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Review Article

Adherence To Usage Of Antibiotics As Per Standard Treatment Guidelines.

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Abstract

The misuse and overuse of antibiotics have significantly contributed to the global threat of antimicrobial resistance (AMR). This study evaluates the adherence to standard treatment guidelines for antibiotic prescriptions among healthcare providers. Through a prospective observational analysis of treatment patterns and audit report of admitted patients in the hospital , we assess the extent of compliance with national and international . The findings indicate a moderate to low adherence rate with frequent instances of empirical therapy, inappropriate antibiotic selection and inadequate documentation. Contributing factors include lack of adhere to guideline, inadequate Infection Control Practices, inappropriate bug drug combination , inappropriate dosing and lack of regulatory oversight. The study underscores the urgent need for continuous medical education , robust antimicrobial stewardship programs and effective monitoring systems to promote rational antibiotic use and mitigate the development of AMR..

Keywords: Antimicrobial Resistance (AMR), Antimicrobial Stewardship Program (AMSP), Standard Treatment Guidelines (STGs), Healthcare-Associated Infections (HAIs).

INTRODUCTION

Antimicrobial Resistance is a global problem today in view of the lack of no new drugs in the pipeline. The rise in antimicrobial resistance has been attributed to irrational use of Antibiotics, inappropriate bug drug combination, inappropriate dosing, inadequate Infection Control Practices leading to multi drug Resistant organisms.[1] At present the death due to AMR is 70,000 annually, if proper interventions are not taken the rate of mortality due to AMR will rise to 10 million cases by the year 2050. It is crucial to develop integrated approaches to improve the judicious usage of these Antibiotics and thereby reduce the incidence of resistant bugs. One such initiative was the launch of AMSP program by WHO as a key strategy in its Global Action Plan for Antimicrobial Resistance in 2015. Other agencies like CDC, IDSA, SHEA launched this program in 2007.[2]

In a tertiary care hospital, patients are often admitted after being exposed to multiple antibiotics injudiciously. The prescribing process in the primary healthcare facilities varies and patients are treated for minor illness with antibiotic without any standardized guidelines that ultimately culminate into Antimicrobial Resistant.[3] The study was conducted in a tertiary care Multi speciality Hospital in Northeastern part of India . The main aim of the study was to study the adherence of antibiotic usage as per Hospital Policy and Standard Treatment Guidelines. The study was carried out with a novel aim of rationalizing and optimizing the use of Antibiotics in the hospital which in turn help reduce the total consumption of antibiotics, improve awareness about antimicrobial resistance, enhance compliance with standard recommendations for common infections such as pneumonia, diarrhea, skin infections, urinary infections, and sepsis. The study also aims to strengthen the knowledge and evidence base through surveillance and research efforts to reduce Healthcare-Associated Infections and improve patient outcomes.

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METHODS AND MATERIALS

It was a prospective observational study conducted for a duration of three months from August 2024 to October 2024. Patients of all age groups and gender receiving antibiotic treatment in the hospital after admission were included in the study. Adherence to guidelines on various clinical conditions, such as community-acquired pneumonia, community-acquired urinary tract infections, surgical prophylaxis, and other relevant infections as per Hospital policy and WHO Standard Treatment Guidelines were considered. The patients who presented from other referral centers on antibiotic were excluded from our study. A standardized questionnaire was designed for data collection using Microsoft excel tool as per WHO toolkit and data validation was done by Microbiology Department. It is noteworthy that comprehensive audits are conducted for all patients by active surveillance method by Microbiologist, Infection Control Nurse, Clinical Pharmacologist within a 24-hour time frame to ensure appropriate antibiotic usage and deescalation as per culture sensitivity reports. The appropriateness of antibiotic was assessed on the basis of the WHO Standard Treatment Guidelines and as per Hospital Policy. Implementation of Justification forms for usage of restricted antibiotics and proper monitoring of these forms to restrict injudicious use of restricted antibiotic as empirical antibiotics has been initiated.

RESULTS

A total of 170 patients were enrolled in the study over a period of three months. 54, 60, 56 patients were randomly selected over 3 months from Aug to Oct 2024 respectively, of this 51 % were female (**Fig 1**) and 64 % (**Fig 2**) of the population were aged between 30 and 69 years . On an average 90% (**Table 1, Fig 3**) of the patients received antibiotics in the last three months and the the percentage of patients receiving restricted antibiotics over the same time-frame was 48%, 44%, 52% respectively. The usage of antibiotics was categorized as per WHO AWaRe classification. The usage of Access category of drugs was found to be 52%, 56% and 48% , Watch category was 38%, 31% and 44% and Reserve category was 10%, 13% and 8% respectively from Aug to Oct 2024. (**Table 2, Fig 4**) The adherence to Hospital Antibiotic policy was found to be 69%, 72% and 75% and WHO Standard Treatment Guidelines was 72%, 76% and 77% respectively (**Table 3, Fig 5**) over the same time-frame. To monitor the proper usage of restricted antibiotics justification forms have been formulated but the compliance for providing justification was found to be 66%, 70% and 69% respectively from Aug to Oct 2024 (**Table 4, Fig 6**)

Figure 1.

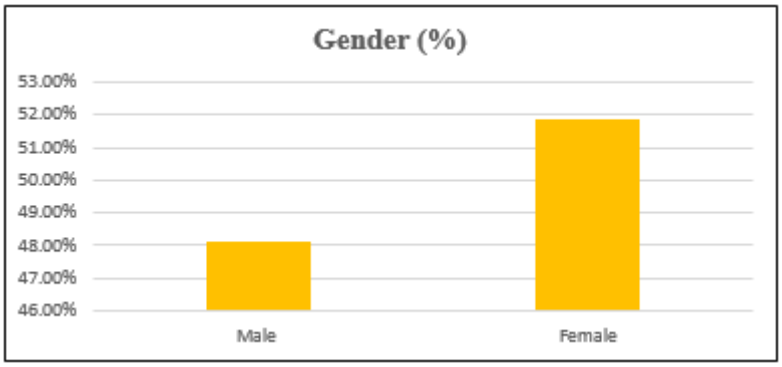


Figure 2.

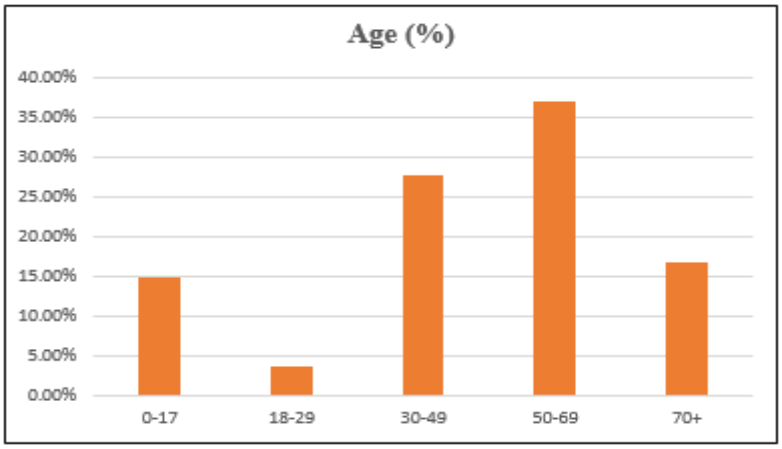


Table 1.

Patients on Antibiotics	Aug-24	Sep-24	Oct-24
Total no of patients audited	54	60	56
Total number of patients on antibiotics	50 (90%)	55(91.6%)	50(89%)
Total patients on Restricted antibiotics	24(48%)	24(44%)	26(52%)

Figure 3.

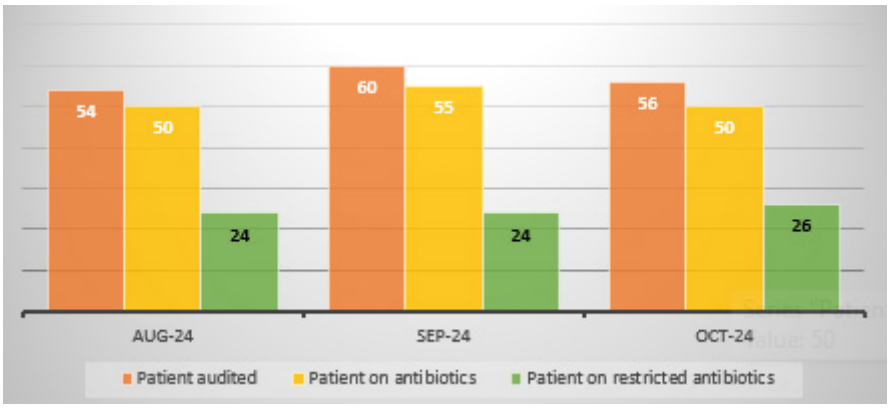


Table 2.

Percentage of antibiotic usage as per WHO AWaRe	Aug-24	Sep-24	Oct-24
Total number of patients on antibiotics	50	55	50
Patients on Access category of antibiotics	26(52%%)	31(56.3%)	24(48%)
Patients on Watch category of antibiotics	19(38%)	17(31%)	22(44%)
Patients on Reserve category of antibiotics	5(10%)	7(13%)	4(8%)

Figure 4.

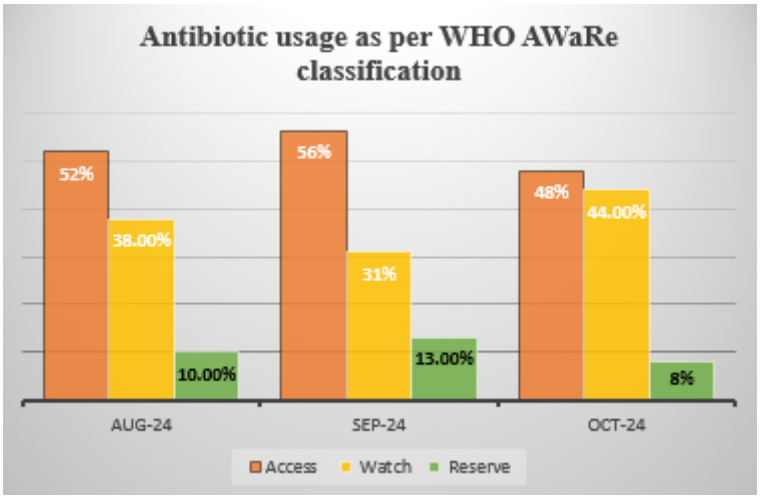


Table 3.

Compliance to Local and Standard treatment guidelines	Aug-24	Sep-24	Oct-24
Total number of patients on antibiotics	50	55	50
Compliance to Local Antibiotic policy (%)	69%	72%	75%
Compliance to Standard Treatment Guidelines (%)	72%	76%	77%

Figure 5.

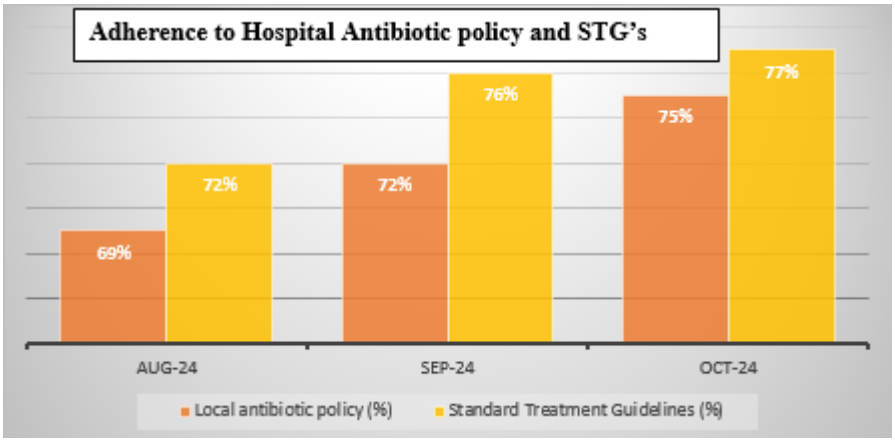
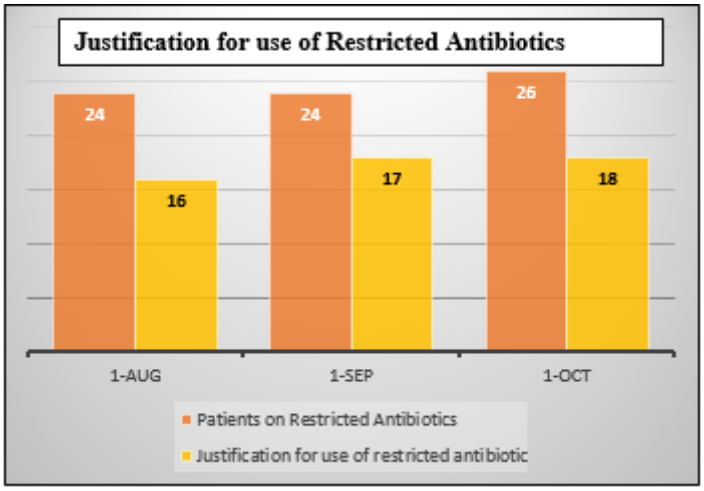


Table 4.

Justification for Restricted Antibiotics	Aug-24	Sep-24	Oct-24
Patients on Restricted Antibiotics	24	24	26
Justification for use of restricted antibiotic	16(66%)	17(70%)	18(69%)
Benchmark	75%	75%	75%

Figure 6.



DISCUSSION

Antibiotics prescribed in the hospital were analyzed for a period of 3 months. Out of the total patients audited, 90% of the patients were found to be on antibiotics of which 50 % of the patients were prescribed restricted antibiotics. In another study conducted nation wide it was seen the usage of restricted antibiotics was 39.5%. [4]

As per WHO recommendations, the "Access category" of antibiotics should be approximately 60% with a negligible amount of usage of the Reserve group of antibiotics. In our study, mean usage of "Access category" was 52% and "Watch Category"

was 38% and Reserve group 10%. Earlier Indian studies shows the Access category of drug was 35%, Watch 47.3% and Reserve category to be 0.2%. Recent Indian studies shows the Access category as 42.4%, Watch category 53.1% and Reserve category as 5.5%. This is in compliance with our study and this shift towards the usage of Restricted antibiotic demonstrates that injudicious use of antibiotic will have a serious impact on mankind as it tend to disrupt the natural ecosystems.[5]

Among the prescribing practices, the adherence to Hospital Antibiotic policy was 69%, 72% and 75% and Standard Treatment Guidelines was 72%, 76% and 77% respectively which was found to be low. In another multicentric Point Prevalence Study the adherence to Hospital Antibi ogram was found to be 53%[6]. Lower adherence to evidence-based antimicrobial treatment guidelines can be attributed to healthcare provider-related factors, such as lack of awareness or knowledge about the guidelines,doubt regarding their applicability to individual patients, limited availability or accessibility of guidelines, inadequate resources or infrastructure to support guideline implementation, and competing priorities within healthcare settings, and sometimes patient preferences [7]

50% of the patients were on Restricted antibiotics and continuation of restricted antibiotics even after culture sensitivity reports were available and deescalation was possible for an average of 90% cases(**Fig 8**). Percentage of de-escalation is even less which is average 10% of the total sample. Justification for the use of restricted antibiotic was implemented to decrease the inappropriate use of restricted antibiotics but the compliance was below the benchmark,75% as per the Institutional policy (66%, 75%, 69% respectively) (**Fig 7**).

Figure 7.

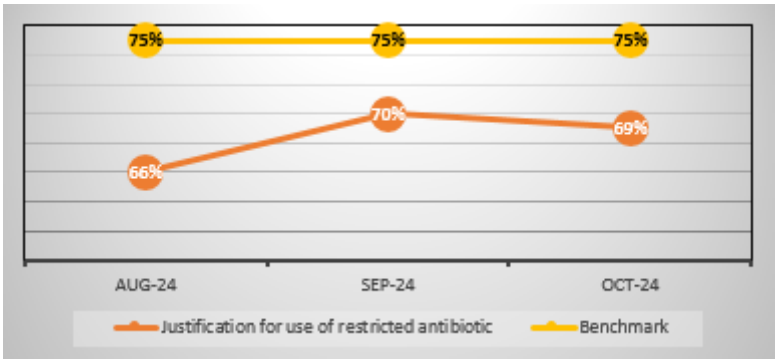
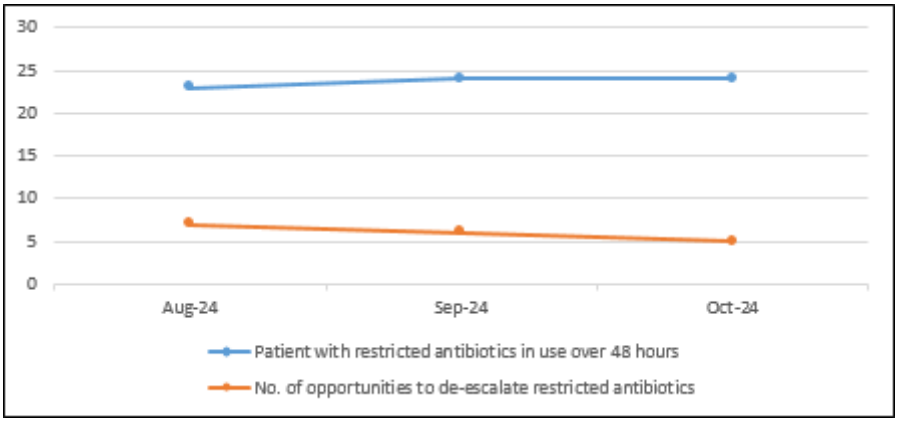


Figure 8.



Use of narrow spectrum antibiotics for the shortest duration that is effective for the treatment of a particular infection and strict adherence to Hospital Antibiotic policy and WHO Standard Treatment guidelines for various clinical conditions are important to reduce the dissemination of Antimicrobial Resistance. Recognize situations when antimicrobial therapy is not needed, such as viral infections reduces the risk of unnecessary antibiotic exposure. Optimizing the use of antibiotics is critical to effectively treat infections, protect patients from harms caused by unnecessary antibiotic use, and combat antibiotic resistance. [8] Antibiotic Stewardship Programs (ASPs) can help clinicians improve clinical outcomes and minimize harms by improving antibiotic prescribing

Our study highlights the importance of adherence to Hospital Antibiogram and WHO Standard Treatment Guidelines and prescription pattern of Restricted Antibiotics have been an important factor to minimize the antimicrobial resistance.

CONCLUSION

Adherence to guidelines denotes the degree of conformity between the knowledge, cognition and/or action of healthcare professionals who are involved in antimicrobial prescription pursuant with the recommendations of a guideline. By adhering to evidence-based guidelines, healthcare providers can optimize patient outcomes, enhance antimicrobial stewardship efforts, and contribute to the overall public health goal of combating antimicrobial resistance. Our study demonstrates that Knowledge, Attitude and Practice (KAP) plays a major role in minimizing treatment diversity and inappropriate use of broad-spectrum antimicrobial. Prescribers should be aware that a more broad-spectrum empirical treatment does not result in more effective treatment, but does increase the selection of antimicrobial resistance. A multidisciplinary effort should be made to improve compliance with local antimicrobial treatment guidelines.

Conflict of interest: No conflict of interest
Funding: Not applicable
Ethics approval and consent to participate: Not applicable. Unlike primary studies, systematic reviews does not include the collection of deeply personal, sensitive, and confidential information from the study participants. Systematic reviews involves the use of publicly accessible data as evidence and are not required to seek an institutional ethics approval before commencement.

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