospital AMS program, a more comprehensive arrangement will give a better outcome. This new setup will closely monitor the use of selected antimicrobials (Especially the red light) and non-adherence to the guidelines will be highlighted then and there and corrected instantly. Prescribers will be made aware continuously of their prescription behavior as the monitoring occurs weekly.

CONCLUSION

A leading private healthcare facility in Sri Lanka has introduced an antimicrobial stewardship program to minimize antimicrobial resistance within the institution. However, prescriber guidelines were not well followed by the prescribers, and that led to poor performance of the program. Post Prescription Review and Feedback (PPRF) was identified as well effective strategy with proven benefits to ensure compliance with the guidelines. Though the available hospital document has some activities relevant to PPRF, establishing a robust system will minimize prescriber non-compliance and improve the performance of the institutional AMS program.

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