



**BHARATI VIDYAPEETH
(DEEMED TO BE UNIVERSITY)
PUNE**

BEST PRACTICE-1

Title of the Practice

An evidence based, result oriented Antimicrobial Stewardship Program with positive outcomes and long-term impact.

Objectives:

- To rationalize the use of antimicrobials by promoting the optimal selection, dosage and duration of antimicrobial treatment.
- To develop SOPs and guidelines on use of antimicrobials.
- To train health care professionals in the appropriate and judicious use of antimicrobials.
- To ensure best clinical outcome for the treatment or prevention of infection with minimal adverse effects to the patient
- To minimize development of antimicrobial resistance (AMR).

The Context

Indiscriminate and irrational use of antibiotics and antibiotic resistance is a national and global issue. Bharati Hospital Pune (BVMCH) is a 1071 bedded tertiary care facility with more than 200 critical care beds, 14 operation theatres and all broad and super speciality. It caters to more than 1400 OPD patients per day and 85% bed occupancy. 40-45 major surgeries and 60-75 minor procedures are performed per day.

Antibiotics are the mainstay of the therapy for critically ill patients who need multidisciplinary care and are also faced with the danger of hospital acquired infections. Indiscriminate use of antimicrobials may lead to AMR leading to use of higher antibiotics and increased hospital stay, thereby increasing the cost to patients. In addition, these antimicrobials may be rendered ineffective for future use. Developing evidence-based guidelines for the appropriate and effective use of antimicrobials is therefore necessary to align with the national goal of containment of AMR. AMR is a global phenomenon and in developing countries like India, it not only increases the healthcare cost but mortality and morbidity.

In view of the above BVMCH has formulated a robust and evidence based antimicrobial stewardship programme to mitigate this challenge that act as a framework in other institutes and is in alignment with the national policy.

The Practice

- Establishing AMS team: A multidisciplinary approach was adopted, leveraging the expertise of microbiologists, infectious disease physicians, clinical pharmacists, infection control team and antimicrobial champions from each clinical department in the year 2019.
- As a first step the culture data of the previous year was analysed along with an audit of the antimicrobial purchase and prescriptions in the hospital. Based on this data a gap analysis was carried out which resulted in appropriate revision to the policy and treatment guidelines. The policy guidelines are revised annually in consultation with the stakeholders.
- The revised policy was then circulated amongst the various stakeholders followed by a series of training programmes/workshops for sensitisation about antimicrobial stewardship both at hospital and departmental levels. In addition, the programme was introduced to the Interns, Postgraduates and Undergraduate students as a part of their orientation programme.
- The concept of diagnostic stewardship was introduced, which entails ensuring ordering the right microbiological and supporting investigations along with collection of appropriate specimens from the patient, to arrive at a timely and correct diagnosis of the infection. This enabled targeted therapy and minimize duration of empiric therapy.
- Monitoring of antimicrobial prescription by the clinical pharmacists daily along with a prospective audit and feedback intervention was introduced which included monitoring of prescription of higher antimicrobials with appropriate advice to escalate/de-escalate the antimicrobial which was ensured by the departmental antimicrobial champions.
- Close coordination with infection control team was established to monitor factors related to breach in infection control practices if any, which might affect antimicrobial usage.
- The AMS data metrics generated was presented to the HIC/AMSP Committee monthly, as well as in interactions with individual departments.
- Introduction of Post MD fellowship on AMS and infection control for microbiologists and for Clinical Pharmacy (PharmD) students.
- The revised antimicrobial policy is notified to all health professionals in hospital. This policy document incorporates SOPs, treatment guidelines, Dos and Don'ts and FAQs

which have been displayed on all the computers in the wards/OPDs and Departments including the mobiles of faculty and residents for easy access and reference.

- Conduct of a weeklong antimicrobial awareness programme periodically.

Evidence of success

- BVMCH was early to start the AMS programme in 2019, well ahead of the advisory by NMC dated 18 Oct 2021 regarding setting up of AMS committee in Medical Colleges and inclusion of knowledge of AMR in the curriculum for undergraduates and postgraduates.
- BVMCH is now a constituent of the ICMR-Maharashtra Antimicrobial Resistance Surveillance network (MAHASAR) as required vide the Health Ministry letter of 10 Sep 2021. Regular surveillance data on AMR is shared with MAHASAR.
- A Comprehensive evidence based AMSP policy document in the form of a booklet is prepared that serve as reference guidelines for antibiotic prescription.
- Compliance to antibiotic policy: The prescription of antimicrobials as per antibiotic policy guidelines was seen to rise from 70% in 2019 to 87% in 2023 a significant increase of 17%.
- Compliance to stewardship advice: The compliance to stewardship advice which was on an average at 54% in 2019 has now improved to 80% in 2023.
- Cost of antimicrobials: The cost of antimicrobials procured by the hospital for use has decreased by about **42%** when compared between the years 2018-19 (**Rs 22,15,143**) to 2023-24 (**Rs 13,02,803**)
- Percentage of admitted patients administrated antimicrobials: Our data shows that antimicrobials are administered to about less than 25% of admitted patients at any given time (National Survey done in 2022 by NCDC Govt of India has found Upto 60% of patients were on antibiotics in other hospitals)
- Cessation of Surgical prophylaxis antimicrobial within 24h: This has shown a steady increase from **72%** in the year 2019 to **97%** in the year 2023.
- No antimicrobials as surgical prophylaxis in clean surgery and orthopedic cases.
- **Morbidity:** The average length of hospital stays in 2019 was 4.3 days which decreased to 3.5 days in 2023 which is drop of 18%.

- **Mortality:** The all-cause mortality rate in 2019 was 2.1 which has significantly decreased to 1.3 in 2023 reflecting a drop of 38%.
- Resistant bacteria isolated in the hospital from patient has not shown an increase in the level of drug resistance over the last four years.
- The policy has been shared with other constituent health units of the University like Dental and Medical Colleges in Pune, Sangli and Navi Mumbai.

Problems encountered and resources required:

The main challenge of the program was the sensitization of all the clinicians to the importance of AMS and to promote amongst the clinicians a behavioral change in terms of their prescription pattern for antimicrobials and consequently bring about evidence based, better and economical patient care.

Any other information regarding Institutional Values and Best Practices which the institution would like to include.

- Publication outcome of the practice: A research paper titled “Evaluation of antibiotic consumption and compliance to hospital antibiotic policy in the surgery, orthopedics and gynecology wards of a tertiary care hospital” has been published in Clinical Epidemiology and Global Health, Volume 13, 100944, 2022 (<https://doi.org/10.1016/j.cegh.2021.100944>)
- Faculty from this team has been invited to present or chair discussions in other institutions as a part of continuing medical education programmes.
- Owing to the rigorous training and sensitization at UG and PG levels, we are creating a generation of doctors and health care personnel who are well aware of the need for judicious use of antimicrobials so that the same can be safeguarded for their use in the future.