

Elective: Antimicrobial Stewardship (AMS)

Name of Block	Block 1
Name of Elective	Antimicrobial Stewardship (AMS)
Location of hospital Lab or research facility	Dept. of Pharmacology, Medicine
Name of internal preceptor(s)	Dr. Bharti Mahajan
Name of external preceptor if applicable	
Learning objectives of elective	- To understand the importance of Antimicrobial stewardship - To understand Antimicrobial resistance - To apply principles of rational antibiotic use - To interpret culture and sensitivity reports - To practice de-escalation - To understand where to switch to oral use of antibiotics from IV
Number of students that can be accommodated in this elective	4
Prerequisites for elective	- Knowledge about the spectrum of infections - Knowledge of pharmacotherapy of infections - Knowledge about antibiotics used in various infections
List of activities of student participation	- To understand AMS - Antibiogram interpretation - To interpret culture sensitivity report and suggest treatment - Hospital antibiotic policy - Rational antibiotic selection in patients of Pneumonia, UTI, Sepsis, skin and soft tissue infection - Case presentation
Learning Resources	Katzung's Basic and clinical pharmacology Davidson Antibiogram and Antibiotic policy
Portfolio entries required	- Analysis of culture sensitivity reports - Rational antibiotic selection - Case work up
Log book entry required	- Introduction to AMS - Culture sensitivity reports along with their interpretation - Rational antibiotic selection - Case summary - Case presentation - Reflection

Assessment	• Pre-test • Final presentation • Post-test
Other comments	Nil

Antimicrobial stewardship (AMS)

Irrational and excessive use of antimicrobial agents has emerged as a major global public health challenge in the form of antimicrobial resistance (AMR). Antimicrobial stewardship (AMS) is a structured and multidisciplinary approach aimed at ensuring the judicious, evidence-based, and rational use of antimicrobials. This helps to optimize clinical outcomes while minimizing the development of resistance. It will also help to reduce healthcare costs.

Antimicrobial stewardship highlights the principles of rational antibiotic use i.e. right drug, right dose, right duration, right patient and right route. AMS also emphasizes on timely review and modification of treatment based on clinical response and microbiological data. Inappropriate prescribing practices such as unnecessary use of broad-spectrum antibiotics, incorrect dosing, and prolonged therapy contribute significantly to antimicrobial resistance and adverse drug reactions.

Pharmacology forms the backbone of antimicrobial stewardship by integrating principles of pharmacokinetics and pharmacodynamics (PK/PD) with clinical decision-making. Understanding factors such as absorption, distribution, metabolism, elimination, time-dependent and concentration-dependent killing, and post-antibiotic effect helps in optimizing antimicrobial therapy. Dose individualization based on patient-specific variables such as age, renal and hepatic function, and severity of infection is crucial for maximizing efficacy and minimizing toxicity.

Proper selection of antimicrobial agent based on culture sensitivity report (narrow spectrum agents) helps to control antimicrobial resistance. Antimicrobial stewardship also promotes de-escalation of therapy.

Antimicrobial stewardship provides an opportunity to understand the rational pharmacological basis of antimicrobial use, prescribing patterns, and common causes of irrational therapy in clinical settings. Early exposure of students in the form of elective module is essential to develop responsible prescribing habits and helps in preparing future physicians who can actively contribute to antimicrobial stewardship programs and the global fight against antimicrobial resistance.

