



ASPICON
2025 THE 7TH ANNUAL CONFERENCE OF SOCIETY FOR
ANTIMICROBIAL STEWARDSHIP PRACTICES IN INDIA (SASPI)

4th TO 7th SEPTEMBER 2025 | MANGALAGIRI



AIIMS
MANGALAGIRI, ANDHRA PRADESH



7th Annual Conference of SASPI **SOUVENIR**



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Organising Committee



*Professor of Excellence
Department of Internal Medicine
Lady Hardinge Medical College
New Delhi, India*

*Former Director General Health Services (2022-25)
Ministry of Health and Family Welfare
Government of India*

Message



I am pleased and privileged to write this message for an event as important as ASPICON 2025, the 7th Annual Conference of the Society for Anti-microbial Stewardship Practices in India (SASPI), being organized jointly by the Departments of Clinical Microbiology, General Medicine and Pharmacology. First and foremost, I must congratulate the three Departments, as also the organizing chairperson, Dr Sumit Rai and Executive Director, AIIMS, Manglagiri, Dr Santa Singh for organizing the event.

Anti-microbials are important instruments in our armamentarium against microbes and infections. From the time Sulfonamides and Penicillin were used in the early 1930s, within less than 100 years, modern medicine faces a crisis of existence against multi-drug-resistant microbes. Thus, a need for developing accountability for the use of anti-microbials, to delay and prevent development of resistance in microbes.

Last few years have seen many proactive steps by the World in this direction, but a lot more needs to be done. I would enumerate some of them. Firstly, it is essential to enhance the quality of medical education and foster an appreciation among medical students that prescription writing is a significant responsibility. Medications, including antimicrobials, should never be prescribed without due diligence and accountability. Second, it would be to regulate the availability of anti-microbials both in public and private sectors. Third, would be formation of 'Infection Boards' on the lines of 'Tumor Boards'; where complicated antibiotic changes should be debated before being taken and executed.

In the end, I would like to stress the need to be careful about prescribing any drug including vitamins without a need. Needless prescriptions not only harm patients but are also a reason for out-of-pocket expenditure for patients.

I once again congratulate the organizers and wish them success at the event.





Dr. Ahanthem Santa Singh
Executive Director
All India Institute of Medical Sciences,
Mangalagiri

It is with profound pride and a deep sense of professional responsibility that I extend my warmest congratulations and best wishes to all delegates, organizers and participants of the 7th Conference on Antimicrobial Stewardship Practices in India –‘ASPICON-2025’, centered on the imperative theme ‘A.A.A: Asserting AMR Awareness’. This landmark event, conducted under the esteemed aegis of the Society of Antimicrobial Stewardship Practices (SASPI), and meticulously organized by the Department of Clinical Microbiology, Clinical Pharmacology & General Medicine at AIIMS Mangalagiri, stands as a testament to our collective commitment towards confronting the urgent global challenge of antimicrobial resistance.

The scientific symposia embedded within this forum encapsulate a contextualized and comprehensive vision for stewardship. By harmonizing standards across Clinical Microbiology, Pharmacology, Medicine, Public Health, Pediatrics, vulnerable populations, Allied Health/Sciences and leveraging breakthroughs in Artificial Intelligence, Digital Health, and the One Health paradigm, this conference sets a new benchmark for interdisciplinary collaboration and evidence-guided discourse. It is commendable that the sessions are rigorously aligned with contemporary national and international policies, ensuring tangible clinical relevance and resonance with frontline healthcare realities.

As antimicrobial resistance accelerates towards a critical inflection point for public health and patient safety, such scholarly gatherings underscore the ‘need of the hour’ for transformative strategies, robust biosafety practices, pandemic preparedness and holistic management. The vision and leadership demonstrated here will indubitably inspire innovative solutions, capacity building and sustainable stewardship models across India and beyond.

Wishing ASPICON-2025 resounding success, may its legacy nurture conscientious action, enduring collaborations and progressive stewardship towards a safer, healthier future for all.



Dr. Desu Rama Mohan
Dean (Academic)
AIIMS Mangalagiri

The 7th Conference on Antimicrobial Stewardship Practices in India—ASPICON-2025, themed 'A.A.A: Asserting AMR Awareness', stands as a testament to our unwavering commitment to confronting the pervasive challenge of Antimicrobial Resistance (AMR). Under the distinguished auspices of the Society of Antimicrobial Stewardship Practices (SASPI) and thoughtfully organized by the departments of Clinical Microbiology, Clinical Pharmacology and General Medicine at AIIMS Mangalagiri, this gathering symbolizes a proactive and visionary approach to strengthening rational antimicrobial utilization.

This year's scientific program distinguishes itself by bridging the latest national and international guidelines with timely, clinically relevant discourse. The multidisciplinary focus—spanning Clinical Microbiology, Pharmacology, Medicine, Community Health, Pediatrics, Allied Sciences, and the integration of Artificial Intelligence and Digital Technology—addresses both foundational and emerging frontiers within antimicrobial stewardship. Special attention to comprehensive preparedness for future pandemics, and the One Health perspective further underscore the conference's depth and practical relevance.

On behalf of AIIMS Mangalagiri's Academic Dean, it is a privilege to congratulate each participant and the organizing team. Your dedication, expertise and forward-thinking collaborations are vital in shaping impactful stewardship practices and inspiring meaningful change. ASPICON-2025 embodies the essential spirit and strategic vision our era demands, advancing collective knowledge to secure the health of both humanity and our environment. May this conference invigorate our shared mission and pave the path towards lasting progress in antimicrobial stewardship.



Dr. Nataraj A R
Medical Superintendent
AIIMS Mangalagiri

It is with great honor and optimism that AIIMS Mangalagiri welcomes the distinguished participants of the 7th Conference on Antimicrobial Stewardship Practices in India—ASPICON-2025, centered on the timely theme 'A.A.A: Asserting AMR Awareness'. Under the visionary guidance of the Society of Antimicrobial Stewardship Practices (SASPI) and through the collaborative efforts of our Departments of Clinical Microbiology, Clinical Pharmacology and General Medicine, this conference assembles a forum of exceptional medical minds, united to address one of the utmost priorities in contemporary healthcare.

This year's scientifically robust agenda exemplifies a synthesis of pioneering research, updated clinical protocols and global best practices vital for advancing antimicrobial stewardship. By integrating perspectives from Clinical Microbiology, Pharmacology, General Medicine, Community Medicine, Pediatrics, Allied Health Sciences and the frontier realms of Artificial Intelligence and Digital Health, the program is a reflection of comprehensive, patient-centered care. The inclusion of topics such as stewardship in vulnerable populations, biosafety, the One Health paradigm, and pandemic readiness is proof of our proactive commitment to resilient and sustainable healthcare strategies.

On behalf of the Medical Superintendent, AIIMS Mangalagiri, warmest congratulations are extended to every delegate, speaker and organizer. Your dedication and collaborative spirit are the cornerstones of our progress in combating antimicrobial resistance. May ASPICON-2025 inspire transformative dialogue, strengthen multidisciplinary alliances and catalyze actionable solutions that will safeguard health and well-being for generations to come. The need for these discussions has rarely been greater; together, we are shaping a healthier future.



President's Message

Dear Esteemed Colleagues and SASPI members,

Greetings from SASPI!

It is my privilege to welcome you all to ASPICON 2025, the 7th Annual Conference of the Society for Antimicrobial Stewardship Practices in India, to be hosted at AIIMS Mangalagiri, Andhra Pradesh, from 4th to 7th September 2025. The theme this year—"Asserting AMR Awareness (AAA)"—is a call to strengthen our collective resolve in tackling antimicrobial resistance through awareness, action, and accountability.

Antimicrobial stewardship today demands more than guidelines; it requires innovative, practical solutions that can be adapted across diverse healthcare systems in India. At the heart of this lies the physician–microbiologist collaboration—where clinical insight and laboratory evidence converge to guide rational, patient-centered decisions. This partnership is the foundation for advancing diagnostic stewardship, optimizing therapy, and ensuring sustainable use of our limited antimicrobials.

ASPICON 2025 will feature pre-conference workshops, scientific deliberations, clinical case discussions, and interactive platforms designed to empower every participant—from trainees to senior faculty, from policymakers to frontline providers. The aim is not only to share knowledge but to equip ourselves with strategies that can be directly translated into practice, from tertiary hospitals to community care.

I warmly invite you to engage actively in the sessions, competitions, and dialogues. Beyond the conference, I hope you will also enjoy the cultural richness and hospitality of Andhra Pradesh, which provides a fitting backdrop for meaningful collaboration.

On behalf of SASPI, I extend my gratitude for your commitment to stewardship and AMR containment. Together, let us assert AMR awareness and move forward with innovation, practicality, and partnership.

With warm regards,
President, SASPI

Prof. Sarita Mohapatra



Dr Prasan Kumar Panda
Secretary (SASPI)

Greetings to all SASPI members and readers,

Antimicrobial Resistance (AMR) continues to pose a formidable global health challenge. Integrated Antimicrobial Stewardship (IAS), as envisioned by SASPI, is based on the DIA model: Diagnostic Stewardship Infection Prevention Antimicrobial Stewardship. This “DIA/Deep” model symbolises our collective mission to remove darkness through structured stewardship practices, ensuring rational and effective use of antimicrobials.

Since the inception of the first annual meeting/ASPICON in 2018 (though officially registered in 2022 under the Society Registration Act), SASPI has grown into a robust pan-India consortium of more than 500 members across 27 Institutes of National Importance and over 100 non-INI institutions. Together, we have strived to implement and scale IAS practices through conferences, research, education, and collaborative initiatives.

ASPICON has served as the flagship academic platform for stewardship enrichment in India, each year advancing unique dimensions of IAS practice. The journey has been:

- 2018 – AIIMS Rishikesh
- 2019 – AIIMS Bhopal
- 2021 – AIIMS Patna (2020 cancelled due to COVID disaster)
- 2022 – AIIMS Raipur
- 2023 – AIIMS Jodhpur
- 2024 – PGIMER Chandigarh
- 2025 – AIIMS Manglagiri (current edition)

Each edition has carried forward the vision of stewardship with fresh focus and growing participation. We are pleased to announce that ASPICON 2026 will be hosted by AIIMS Bathinda, strengthening our expanding network and impact.

SASPI’s foundation rests on its ten functional committees, which act as independent yet complementary pillars. Each committee follows its blueprint, making unique contributions toward our common mission:

1. Annual Meeting Committee – streamlining ASPICON and other annual activities, holding elections, and advocating bylaws.
2. Publication Committee – advancing society journal ‘JASPI’ and Newsletters.
3. Training Committee – launching certification courses, doing Webinars, and preparing e-modules.

4. Practice Guideline Committee – developing and releasing practice statements, including the Manglagiri Declaration, and creating evidence synthesis.
5. Leadership Development Committee – nurturing stewardship champions and preparing fellowships in IAS..
6. Quality & Ethics Committee – ensuring compliance and SOP-based governance, and preparing its first quality checklist on AST reporting.
7. Investment Committee – strengthening fiscal oversight and sustainability with a membership drive.
8. Research Committee – driving multicentric projects such as ASPIRE II and the Delphi study.
9. Nursing Steward Committee – empowering nurses as frontline stewards.
10. Public Health Committee – promoting One Health stewardship and advocacy.

Together, these committees embody SASPI's decentralized, action-oriented model, ensuring growth in multiple dimensions simultaneously.

The past year marked steady progress and several milestones:

- **Membership growth:** Total membership rose to 502, with 320 active paid members, spanning diverse disciplines including clinical medicine, microbiology, pharmacology, nursing, and public health.
- **Capacity building & education:**
 - Endorsed the 2nd IAS Foundation Course for postgraduates, nurses, and faculty, with multiple institutes signing MoUs to implement the program.
 - Developed SASPI e-Modules and a structured online training platform (LMS) to host certification courses in diagnostic, infection prevention, and antimicrobial stewardship.
- **Conferences & workshops:**
 - Successfully organized the 6th ASPICON and continued the National IAS Quiz.
 - Conducted the 1st Hands-on Workshop on Integrative Stewardship in Sepsis, VAP, and UTI Workup at AIIMS Delhi.
- **Research & Publications**
 - Completed ASPIRE II, the first pan-India multicentric PPS on antimicrobial use, published in The Lancet/eClinical Medicine.
 - Conducted the first Delphi survey to develop evidence-based 42 IAS practice statements, which are being released as the Manglagiri Declaration.
 - The Society's official journal JASPI published 7 issues with 53 peer-reviewed articles, now indexed in CrossRef and Google Scholar, achieving 10 citations with an h-index of 2. Importantly, this year it launches an online portal for manuscript submission.
- **Governance & systems:**
 - Implemented SOPs for society functions (webinars, ASPICON, membership, quizzes, newsletters, and fund utilization) to streamline activities.
 - Secured TAN registration and initiated FCRA registration processes to strengthen financial compliance.
- **Collaborations:**
 - Strengthened ties with ISARIC, University of Oxford, and SoPI.
 - Initiated communications with Indian academic societies, McGraw Hill, WHO AMR division, and ABIM/Choosing Wisely to broaden collaborative impact.
- **Public engagement & awareness:**
 - Celebrated World AMR Awareness Week 2024 across 34 institutions under the theme "Educate. Advocate. Act Now."
 - Enhanced digital outreach: 102 posts on Twitter, 42 posts on Facebook, and 22 educational videos on YouTube.

- **Practice & policy contributions:**

- Released 42 practice statements to standardize IAS approaches across institutions.
- Supported institute-level IAS surveillance sharing at ASPICON to promote peer learning and benchmarking.

The journey of SASPI is one of collective commitment and vision for our nation-building. Our priorities for the coming year include expanding the IAS Foundation Course to all tertiary centres, scaling intramural and extramural research projects, indexing JASPI in DOAJ, Scopus, and PubMed, and deepening collaborations at national and international levels.

We firmly believe that the DIA model of IAS — Diagnostic, Infection Prevention, Antimicrobial stewardship — supported by the 8 D's of stewardship (right Do's & Don'ts, right Diagnosis, right Drug, right Dose, right Delivery, right Decision, and right Duration) must become everyday practice across India. With united efforts, we can achieve sustainable progress against AMR.

I sincerely thank all members, collaborators, and institutions for their active contributions. Together, we continue to transform stewardship practices in India and beyond.

United we work, we will win.

Sincerely,
Prasan



Organizing Chairman's Message

HARE KRSNA

Society for Antimicrobial Stewardship Practices in India [SASPI®] is a Conglomerate of all Institutes of National Interest [INI's] and other Institutes that share a common goal of Integrated Stewardship Practices. The SASPI Logo is the Morpankh of LORD SRI KRSNA, that depicts the entire Universe and everything that's contained and included in it. That was the premise of ASPICON 2025 – INCLUSIVITY as the entire Universe and the World contained in it is One Consciousness, One Family, hence "VASUDHAIVA KUTUMBAKAM". With this, I welcome All to the 7th ASPICON being held at AIIMS Mangalagiri and being jointly conducted by the Departments of Clinical Microbiology, General Medicine and Clinical Pharmacology.

Only through Inclusivity, we can Assert AMR Awareness [AAA], and that was the theme of ASPICON 2025 to symbolize a AAA Battery to Charge Everyone so as to Assert AMR Awareness. To include everyone involved or would be involved in the use of Antimicrobials, We the Organizers conducted Eight pre – conference workshops to include Nurses, MBBS Undergraduate Students, Clinical Microbiologists, Internal Medicine, Pediatricians, Surgeons, Community Medicine, ID Physicians and Clinical Pharmacologists, at AIIMS Mangalagiri. This is followed by a carefully curated and scientifically structured program for the three-day Conference from 5th to 7th September 2025 at Novotel, Vijayawada.

Assertion of AMR Awareness can only be implemented through Duty, Diligence, Discipline, Dedication, Devotion, Decorum and Determination, all which can be spelled out in one word – DHARMA, the Act of Righteousness, performed by Letting go of the Ego and Expectations and Perform Our Duty to Assert AMR Awareness, a lesson that needs to be remembered 24x7 and Thus, it has been echoed in Sholka 2.47 in Srimad Bhagwad Gita.

कर्मण्येवाधिकारस्ते मा फलेषु कदाचन।
मा कर्मफलहेतुर्भूर्मा ते सङ्गोऽस्त्वकर्मणि॥

I Thank my Colleagues, Family and Friends for being extremely supportive during the preparations for ASPICON 2025. Only through Cooperation and Teamwork, we can move forward as it can be summarized in One Word from Swahili – UBUNTU [I Am, Because, We Are]

Dr Sumit Rai
Organizing Chairperson and Vice President SASPI
Professor and Head, Department of Clinical Microbiology, AIIMS Mangalagiri



Organising Secretary Message

Seeking the blessings of Sri Panakala Narasimha Swamy, we begin ASPICON 2025 with purpose, humility, and just the right dose of audacity.

Dear stewards, bug whisperers, and defenders of dose and duration,
A very warm (but not febrile) welcome to ASPICON 2025 — the 7th Annual Conference of the Society of Antimicrobial Stewardship Practices in India — from 4th to 7th September 2025 by AIIMS Mangalagiri, Andhra Pradesh.
Our theme this year is carefully chosen as “Asserting AMR Awareness.” If resistance is loud, our stewardship will be louder, clearer, and impossible to ignore — on rounds, in records, and across routines.

Proudly hosted by the Organising Departments — the Department of Clinical Microbiology, the Department of General Medicine, and the Department of Pharmacology — this meeting stands at the intersection of bugs, bedsides, and bottles. Think diagnostics with purpose, prescriptions with precision, and policies with punch. What you can expect (besides excellent looms, toys, pickles and even better arguments):

- Keynotes with a backbone: Clear calls, crisp data, zero hand waving — like a narrow spectrum agent with perfect PK/PD.
- Workshops that actually work: Audit and feedback people don’t dread, IV to PO switches with swagger, and time outs that happen on time.
- Cases with consequences: De escalation dilemmas, surgical prophylaxis sanity checks, and empiric choices with receipts.
- One Health, one loud voice: Awareness that travels across wards, water, and warehouses.
- Dashboards you’ll show off: Metrics that make stewardship visible, irresistible, and mildly addictive.
- Abstracts and applause: Bring your battle wins, near misses, and “we fixed it on cycle three” stories — we love an honest arc.

The only “broad spectrum” the organising committee endorsed is the buffet meals. Expect Andhra warmth, flavors with personality, and a social evening where the only overgrowth is on the dance floor.

Between Vijayawada’s lively bazaars and Mangalagiri’s timeless looms, scoop up Kondapalli toys and handloom sarees—negotiate kindly, pack smart, and save room for gongura pickles.

Arrive curious, leave assertive — with implementable tools for tomorrow, a fiercer voice for AMR awareness, and at least one new colleague who answers your 11 pm “quick query” with grace. May your cultures inform, your empiric choices be wise, and your de escalations timely.

Warm regards,
Dr. Debabrata Dash



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Journal Editor: Douglas M. McCabe
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Preconference Workshops

PRE- CONFERENCE WORKSHOP OF ASPICON AIIMS MANGALAGIRI – 4TH SEPTEMBER 2025 Paediatric and Neonates Care and AMS

AMS In Neonates and Paediatrics

The increasing spread of AMR is a global public health threat. There is a general paucity of information on Child Healthcare and the risk of AMR across LMIC Countries. Antibiotics are the most common medications prescribed to children. infants and neonate. Many children and particularly infants are exposed to antibiotics during infancy and childhood, prescribed for conditions which do not require antibiotic therapy. Neonates on the other hand may be exposed to antibiotic before birth, during parturition and soon after birth , often empirically because of the risk factors of infection or for non specific signs which may or may not be a result of infection. The rampant use of antibiotics in the peripartum period alters the foetal and neonatal microbiome, with both short term and long term effects on immune health.

It is important for AMS in paediatrics, infants and neonates to be established with the help of multidisciplinary teams consisting of specialists from various fields of medicine along with trained nursing professionals and clinical pharmacists. This workshop explores arious aspects of AMS and AMR as seen in children seen on an outpatient basis, reflecting community acquired infections, patients in the paediatric haemato-onco and BMT units, neonates admitted to the NICU with serious life threatening conditions .

Hopefully it would open newer vistas of thinking and analysis in many a young mind in this field of paediatric antimicrobial stewardship.

Timing	Topic / subtopics	Speakers / Faculty
8.00 am - 8.30 am	Registration	
8.30 am - 8.40am	Introduction to the workshop	Dr. Ranganathan Iyer
8.45 am - 9.10 am	How different is AMS in paediatrics and what are the challenges in Neonates	Dr. Sanjana Hansoge (AIIMS Nagpur)
9.15 am - 9.45 am	How do we apply PK /PD in Paediatrics and Neonates . Will this be the same ?	Dr. Ranganathan N Iyer (RCH Hyderabad)
9.45 am - 10.00 am	TEA BREAK	
10.00 am - 11.30 am	Group exercises on AMS problems in different clinical situations in the Neonate	Dr. Ranganathan N Iyer Dr. Sanjana Hansoge Dr. Vamsi Sivarama Raju (RCH Vijayawada)
11.30 am - 12.00 Noon	How does one assess antimicrobial prophylaxis in surgical procedures in the newborn and infant?	Dr. Ranganathan Iyer
12.00 Noon - 1.15 pm	Group exercises on AMS problems in Community acquired infections in children	Dr. Ranganathan Iyer (RCH Hyderabad) Dr. Vamsi Sivaramaraju (RCH Vijayawada)

Timing	Topic / subtopics	Speakers / Faculty
1.15 pm – 2.00 pm	LUNCH	
2.00 pm – 3.30 pm	Preparing an antibiogram in different clinical scenarios in Paediatrics/ Neonatology and forming an antibiotic policy- Group exercises and work	Dr. Ranganathan Iyer Dr. Nita Radhakrishna (SsphPgti Noida) Dr. Sanjana Hansoge
3.30 pm – 4.15	AMS in Immunocompromised children and the febrile neutropenia AMS Vs Infection control or AMS & Infection control	Dr. Nita Radhakrishna (Ssph Pgti Noida)
4.15 pm – 5.30 pm	Group Exercises on AMS problems in clinical scenarios in the PICU	Dr. Ranganathan Iyer Dr. P. Ramesh Kumar (RCH Vijayawada)
5.30 pm	Closing remarks and TEA – Disperse	

Dr. Ranganathan N Iyer MD FRCPATH DNB DPB MAMS

Director, Clinical Microbiology, Infection and Infection Control service
Rainbow Children's hospital Group
Assoc Regional Advisor SE Asia The Royal College of Pathologists UK

Moderator – Workshop on AMS in Paediatrics and Neonates

For ASPICON AIIMS Mangalagiri AP 2025

Antimicrobial Stewardship Program for MBBS Undergraduates

Pre conference Workshop- ASPICON 2025

4th September 2025

The use of Antimicrobial Stewardship Programs (AMSP) in the MBBS curriculum is critical in shaping future doctors to combat the growing challenge of antimicrobial resistance (AMR). Integrating AMSP education ensures that medical students not only understand the science behind antimicrobials but also develop responsible prescribing behaviours from the start of their careers. With this view the workshop led by the coordinators Dr Jayalakshmi J and Dr Pooja Rao has been structured to introduce MBBS students to the critical concepts of Antimicrobial Stewardship (AMS) through a series of targeted learning modules. The modules combine foundational knowledge, clinical application, and policy awareness in an AMS program to equip future doctors with the tools they need to prescribe antibiotics rationally and combat antimicrobial resistance (AMR). The workshop will consist of introduction to the global crisis of AMR and the vital role of AMSP in preserving antibiotic effectiveness. Focuses on understanding resistance mechanisms and interpreting microbiology lab reports—essential for selecting effective therapies in the clinical practice. This covers basic pharmacokinetics and pharmacodynamics, helping students understand optimal dosing, time-dependent vs. concentration-dependent killing, and drug selection.

Emphasizes the importance of appropriate diagnostic practices which includes the right method of specimen collection, transport and prevent the misuse or overuse of diagnostics tests available. Explains how stewardship programs are put into practice in clinical settings which includes monitoring & audits. Introduces students to institutional antimicrobial guidelines, rationale use of restricted drugs, and strategies to optimize antibiotic use. Highlights the infection prevention and control (IPC) measures, including hand hygiene, sterilization, strategies to prevent healthcare-associated infections (HAIs) and, its role in combating AMR. By the end of the day, the workshop instills awareness of AMR and stewardship principles from the undergraduate level and prepares students for future roles in AMS committees and clinical leadership in alignment with national and global standards (ICMR, WHO)

Antimicrobial Stewardship Program for MBBS Undergraduates Workshop Schedule				
	Topics	Faculty	Schedule	T-L Method
Pre test				
	Introduction of Resource persons	Dr Sumit Rai	9-9:15 am	-
1	Mission Briefing: Need & significance of AMSP	Dr Hitender Gautam	9:15-9:45 am	Lecture
2	Resistance revealed: Antimicrobial Drug Resistance & Microbiology Report Interpretation	Dr J Jayalakshmi & Dr Pooja Rao	9:45-10:45am	Group Discussion
		Tea Break: 10-45pm-11pm		
3	Kinetics in Action: Pk - Pd of antibiotics	Dr Bhaskar Thakuria	11-11:45am	Case scenario-Lecture
4	Precision Targeting: Diagnostic Stewardship	Dr Hitender Gautam	11:45-12:15 pm	Group Discussion

5	Policy protectors: Formulating Antimicrobial Policy & Antimicrobial Use	Dr Pooja Rao	12:15-1:00pm	Lecture
		Lunch Break: 1 pm-2 pm		
6.	Implementation & monitoring of AMSP	Dr J Jayalakshmi	2-3:00 pm	Lecture
7	Infection Interceptors: ICP & Prevention of HAI's	Dr Bhaskar Thakuria	3:00-3:45 pm	Case based
		Tea Break: 3:45pm-4pm		
8	Reflection		4-4:45pm	Student Presentation
Post test & feedback				

Antimicrobial Stewardship for the Nursing Cadre

Why nursing stewardship for antimicrobial practices is important?

Nursing stewardship in antimicrobial practices is an essential component of modern healthcare and a critical strategy in combating the global challenge of antimicrobial resistance. As frontline caregivers, nurses are uniquely positioned to ensure the judicious use of antimicrobials through vigilant infection prevention and control, accurate administration, timely monitoring of therapeutic responses, and patient education. Their active involvement supports evidence-based clinical decision-making, minimizes the risks of adverse drug reactions, and reduces the misuse or overuse of antibiotics. By strengthening antimicrobial stewardship, nurses not only enhance patient safety and clinical outcomes but also contribute significantly to safeguarding the long-term effectiveness of antimicrobial agents, thereby upholding the integrity of healthcare systems worldwide.

How can nursing stewardship for antimicrobial practices be achieved?

- Adherence to evidence-based infection prevention and control measures.
- Accurate administration and timely documentation of antimicrobial therapies.
- Vigilant monitoring of patient responses and identification of adverse drug reactions.
- Prompt communication and collaboration with the multidisciplinary healthcare team.
- Active participation in antimicrobial stewardship committees and programs.
- Continuous professional education and training on antimicrobial guidelines.
- Patient and family education to promote awareness and responsible antimicrobial use.

Antimicrobial Stewardship for the Nursing Cadre		
Time	Topic	Speaker / Resource Personnel
09:00 am – 10:00 am	Nursing Role in Infection Prevention and Control Link between IPC and AMSP	Dr. Mohan Kumar A, Associate professor, Microbiology, Infection Control Officer, AIIMS, Mangalagiri.
10:00 am – 10:20 am	I Station - Specimen Handling Collection, Storage and Transportation	Mr. Sudheendra M, Assistant Professor, College of Nursing, AIIMS, Mangalagiri.
10:20 am - 10:40 am	Tea Break	
10:40 am- 11:00 am	II Station - Hands on Training Hand hygiene - Glow gel Demonstration	Mrs. Ambili Venugopal, Tutor, College of Nursing, AIIMS, Mangalagiri
11:00am – 11:20 am	III Station - Hands on Training PPE donning/doffing/common mistakes	Mrs. Sandhya C, Tutor, College of Nursing, AIIMS, Mangalagiri.
11:20am – 11:40 am	IV Station - Hands on Training CAUTI Bundle care - Urinary Catheter	Mrs. Aswathy KV, Senior Nursing Officer, Infection Control Nurse, AIIMS, Mangalagiri
11:40am – 12:00 pm	V Station - Hands on Training CLABSI Bundle care - Central Line	Mrs. Radhika S, Nursing Officer, Infection Control Nurse, AIIMS, Mangalagiri
12:00 pm – 01:00 pm	Standard and Specific Precautions Case Scenarios and discussion	Dr. Mohan Kumar A, Associate professor, Microbiology, Infection Control Officer, AIIMS, Mangalagiri.
01:00 pm- 02:00 pm	Lunch	
02:00 pm – 03:00 pm	Posology - Therapeutic Doses of Antimicrobials co-relating organ dysfunction - Compatibilities of drugs - Safe drug administration practices - Time out and Hang out - Preparation and storage of antimicrobial drugs	Ms. Ranjana Verma, Assistant Professor, College of Nursing, AIIMS, Bhopal. & Ms. Uma Phaiwal, Tutor, College of Nursing, AIIMS, Rishikesh.
03:00 pm – 04:00 pm	Documentation - Maintenance of white boards in IPD - ADR management - Miss, Near miss and Events - Role play	Dr Anurag Patidar, Associate Professor, Nursing College, AIIMS Bhopal & Mr. Amit Sharma, Senior Nursing Officer, AIIMS Bhopal.
04:00 pm – 04:10 pm	Tea Break	
04:10 pm – 05:00 pm	Audits - Hand Hygiene audit - WHO - DDD and DOT calculation - Point Prevalence study - Calculation of CLABSI,CAUTI,VAP	Dr. Sagar Khadanga, Additional Professor, General Medicine, AIIMS, Bhopal. & Ms. Vani P, ANS, AIIMS Bhopal

Workshop on Antifungal Stewardship: ASPICON 2025

Pre Conference Workshop-ASPICON 2025

4th September 2025

The workshop on 'Antifungal Stewardship' is being organized with the objective of promoting the judicious, evidence-based use of antifungal agents in clinical practice. The increasing burden of invasive fungal infections, emergence of drug-resistant fungal pathogens, and limited therapeutic options have made antifungal stewardship an essential component of modern healthcare. This initiative aims to reduce antifungal overuse and misuse, thereby minimizing adverse effects, reducing treatment costs, and preserving the effectiveness of existing antifungal drugs.

This educational event is tailored for a wide range of healthcare professionals, including clinicians, microbiologists, infectious disease specialists, pharmacists, infection control nurses, and postgraduate students. These participants are directly or indirectly involved in the diagnosis, treatment, and prevention of fungal infections in hospitalized and immunocompromised patients. The workshop will also serve as a platform to strengthen multidisciplinary collaboration in antifungal decision-making. Key themes will include an overview of antifungal agents, their mechanisms of action, pharmacokinetics and pharmacodynamics (PK/PD), and toxicity profiles. Sessions will also focus on the interpretation of fungal diagnostics—such as microscopy, culture, galactomannan, beta-D-glucan, and molecular methods—and their integration into clinical practice to facilitate early, targeted therapy. One of the major highlights will be the role of therapeutic drug monitoring (TDM), particularly for azoles like voriconazole and posaconazole, to optimize efficacy while minimizing toxicity.

The workshop will feature highly interactive components, including case-based discussions and hands-on demonstration of the bioassay technique used in TDM. Through real-world clinical scenarios, participants will learn how to apply stewardship principles in day-to-day practice—such as choosing the right drug, right dose, right route, and right duration. Timely de-escalation or cessation of therapy based on clinical improvement and diagnostic results will also be emphasized.

The sessions will be led by renowned faculty from the fields of infectious diseases, medical mycology, and clinical microbiology, who will provide practical insights, share institutional experiences, and discuss national and international guidelines from bodies such as IDSA, ESCMID, and WHO. The workshop will also explore the challenges of implementing antifungal stewardship in resource-constrained settings and propose context-appropriate solutions.

Ultimately, the workshop seeks to build institutional capacity in antifungal stewardship, promote responsible antifungal prescribing, and curb the spread of resistance—contributing to better patient outcomes and sustainable healthcare practices.

Time	Topic	Speaker
8:30am – 8:45am	Registration	
8:45am – 9:00am	Pre-workshop evaluation	
9:00am – 9:05am	Welcome and Introduction to the WS and Faculty	Dr. Nidhima Aggarwal, AIIMS, Mangalagiri
9:05 am – 9:40 am	Diagnostic stewardship in Mycology (L)	Dr. Immaculata Xess, AIIMS, New Delhi
9:40 am – 10:15 am	Antifungal agents (L)	Dr Janya Sachdev, PGICH, Noida
10:15 am – 10:45 am	PK/PD of antifungals (L)	Dr Vinay K. Hallur, AIIMS, Bhubaneswar
10:45 am -11:15 am	TEA BREAK	
11:15 am – 12:15pm	Appropriate antifungal therapy (L)	Dr Gagandeep Singh, AIIMS, New Delhi
12:15 pm-1:00 pm	Therapeutic drug monitoring (L)	Dr Hansraj Choudhary, ICMR Hq New Delhi
1:00pm – 2:00pm	LUNCH BREAK	
2:00 pm – 3:45 pm	Therapeutic drug monitoring: Bioassay (P)	Dr Gagandeep Singh, AIIMS, New Delhi Dr Hansraj Choudhary, ICMR Hq, New Delhi Ms. Sonakshi Gupta, AIIMS, New Delhi
3:45 pm – 4:00 pm	TEA BREAK	
4:00 pm – 5:00 pm	Therapeutic drug monitoring: Bioassay (P)	Dr Gagandeep Singh, AIIMS, New Delhi Dr Hansraj Choudhary, ICMR Hq, New Delhi Ms. Sonakshi Gupta, AIIMS, New Delhi
4:45 pm – 5:00 pm	Post-Workshop Evaluation	
5:00 pm – 5:15 pm	Valedictory Function	

Pre-Conference Workshop ASPICON on Antifungal Stewardship



Dr. Hansraj,
ICMR New Delhi

Invasive fungal infections (IFIs) represent a growing global health threat, particularly among immunocompromised populations, causing over 1.5 million deaths annually (Zhang et al., 2023). The rising burden is driven by expanding susceptible hosts, climate change, emerging fungi, changing epidemiology, and increasing resistance (Seagle et al., 2021; George et al., 2025). Management is further limited by inadequate diagnostics, restricted therapeutic options, drug toxicity, and treatment failures (Branda et al., 2025).

Antifungal stewardship (AFS) aims to optimize patient outcomes, reduce resistance, and minimize costs, with therapeutic drug monitoring (TDM) as a central component (Wattal et al., 2017; Chakrabarti et al., 2025). Variability in pharmacokinetics (PK) and pharmacodynamics (PD), drug-drug interactions, and organ dysfunction frequently necessitate individualized dosing (John et al., 2019). TDM is strongly recommended for triazoles (voriconazole, posaconazole, itraconazole) and flucytosine, but has limited utility for amphotericin B, echinocandins, and fluconazole (Carmo et al., 2023).

Serum drug concentrations can be assessed using bioassays, high-performance liquid chromatography (HPLC), and mass spectrometry (MS). While HPLC and LC-MS are reference standards, bioassays offer a simple and reasonably accurate starting point (Steinmann et al., 2011).

Incorporating TDM into antifungal stewardship (AFS) enables individualized antifungal therapy, improves clinical outcomes, reduces toxicities, optimizes resource utilization.

COMMUNITY ANTIMICROBIAL STEWARDSHIP Pre Conference Workshop-ASPICON 2025 4th September 2025

Antimicrobial resistance (AMR) is a mounting global health crisis that imperils the effectiveness of life-saving treatments and threatens the achievements of modern medicine. While much of the discourse and action around antimicrobial stewardship (AMS) has historically centered on hospital and tertiary care settings, the bulk of antibiotic use—and therefore the greatest opportunity for meaningful stewardship—lies within the community. In India, widespread and unregulated antibiotic consumption, self-medication, and disparities in healthcare access amplify the challenge, with rural, tribal, and underserved populations at the highest risk. Against this backdrop, the pre-conference workshop at AIIMS Mangalagiri addresses the urgent need to broaden the stewardship lens to encompass community settings, rooted in a robust One Health approach.

One Health recognizes that AMR surveillance, control, and stewardship are integrally linked not only across disciplines—human medicine, veterinary science, environmental health—but also across the continuum of care from tertiary hospitals to the most remote communities. The workshop's opening session, led by Dr. Rahul Narang (AIIMS Bibinagar), sets the scientific stage by exploring how the interconnectedness of human, animal, and environmental factors drives AMR emergence at the grassroots level. Such an integrated perspective is essential for the design of stewardship interventions that are sustainable, context-sensitive, and scalable.

Primary health care (PHC) emerges as a cornerstone in the community AMS paradigm. Dr. Dhruvajyoti J. Debnath (AIIMS Mangalagiri) highlights the transformative potential of PHC-based stewardship—advocating for rational antibiotic prescribing, strengthening local surveillance, and enhancing referral networks to curb resistance. Kerala's model of "Antibiotic Smart Hospitals" is presented as a best-practice case by Dr. A. Rajalakshmi (KIMS HEALTH), offering empirical insights into stewardship models that can be replicated or tailored to fit other community settings. These institutional successes underscore the importance of leadership, continuous professional education, and integrated stewardship protocols.

The workshop further tackles unique stewardship challenges faced by family practitioners in community medicine, as well as the critical need to extend AMS advocacy to tribal and marginalized populations. Dr. Sathiyannarayanan (AIIMS Mangalagiri) and Dr. Ashish Satav (MAHAN Trust) detail how nuances in cultural beliefs, healthcare delivery, and socio-economic status shape antibiotic use patterns, demanding stewardship approaches that combine education, empowerment, and locally relevant tools. Interactive case-based discussions, moderated by an expert panel, allow participants to dissect practical dilemmas in antibiotic prescribing at community clinics and health centres, reinforcing best practices with peer-to-peer learning.

Recognizing that robust AMS is data-driven, Dr. Rahul Garg (AIIMS Bibinagar) and Dr. Rajeev Aravindakshan (AIIMS Mangalagiri) train participants in utilizing rapid diagnostics and basic data analytics in the community respectively. Empowering frontline health workers to leverage point-of-care tests and molecular diagnostics, combined with systematic interpretation of antibiotic sensitivity reports, will facilitate surveillance and inform timely stewardship interventions—even in resource-constrained environments.

Public engagement and behavioural change is highlighted through sessions led by Dr. Biju Soman (SCTIMST Trivandrum), wherein participants explore science-based strategies for effective health communication and risk messaging. Participatory rural appraisal (PRA) techniques, introduced by Dr. Kalaiselvan Ganapathy (AIIMS Mangalagiri), build capacity for community-led assessment of antibiotic use, encouraging the co-creation of stewardship initiatives that resonate with local realities.

The workshop's multidisciplinary closing panel, facilitated by Dr. Vishakha Jain (AIIMS Bibinagar), synthesizes the day's insights, charting future directions for a One Health-integrated AMS at the community level. Participants emerge equipped not only with scientific understanding but also pragmatic skills to implement, evaluate, and lead stewardship interventions in diverse community contexts. In sum, this workshop establishes a blueprint for advancing community AMR stewardship in India, guided by One Health principles, scientific rigor, and collaborative engagement—essential for securing the future of effective, equitable healthcare amidst the growing threat of AMR.

From Awareness to advocacy: Strengthening Community AMS in Tribal India



Dr. Ashish Satav,
MAHAN TRUST

Antimicrobial resistance (AMR) poses a significant threat in resource-limited settings. MAHAN trust implemented a successful, multifaceted community antimicrobial stewardship (AMS) program in tribal population of Melghat, India. Our model moves beyond simple awareness to empower the community through action and mobilise government to change policies. Key interventions include training tribal village health workers for rational antibiotic use within integrated home-based child care, mortality control program for adults and community-based management of severe malnutrition, and strengthening of government hospitals. We emphasize intensive Behaviour Change Communication (BCC) on health and hygiene, alongside promoting nutritional resilience through over 12,000 nutrition gardens and fibre-based local therapeutic foods, which enhance gut microbiomes. This has significantly improved recovery, reduced mortality and prevalence of SAM and SUW in intervention villages, $p < 0.01$. This holistic approach has also significantly reduced child mortality and adult mortality, $p < 0.001$. Importantly, our stewardship has resulted in a demonstrably lower prevalence of toxigenic *Clostridioides difficile* in the tribal community compared to urban populations, highlighting the impact of minimizing antibiotic exposure and very rational use of antibiotics by MAHAN trust. MAHAN could change 34 Maharashtra state level policies benefitting 1 million poor tribals.

Community First: Kerala's Antibiotic Smart Hospitals & AMS Implementation Strategies



Dr A Rajalakshmi
Senior ID Consultant, KIMS Health,
Thiruvananthapuram

When policymakers are convinced about the AMR crisis, it becomes easier for technical experts to conceptualize and implement AMR mitigation efforts! Kerala's Antibiotic Smart Hospital Initiative (ASHI) is a pragmatic, customized stewardship model that can address AMR challenges at different tiers of healthcare, especially in LMICs. The Kerala Antibiotic Literate Campaign is a genuinely decentralized One Health approach to tackling AMR's menace, highlighting the importance of political and administrative will in AMR action plans. ASHI and participatory stewardship represent a transformative approach to combating antibiotic resistance. Through government-led initiatives focusing on policy, funding, regulation, and education, this system can significantly improve antibiotic use and safeguard public health. As the healthcare landscape continues to evolve, the widespread adoption of Antibiotic Smart Hospitals and participatory stewardship will be crucial in the global fight against antibiotic resistance.

Stewardship in Clinical Virology: Strategies for Better patient Outcomes in Clinical Settings

**Pre Conference Workshop-ASPICON 2025
4th September 2025**

This pre-conference workshop at ASPICON 2025 focuses on Virology Stewardship, an evolving discipline that integrates laboratory diagnostics with clinical decision-making to optimize patient care and resource utilization. The program is designed to sensitize clinicians, microbiologists, infectious disease doctors and researchers to the principles of diagnostic and therapeutic stewardship in the field of clinical virology.

The workshop opens with a pre-assessment session, followed by an introduction to stewardship in clinical virology, emphasizing its role in improving outcomes and minimizing unnecessary testing. Key discussions include the rational use of molecular diagnostics, highlighting when to order PCR assays, interpretation of Ct values, and pitfalls of over-testing. Antiviral stewardship is addressed through a case-based approach, where few very interesting clinical case scenarios will be discussed.

Scenario-based learning forms a major component, covering stewardship challenges in post-transplant care, congenital infections, ICU settings, and public health. These discussions stress the importance of rapid diagnostics, appropriate interpretation, and tailoring interventions to patient-specific needs.

Panel discussions will bring together virologists, intensivists, and infectious disease specialists to deliberate on building stewardship bundles “from lab to ward.” Practical strategies include checklists, standardized reporting, lab alerts, and integration into hospital-wide stewardship programs.

The afternoon sessions will focus on chronic viral infections, algorithmic approaches to management, and group exercises on making virology reports clinically actionable. Participants will also explore the role of stewardship in outbreak and pandemic preparedness, underscoring lessons learned from recent global health crises. The workshop will conclude with a post-assessment and certification, equipping participants with practical tools to apply stewardship principles in their clinical practice. Overall, the program provides a comprehensive framework to “test smarter, not more” while ensuring judicious use of diagnostics and antivirals in virology.

Time	Session	Speaker(s)
09:00 - 09:30 AM	Registration and Pre-Workshop Assessment	Dr. Ekta Gupta, Dr. Aashish Choudhary, Dr. Abhishek Padhi
09:30 - 10:00 AM	Introduction to Stewardship in Clinical Virology	Dr. Ekta Gupta, ILBS
10:00 - 10:30 AM	Rational Use of Molecular Diagnostics in Virology	Dr. Aashish Choudhary, AIIMS, New Delhi
10:30 - 11:00 AM	Antiviral Stewardship: Who Needs Treatment and Who Doesn't?	Dr. Abhishek Padhi, AIIMS, Rajkot
11:00 - 11:30 AM	Tea Break	
11:30 - 11:45 AM	Scenario 1: Diagnostic Stewardship in Post-Transplant setting	Dr. Ekta Gupta
11:45 - 12:00 PM	Scenario 2: Diagnostic Stewardship in <u>Congenital</u> Viral Infection	Dr. Aashish Choudhary
12:00 - 12:30 PM	Why Virology Stewardship Matters in the ICU?	Infectious Disease Specialist
12:30 - 01:00 PM	Panel Discussion: Building a Stewardship Bundle – From Lab to Ward	ID specialist / EG, AC, AP
01:00 - 02:00 PM	Lunch Break	

Post-Lunch sessions

Time	Session	Speaker(s)
02:00 - 02:15 PM	Scenario 3: Diagnostic Stewardship in Public Health	Dr. Abhishek Padhi
02:15 - 02:45 PM	Panel Discussion: Stewardship in Post-Transplant Scenarios	EG / AC/AP
02:45 - 03:00 PM	Tea Break	
03:00 - 03:30 PM	Chronic Viral Infection – An Algorithmic Approach	Dr. Ekta Gupta
03:30 - 04:15 PM	Virology Reports: Making Them Clinically Actionable (Group Exercise)	EG, AC, AP
04:15 - 04:45 PM	Stewardship in Outbreak and Pandemic Preparedness	Dr. Abhishek Padhi
04:45 - 05:00 PM	Post-Workshop Assessment & Certificate Distribution	EG, AC, AP

Rendezvous with Antibiotics: A Workshop on PK–PD Cornerstones

Preconference Workshop – ASPICON 2025

4th September 2025

This preconference workshop, curated under the banner of ASPICON 2025, is dedicated to the pivotal role of pharmacokinetics (PK) and pharmacodynamics (PD) in optimizing antimicrobial therapy. Designed and led by eminent faculty across AFMC, AIIMS, and other premier medical colleges, the workshop seeks to bridge foundational pharmacological principles with practical stewardship strategies, empowering participants to translate science into bedside precision.

The main goal of the workshop is to help participants understand how antibiotics can be used more effectively, safely, and rationally. The sessions are planned in a way that builds concepts step by step and then connects them to real-world patient care. The programme begins with an introduction and a short pre-test, followed by a primer on antimicrobial resistance and stewardship—reminding everyone why appropriate antibiotic use is so important. An early group exercise will make the learning interactive, with participants working in teams to discuss how they would choose antibiotics in practical situations.

The next set of sessions will focus on the basics of antibiotics, their pharmacological profiles, and the key PK–PD principles that guide dosing. Participants will also learn to perform simple pharmacokinetic calculations and solve practice problems in groups, making the sessions both engaging and practical.

After lunch, attention shifts to dose optimization in critically ill patients and special populations. These are situations where standard antibiotic dosing often fails, and PK–PD knowledge can make a big difference. Later, groups will be given clinical case scenarios to analyse, discuss, and present. Faculty will first demonstrate how to approach these problems and then guide participants during their own presentations. The day will close with a summary and a short post-test to consolidate key learnings.

By the end of the workshop, participants will gain practical skills such as:

- How to choose antibiotics wisely in real-life scenarios
- How to use PK–PD knowledge for dosing decisions
- How to adjust treatment in critically ill and special populations
- How to analyse and present case-based problems in a structured way

This workshop is designed not only to update knowledge but also to provide participants with tools they can immediately apply in their clinical practice—helping improve patient care while also supporting the global fight against antimicrobial resistance.



S No	Time	Activity/Session	Faculty/Moderator	Remarks
1	0900-0915	• Introduction to Wksp and its deliverables • Pretest Questionnaire	Dr Prafull Mohan (AFMC)	
2	0915-0945	Antimicrobial resistance and AMSP: A primer	TBD	
3	0945 - 1030	A real-world approach to prescribing antibiotics: A hand-on exercise and discussion	Dr Bhaskar Krishnamurti (Seth GSMC and KEM)	Attendees will be divided into 4 syndicates. They will be asked to prescribe antibiotics. Then each syndicate to discuss as to how they chose the Ab which they prescribed. Intended discussion on factors that govern Ab choice.
4	1030-1045	Tea		
5	1045-1145	Pharmacological profile of antibiotics and basics of clinical pharmacokinetics	Dr Prafull Mohan	
6	1145-1230	Pharmacokinetic calculations: Lec and Demonstration	Dr Darshan Dev (AFMC)	01 PK problem each will be given to 4 syndicates. They will have to present them at the end.
7	1230-1330	Dose optimization of antibiotics in critical care/ICU setting and special population	Dr Rachna Rohilla (AIIMS Bhatinda)	
8	1330-1400	Lunch		
9	1400-1430	• Handing over of case-based scenarios and problems (02 to be given to each of the 4 groups) • Model discussion on 2 case-based scenarios by wksp faculty (to serve as a template for the groups)		
10	1430-1500	Internal discussions by syndicates on case scenarios and pharmacokinetic problems.		
11	1500 – 1630	Syndicate presentations on case scenarios and pharmacokinetic problems		
12	1630 hrs	Summing up and post test		

Rendezvous with antibiotics: A workshop on PK-PD cornerstones





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Dataset Description	Real	Real (Synthetic) Data	Synthetic (Real) Data	Synthetic (Real) Data	Synthetic (Real) Data
Analysis Difficulty	Easy	Easy	Easy	Easy	Easy
Limit of Detection	0.1 (10% Sensitivity) 0.1 (10% Specificity)	0.1 (10% Sensitivity) 0.1 (10% Specificity)	0.1 (10% Sensitivity) 0.1 (10% Specificity)	0.1 (10% Sensitivity) 0.1 (10% Specificity)	0.1 (10% Sensitivity) 0.1 (10% Specificity)
Drawings		See Appendix A.1	See Appendix A.2	See Appendix A.3	See Appendix A.4
Reference	Appendix B	Appendix B	Appendix B	Appendix B	Appendix B
Cost	\$0.001	\$0.001	\$0.001	\$0.001	\$0.001
Type of Data	Continuous	Continuous	Continuous	Continuous	Continuous
Model Complexity	Low (Linear) High (Non-linear)	Low (Linear) High (Non-linear)	Low (Linear) High (Non-linear)	Low (Linear) High (Non-linear)	Low (Linear) High (Non-linear)

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Fig. 1. (a) Side view of the device; (b) top view of the device.

1. *What is the central focus of the passage?*
 A. The challenges of space exploration
 B. The importance of international cooperation
 C. The potential benefits of space exploration
 D. The current state of space exploration
 E. The future of space exploration

1. **Introduction**

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Journal of Management Education 32(10)

[illegible]Management Science, Vol. 47, No. 1, pp. 1–14, 2001
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0893-2172/01/010001-14\$05.00
DOI: 10.1287/mnsc.47.1.1.1201[illegible]

RESEARCH DESIGN

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Keynote Abstracts





My Tryst with Antimicrobial Stewardship

Dr. Atul Goel, Professor of Excellence

Department of Internal Medicine

Lady Hardinge Medical College

New Delhi, India,

Former DGHS, Ministry of Health & Family Welfare, GoI

My Tryst with Antimicrobial Stewardship can be divided into phases. The first phase was of a young physician, who used to think about curing everything and anything with the pharmaceutical agents at my disposal including anti-microbials. Second phase, as I matured as a physician, the realization that drugs including 'anti-microbials' could potentially harm a human life (varying from minor side effects to life threatening organ failure, including death). In the third phase when I headed a medical unit from 2004 riding into 2021, and realizing how indiscriminately, newer anti-microbial drugs were being pumped in by pharmaceutical giants, non-ethical promotion of their indiscriminate use by private practitioners and their misuse by public as well as medical personnel. During this third phase, I also encountered deaths due to infections that never responded to the best of antibiotics available.

In this context, I would like to narrate a short learning experience. This experience happened in 1982 when I was a third-year medical student training in tuberculosis at Mehrauli. Director of the Institute was Dr HB Dingley. This was also the year 'Rifampicin' was introduced for treatment of Tuberculosis. Dr Dingley, a leading expert in the field of Tuberculosis, expressed reservations regarding the use of chemotherapy as a management strategy for TB. And what he prophesized in 1982 still stands. TB bacilli have become resistant to every new drug (including Bedaquilin) with remarkable regularity. He mentioned prevention through nutrition, fresh air, and sunlight.

As 'Director General Health Services' I realized that my stewardship was not meant for isolated things like anti-microbials, I needed to be a steward for promotion of human health and prevention of disease. However, I did have opportunities to interact with numerous stakeholders of anti-microbial stewardship (AMS) as well as antimicrobial resistance (AMR). The various stakeholders I interacted with included policy makers (Niti Aayog, ICMR and Ministry of Health & Family Welfare), industry players (diagnostic and drug manufacturers), licensing authorities (drug controllers), teachers of pharmacology and therapeutics (pharmacologists and pharmacists), those responsible for diagnosing infections (microbiologists), prescribers of antimicrobials (doctors, dentists, nursing personnel, pharmacists etc.), dispensers of antimicrobials (chemists, druggists and pharmacists). As a clinician, I also interacted with another (perhaps the most important) stakeholder – the patient and his caregivers (family members). The most important stakeholder is often excluded from policy frameworks, decision-making, and interactions. The only place I found the last stakeholder included was the annual TB review meeting of the WHO, where the purpose of inclusion was neither AMR nor AMS. The goal was to urge policy makers to include new tuberculosis chemotherapeutic agents.

All the above stakeholders did have some degree of conflict of interest in antimicrobial stewardship. There is absolutely nothing wrong with this if there is an overall benefit to the last stakeholder, which is not always the case.



Prevention of Infection v/s treatment of a resistant infection – which of the two are of benefit to the patient from a medical/scientific and/or economic benefit to the patient?? The answer to this question is central to determine the future direction of the AMR and AMS program. Success will be forthcoming only if prevention is looked at with interest by the first stakeholder i.e. policy makers.

As I dived myself further into the issues of AMR and AMS, because of the vast portfolio under me I realized that we need to modify AMS into APS (Anti-pharmacotherapeutic Stewardship). Today, polypharmacy is the leading cause of health problems today. I will sum this up with two case examples. First case of a young man incapacitated due to Atorvastatin prescribed for lipid abnormalities (as prescribed as per existing guidelines). Second case of an elderly lady rendered bed bound due to prescription of newer anti-parkinsonism drugs.





AMR, global and local, and current options to control
Dr. Pallab Ray,
Former Professor & Head,
Dept. of Medical Microbiology, PGIMER Chandigarh

Antimicrobial resistance (AMR), to a clinician, means unresponsiveness of infection to antimicrobial therapy with standard dose and duration. To a microbiologist, AMR means ability of a pathogen to multiply in drug concentrations higher than that in humans receiving therapeutic doses. Emergence of resistance to antimicrobials is a natural phenomenon of evolution, slow and continuous, spontaneous, random, and independent of antibiotic exposure. Antimicrobials provide survival advantage to resistant population, selects resistant over susceptible and once developed, is irreversible or slow to reverse.

AMR figures in “Ten threats to global health” published by the WHO in 2019. Yearly, more than 7 lakh people die of drug-resistant infections and the number is projected to reach 10 million in 2050. A publication in The Lancet in 2022 brought out the global burden of AMR providing analysis of data from 204 countries, 23 bacterial pathogens and 88 pathogen-drug combinations. According to the study, rate of deaths attributable to and associated with AMR is maximum in African countries followed by south Asian countries. It affected lower respiratory tract infections maximally followed by blood stream and intra-abdominal infections. The most common pathogen incriminated included *Escherichia coli* followed by *Staphylococcus aureus* and *Klebsiella pneumoniae*. Multi drug resistant pathogens like methicillin resistant *Staphylococcus aureus* (MRSA), ESBL-producing *Escherichia coli* and *Klebsiella pneumoniae*, carbapenem resistant *Acinetobacter baumannii* and *Klebsiella pneumoniae*, and fluoroquinolone resistant *E. coli* are widely prevalent all over the world. The ICMR reports published yearly gives us the magnitude of AMR in India in Enterobacteriales, *Salmonella* and *Shigella*, non-fermenting gram-negative bacilli, staphylococci and enterococci.

The drivers to the AMS crisis include multifactorial intrinsic and extrinsic determinants and selective pressure by antimicrobials (use and abuse) is the most important. In the first decade of this century, there have been a four-fold increase in use of cephalosporins, and a one and half fold increase in the use of broad-spectrum penicillins and fluoroquinolones. The increase in use of antibiotics has been predominantly in the low- and medium-income countries.

In the face of rising antimicrobial resistance and a drying pipeline of newer antibiotics, scientific community has been working on other modes of managing the infections and containing the threat. Vaccines, immunomodulation and infection prevention and control (IPC) has been known modalities for a long time. Newer horizons of anti-virulence therapy, quorum sensing, bacteriophage therapy, bacteriocins, lantibiotics, antimicrobial peptides, killing factors and microbiome modulation are being extensively researched on. Till we have successful alternative modalities available, the last and only resort is preserving the efficacy of available antibiotics by responsibly and optimally using them, collectively known as antimicrobial stewardship.





One Health, Many Risks: Antimicrobial Stewardship at the Interface of Allergy — The Role of Allergen Immunotherapy
Dr Shambo Samrat Samajdar MBBS MD DM
(Clinical Pharmacology); FIPS Fellow Diabetes India;
Fellowship in Respiratory and Critical Care (WBUHS);
Diploma in Allergy Asthma Immunology (BV University);
PG Dip Endo & Diabetes (RCP)

Antimicrobial resistance (AMR) poses a growing global health crisis, necessitating a One Health approach that bridges human, animal, and environmental health. At the intersection of antimicrobial stewardship and allergic disease lies a critical but underrecognized opportunity—leveraging allergen immunotherapy (AIT) to mitigate irrational antibiotic use. In countries like India, the high prevalence of allergic airway diseases such as asthma and allergic rhinitis—often misdiagnosed as infections—has led to widespread, inappropriate antibiotic prescriptions. Studies show up to 50% of adults with asthma are exposed to unnecessary antibiotics, exacerbating AMR risks and altering host immunity.

Allergen immunotherapy offers a disease-modifying solution by shifting immune responses from Th2 to Th1 dominance, promoting IgG4 production, and reducing IgE-mediated inflammation. Clinical trials confirm AIT's efficacy in reducing respiratory tract infections, medication reliance, and exacerbations—thereby decreasing antibiotic demand. Special populations, such as athletes, face heightened AMR risk due to frequent misuse of "Watch" and "Reserve" antibiotics without proper guidance. AIT's role in antimicrobial stewardship is thus twofold: improving allergy control and curbing antibiotic overuse. Policy interventions should expand access to AIT, enforce AWARe guidelines, regulate over-the-counter antibiotic sales, and promote biomarker-driven diagnostics to distinguish infections from allergic episodes. Integrating AIT within AMR policy frameworks aligns with One Health principles, offering sustainable solutions at the community and national levels.

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AI and digital health: Reimagining antimicrobial stewardship in Digital era

Dr. Vikas Manchanda,

Professor

Department of Microbiology

MAMC, New Delhi

The integration of artificial intelligence (AI) and digital health is transforming antimicrobial stewardship programs (AMSP), offering novel approaches to combat antimicrobial resistance (AMR) and optimize antibiotic use. This transformation requires healthcare professionals to understand key AI concepts such as machine learning, clinical decision support systems (CDSS), and digital surveillance tools, which are foundational to AI-enabled AMSP.

Early studies demonstrated AI's potential in predicting antimicrobial resistance and guiding targeted therapy, with machine learning models like random forests and gradient boosting achieving high predictive accuracy. These tools analyze electronic health records, laboratory data, and prescribing patterns to provide real-time, personalized antibiotic recommendations. Advanced models such as deep learning applied to complex datasets further enhance predictive capabilities, though they require robust infrastructures.

The deployment of AI-based AMSP, especially in Indian hospitals, faces challenges including limited trained personnel, inadequate laboratory and digital infrastructure, fragmented electronic medical records, and financial constraints. Cultural resistance, data ecosystem fragmentation, regulatory gaps, and concerns about ethics and data privacy also hinder widespread adoption. Smaller hospitals are often disproportionately affected due to resource limitations.

A practical roadmap for AI AMSP implementation involves assessing institutional readiness, building multidisciplinary teams, defining clear stewardship goals, selecting appropriate AI tools, preparing high-quality interoperable data systems, and piloting interventions. Continuous evaluation, scaling, and addressing ethical and regulatory frameworks ensure sustainability. Collaboration and data sharing further refine AI tools and stewardship outcomes.

Education of healthcare professionals with focus on understanding AI basics, recognizing AI's role in enhancing stewardship outcomes, bracing the implementation challenges, and adopting a forward-looking mindset toward AI integration is critical. Clinicians must become active participants in stewardship, partnering with data scientists and administrators to translate AI insights into improved patient care.

Overall, AI and digital health represent pivotal innovations that, if comprehensively adopted and contextually tailored, can revolutionize antimicrobial stewardship. Their success hinges on overcoming barriers through education, infrastructure development, policy support, and a culture open to technological advancement in clinical decision-making and infection control. This digital era promises more precise, data-driven stewardship that could significantly reduce AMR burden globally and in India.



Antibiotic stewardship programs aim to ensure the right antibiotic is given to the right patient, at the right dose, time, and route, thereby minimizing resistance and adverse outcomes. Pharmacokinetics (PK) and pharmacodynamics (PD) provide a scientific basis for dose optimization and are central to effective stewardship. PK describes drug absorption, distribution, metabolism, and elimination, while PD evaluates drug-pathogen interactions, including minimum inhibitory concentration (MIC), time above MIC, and concentration-dependent killing. By integrating PK-PD indices such as C_{max}/MIC , AUC/MIC , and $T > MIC$, clinicians can tailor therapy, reduce toxicity, and maximize bactericidal activity. Evidence demonstrates that alternative dosing strategies, such as extended or continuous infusions, improve outcomes in critically ill patients. Therapeutic drug monitoring further refines individualized therapy, particularly for agents like aminoglycosides and vancomycin. Overall, PK-PD guided stewardship enhances clinical efficacy, reduces resistance, and decreases healthcare costs, underscoring its indispensable role in modern infectious disease management.



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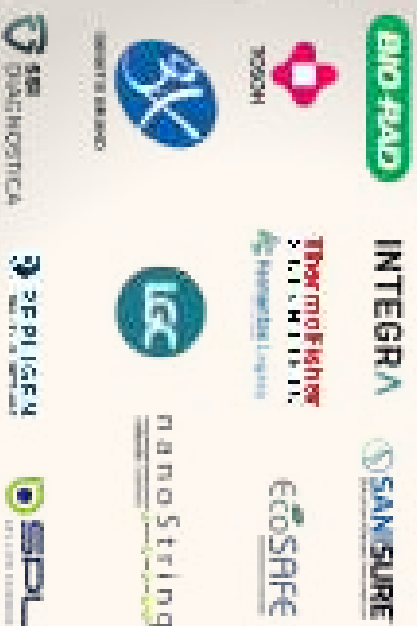
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Symposia Abstracts

Symposium – 1

AMS in Vulnerable Populations: Tailored Strategies for High-Risk Groups

Neonates and Paediatrics: Age-Appropriate Stewardship Interventions

Dr. Ranganathan Iyer,

Sr. Consultant & Director Clinical Microbiology, Infections and Infection Control

Rainbow Children's Hospital Group

The vast majority of antibiotic use occurs in children and neonates care, both in the community and in the hospital. Most of these happen, either due to anxious parents, who wish their child to get better within a day, or an equally anxious paediatrician who is baffled with the clinical presentation, unusual at times which does not fit into a clinical diagnosis. This challenge is compounded by inadequate laboratory medicine and particularly clinical microbiology services in the hospital along with an immature Infection control service.

Diagnostic stewardship is extremely important in any paediatric hospital, as the diagnosis of infections or exclusion of the same is done only on the basis of a well established Blood culture service that has a consultant cover 24x7x365 days of the year.

Clinical Stewardship may be a challenge in paediatrics as it involves counselling of the parents as well as taking care to ensure that a life threatening illness is not ignored due to over zealous stewardship. Hence a discussion on the patient's management plan and protocols is very important and goes a long way in winning patient confidence (confidence of the parents) and the fact that they agree with the delayed prescription of antibiotics, should the need arise. Interventions for the hospitalised child will involve a combination of good clinical acumen, good diagnostic clinical microbiology and over all an adequate infection control service of the hospital. Once these are established and are available for the patient, antimicrobial stewardship can be established with some success

Geriatric Stewardship: Addressing Polypharmacy and Frailty

Dr. Y.V.S. Prabhakar

Former Professor & Head

Department of General Medicine

GMC, Guntur

AMS for Immunocompromised and Critical Care Patients

Dr. Saurav Saigal

Professor

Dept. of Anaesthesiology & Critical Care

Symposium – 2

Policy, Regulation & Global Governance: Shaping the AMS Landscape

International Collaboration: Learning with Value Addition

Dr Sanjeev Singh, Director, AMRITA Institute, Delhi – NCR

Implementing National Action Plans on AMR: Successes and Gaps in India

Dr. Lata Kapoor, Additional Director

Centre for Bacterial Disease and Drug Resistance and Antimicrobial Resistance Containment
NCDC, New Delhi

Antimicrobial resistance (AMR) has been identified as a global health threat with serious health, political and economic implications. Several fields of modern medicine depend on the availability of effective antibiotics and could be seriously affected if action for AMR containment is not prioritised.

AMR occurs naturally over time, usually through genetic changes. However, the misuse and overuse of antimicrobials in human, animal and agriculture sector is accelerating this process. While AMR control requires action across sectors, it is important that the 'One Health' approach focuses on strengthening sectoral action and on that foundation build the required intersectoral coordination and collaboration.

Government of India started its journey towards AMR containment in 2010 when the National task force was constituted to develop National Antibiotic policy. The policy launched in 2013 was translated to the National Programme on AMR Containment which was initiated in 2013 with National Centre for Disease Control (NCDC) as the coordinating agency. India developed its multisectoral National Action Plan on AMR in alignment with the Global Action Plan and launched it in April 2017.

While human health sector has made substantial progress in implementing the NAP AMR including strengthening awareness and education, strengthening lab capacity to guide evidence based use of antimicrobials, generating annual AMR surveillance reports, establishing National HAI surveillance network, developing National Guidelines on IPC for healthcare facilities and conducting trainings of trainers for all states and UTs. The implementation of Antimicrobial Stewardship (AMS) continues to be a challenge and self-motivated AMS practices in a mission mode by each clinician would be a very important contribution of medical fraternity in this challenge of saving the essential armamentarium of antimicrobials required for benefiting mankind with the advances made in modern medicine.

Regulatory Innovations: Restricting Over-the- Counter Antibiotic Sales

Dr. Bikash Ranjan Meher

Additional Professor, Pharmacology, AIIMS, Bhubaneswar, Odisha

Over the counter (OTC) sale of antibiotics is considered a serious public health concern as it could cause the emergence of antimicrobial resistance (AMR). Health agencies are taking various measures to curb the use of antibiotics as OTC. However, due to multiple compelling reasons, OTC sales of antibiotics are still common in India. The current regulatory model is mostly a binary switch between strict prescription only and uncontrolled OTC access. We need a middle ground—a dynamic and data-driven system that balances access with responsible stewardship. This talk of mine deliberate on few of such innovative initiatives like Tiered Antibiotic Framework, National Digital Antibiotic Registry, Use of AI/ML for Monitoring of Sales of Antibiotics, Economic Levers to Incentivize Stewardship Re-engineering Public Demand and, Behaviour which could help in restricting OTC sales of antibiotics.

Symposium – 3

One Health Synergy: Bridging Human, Animal and Environmental Stewardship

Surveillance Across Sectors: Integrating Human, Veterinary and Environmental Data

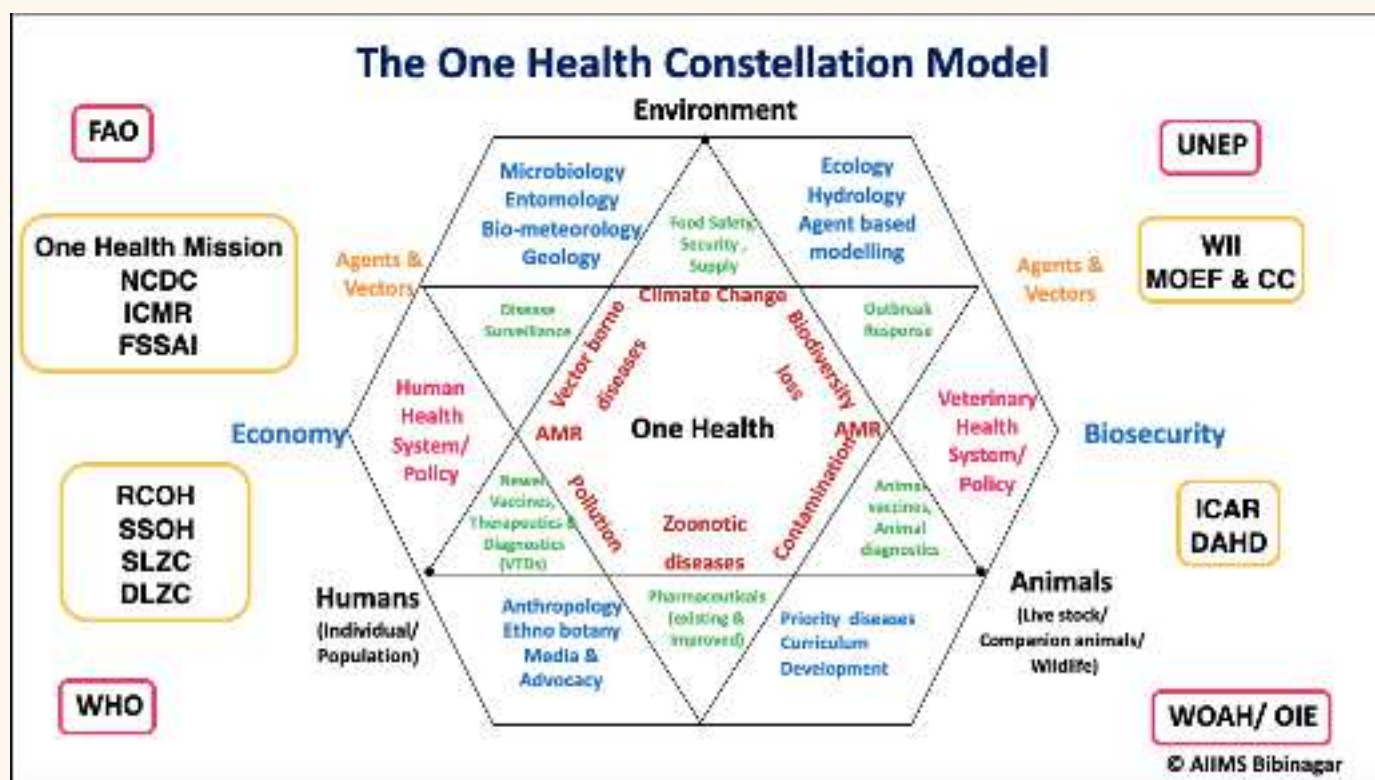
Dr. Rahul Narang

Professor & Head, Department of Microbiology, AIIMS Bibinagar

Decades of engagement at the confluence of human, animal, and environmental health have made one reality inescapable: microbial threats are inherently transboundary, yet our surveillance architectures remain jurisdictionally and disciplinarily compartmentalized. The accelerating emergence of zoonoses—driven by anthropogenic climate perturbations, rapid land-use change, biodiversity loss, and intensifying human–animal interfaces—has rendered traditional, siloed monitoring paradigms strategically inadequate.

Effective health security in the 21st century demands surveillance systems that seamlessly connect human, veterinary, and environmental data. Pathogens, vectors, and environmental hazards move fluidly across these domains, yet most monitoring remains fragmented—limiting early detection and coordinated action. At AIIMS Bibinagar, we address this gap through two operational frameworks: the One Health Constellation Model, which unites microbiology, veterinary diagnostics, epidemiology, ecology, hydrology, biosecurity, and social sciences within a common surveillance architecture; and the Asclepius Model, which integrates this intelligence directly into healthcare delivery and policy systems.

The Constellation Model aligns national and international mandates—linking NCDC, ICMR, ICAR, FAO, WHO, UNEP, and WOA/ OIE—while harmonizing indicators to track zoonotic diseases, antimicrobial resistance, vector-borne threats, biodiversity loss, and climate-sensitive illnesses. The Asclepius Model operationalizes this vision, embedding disease surveillance from the community level (ASHAs, HWCs, PHCs) through district and tertiary care hubs, supported by advanced diagnostics, outbreak response units, and community engagement initiatives.



Multi-modal data streams—wastewater pathogen monitoring (CSIR-CCMB), veterinary syndromic alerts (ICAR networks), environmental telemetry, and vector mapping—feed into an AI-enabled, geo spatially aware platform capable of detecting sentinel events such as livestock morbidity spikes linked to climatic anomalies or wastewater biomarkers preceding human outbreaks. This bidirectional flow of intelligence ensures that local observations inform national strategy, and national policy translates into rapid, field-level action.

In the Anthropocene epoch—defined by climate volatility, ecological disruption, and global interconnectivity—the institutionalization of cross-sectoral, interoperable surveillance is not a technological enhancement but a geopolitical, public health, and moral imperative. It must form the backbone of pandemic preparedness, global health security, and sustainable development. In an era of climate volatility and ecological disruption, integrated cross-sectoral surveillance is not an aspirational ideal but a public health, policy, and ethical imperative. The AIIMS Bibinagar models demonstrate that operationalizing One Health is both feasible and transformative—turning fragmented data into predictive, actionable intelligence that safeguards human, animal, and environmental health as a single, indivisible entity.

Tackling AMR in Agriculture: Sustainable Practices and Policy Innovations

Dr. KSS Naik

Ex. Director of Extension

Acharya NG Ranga Agricultural University, Guntur

The world continues to face growing challenge of global food security. There is a need to make global agrifood systems more resilient, sustainable, and capable of meeting the Sustainable Development Goals (SDGs) FAO's Strategic Framework 2022–2031 and its four betters –better production, better nutrition, a better environment and a better life, leaving no one behind– are guiding our efforts towards that transformation.

Antimicrobials play a critical role in treating diseases in productive and sustainable agrifood systems, supporting the countless livelihoods around the world. When overused or misused antimicrobials can contribute to a rise in antimicrobial resistance (AMR). The “silent” AMR pandemic can jeopardize human and animal health and welfare gains, the environment, food and nutrition security and safety, economic growth and development. Antimicrobial resistance impacts everyone everywhere, and responsible 1.3 million deaths and 5 million associated deaths globally in 2019. It is highest in the developing countries of the global south. Antimicrobial resistance is therefore not a “first world problem”. The urgency of tackling AMR is growing, and FAO is proud to lead the response within the agrifood sector, in collaboration with many partners, including the United Nations Environment Programme (UNEP), the World Health Organization (WHO) and the World Organisation for Animal Health (WOAH) for working together in a multisectoral "One Health" approach that integrates improved agricultural practices, prudent use of antimicrobials, and policy innovations like national action plans, increased surveillance, and public awareness campaigns to reduce demand.

Key policy innovations include developing national AMR policies aligned with global frameworks, strengthening governance and resource mobilization, incentivizing the development of antimicrobial alternatives, and promoting consumer demand for antibiotic-free products to foster responsible practices throughout the food chain. Responsible antimicrobial use (AMU) in agriculture involves good agricultural practices like biosecurity and improved animal health to reduce the need for antimicrobials,

Symposium – 4

Surveillance & Big Data: Powering AMS with Real-World Evidence

Big Data Analytics: Identifying Trends and Informing Policy

Dr Biju Soman, Professor,

Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST),

[An Institution of National Importance under DST, govt. of India]

Thiruvananthapuram, Kerala, India

Antimicrobial Resistance (AMR) poses a severe global health threat, projected to cause over 10 million deaths annually by 2050. One major limiting factor for action against AMR is our existing fragmented and faulty surveillance methods. Big data analytics offers a potential solution by integrating clinical, laboratory, genomic, and environmental data for more effective AMR surveillance. In the presentation I would be introducing a few such initiatives like the Antibiotic Resistance Microbiology Dataset (ARMD), CARD (enabling high-throughput annotation of resistance genes), One Health and surveillance networks (e.g., India's i-AMRSS) and broader Global and environmental datasets.

Absence of interoperability of these datasets, among themselves and with other programmatic/administrative datasets pose the major hurdle in AMR prevention activities. Data silos, data fragmentation, inconsistent reporting, lack of trained personnel for data analysis, etc. are some of the main hurdles. Leveraging GIS-based clustering research, open-source pipelines, and enhanced training can overcome these hurdles, resulting in evidence-driven and scalable AMR responses.

Thus, I will discuss the issues and potential of use of available data for AMR stewardship in the presentation, drawing examples from some of our own work.

Data-Driven Feedback Loops in Antimicrobial Stewardship

Dr. Dinoop K. P.,

Additional Professor – Clinical Microbiology,

Department of Microbiology,

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[An Institution of National Importance under DST, govt. of India]

Thiruvananthapuram, Kerala, India

Antimicrobial stewardship play a critical role in optimizing antibiotic use, reducing development of antimicrobial resistance thereby improving patient outcomes.

However, traditional stewardship interventions often rely on retrospective audits and delayed feedback to stakeholders, limiting their effectiveness.

A data-driven feedback loop can offer a dynamic approach by integrating real-time electronic health record data, microbiology results, prescribing trends, and patient-specific outcomes into a continuous cycle of analysis and intervention.

Advanced analytics and machine learning models can identify inappropriate prescribing patterns, predict patient risk profiles, and generate specific recommendations for clinicians at the point of care. Periodic analysis (Pre-post intervention analysis) of key performance indicators (KPI) in data-driven decision-making for antimicrobial stewardship programs enables evidence-based data generation, monitoring, and continuous quality improvement of antimicrobial stewardship efforts.

They provide a comprehensive framework for assessing program effectiveness on antibiotic use, resistance control, clinical outcomes, and economic impact. Feedback from prescriber behaviour and patient outcomes is immediately reintegrated into the system, enabling re-iterative and personalized care guidance.

supported by the One Health approach which links human, animal, and environmental health to combat AMR. Innovations also include genetically modified (GM) crops to increase pest resistance and data infrastructure for monitoring antimicrobial use and informing risk analysis.

Environmental Decontamination: Biosafety and the One Planet Approach

Dr. Rekha Priyadarshini

Associate Professor

Dept. of Pharmacology

AIIMS Bibinagar, Hyderabad

Environment also plays a critical role in the emergence and spread of antimicrobial resistance (AMR). Here, the term environment refers not only to humans, animals, plants, and livestock, but also to the waste products and effluents that interact with these ecosystems. The key drivers of AMR development and spread in the environment are pharmaceuticals and other chemicals, agriculture and food, and healthcare and community. Pharmaceutical waste often contains high levels of antimicrobials when released into soil and water systems, create selective pressure that results in the development and spread of resistant microbes. Agricultural and food practices use excessive pesticides and antibiotics in crops and animal husbandry, respectively, which can lead to antimicrobial residues in soil, plants and food animals and indirectly cause antimicrobial resistance in humans, when food from these sources are consumed. Within healthcare and community, antimicrobials are indispensable for treating and preventing diseases. However, biomedical waste when improperly treated introduces residual antimicrobials into the environment (groundwater and food chain), further propagating resistance genes and selection pressure. Measures to address these challenges include effluent treatment from pharmaceutical industries, hospitals and communities; stricter regulation of pesticide and antibiotic use in agriculture and animal husbandry; and establishment of surveillance and monitoring systems to detect and contain environmental AMR hotspots.

Environmental decontamination lies at the intersection of public health, environmental science, and technology. It calls for an integrated, motherly "One Planet" approach, based on the principle of "Do No Harm", to protect not only human health but also animals, plants, and the ecosystem as a whole.

This closed-loop process not only supports timely decision-making but also drives sustained behavioral change in prescribing practices. By leveraging automation, predictive modelling, and clinician-centered interfaces, a data-driven feedback loop can strengthen antimicrobial stewardship and enhances the health system's ability to combat antimicrobial resistance. Since this loop involves big data handling, the challenges faced in collecting and analyzing AMR-related data (noises and biases), while underlining the importance of standardization and the steps to be undertaken in mitigating these challenges for robustness and standardisation, shall be discussed.

~Harnessing National and Global AMR Surveillance Networks

Dr. Prasanna Kumar

Associate Professor

Department of Infectious Diseases, CMC, Vellore

Symposium – 5

Innovation in Antimicrobial Development & Alternatives

Repurposing Existing Drugs: Crossing Therapeutic Boundaries in Antimicrobials

Dr. Sushil Sharma,

Professor, Department of Pharmacology, AIIMS Mangalagiri

Drug discovery and development is a long, laborious and uncertain process. It takes 10–12 years and costs around 1.2 billion dollars to bring a new drug in the market. In case of anti-microbials, the situation is far worse with high failure rate and steady increase in anti-microbial resistance. To make matters worse, the antibiotic pipe line is drying up. In this scenario, 'Drug Repurposing' which involves identifying new therapeutic applications for existing drugs can prove to be very beneficial and be critical in our fight against the microbes. These drugs include NSAIDs, Anti-psychotics, Anti-cancer agents, SERMs, Anti-cholinergic agents, Statins etc.

These drugs have been found to have anti-microbial actions that range from interfering with the cell wall/cell membranes, inhibition of biofilms, ability to inhibit efflux pumps, inhibition of bacterial DNA production etc. By leveraging the extensive pharmacological data and clinical experience that is already available with these drugs, Drug repurposing can save billions of dollars and cut down the time to new drug development by more than 50%. However, there are various challenges to this approach and these must be addressed while embarking on this path.

Curcumin Quantum Dots: A Promising Antimicrobial and Antibiofilm Therapeutic Candidate

Pradyot Prakash

Department of Microbiology, Institute of Medical Sciences, Banaras Hindu University, Varanasi, India

Curcumin, an active polyphenol, was first described more than a century ago, but its therapeutic utility has been limited due to poor aqueous solubility and stability. Although curcumin exhibits weak bactericidal activity against most pathogenic organisms, its anti-efflux pump and anti-biofilm properties highlight its potential as an antimicrobial potentiator or adjuvant.

The synthesis of Curcumin Quantum Dots (CurQDs) not only improved aqueous solubility and stability but also enhanced antimicrobial and antibiofilm activity against Methicillin-resistant *Staphylococcus aureus* (clinical isolate), Methicillin-sensitive *Staphylococcus aureus* (ATCC 29213), *Escherichia coli* (ATCC 25922), and *Pseudomonas aeruginosa* (ATCC 25619). CurQDs completely disrupted biofilms formed by all the above bacterial strains at a minimum concentration of 0.06 µg/mL, except for *P. aeruginosa*, whose biofilm was degraded up to 85%.

When tested against pathogens associated with chronic periodontitis, a biofilm-associated dental disease, the Minimum Inhibitory Concentrations of CurQDs were 0.42 µg/mL for *Porphyromonas gingivalis* (ATCC 33277), 0.84 µg/mL for *Streptococcus mutans* (ATCC 25175), and 0.42 µg/mL for *Actinomyces viscosus* (ATCC 15987). Complete disruption of mixed biofilms formed by these three pathogens was achieved at 6.56 µg/mL. Furthermore, CurQDs inhibited the activity of *P. gingivalis* Arg- and Lys-specific proteinases, key enzymes in periodontal disease progression, by 98.7% and 89.4% respectively at 6.56 µg/mL.

In vitro toxicity assays using human RBCs and Vero cells demonstrated that CurQDs are non-toxic to eukaryotic cells. These findings suggest that CurQDs represent a promising drug candidate as an antimicrobial and antibiofilm agent for the treatment of chronic infections, warranting further clinical validation.

Non-Antibiotic Therapies: Immunomodulators, and Probiotics

Dr. Surjeet Singh

Professor

Department of Pharmacology, AIIMS Jodhpur

Introduction: Immunomodulators are pharmacological agents that alter the activity of the immune system to enhance its functional efficacy against infections, cancer and autoimmune diseases. Probiotics are viable microorganisms which, when administered in sufficient quantities, confer health benefits to the host and modulate host physiology through their metabolic activity.

Aim: Discuss potential alternatives to antibiotics for treatment of bacterial infections like immunomodulators and probiotics

Methods: Literature search showed many potential alternatives to antibiotics, including preventive and treatment strategies. Preventive strategies include vaccines and immunotherapeutic. Treatment strategies include bacteriophage therapy, bacteriocin and competitive exclusion. We will focus our review on one of preventive strategy i.e. immunotherapeutic and probiotics.

Results: Many modalities have shown success in treatment of Sepsis including immunoglobulins, mesenchymal stem cells, Colony stimulating factors, Janus kinase (JAK) inhibitors, monoclonal antibodies, cytokine modulators and corticosteroids. Robey et al. [1] showed that immunomodulatory drugs like cytokine inhibitors have shown reduction in mortality in sepsis patients without any increase in serious adverse events. Zhao et al.[2] showed that probiotics reduced the number as well as duration of upper respiratory tract infection episodes in addition to antibiotics use. Probiotics have proven beneficial in H.pylori infection, diarrhea, VAP, UTI. Also, improvement in mammary microbiology have led to decrease incidence of mastitis. IBD can be effectively treated with fecal microbiota transplantation (FMT) and monoclonal antibodies like etrolizumab.

Discussion: Immunomodulators have proven to be beneficial without any safety concerns in sepsis. Probiotics have shown beneficial effect in infections like URTI, UTI, Diarrhea and infections associated with imbalance of normal microbiota, beside sepsis. The real world data will help us in better understanding about these drugs.

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Novel Antimicrobials: Updates on the Global Pipeline

Dr. Ashish Kakkar,

Additional Professor, Clinical Pharmacology Unit, Department of Pharmacology, PGIMER
Chandigarh

Antimicrobial resistance (AMR) is an escalating global health crisis that threatens the effectiveness of current therapies, particularly against multidrug-resistant Gram-negative bacteria, tuberculosis, and invasive fungal infections. Despite the urgent need, the development of new antimicrobials has slowed considerably, with the pipeline remaining both narrow and fragile. According to the World Health Organization, fewer than one hundred agents are currently in clinical development worldwide. Only a limited number demonstrate novel mechanisms or meaningful activity against critical-priority pathogens, highlighting the disparity between clinical demand and scientific output.

While some recent approvals expand therapeutic options, these represent incremental progress rather than transformative advances. The antifungal pipeline is even more restricted, with very few candidates targeting the fungal pathogens prioritized by the WHO. Non-traditional candidates include most prominently bacteriophages/ phage derived enzymes, antibodies, and microbiome-modulating agents amongst others; yet their clinical impact remains to be established.

This gap reflects broader structural and economic challenges, where stewardship-driven restricted use and short treatment courses reduce commercial incentives, leading to a classic market failure in antimicrobial research and development. This session will summarize the current global pipeline, highlight emerging trends, and outline the policy mechanisms—including innovative models—that aim to realign incentives. The goal is to provide a multidisciplinary audience with a clear understanding of opportunities and challenges in ensuring sustainable access to effective antimicrobials in the future.

AMS Education & Capacity Building: Training the Next Generation

E-Learning and Virtual Coaching: Scaling AMS Education Globally

Dr. J. Jayalakshmi

Professor

Department of Microbiology, KMCH ISHR, Coimbatore

Interprofessional Collaboration: Building Multidisciplinary AMS Teams

Dr. Deepak Kumar,

Associate Professor,

Division of Infectious Diseases, AIIMS Jodhpur

Abstract

Antimicrobial resistance is a growing global threat, and Antimicrobial Stewardship Programs (AMSP) have emerged as one of the most effective strategies to address this challenge. However, stewardship cannot succeed in isolation—it requires strong interprofessional collaboration. This presentation focuses on the process of building a multidisciplinary AMS team, the roles of different professionals, and the barriers that need to be overcome in real-world practice.

Interprofessional collaboration in healthcare ensures that decisions are taken together, actions are coordinated, and care is safer and more effective. The benefits are clear: fewer medical errors, quicker and smarter decisions, and better communication so that every member of the team understands the plan. Ultimately, both patients and healthcare staff experience greater satisfaction.

The foundation of an AMSP begins with identifying a chairperson and a member secretary, usually an infectious diseases specialist. From there, a core team of 7–10 members is formed, representing infectious diseases, microbiology, pharmacy, nursing, intensive care, surgery, infection prevention, IT/data analysis, and administration. Each professional contributes unique expertise: the infectious diseases lead guides policy writing and complex infection management; the microbiologist ensures diagnostic quality and timely reporting; the clinical pharmacist oversees rational dosing, therapeutic drug monitoring, and drug safety; ICU and surgery representatives align stewardship with high-risk clinical settings; and nurses play a vital role in surveillance, compliance, and patient education. Together, these contributions create a robust stewardship framework.

To function effectively, AMS teams require administrative support, defined roles, proactive interventions, strong communication channels, and systematic tracking and reporting. Prospective audit and feedback, formulary restrictions, rapid diagnostics, and clear clinical pathways are highlighted as key strategies. Despite these strengths, real-world implementation faces challenges. Limited diagnostic infrastructure, insufficient trained personnel, funding gaps, and poor IT systems remain common barriers. Cultural and professional hierarchies also pose difficulties, as healthcare in many settings still operates in silos. Furthermore, regulatory enforcement and national surveillance frameworks are often fragmented, leaving stewardship programs without consistent external support.

The central message of this work is that antimicrobial stewardship is not the responsibility of one department or one professional group. Instead, it thrives only when diverse disciplines come together, respect each other's contributions, and work towards a common goal. Breaking down barriers of hierarchy and communication is as important as clinical expertise. By strengthening interprofessional collaboration, AMS programs can significantly improve antibiotic use, reduce antimicrobial resistance, and ultimately protect patients and the healthcare system.

Simulation-Based Antimicrobial Stewardship: From Theory to Practice

Dr Pooja Rao,

Associate Professor,

Dept of Microbiology, KMC, Mangalore, MAHE

Responsible use of antimicrobials is the key AMS strategy which each healthcare professional should strive for in the day to day practice. AMS education along with training must go hand in hand with follow up of its implementation and dissemination in community. The continued medical education is a requirement at various levels such as in undergraduates teaching (Foundation course, 2nd year MBBS, Electives, Internship), post graduate curriculum, induction training of Senior residents and Consultants. NAP AMR in India in alignment with the WHO Global action plan emphasis on training prescribers, non prescribers in a phased manner. Integrating AMS core competencies in medical curriculum is the way forward. AMS training should emphasize ethical prescribing, diagnostic interpretation, infection prevention and control and collaborative practice with pharmacists, microbiologists and nurses. Innovative teaching methods such as problem-based learning, case-based learning, OSCE, patient centered learning and audit and feedback interventions are some of the interactive educational strategies for influencing prescribing behaviors. The missed care bundle for antibiotic prescription in acute care and SAP among the available bundle care for health care associated infections is an important intervention that ensures safety and best patient care practice.

Symposium – 7

Integrating AMS Strategies in the Fight Against Neglected Tropical Diseases and Parasitic Infections

Antimicrobial resistance in Protozoan Infections: Surveillance and Stewardship

Dr Tuhina Banerjee,

Professor and Head,

Department of Microbiology, Institute of Medical Sciences, Banaras Hindu University, Varanasi-221005

The burden of protozoan infections, causing significant morbidity and mortality worldwide, is concerning. While on one hand effective screening and diagnosis of these infections is challenging, on the other, lack of appropriate management and therapy also account for their overwhelming burden. Added to this problem, is the empirical use and misuse of antiparasitic agents, on presumptive basis, owing to delayed diagnosis and unavailability of wide spectrum of antiparasitic agents. In this context, drug resistance in parasitic infections is a relatively less talked about subject and the scientific community seems to remain unaware of its exact proportions and consequences. Protozoal infections like malaria, visceral and cutaneous leishmaniasis have already made the challenge of drug resistance very prominent.

Evidences against other protozoan parasites like extraintestinal infections of *Entamoeba histolytica* is also emerging. Parasites usually develop ingenious and innovative mechanisms to achieve drug resistance and cross resistance, which is difficult to combat. Due to complex growth requirements and difficulty in performing susceptibility testing of antiparasitic agents on routine basis, laboratory demonstration of drug resistance is still in its infancy and there is huge reliance on clinical resistance. However, with the advent of better technologies and increased awareness, there is hope for better stewardship against these agents, thus preserving their efficacy and importance.

Diagnostics-Driven Stewardship: Reducing Empirical Treatment in Parasitic Diseases

Dr Nonika Rajkumari,

Additional Professor & DMS,

Dept of Microbiology, AIIMS, Kalyani, WB

We live in an era where existing therapeutic drugs are slowly losing out to resistance. Diagnosis-driven stewardship is an emerging approach within antimicrobial stewardship programs that emphasizes the use of targeted diagnostic tools to guide appropriate therapy, reducing unnecessary empiric treatment. In the context of parasitic infections, this strategy is especially important due to the broad diversity of parasites, overlapping clinical presentations with bacterial and viral infections, and the potential toxicities and resistance issues associated with antiparasitic drugs. Traditionally, empiric therapy has been widely used for suspected parasitic infections, particularly in endemic regions or in patients with non-specific gastrointestinal or systemic symptoms. However, such practice can lead to overuse of antiparasitic agents, mismanagement of non-parasitic conditions, and delayed identification of the actual pathogen.

Diagnosis-driven stewardship aims to improve accuracy and timeliness of diagnosis through:

- **Advanced Diagnostic Tools:** The implementation of rapid diagnostic tests (RDTs), molecular assays (e.g., PCR), antigen detection, and multiplex panels allows for faster and more precise identification of specific parasites such as *Giardia lamblia*, *Entamoeba histolytica*, and *Plasmodium* species.

- **Targeted Treatment:** Once the causative agent is identified, therapy can be tailored to the specific parasite, avoiding unnecessary broad-spectrum or multi-drug empiric regimens.
- **Reduced Drug Resistance and Toxicity:** By avoiding unnecessary empiric therapy, the risk of drug resistance development and exposure to potentially toxic antiparasitic medications (e.g., metronidazole, albendazole) is minimized.
- **Improved Patient Outcomes:** Accurate diagnosis enables timely, appropriate treatment, which is critical in severe parasitic infections such as malaria, neurocysticercosis, or amoebic liver abscess.
- **Resource Optimization:** Diagnostic stewardship reduces hospital stays, repeat visits, and diagnostic ambiguity, leading to better resource utilization and cost savings.

In conclusion, integrating diagnosis-driven stewardship into clinical practice fosters a more rational, effective, and safer approach to managing parasitic infections. It aligns with the broader goals of antimicrobial stewardship by reducing empiric therapy reliance, improving diagnostic precision, and enhancing overall healthcare outcomes.

Climate change, Vector shifts and AMS implications

Dr. Vibhor Tak

Additional Professor & HoD

Department of Microbiology, AIIMS Jodhpur

Climate change (CC) directly impacts the life cycle, distribution, and behaviour of vectors. The rise in temperatures and altered rainfall patterns are expanding the geographic range and transmission seasons for vectors like mosquitoes and ticks, bringing diseases to new areas and increasing the frequency of outbreaks. Climate change is a significant driver of the shifting patterns of vector-borne diseases, which in turn have serious implications for antimicrobial stewardship. The upsurge in vector-borne diseases, like dengue, malaria, and tick-borne illnesses, increases the number of people seeking treatment. While many of these diseases are viral or parasitic and don't respond to antibiotics, there is often a presumptive or inappropriate use of antibiotics for managing these cases, especially in regions with limited diagnostic capabilities. This surge in infectious diseases leads to a greater demand for antimicrobial drugs, which can fuel antimicrobial resistance (AMR), making existing treatments less effective.

The simultaneous management of AMR and CC is imperative for global health. Both crises require a systemic approach that integrates human, animal, and environmental health strategies. The relationship between climate change, vector-borne diseases, and antimicrobial resistance is a classic example of the "One Health" concept, which recognizes that the health of humans, animals, and the environment are interconnected.

To effectively combat this, strategies must integrate these three domains. This means:

- Improving disease surveillance and early warning systems that use climate data to predict outbreaks.
- Strengthening public health infrastructure to provide rapid and accurate diagnostics.
- Implementing strict antimicrobial stewardship programs that prioritize correct diagnosis and appropriate treatment.
- Investing in research for new drugs, vaccines, and vector-control strategies that are sustainable and effective in a changing climate.

- Targeted Treatment: Once the causative agent is identified, therapy can be tailored to the specific parasite, avoiding unnecessary broad-spectrum or multi-drug empiric regimens.
- Reduced Drug Resistance and Toxicity: By avoiding unnecessary empiric therapy, the risk of drug resistance development and exposure to potentially toxic antiparasitic medications (e.g., metronidazole, albendazole) is minimized.
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Symposium – 8

Pandemic Preparedness & AMS: Lessons and Innovations

Stewardship During COVID-19 and Beyond: What Worked, What's Next?.

Dr. Priscilla Rupali

Senior Professor

Department of Infectious Diseases, CMC, Vellore

COVID-19 infection single-handedly crashed antibiotic stewardship all over the world, markedly increasing the antibiotic misuse and impacting in person stewardship due to isolation and quarantine precautions. Indiscriminate use of antivirals, antibiotics and antifungals was fuelled by uncertainty in clinical diagnosis and management protocols. It also set back the hitherto effective and smoothly operating national programmes of paediatric immunisations, tuberculosis and HIV. Now in a post pandemic world we need to take stock and look forward to optimally utilising antibiotics similar to the innovations which we implemented during COVID-19 infection.

Principles of AMSP in immunocompromised individuals

Antimicrobial resistance (AMR) is widespread in solid organ, bone marrow transplantation as well as in immunosuppressed individuals. Antimicrobial stewardship (optimizing antibiotic use) is one of the three pillars of the combating AMR apart from preventing transmission of drug resistant infections and improving environmental decontamination. Immunocompromised individuals have attenuated symptoms and signs and invasive testing may be required to arrive at a diagnosis. Prophylaxis, vaccinations and screening are the mainstay for the treatment of infections.

Rapid Response Protocols for Emerging Infectious Threats

Dr. Aruna Poojary

Director, Laboratory Services

Breach Candy Hospital Mumbai

Building Resilient AMS Programs for Future Pandemics.

Dr. Vikas Suri

Professor

Infectious Diseases Division, Department of General Medicine, PGIMER, Chandigarh

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Symposium – 9

Behavioural Science & AMS: Changing Minds, Changing Outcomes

Nudging Prescriber Behaviour: Insights from Behavioural Economics

Dr. Ashwini Agarwal

Professor & HoD

Department of Microbiology & Infectious Diseases, AIIMS Rajkot

Patient Engagement: Empowering Communities for Rational Antibiotic Use

Vijay V. Yeldandi, M.D., FACP, FCCP, FIDSA

Programs like the UK TARGET toolkit and interventions in rural India, Vietnam, and Thailand cut self-medication and reduced antibiotic prescribing by ~30%. However, the impact is limited due to the fact that antimicrobial use/abuse and mitigation strategies are part of a complex adaptive system, and we need to add Human Factors Engineering and Health Empowerment.

Practical Approaches to Common Illnesses, where antimicrobials may be misused
Acute Gastroenteritis (AGE)

- Most cases are viral antibiotics don't help.
- Antibiotics ONLY if: severe dysentery, cholera, traveler's diarrhea, or high-risk patients.

Respiratory Infections:

Early use of inhaled budesonide (800 µg BID) in non-hypoxemic, higher-risk outpatients shortens recovery by about 3 days.

- Vaccinate: flu, RSV, pneumococcal.
- Promote smoking cessation.
- Improve air quality:

Key Message

Patients, families, pharmacists, and health workers must work together to protect antibiotics for the future.

Non-antibiotic drugs can disrupt gut microbiome colonization resistance, promoting enteropathogen proliferation, such as Salmonella Typhimurium.

Overcoming Cognitive Biases in Antimicrobial Prescribing

Dr Alladi Mohan, MD (Medicine) (AIIMS, New Delhi), FAMS, FRCP (Edin), FCCP (USA), FICP, PG Dip in Epidemiology (PHFI-IIPH)

Dean of Faculty, SVIMS University

Professor (Senior Grade) and Head, Department of Medicine

Chief, Division of Pulmonary and Critical Care Medicine

Sri Venkateswara Institute of Medical Sciences

(A University established by an Act of Andhra Pradesh State Legislature)

Tirupati, Andhra Pradesh, India

Antimicrobial prescribing decisions are frequently influenced by cognitive biases—systematic errors in thinking that arise from fast, intuitive (type 1) decision-making in busy clinical settings. These subconscious shortcuts contribute significantly to suboptimal antibiotic use, undermining antimicrobial stewardship efforts. Common biases include hyperbolic discounting, which favours the small, immediate benefit of prescribing over the larger, distant risk of resistance, and commission bias, the tendency to act rather than observe. Other factors like diagnostic momentum and confirmation bias can lock clinicians into an initial, incorrect decision to use antibiotics.

A behavioural science approach can help mitigate these challenges. Strategies focus on encouraging a shift to more deliberate (type 2) thinking and redesigning the clinical environment. Key interventions include implementing structured "antibiotic time-outs" and checklists to force re-evaluation, fostering metacognition to improve clinicians' awareness of their own biases, and using decision support tools and "nudges" to make the optimal choice the easiest one. By integrating these psychological insights, stewardship programs can better address the root causes of inappropriate prescribing, explain why certain interventions succeed, and develop more creative and effective strategies to preserve antimicrobial efficacy.

Symposium – 10

Clinical Microbiology & AMS: Not Always About from Bench to Bedside

Culture based vs. Syndromic management: Impact on AMR

Prof. Jyotsna Agarwal,

Professor & HoD

Department of Microbiology, RMLIMS, Lucknow

Culture-based diagnosis involves taking a sample from the infected area (e.g., blood, urine, tissue) and cultivating the microbes in a lab to identify the specific pathogen and its sensitivity to different antibiotics.

Advantages:

Accuracy, Antimicrobial Susceptibility Testing can be done, specific targeted treatment can be given, which can reduce over use of broad spectrum antibiotics and reduce AMR, surveillance of antibiotic resistance can be done, available data helps in formulation of appropriate treatment guidelines, monitoring Emerging Pathogens etc.

Disadvantages

Time-consuming, labour-intensive and costly, difficult-to-culture organisms, sensitivity results may take time to be available hence delay treatment which can have detrimental effect.

Syndromic management relies on treating infections based on easily identifiable symptoms and signs (syndromes), without waiting for laboratory confirmation.

Advantages:

Rapid Treatment, cost-effective, simplified implementation, effective for common syndromes

Disadvantages

Potential for overtreatment which can contribute to rise in AMR, misses asymptomatic infections, lower accuracy for specific infections, reliance on clinical judgement

Conclusion

The choice between culture-based diagnosis and syndromic management depends on various factors, including resource availability, the severity of the infection, and the prevalence of specific pathogens and their resistance patterns in a given setting. While culture-based diagnosis remains the gold standard for accuracy and informing targeted treatment, syndromic management plays a vital role in providing timely care, especially in resource-constrained environments. Ideally, where feasible, a combination of both approaches, with the judicious use of culture and point-of-care tests to validate and optimize syndromic management, can lead to the best patient outcomes and mitigate the risks of antibiotic resistance. Rest will be discussed during the presentation.

Rapid antimicrobial Susceptibility testing: Reducing time to optimal therapy

Dr Ayush Gupta,

Additional Professor,

Dept. of Microbiology, AIIMS Bhopal

Antimicrobial resistance (AMR) is a sworn “Global Health Emergency” by the United Nations. India, unfortunately, is becoming the global capital of AMR due to indiscriminate use of antibiotics coupled with poor compliance to infection control practices which are the major driving force for development and spread of multidrug resistant organisms.

With the current culture-based diagnostic tools available in India, it takes about 72-96 hrs to provide a microbiologically positive report with antimicrobial susceptibility testing (AST) results. This is unacceptable especially for serious infections particularly blood stream infections wherein mortality is significantly high if the patient is not given appropriate antibiotics. Consequently, the clinicians rely on empirical, broad spectrum antibiotic therapy promoting AMR. Due to these diagnostic delays and reliance on empiricism, it is often difficult for the clinicians to facilitate or practice antimicrobial stewardship.

In the developed world, newer automated systems for determining AST directly from the positively flagged blood culture bottles (fBCB) are becoming the standard of care. In my talk, I will be covering them briefly. They provide AST results within 2-8 hours from fBCB in patients with sepsis. Apart from these newer automated systems, AST testing in cases of culture-positive sepsis can also be expedited using the traditional Kirby-Bauer disk diffusion (KBDD) method by performing it directly from fBCB. Various national agencies such as the CLSI, EUCAST and France-based CAFSM have established breakpoints for direct disk diffusion from fBCB. The latter approach for AST ticks all the boxes of the WHO ASSURED criteria for a diagnostic test: affordable, sensitive, specific, user-friendly, rapid, equipment-free, and deliverable and are especially useful in the developing countries, like India. It has tremendous potential to reduce time to optimal antimicrobial therapy especially in patient with gram-negative sepsis.

Microbiome stewardship: Preserving beneficial flora

Dr. Rudresh SM,

Additional Professor,

Department of Microbiology, AIIMS Bibinagar

Microbiome stewardship refers to the responsible management and preservation of microbial communities inhabiting humans, animals, plants, and the environment, recognising their essential role in health, ecology, and sustainability. The human microbiome supports nutrient cycling, immune modulation, pathogen resistance, and bioactive molecule production, while biodiversity loss increases disease risk and ecological dysfunction. As a shared collective resource, microbial diversity provides benefits beyond individuals, extending to communities and ecosystems. However, societal practices such as antibiotic overuse, pesticide application, pollution, and industrialised food processing are accelerating microbiome deterioration. Modern sanitation, though vital for infectious disease control, can inadvertently limit exposure to microbes crucial for immune development. Stewardship strategies include preserving diversity, using antimicrobials judiciously, and promoting beneficial microbes. Policy frameworks, scientific research, and One Health approaches are required to safeguard microbial ecosystems. Ultimately, microbiome stewardship is both an ethical responsibility and a practical necessity for sustaining long-term planetary health.

Symposium – 11

Clinical Pharmacology & Therapeutics: Optimizing Antimicrobial Use

De-escalation of Antibiotics in ICU

Dr. Arif Pasha

Professor

Department of Critical care

NRIAMS, Mangalagiri, Andhra Pradesh

Antibiotic use in the intensive care unit (ICU) is both life-saving and potentially harmful. While early initiation of broad-spectrum antibiotics is essential in managing critically ill patients with sepsis or septic shock, the continued and unchecked use of these agents contributes to antimicrobial resistance, fungal superinfections, *Clostridioides difficile* colitis, and increased healthcare costs. De-escalation of antibiotics is a key strategy in antimicrobial stewardship, aiming to balance timely treatment with the need to limit overuse.

De-escalation involves initiating empirical broad-spectrum therapy based on likely pathogens and patient risk factors, then narrowing, discontinuing, or switching antibiotics based on microbiological data, clinical response, and biomarkers. This approach includes four main strategies: (1) narrowing the antibiotic spectrum when susceptibilities are known, (2) stopping redundant combination therapy, (3) shortening the duration of therapy where evidence supports it (e.g., 7 days for ventilator-associated pneumonia), and (4) switching from intravenous to oral therapy once the patient is clinically stable.

Daily reassessment is critical, using clinical markers such as fever resolution, hemodynamic stability, SOFA score trends, and inflammatory biomarkers like procalcitonin or C-reactive protein. Studies such as PRORATA, DALI, and the Surviving Sepsis Campaign 2021 emphasize the safety and necessity of regular antibiotic review and de-escalation in appropriate patients. Guidelines from IDSA, ATS, and national bodies like ICMR strongly advocate for structured stewardship practices in the ICU.

De-escalation does not equate to under-treatment; it represents precision, evidence-based care. Implementing this practice improves patient outcomes, reduces adverse effects, and helps preserve antibiotic effectiveness for future patients. In today's ICU, the principle must be: start smart, then narrow fast.

Pharmacogenomics in Antimicrobial Prescribing
 Dr. Pugazhenthana Thangaraju
 Additional Professor
 Department of Pharmacology, AIIMS Raipur

Antimicrobial prescribing has traditionally followed a one-size-fits-all approach, often overlooking individual genetic variations that influence drug metabolism, efficacy, and risk of adverse reactions. Pharmacogenomics—the study of how genetic factors affect drug response—offers a transformative opportunity to optimize antimicrobial therapy by tailoring drug selection and dosing to each patient’s genetic profile. This talk will explore key pharmacogenomic markers relevant to antibiotics and antifungals, including variations in CYP450 enzymes, NAT2, SLCO1B1, and others that impact the pharmacokinetics and pharmacodynamics of commonly used agents such as isoniazid, fluoroquinolones, and azole antifungals. Case studies will illustrate how pharmacogenomic insights can guide therapy in high-risk populations such as patients with tuberculosis, HIV, or sepsis. We will also discuss current challenges in integrating pharmacogenomics into routine clinical practice, including limitations in available evidence, cost-effectiveness, and infrastructure requirements. The talk will conclude by highlighting the emerging role of pharmacogenomics within antimicrobial stewardship programs and proposing a roadmap for implementing pharmacogenetic-guided prescribing in both hospital and community settings to enhance patient safety, reduce resistance, and improve clinical outcomes.

Navigating Drug-Drug Interactions in Complex Patients
 Dr. Anant Khot
 Additional Professor
 Department of Pharmacology, AIIMS Nagpur

Polypharmacy is now routine in infectious-disease care, creating dense networks of drug-drug interactions (DDIs) that drive toxicity, therapeutic failure, resistance, and prolonged stay. DDIs involving antimicrobials can be more consequential than those from several psychiatric drug classes in older adults, underscoring the need for systematic prevention.

We recommend embedding DDI checks at four stewardship checkpoints: empirical initiation, escalation/de-escalation, IV-to-oral switch, and discharge/Outpatient Parenteral Antimicrobial Therapy (OPAT) transitions. High-risk pairs include azole antifungals—potent CYP3A/P-gp inhibitors that raise calcineurin/mTOR inhibitor and direct oral anticoagulant (DOAC) exposure—necessitating pre-emptive dose adjustment and therapeutic drug monitoring (TDM). Potent inducers such as rifampin can precipitously lower azoles, tacrolimus, DOAC, and antiviral levels. Linezolid’s reversible MAOI activity warrants holding or vigilant monitoring of serotonergic agents to mitigate serotonin syndrome risk. Macrolides and fluoroquinolones add QT-prolongation risk; correct electrolytes, avoid dual QT-prolongers, and obtain ECGs in high-risk patients.

Prevention hinges on meticulous reconciliation at transitions of care, improving the diagnostic facilities, risk profiling, individualized treatment plan if feasible within resource limited setting, pharmacist-led prospective audit-and-feedback, tuned EHR alerts prioritizing high-severity pairs, formulary restriction and TDM for narrow-therapeutic-index drugs (e.g., tacrolimus, azoles). The take-home message is simple: build DDIs into the stewardship workflow with help of technology

Symposium – 12

AMS through the Lenses of HIC

Surveillance to Stewardship: Leveraging HAI Data for Smarter Antibiotic Use

Dr. Apurba Sankar Sastry

Additional Professor

Department of Microbiology, JIPMER, Puducherry

Global Guidelines, Local Realities: Adapting HIC protocols to Indian Contexts

Prof. (Dr.) Ujjwala Gaikwad

Professor

Department of Microbiology & Infection Control Officer, AIIMS Raipur

The increasing menace of healthcare-associated infections (HAIs) necessitates the prompt enforcement of stringent infection control measures in hospitals. This is especially true for developing countries like India, which face a substantially higher burden of HAIs than developed countries.

Low- or middle-income countries usually depend on the protocols developed by high-income countries, as these represent the gold standard of evidence-based practice, formulated within contexts of abundant resources, advanced technology, and specialized workforces. Applying these protocols within the Indian context poses considerable challenges which includes insufficient funds, shortage of trained personnel, limited access to essential supplies to practise appropriate infection control behaviour, absence of standardised protocols and regulations to govern use of medical equipment and antimicrobials, high patient volume, diverse socioeconomic groups, lack of awareness or motivation among staff and unique cultural factors or false beliefs.

Despite existing challenges, global guidelines can be adapted to Indian healthcare settings, aligning with the minimum requirements outlined in WHO's core components for the implementation of a Hospital Infection Control (HIC) Program. The adaptation can focus on tailoring the protocols according to the available resources and skills, and then translating them into simple actionable steps that can be practiced one at a time. Nonetheless, administrative commitment to allocate sufficient budget for infection control-related activities, increasing the trained healthcare workforce, planning for decongestion of large government hospitals, developing regulatory networks that increase hospital staff accountability, and promoting the development of cost-effective technologies for better compliance can help in smooth adaptation of global recommendations.

The Indian healthcare system holds potential for such transformation, which could enhance care quality and offer evidence-based recommendations for both developing and developed nations to implement effective, sustainable, and locally relevant infection prevention and control protocols.

Bridging Care Cultures: A Comparative Lens on NHS and Indian HIC Practices

Dr. Vidhi Jain

Associate Professor

Department of Microbiology, AIIMS Jodhpur

My talk, "Bridging Care Cultures: A Comparative Lens on NHS and Indian HIC Practices", is based on experiences across two health systems, highlighting both parallels and contrasts that can inform infection control practices.

Similarities

Despite differences in context, the United Kingdom and India face comparable hospital-acquired infections, including bloodstream infections, ventilator-associated pneumonia, catheter-associated urinary tract infections, and surgical site infections. The pathogen profile is also similar, with *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Escherichia coli*, and *Pseudomonas aeruginosa* frequently isolated. Another shared feature is the significant contribution of Indian doctors, nurses, and allied health professionals, who are integral to both the NHS and Indian hospitals.

Differences

The divergences, however, are substantial. Infections in the UK are more common among the elderly, reflecting an ageing population, while in India the same pathogens demonstrate far higher levels of antimicrobial resistance. The NHS benefits from a larger health budget, financed by taxpayers yet delivered as free healthcare, enabling strong stewardship frameworks. Within this system, every antibiotic prescription is carefully monitored: infectious disease physicians and pharmacists co-consult on each case, and prescriptions are cross-checked thrice before reaching the patient. UK nurses are also better trained in infection control and empowered to work more independently, which strengthens adherence to protocols.

In contrast, Indian hospitals often work with constrained resources. While hospital infection control committees and AMS programmes are steadily expanding, infectious disease pharmacists are not yet part of the system, and nursing roles, though critical, remain more dependent on physicians for decision-making.

This comparison highlights opportunities for cross-learning, where structured frameworks and resource-sensitive innovations can together advance global infection control and antimicrobial stewardship.

Symposium – 13

AMS in Specialties: Tailored Approaches for Diverse Disciplines

Antimicrobial Stewardship (AMS) in Obstetrics and Gynecology: Safe Practices for Mother and Child

Dr Sharmila Arun Babu,

Professor and Head,

Dept. of Obstetrics and Gynecology, AIIMS Mangalagiri

Antimicrobial resistance (AMR) has been declared a major global health threat, leading to increased morbidity, mortality, and healthcare costs. Antimicrobial stewardship (AMS) programs aim to optimize the use of antimicrobials, improve patient outcomes, and preserve drug efficacy for future generations. In obstetrics and gynecology (OBG), AMS assumes special significance as antimicrobial use affects two lives simultaneously—the mother and the newborn. With cesarean section being the most common surgical procedure worldwide, and antibiotics frequently prescribed in labor, abortion care, pelvic infections, and gynecological surgeries, OBG is recognized as a high-volume specialty for antimicrobial exposure. However, inappropriate use—such as unwarranted prophylaxis, incorrect drug selection, prolonged courses, and lack of culture-directed therapy—remains widespread and contributes to resistant infections and adverse events.

Safe Practices in Obstetrics and Gynecology

In obstetric and gynecological practice, evidence-based AMS principles emphasize the right drug, right dose, right duration, and right route and focuses on rational prophylaxis and culture-guided therapy

- Cesarean section: A single pre-incision dose of a first-generation cephalosporin is recommended; routine postoperative continuation is unnecessary in uncomplicated cases.
- Vaginal deliveries: Antibiotics are not routinely indicated, except in specific conditions such as chorioamnionitis, preterm premature rupture of membranes (PPROM), or severe perineal trauma (third/fourth-degree tears).
- Intra-amniotic infections (chorioamnionitis): Require timely initiation of broad-spectrum intrapartum therapy, with prompt de-escalation once cultures are available.
- Group B Streptococcus (GBS): Intrapartum prophylaxis should be reserved for indicated cases, avoiding overuse.
- Abortion care: A single pre-procedure prophylactic dose (such as doxycycline or azithromycin) is adequate to prevent infection.
- Elective gynecological surgeries: Single-dose perioperative prophylaxis is sufficient; extended postoperative courses are unnecessary.
- Pelvic inflammatory disease (PID): Management should follow standardized syndromic and culture-based protocols, ensuring anaerobic coverage and partner treatment to reduce recurrence.
- Oncology and immunocompromised patients: Require individualized prophylaxis based on risk assessment and institutional antibiogram.

AMS in OBG is central to ensuring safe, effective, and judicious use of antimicrobials for both mother and child. Rational prophylaxis, culture-guided therapy, de-escalation practices, and integration of infection-prevention measures can significantly reduce unnecessary drug exposure while maintaining optimal maternal and neonatal outcomes. AMS is not about restricting access but about using antibiotics wisely—protecting current patients and safeguarding therapeutic effectiveness for generations to come.

Keywords: Antimicrobial stewardship, obstetrics, gynecology, cesarean section, prophylaxis, maternal safety, neonatal safety

Antimicrobial stewardship in chronic disease management, Diabetes, Renal, and liver diseases

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Senior Consultant

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Antimicrobial stewardship (AMS) programs are crucial for optimizing antimicrobial use, reducing antimicrobial resistance (AMR), enhancing patient outcomes, and mitigating adverse events. Chronic diseases such as diabetes mellitus, chronic kidney disease (CKD), and chronic liver disease (CLD) pose unique challenges for AMS due to altered pharmacokinetics, increased infection susceptibility, and frequent antimicrobial exposure. This presentation consolidates current evidence from the past decade on the use of AMS in managing infections within populations with chronic diseases. Diabetes is associated with increased risk of infections caused by multidrug-resistant organisms, partly due to hyperglycemia-related immune dysfunction and frequent antibiotic exposure. Controlling glycemia with insulin reduces the emergence of resistant pathogens, suggesting the need for metabolic and antimicrobial management. In CKD, impaired renal function necessitates careful antimicrobial dosing adjustments to avoid toxicity while ensuring efficacy; stewardship interventions targeting dosing optimization have demonstrated improved clinical outcomes and reduced adverse drug reactions. CLD patients, especially those with cirrhosis, are highly vulnerable to bacterial infections and exhibit high rates of AMR, complicated by gut dysbiosis and frequent invasive procedures. AMS strategies, which incorporate rapid diagnostics, de-escalation protocols, and gut microbiome modulation (e.g., probiotics), show promise in this population. This underscores that effective AMS in chronic diseases requires a multidisciplinary approach including precise dosing, infection prevention, appropriate antimicrobial choice based on local resistance patterns, and metabolic control in diabetes

Oncology and AMS: Managing Febrile Neutropenia and Beyond

Dr. Abhishek Raghav,
Assistant Professor

Department of Medical Oncology, AIIMS Mangalagiri

Febrile neutropenia (FN) remains a critical and potentially life-threatening complication in oncology patients undergoing cytotoxic chemotherapy. Prompt and appropriate antimicrobial therapy is essential, but overuse and misuse of antibiotics contribute significantly to antimicrobial resistance (AMR), posing a dual challenge in cancer care. Clinical microbiologists play a pivotal role in optimizing antimicrobial stewardship (AMS) in this high-risk population. This session explores the intersection of oncology and AMS, emphasizing evidence-based strategies for managing FN while minimizing unnecessary antibiotic exposure and including evolving pathogen profiles, emerging resistance patterns, and the impact of local antibiograms in guiding empirical therapy. By integrating AMS principles into oncologic care, clinicians can improve patient outcomes, preserve antimicrobial efficacy, and combat the growing threat of AMR. This session will also discuss AMS implementation in oncology settings, emphasizing multidisciplinary collaboration, protocol development, and microbiology lab-led surveillance.

Symposium – 14

AMS in Surgery & Procedural Settings: Preventing Surgical Site Infections

Evidence-Based Surgical Prophylaxis: Compliance and Outcomes

1. Dr Mallikarjun Gungjiganvi, Associate Professor, Department of General Surgery, AIIMS Mangalagiri.

2. Dr. Rajashekar Mohan, Prof & Head, Department of General Surgery, AIIMS Mangalagiri.

Surgical wounds in patients undergoing operative/interventional procedures breaching the natural barriers fall under clean, clean contaminated, contaminated, and dirty category types. The infection of these surgical sites classified as superficial, deep, or organ/space surgical site infection (SSI) as per CDC definitions represent a major healthcare burden with significant costs and resource utilization [1,2]. Surgical antibiotic prophylaxis (SAP) i.e., administering appropriate antibiotics preoperatively to achieve therapeutic tissue levels at incision is a cornerstone of preventing SSIs [3]. Guidelines from ASHP/IDSA/SHEA/SIS (published in 2013, to be updated in Q4 2025) provide standardized approaches and latest guidelines i.e., right antibiotic selection, right dosage, right timing, right infusion duration with due consideration for underlying clinical scenario and special populations [3,4,5].

Despite these guidelines and various antibiotic stewardship programs, the global compliance varies from 18–95%, with full adherence often as low as 18% in emergency surgeries and >80% elective surgeries [2,6]. Various barriers to full adherence include – timing errors (55–100% non-compliance), incorrect dosing (95%), surgeon preference, lack of protocols [7]. Impact of non-compliance result in increased SSIs (up to 66% vs. 0–22% in compliant cases), antimicrobial resistance, and costs [8].

Strategies to improve compliance to SAP requires multidisciplinary interventions involving surgeons, infectious diseases specialists, clinical microbiologists, pharmacologists, pharmacists with multipronged approaches: training workshops, stewardship programs, reminders; checklists – electronic tools/ print forms, handouts; monitoring and feedback systems [9]. Stewardship Programs on SAP are effective in improving SAP guideline adherence, antibiotic utilization, and their cost [9]. Benefits of SAP include reduction in SSI, hospital stay hence costs, and improved quality of life [1,8,10]

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AMS in Perioperative Care: Multidisciplinary Approaches

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Additional Professor Orthopaedics, AIIMS Mangalagiri

Antimicrobial Stewardship (AMS) in perioperative care requires a coordinated multidisciplinary approach to ensure optimal antibiotic use, prevent surgical site infections (SSIs), and combat antimicrobial resistance (AMR). Antimicrobial stewardship (AS) programs have historically overlooked surgical teams as they considered them more difficult to engage. SSIs can be disastrous for the patient and giving sleepless night to the surgeons. Each surgical department needs to choose the appropriate antibiotic according to their speciality, evidence and hospital antibiogram in collaboration with the AMS committee. Collaboration among healthcare professionals is essential for implementing evidence-based practices throughout the surgical pathway. Key aspects include giving the correct antibiotic at the right time (prophylaxis) within strict guidelines for duration, type, and dose. A collaborative, evidence-based effort has to be made involving surgeons, anaesthesiologists, microbiologists, Infection prevention control team, pharmacologists, nursing staff and the AMS committee. The common goal is to improve patient outcomes by ensuring antibiotics are used judiciously and effectively, ultimately reducing morbidity, costs, and the threat of antimicrobial resistance. The benefits of the multidisciplinary approach will include better adherence to Surgical Antibiotic Prophylaxis (SAP) protocols, audit and feedback from all concerned, along with education, training and implementation. Hospitals thus will be able to ensure responsible antibiotic use while minimizing risks of infection and resistance.

Innovations in Infection Prevention for Invasive Procedures

Dr. Rajasekhar Rekapalli,

Associate Professor

Department of Neurosurgery, AIIMS Mangalagiri

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Symposium – 15

Future Frontiers: Novel Agents, Vaccines & Alternatives

Newer Antimicrobial Peptides (AMPs)

Dr. Ratinder Jhaj,

Professor,

Department of Pharmacology, AIIMS Bhopal

Antimicrobial Peptides (AMPs) are small bioactive proteins usually with 10–50 amino acids and a molecular weight of less than 10 KDa, and a net positive charge, produced by all living organisms, but also manufactured synthetically. They have broad-spectrum activity against multiple microorganisms including bacteria, fungi, viruses and parasites, while some also have immune-modulatory, anti-inflammatory, antioxidant and wound healing actions. AMPs can act through a membranolytic and non-membranolytic mechanism, in addition to inhibiting the biofilm. The American microbiologist René Dubos observed the ability of the soil microbe *Bacillus brevis* to inhibit *Pneumococci* in 1939, and later isolated tyrothricin (a mixture of gramicidin and tyrocidine) from it. Since then, many AMPs have been discovered, several already approved for clinical use, while others are undergoing clinical trials. These include omiganan and plexiganan which are in phase III CTs for dermatological and catheter-related infections, and diabetic foot ulcers respectively. In addition to their potential as alternatives to conventional antimicrobials, AMPs can re-sensitize several MDR organisms including MRSA, VRSA and *Pseudomonas* to conventional antimicrobials. Although resistance development to AMPs was expected to be low due to their non-specific actions, there are reports of AMR against AMPs. In addition, high production costs, reduced efficacy in vivo, hemolysis and renal toxicity, are other challenges to their clinical application. Strategies to overcome these challenges include modification of amino acid and chemical structures, PEGylation, and improved delivery vehicles, as well as combinations with conventional antimicrobials.

Microbiome Modulators: Beyond Antibiotics

Dr. Gerard Marshall Raj

Associate Professor

Dept. of Pharmacology

AIIMS Bibinagar, Hyderabad

The genetic repertoire of the ecosystem of microbes that coexist at a given site within each human is referred to as the “microbiome” – the different microbes that could partake in this ecosystem include bacteria, viruses including phages, and sometimes archaea, fungi, and microbial eukaryotes. Any disruption of this ecosystem (“microbial dysbiosis”) could result in multiple disorders – spanning from the gastrointestinal, cardiovascular, and neuropsychiatric disorders, and to autoimmune and metabolic disorders. Hence, researchers are vouching on diverse treatment strategies to positively modulate the microbiome ranging from dietary interventions such as probiotics, prebiotics, synbiotics, postbiotics, and also faecal microbiota transplantation (FMT) and phage therapies. The dietary “biotics” are expected to replenish the gut microbial community – and are considered as the major machineries of ‘non-antibiotic’ microbiome modulators. FMT or ‘stool transplant’ refers to administration of stool bacteria (from a healthy donor) into the intestinal tract of a patient (recipient) so as to alter the gut microbiome to its optimal state. Phage therapy or the “bacteriophage therapy” is a novel modality of treatment for severe bacterial infections – including that for multidrug-resistant infections. Unlike the conventional antibiotics (or antibacterials), the phages infect their bacterial hosts with great specificity and do not infect human cells. Thus, the vintage phage therapy is again

being reconsidered as one of the tools for combating the ever-elusive antimicrobial resistance (AMR). It has been observed that, these “microbiome modulators” can aid in the management of various conditions – ranging from inflammatory bowel disease, irritable bowel syndrome, metabolic syndrome, obesity, type 2 diabetes, autism, to serious recurrent infections and cancers – by resetting the microbiome to a healthy state. Hence, the ultimate objective is to achieve a ‘healthy’ microbiome thereby restoring health to the host.

Integrating Adult Pneumococcal and Influenza Vaccination into Antimicrobial Stewardship in India

Dr. Abhishek Padhi

Assistant Professor

Department of Clinical Microbiology & Infectious Diseases, AIIMS Rajkot

Abstract

Antimicrobial resistance (AMR) is an escalating threat to global and national health security, with India among the countries facing a high burden of resistant bacterial infections. Antimicrobial stewardship (AMS) programs have traditionally focused on rational prescribing, diagnostics, and infection prevention. However, preventive vaccination—particularly against influenza and *Streptococcus pneumoniae*—remains an underutilized but highly effective AMS strategy.

Seasonal influenza drives substantial antibiotic misuse in India, as viral respiratory infections are frequently treated empirically with antibiotics. Similarly, pneumococcal disease in adults, especially among older individuals and those with comorbidities, leads to severe community-acquired pneumonia and invasive infections, often managed with broad-spectrum antimicrobials. Evidence from systematic reviews and global surveillance demonstrates that influenza vaccination significantly reduces outpatient antibiotic prescriptions, while pneumococcal conjugate vaccines (PCVs) lower the incidence of resistant pneumococcal infections and hospitalizations.

In India, influenza vaccination is recommended for adults ≥ 60 years, individuals with chronic diseases, pregnant women, and healthcare workers, with timing aligned to the country’s bimodal influenza peaks (pre-monsoon and pre-winter). Adult pneumococcal vaccination is advised for seniors and high-risk groups, with newer PCV15 and PCV20 formulations simplifying schedules and expanding serotype coverage. Despite these recommendations, uptake remains very low due to hesitancy, cost, and lack of integration into routine care pathways.

Embedding adult vaccination into AMS offers a pragmatic solution: reducing the burden of viral and bacterial respiratory infections, cutting inappropriate antibiotic use, and mitigating AMR. Practical integration strategies include hospital-based vaccination prompts during outpatient visits, inpatient AMS rounds, pre-operative assessments, and discharge planning, supported by national surveillance networks (IDSP, VRDL) to guide campaign timing.

Symposium – 16

Rewriting Combat Against Resistance
Healing with viruses
Dr. Kalyan C K,
Senior Infectious Disease Consultant
SHRI & HELP Hospital, Guntur

We all know that there aren't significant new antibiotics in the pipeline that can tackle the growing menace of antimicrobial resistance. But, nature has always an answer and bacteriophages are one among them.

Phage therapy for managing infections was popular in early 1900's and were widely used in the world wars. But, with the advent of antibiotics, they weren't seriously considered later.

Now, it's again time to look at them, with available technology and bioinformatics. As a member of ESGNTA (European Study Group on Non-Traditional Antibacterials) having attended few training programs in this field, research is quite promising and wish to share some valuable points.

- 1) Phages are predators of bacteria and they don't infect humans.
- 2) They are very safe, freely available and with proper purification techniques and assessing the endotoxin levels/AMR genes, can be given without any significant side effects.
- 3) They do not cause any significant inflammatory response, though there can be an immunological response which is harmless.
- 4) They also have immunomodulatory action, which can be considered in situations other than infections like Rheumatoid arthritis, IBD etc.
- 5) Presently, they are being used mainly for SSI, BJI along with pneumonia, UTI etc., across the world as compassionate use. Tens of papers with few hundreds of patients successfully treated are available suggesting to go forward with clinical trials and they are various levels with USFDA/EU.

The BORSA–MRSA Diagnostic Dilemma: Rethinking Antimicrobial Therapy

Dr Grishma Kulkarni

Assistant Professor

Department of Microbiology

MNR Medical College and Hospital, Sangareddy

Abstract:

Recently, *mecA*-negative *Staphylococcus aureus* strains with decreased susceptibility to oxacillin and cefoxitin have been sporadically reported worldwide. They are called as borderline oxacillin resistant *Staphylococcus aureus* (BORSA). Almost, more than 30% of such strains are often misinterpreted and reported as MRSA (methicillin resistant *Staphylococcus aureus*) due to the hyperproduction of beta-lactamase enzyme and other reasons which results in invitro reduced susceptibility to oxacillin as well as cefoxitin. Similar phenomenon is quite common in other staphylococci, micrococci and macrococci.

The study included 100 cultures of different samples showing pure growth of gram-positive cocci suggestive of staphylococci, micrococci and other Gram-positive cocci and were tested against different antibiotics panel as per CLSI guidelines (Clinical and Laboratory Standards Institute.) Inclusion of amoxiclav disc to the antibiotics test panel as per recommendation by the special phenotypic methods for the detection of antibacterial resistance in the manual of clinical microbiology was helpful to detect the beta-lactamase hyperproducers (BHP) and helped to report correct identification of the organisms and curtailed the mismanagement of more than 95% of the patients. Therefore, I do recommend to use “Triad disc panel test” consisting of oxacillin, cefoxitin and amoxiclav to differentiate borderline from true methicillin resistant strains to streamline the antibiotic therapy and hence further avoidance of selection of the resistant strains.

From Protocol to Practice: Strengthening SSI Prevention Through AMSP

Fatima Khan,

Professor

Department of Microbiology, Jawaharlal Nehru Medical College, AMU

Surgical site infections (SSIs) remain one of the most common and preventable healthcare-associated infections, yet they continue to burden patients, families, and health systems. Antimicrobial stewardship programs (AMSP) provide the backbone for rational antibiotic use, but their impact depends on how effectively they are translated into day-to-day surgical practice. Moving from protocol to practice requires more than guidelines—it needs timely surgical prophylaxis, adherence to checklists, strong infection control measures, and coordinated teamwork. Equally critical is recognizing the human factors: closing knowledge gaps, building accountability, and fostering a culture where stewardship is shared across the surgical team. Practical lessons and real-world examples show that small, sustained changes can dramatically reduce infection rates, even in resource-limited settings. One such example comes from our own experience, where acknowledging system gaps through a fishbone analysis and applying targeted, practical solutions—such as introducing a surgical safety checklist, standardizing antibiotic prophylaxis, streamlining workflows, and improving infection control—led to a marked reduction in SSI rates. SSI prevention through AMSP is not about adding new layers of work, but about embedding safe, evidence-based habits into routine care. Aligning protocols with practice ensures safer surgeries, preserves antimicrobial effectiveness, and strengthens trust in healthcare systems.



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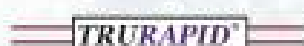
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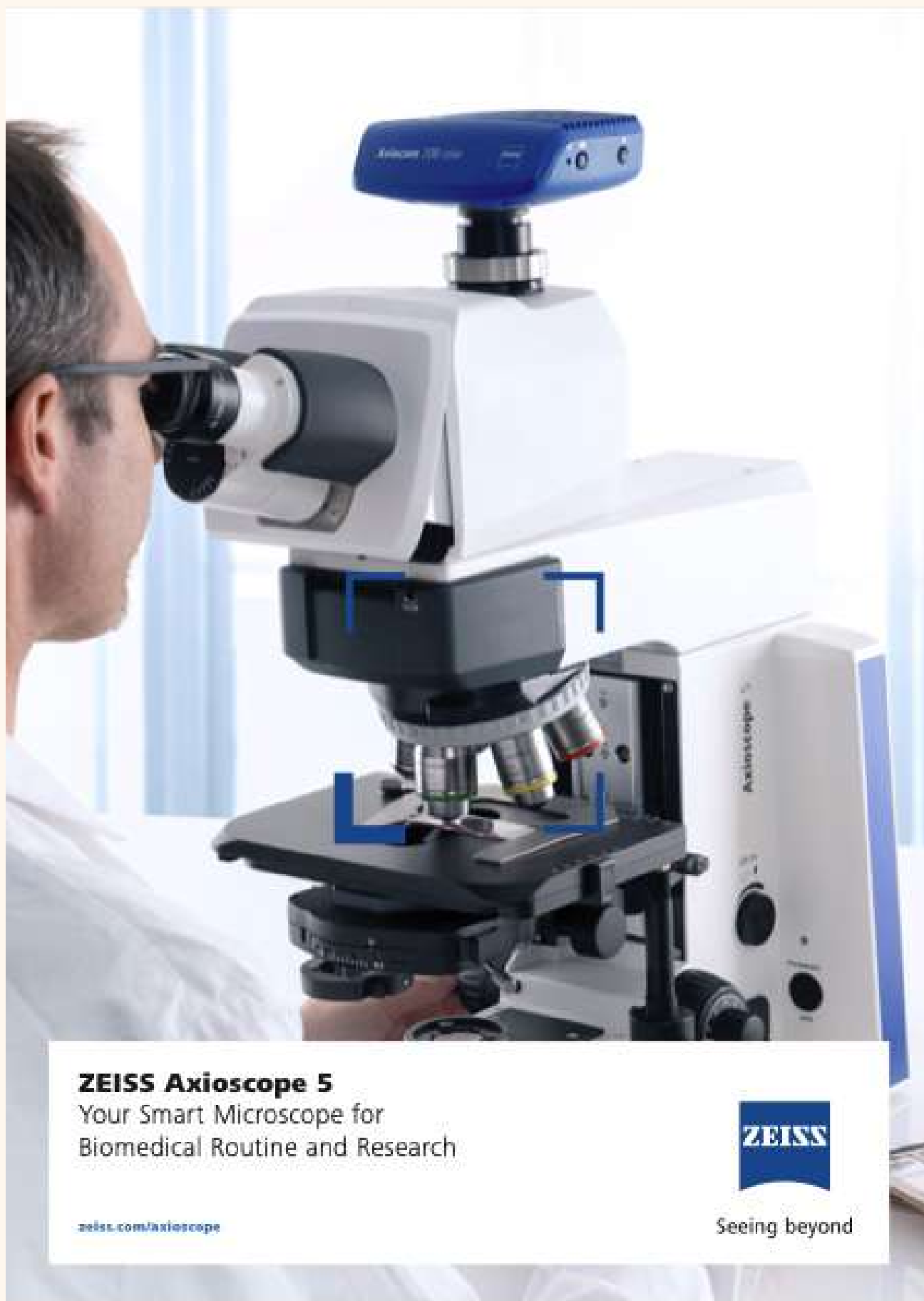


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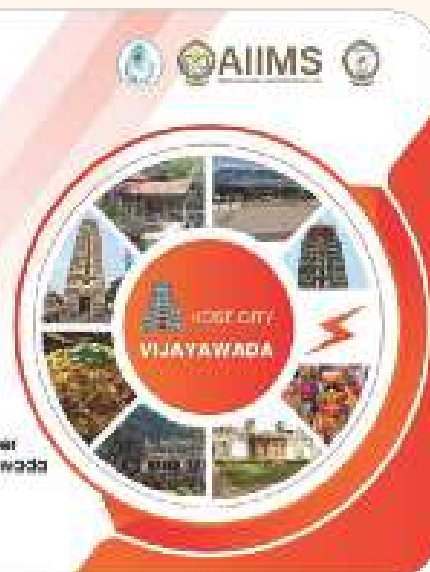
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1. A Community based Cross-sectional Study to Assess the Prevalence, Knowledge and Practices of Self-Medication of Antibiotics

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Background:

Self-medication with antibiotics is a growing public health concern, contributing significantly to the emergence of antimicrobial resistance (AMR). Inappropriate use of antibiotics without prescription remains prevalent in developing countries due to easy over-the-counter access, lack of awareness, and poor regulatory control.

Objectives:

To assess the prevalence, knowledge, and practices related to self-medication with antibiotics among adult residents of Mangalagiri town and evaluate the impact of a structured health education intervention.

Methods:

A community-based cross-sectional study was conducted over six months among 482 adults aged 18–65 years in Mangalagiri, Andhra Pradesh using stratified random sampling. Data were collected using a validated, structured questionnaire, assessing prior antibiotic self-medication, knowledge, and practices. A 15-minute health education intervention was delivered to all participants, followed by a post-intervention knowledge assessment.

Results:

Among 482 participants, 63.9% were males and 36.1% were females with the mean age of 42.34 $\pm$ 14.51. A greater number of males were in the highest income category and conversely lower income brackets had a disproportionately higher number of female participants, suggesting an economic vulnerability among women. When had any need of medication, 36.9% of participants consulted a doctor, while 35.3% of participants bought antibiotics from a pharmacy, 19.9% of participants used leftover antibiotics with them, and 7.9% participants asked a friend for advice. The mean knowledge score increased from 4.00 to 9.16 (p -value < 0.001) after the intervention. The participants with lower educational levels demonstrated the highest gains in knowledge scores and participants with higher education showed less improvement, possibly due to already having better baseline knowledge prior to the intervention.

Conclusion:

The study highlights a high prevalence of self-medication with antibiotics and limited baseline knowledge among the community. The significant improvement in post-intervention knowledge scores, particularly among participants with lower educational status, demonstrates the effectiveness of targeted health education.

2. One and half –Year Retrospective Data Analysis of Pyelonephritis Presentation and Management: Opportunities for Stewardship Intervention to prevent Drug overuse and Complications

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Background:

Pyelonephritis represents a high-burden condition with significant implications for antimicrobial resistance (AMR) and resource utilization. Despite established guidelines (IDSA/EUA), suboptimal management practices, including inappropriate broad-spectrum antibiotic use and delayed IV-to-oral transition, are frequently reported. Antimicrobial Stewardship Programs (ASPs) require institution-specific data to design effective interventions for preventing drug resistance ,cost effectiveness and drug long term side-effects

Aims & Objectives: 1. Assess adherence to key IDSA/ESCMID 2025 guideline recommendations for pyelonephritis management.2.Quantify specific stewardship opportunity areas (e.g., inappropriate fluoroquinolone use, prolonged IV duration, excessive total treatment length,drug longterm sideeffects)3.Quantify clinical outcomes (30-day readmission, treatment failure) by antibiotic regimen4.Assess the pattern of cultures growth and assess sensitive /resistant antibiotics to establish a local antibiogram and stream line regular audits in the institute

Material & Methods:

A retrospective pilot study was conducted in aiims mangalagiri, reviewing electronic health records of adult patients diagnosed with pyelonephritis between 01-01-2024 and 31-07-2025. Data extraction was focused on patient demographics, risk factors, illness severity, empiric and definitive antibiotic therapy (spectrum, agent), timing of IV-to-oral transition, total treatment duration, and adherence to IDSA/EUA guidelines, culture results, antibiotic sensitivity and resistance patterns and clinical outcomes (length of stay, treatment failure, C. difficile infection, 30-day readmission).

Results:A total of 72 patients were included in the data analysis. The cohort was 75% female and 25% male. Overall adherence to empirical antibiotic initiation was high at 98%. However, the median time to switch from intravenous to oral antibiotic therapy was 10 days, which is non-compliant with standard guidelines. The median hospital stay was 15 days.The all-cause readmission rate was 6%, primarily attributed to uncontrolled diabetes and other comorbidities. Due to prolonged antibiotic administration, the rate of Clostridium difficile infection was 6%.

Culture-positive results were obtained in 70% of cases, with E. coli and Klebsiella species being the predominant pathogens. The majority of these isolates were sensitive to Piperacillin-Tazobactam and Meropenem. Notably, a 5% incidence of Carbapenem-Resistant Acinetobacter baumannii (CRAB) positive growth was observed, which presented a significant challenge for further management.

Conclusion:

Based on these findings, it is concluded that while empirical antibiotic initiation for pyelonephritis was highly adherent and effective against the predominant pathogens E. coli and Klebsiella, a significant delay in intravenous-to-oral switch contributed to prolonged hospitalization and a 6% rate of C. difficile infection. The 6% readmission rate, driven by comorbidities, and the emergence of challenging Carbapenem-Resistant Acinetobacter baumannii (5%) underscore the critical need for antimicrobial stewardship to optimize therapy transitions and vigilant monitoring to manage resistant organisms.

3. *Acinetobacter baumannii*: The Next Frontier in Antimicrobial Resistance

Dr. Bhavna Pate, Dr. Supriya Meshram, Dr. Gargi Mudey

Background

Acinetobacter baumannii is an opportunistic pathogen responsible for causing nosocomial infections mostly in the Intensive Care Units. It develops resistance to various antimicrobial agents including carbapenem group of antibiotics complicating the treatment. This study aimed at characterizing the isolates for the presence of β -lactamases encoding genes in *Acinetobacter baumannii*.

Methodology

This prospective cross-sectional study conducted on 160 *Acinetobacter baumannii* isolated from various clinical samples in the present study. Antimicrobial susceptibility testing done by Kirby Bauer disk diffusion method. MBL detection done by imipenem-EDTA combined disk method. Molecular identification by RT-PCR to identify genes (bla-VIM, bla-IMP, bla-NDM, bla-KPC and bla-OXA).

Results

Acinetobacter baumannii was predominantly isolated from endotracheal secretions (54.81%) from the Neurosurgery ICUs (14.86%) with a higher resistance pattern observed towards Tobramycin (94.23%) followed by Piperacillin/Tazobactam (92.31%) and Carbapenem (89.42%) group of antibiotics. 87% resistance was seen in Fluoroquinolones.

90 (86.54%) of the isolates were resistant to Cephalosporin group of antibiotics. Least resistance was seen in Colistin and Tigecycline (1%). Of the total carbapenem resistant isolates, 38 (36.54%) of the samples were positive by Modified Hodge Test. 88 (84.62%) came out to be Positive for Double-disk synergy test producers while 93 (89.42%) isolates tested positive.

On performing the PCR most dominant gene was New-Delhi-Metallo-beta-lactamases (NDM) positive in (17) 57% of the clinical isolates and bla-OXA48 was positive in (8) 35.5% of total meropenem resistant isolates whereas bla-KPC was seen in (2) 5.37% of the total isolates. Among the MBL genes, bla-VIM1 was (2) 3.22% and bla-IMP1 was (1) 1.21% in the clinical isolates.

Conclusion

Metallo-beta-lactamases were detected in a significant number of *Acinetobacter baumannii* isolates, reflecting their contribution to drug resistance. Carbapenem resistance due to production of beta lactamases, is of great concern as they are encoded by genes like bla-VIM, IMP, and OXA genes.

4. "Fast and Accurate — A Paradigm Shift in UTI Diagnosis with Direct VITEK"

Athersh S, Vibhor Tak, Kumar S Abhishek, Kuntal Kumar Sinha, Deepak Kumar, Gautam Ram Choudhary

BACKGROUND:

Urinary tract infections (UTIs) caused by Gram-negative bacilli are among the most common bacterial infections worldwide, requiring timely and accurate antimicrobial therapy. Conventional culture and susceptibility testing take 48–72 hours, delaying targeted treatment. Automated systems like VITEK allow direct identification (ID) and antimicrobial susceptibility testing (AST) from urine samples, potentially expediting clinical decisions.

MATERIALS AND METHODS:

This prospective comparative study was conducted at AIIMS Jodhpur on 151 urine samples from adults (>18 years) that were leucocyte esterase positive on dipstick and showed Gram-negative bacilli on Gram stain. Samples with Gram-positive cocci, budding yeast, or multiple morphotypes were excluded. For direct testing, samples were centrifuged, Gram stained, and bacterial pellets used to prepare a 0.5 McFarland suspension, inoculated into VITEK 2 GN ID and AST-N235 cards. Parallely, all samples were cultured on UTI Chrome agar, and isolates underwent conventional ID and AST. Results were compared for concordance, with discrepancies classified as very major, major, or minor errors.

RESULTS:

Of the 151 samples analyzed, direct ID by VITEK matched conventional methods in 84.7% of cases, with misidentification in 15.3%. AST showed 96.6% concordance, with no very major errors, 1.1% major errors, and 2.3% minor errors.

CONCLUSION:

Direct ID and AST of Gram-negative bacilli from urine samples using VITEK reduced turnaround time by at least 24 hours compared to conventional methods, with high accuracy. This approach holds promise for facilitating early, targeted antimicrobial therapy in UTIs, improving patient outcomes, and supporting antimicrobial stewardship efforts.

Keywords:

Urinary tract infection, Gram-negative bacilli, VITEK, direct identification, antimicrobial susceptibility testing, rapid diagnostics, antimicrobial stewardship.

5. A Systematic Review on Innovative Approaches to Antimicrobial Stewardship Strategies, Technologies and Clinical Effectiveness

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Background:

Antimicrobial resistance (AMR) remains a pressing challenge for health systems worldwide, undermining the effectiveness of routine treatments. In response, antimicrobial stewardship (AMS) programs have evolved to incorporate digital tools and novel strategies aimed at improving prescribing practices.

Aims & Objectives: To explore the range of innovative AMS interventions and assesses their impact on clinical outcomes, antibiotic use, and implementation feasibility.

Material & Methods:

A comprehensive literature search was conducted across six major databases: PubMed, Embase, the Cochrane Library, Scopus, Web of Science, and CINAHL up to July 2025. Eligible studies included various study designs from randomized controlled trials to qualitative studies focusing on AMS interventions using technology or novel frameworks. Two reviewers independently screened and extracted the data. Risk of bias was assessed using established tools including RoB 2.0, ROBINS-I and CASP. Data were synthesized using a structured narrative approach, pooling up the findings in terms of intervention type, healthcare setting and reported outcomes.

Results:

Out of 6,481 screened records, 72 studies met the inclusion criteria. The interventions examined included electronic prescribing systems, AI-powered decision support, mobile health apps and telehealth-enabled AMS programs. Most studies reported reductions in inappropriate antibiotic prescribing and improvements in adherence to clinical guidelines. Some also demonstrated favorable trends in resistance patterns and patient outcomes. Implementation success varied, often influenced by infrastructure, clinical workflow integration, and user engagement. Cost-effectiveness data, though limited, suggested potential financial benefits, particularly for digitally supported programs.

Conclusion:

Emerging technologies and strategic innovations in AMS show considerable promise in optimizing antibiotic use and enhancing patient care. Their success largely depends on local implementation contexts and resource availability. Further rigorous studies, especially in low-resource settings, are needed to strengthen the evidence-based strategies in guiding policy and practice.

6. Evaluation of a novel method for Determination of Vancomycin MIC's in *Staphylococcus aureus* and its Comparison with an In- house Agar Gradient Test

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Background:

Staphylococcus aureus, is one of the commonest aetiologies of skin and soft tissues infections, bacteraemia, sepsis, osteoarthritis, food poisoning and community acquired pneumonias. It is well known for its notoriety in developing resistance against various drugs, especially in the MRSA isolates, which form a significant percentage among these infections. The MRSA prevalence has risen from 23% to 30% from 2022 to 2024 at AIIMS Mangalagiri. The ICMR 2023 data highlights a national prevalence from the participating labs as 44.5%. Vancomycin is the drug of choice for targeted therapy against MRSA, for which vancomycin needs to be tested by only by MIC determination protocols especially to detect Vancomycin-intermediate *S. aureus* (VISA) and heterogeneous VISA (hVISA) phenotype. Current MIC determination methods for vancomycin commonly include automated methods, which may be expensive or not commonly available. The commercial agar gradient E-test strips, which are expensive and both are marred by supply chain issues. The gold standard method broth microdilution is not routinely performed in most of the diagnostic labs as it is cumbersome and technically challenging.

With this premise, a new method Vancomycin broth disk elution (VBDE) method similar to Colistin Broth Disk Elution method was assessed in this study and it was assessed alongside the in – house developed Agar Gradient Test

Aims & Objectives:

To develop, optimize and standardize the VBDE method and validate it against the BMD Reference Method for determination of Vancomycin MIC in *Staphylococcus aureus* isolates from various clinical specimens.

To compare the VBDE with the standardized in – house developed Agar Gradient Test Materials and methods:

A pilot prospective cross- sectional analytical study was conducted with non-repeat strains of *Staphylococcus aureus* isolated from different clinical specimens over a period of 3 months duration were included in the study. Isolates were designated MSSA or MRSA based on susceptibility to Cefoxitin in Kirby-Bauer disk diffusion method as per CLSI guidelines. They were subjected to MIC determination by novel disk elution method VBDE and gold standard BMD in addition to routine Antimicrobial Susceptibility Testing (AST). These isolates were also subjected to the in – house developed Agar Gradient Test

Results:

All isolates tested were susceptible to Vancomycin with range of MIC from 1µg/ml to 2µg/ml. Using BMD as reference, the novel method VBDE demonstrated sensitivity and specificity of more than 90%. And the level of agreement in measuring MIC between BMD and VBDE was assessed using Intraclass correlation coefficient (Two-way random effect, absolute agreement formula) shows high agreement (>0.9) with confidence interval of 95%.

Conclusion:

The VBDE protocol is a novel, reproducible method that can be used in routine diagnostic laboratories to report vancomycin MIC values for MRSA Isolates.

7. Effect of Empirical Gram-Positive and Gram-Negative Antibiotic Coverage on Mortality and Recovery in Sepsis: Interim Results from a Prospective Cohort Study

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Introduction

Sepsis continues to be a major cause of mortality worldwide. Early empirical antimicrobial therapy is a cornerstone of sepsis management, yet there is a lack of consensus in India regarding the inclusion of gram-positive coverage. This study evaluates whether empirical therapy combining gram-positive and gram-negative agents improves clinical outcomes compared to gram-negative coverage alone.

Objectives

To compare in-hospital mortality between two empirical antimicrobial strategies:

1. Gram-negative coverage only (G-)
2. Combined gram-positive and gram-negative coverage (G+G-)

Secondary objectives include comparing hospital stay duration, CRP/PCT/WBC/neutrophil trends.

Methods

This is an ongoing prospective cohort study conducted at a tertiary care center. Adult patients (≥ 18 years) with sepsis or septic shock were enrolled. Patients were grouped based on empirical therapy received. This interim analysis includes 56 patients. The primary outcome was in-hospital mortality. Secondary outcomes included length of hospital stay (analysed only in survivors) and changes in biomarkers. Mortality was assessed using Chi-square test. Length of stay was compared using Wilcoxon rank-sum test. Biomarker outcomes were analysed using ANCOVA models adjusted for baseline values.

Results

In-hospital mortality was significantly lower in the G+G- group (18%) compared to the G- group (86%) ($\chi^2 = 23.17$, $p < 0.0001$). Among survivors, the median length of stay was significantly shorter in the G+G- group (20 days, IQR: 14) than G- group (53.5 days, IQR: 18) ($p = 0.0069$). ANCOVA showed significantly greater reduction in CRP ($\beta = 47.86$, $p < 0.0001$), PCT ($\beta = 9.29$, $p = 0.0015$), WBC ($\beta = 10.92$, $p < 0.0001$), and neutrophil percentage ($\beta = 25.83$, $p < 0.0001$) in the G+G- group.

Conclusions

This interim analysis suggests that empirical antibiotic coverage including gram-positive agents may lead to lower mortality, shorter hospital stay, and faster biomarker resolution in sepsis.

8. Characterization of Carbapenem-Resistant Gram-Negative Bacteria (CR-GNB) from ICU Patients Using Molecular and Phenotypic Methods.

Name of the Author/s and affiliations:

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Background : Carbapenem-Resistant Gram-negative bacteria (CR-GNB) are a major cause of ICU infections and public health concern. Resistance is often due to metallo- β -lactamases (MBL) like NDM, encoded by the bla NDM-1 gene, which hydrolyze β -lactam antibiotics. This study aims to characterize CR-GNB from ICU patients using phenotypic and molecular methods.

Objectives:

1. To isolate and characterize CR-GNB from ICU patients.
2. Phenotypic detection of MBL production in CR-GNB.
3. Genotypic Detection of bla NDM -1 by PCR in CR-GNB

Methods: A total of 200 clinical isolates were collected from ICU patients. Carbapenem resistance was screened using the Kirby-Bauer disc diffusion method as per CLSI guidelines. MBL production was detected by performing Modified Hodge Test (MHT), Double Disc Synergy Test (DDST) and Combined Disc Synergy Test (CDST). The bla NDM-1 genes were detected by Polymerase Chain Reaction (PCR).

Result: Out of 911 GNB isolated from ICU patients, 200 isolates (22%) were identified as CR-GNB. The most predominant organism was Enterobacter spp 47 (23.5%) followed by Acinetobacter spp 44 (22%), Klebsiella spp 40 (20%), E. coli 30 (15%), Pseudomonas spp 29 (14.5%), Proteus spp 5 (2.5%), Citrobacter spp 5 (2.5%). All 200 CR-GNB isolates were subjected to phenotypic testing by Modified Hodge Test (MHT), Double Disc Synergy Test (DDST), and Combined Disc Synergy Test (CDST), and PCR was performed to detect the bla NDM-1 gene. The bla NDM-1 gene was detected in Proteus spp 5/5 (100%), Klebsiella spp 30/40 (75%), Acinetobacter spp 32/44 (73%), Enterobacter spp 34/47 (72%), E. coli 20/30 (67%), Citrobacter spp 3/5 (60%), Pseudomonas spp 15/29 (52%).

Conclusion: Out of 200 CR-GNB isolates, MBL production was detected in 148 isolates by CDST, which was more sensitive than MHT and DDST. The bla NDM-1 gene was identified in 139 isolates. The isolates lacking bla NDM-1 gene, resistance may be due to other genes. CDST can partially substitute PCR for CR-GNB detection in resource-limited or outbreak settings.

Key words: Carbapenem, Modified Hodge Test, Double Disc Synergy Test, Combined Disc Synergy Test.

9. A Systematic Review on Global Resilience of Antimicrobial Stewardship Programs during COVID-19: Disruptions and Innovations

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Background:

The COVID-19 pandemic significantly disrupted healthcare systems worldwide, including routine antimicrobial stewardship (ASPs) programs. The crisis led to widespread empirical antibiotic prescribing despite low bacterial co-infection rates, exacerbating concerns about antimicrobial resistance (AMR). Understanding how ASPs evolved during this period is crucial for developing effective pandemic preparedness strategies for the future.

Aims & Objectives: To systematically review the global impact of COVID-19 on ASPs, with a dual focus on (1) disruptions to stewardship activities and (2) adaptive strategies or innovations implemented to maintain ASP functions during the pandemic.

Material & Methods:

A comprehensive search strategy has been designed to identify relevant studies published between January 2020 and April 2024 from PubMed, Embase, Scopus, and Web of Science. Articles were included if they described disruptions, adaptations, or innovations in hospital-based ASPs during the pandemic. The PRISMA 2020 guidelines were followed, and the risk of bias was assessed using the Newcastle-Ottawa Scale and ROBINS-I tools.

Results:

Out of 2,417 articles screened, 67 studies from 24 countries met the inclusion criteria. Interruptions included increased use of empirical antibiotics (78%), restricted access to microbiology labs (47%), and diversion of ASP staff to COVID-19 care (63%). However, 52% of studies reported digital adaptations, including tele-stewardship, electronic decision tools, and automated alerts. Strategies included multidisciplinary collaboration, national policy support, and the integration of ASPs into pandemic preparedness frameworks. Innovations like AI-driven infection prediction and e-learning platforms for AMS training were also highlighted.

Conclusion:

COVID-19 challenged the continuity of ASPs, but simultaneously accelerated digital transformation and policy innovation. Integrating technology, flexible staffing models, and proactive leadership were pivotal in sustaining stewardship activities. The insights offered guidance for strengthening ASP's resilience in future health crises.

10. Impact of Artificial Intelligence versus Conventional Approaches in Antimicrobial Stewardship: A Systematic Review

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Background:

Antimicrobial resistance (AMR) is a significant global health threat, driven largely by the inappropriate use of antibiotics. Antimicrobial Stewardship Programs (AMS) are crucial for optimizing antimicrobial use, but traditional methods like manual prescription reviews are resource-intensive. Artificial intelligence (AI)-based Clinical Decision Support Systems (CDSS) may enhance stewardship by predicting infections and guiding appropriate.

Aims & Objectives: The primary aim of this study is to systematically review and compare the predictive performance of AI/ML models with conventional statistical approaches. The objectives are to assess whether AI-powered tools improve the accuracy of antimicrobial prescribing decisions and evaluate if AI models can more effectively predict bloodstream infections and culture results compared to traditional methods.

Material & Methods:

A systematic literature search was conducted in PubMed/MEDLINE, Scopus and EMBASE up to July 2024. Studies were included if they directly compared the performance of an AI/ML model to a traditional statistical model for an AMS-related outcome. Data on study design, patient populations, and model performance metrics—including Area Under the Curve (AUC), accuracy, sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV)—were extracted. The risk of bias was assessed using the QUADAS-AI tool. Due to significant heterogeneity, a narrative synthesis was performed.

Results:

AI/ML models, particularly ensemble methods like Random Forest and Gradient Boosting, frequently demonstrated superior or comparable performance to logistic regression. For predicting bloodstream infections, AI models achieved AUCs as high as 0.88, outperforming logistic regression (AUCs up to 0.86). AI models consistently showed higher sensitivity and NPV across various applications, indicating a stronger ability to correctly identify high-risk patients and reliably rule out infections. However, specificity was more variable, with logistic regression sometimes performing comparably. A universal lack of external validation was a key limitation across all studies.

Conclusion:

AI-powered CDSS consistently outperform conventional approaches in optimizing antimicrobial prescribing, predicting infections, and forecasting resistance. These tools show promise for reducing inappropriate antibiotic use and strengthening ASPs, though external validation and real-world integration remain necessary before widespread adoption.

11. Isolation of Dermatophytes in chronic and recurrent dermatophytosis cases in a teaching care hospital

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Background: Dermatophytosis, which affects millions of individuals globally, is one of the most prevalent superficial skin diseases. It has been determined that 20% to 25% of the global population has superficial mycoses, with a higher prevalence in tropical and subtropical nations like India. The most common organism in India, according to recent studies, is *Trichophyton rubrum*. However, *Trichophyton mentagrophytes* is now the co-dominant pathogen. This shift in the epidemiology of dermatophytes may be the cause of persistent, recurrent, and resistant cases of dermatophytosis.

Aims & Objective: To determine the mycological profile of chronic and recurrent dermatophytic infections, including species identification.

Methods: The present study includes a total of 75 chronic and recurrent dermatophytosis patients who are attending to Dermatology department of our hospital. The specimens skin scrapings, hair, scraping of the nails was examined under a microscope using 10% & 40% KOH to look for presence of hyphae in skin, hair and nails. The collected specimens inoculated and incubated at 28°C for 4 weeks by using Dermatophyte test media and Sabarouds dextrose agar. Later the growth of the isolate were examined.

Results: In the present study, out of 75 cases maximum patients were reported in the age group of 18–30 years [40%]. According to this study, Males (56%) were more affected than female (44%) and topical corticosteroids application (17.3%) was the most common predisposing factor. The most common clinical presentation observed was Tinea corporis et cruris patients (41.3%) and *Trichophyton mentagrophytes* was isolated in 27 cases, making it was the most common isolate (36%), followed by *Trichophyton verrucosum* in 12 cases (16%), *Trichophyton tonsurans* in 10 cases (13.3%) and other isolates in the present study.

Conclusion: To conclude, recurrent and chronic dermatophytosis could be reduced and prevented by health educating the patients and also by isolation dermatophytes for specific treatment.

Keywords: Dermatophytes, Topical steroids, Chronic and Recurrent dermatophytosis

12. Assessment of Antimicrobial Use in the Emergency Services: A Retrospective Audit Based on Risk Stratification and WHO AWaRe Classification

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Background:

Emergency Medical Services (EMS) serve as critical transition points between community and hospital care. Due to time constraints and clinical urgency, empirical antimicrobial prescribing is common, increasing the risk of inappropriate use. The WHO AWaRe framework recommends that $\geq 60\%$ of antibiotics used belong to the Access group to help mitigate antimicrobial resistance.

Aims & Objectives: To evaluate antimicrobial prescribing patterns in the EMS, correlate them with presenting syndromes and risk stratification, and classify agents according to the WHO AWaRe framework.

Methodology:

A retrospective audit was conducted from 1st–31st May 2025 in the EMS. Medical records of all patients during this period were reviewed. Those receiving at least one antimicrobial were included. Data on demographics, clinical syndrome, diagnosis, and antimicrobials prescribed were analyzed per WHO AWaRe categories and risk stratification.

Results:

Among 886 patients, 69% were discharged and 31% admitted. Overall, 24% received antimicrobials—21% of discharged and 32% of admitted patients. Discharged patients receiving AMAs were mostly low-risk (79% Type 1), while admitted patients were predominantly high-risk (56% Type 3). AMA use was highest among 18–40-year-olds (discharged) and those >60 years (admitted). Females constituted 54% of AMA recipients. Fever, GI disorders, and respiratory infections were the most common indications. According to AWaRe classification, 43% of prescribed AMAs were Access, 51% Watch, and 2% Reserve. Irrational combinations were noted in 2% of cases.

Conclusion:

Antimicrobial use in EMS reflects a high reliance on Watch group agents and suboptimal adherence to AWaRe targets. The presence of irrational combinations and higher-risk prescribing in admitted patients highlights the need for improved stewardship strategies. Strengthening syndrome-based protocols, promoting rational empirical use, and aligning practices with AWaRe guidelines are critical to ensure appropriate antimicrobial use and reduce the risk of resistance in this fast-paced clinical setting.

13. Comparative analysis of Direct antimicrobial susceptibility testing and Antibiotic Susceptibility Testing of blood cultures of Gram-Negative organisms in a tertiary care hospital

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Background:

Sepsis requires prompt diagnosis for effective management. Standard Antimicrobial Susceptibility Testing (AST) is time-consuming, highlighting the need for Direct Antimicrobial Susceptibility Testing (DST) to provide reports earlier.

Aims & Objectives: To compare the results of DST and AST in order to determine the feasibility and reliability of DST

Material & Methods:

We performed a retrospective cross-sectional comparative study conducted for 12 months at a tertiary care facility analysed positive blood culture isolates. The bottles were removed from the automated system once the sound signal of the instrument indicated the growth of bacteria, and 2 ml of broth was used for smear preparation and Gram staining, along with the microorganism identification test and DST. Only the samples containing gram-negative bacilli (GNB) were included in the study. Blood cultures with two or more morphological types, yeasts, or gram-positive organisms were excluded from the analysis.

Positive blood culture broth samples were plated on MacConkey Agar, Blood Agar and incubated at 35°C overnight to obtain isolated colonies. Routine biochemical tests were performed to identify microorganisms. The colonies were simultaneously inoculated in Mueller-Hinton Broth, making the suspension equivalent to a 0.5 McFarland standard, and then AST was performed by the Kirby-Bauer disc diffusion method. Interpretation of results was done according to the CLSI guidelines. Results were expressed in Whenever a test method yielded same susceptibility category as that of reference method, it is said to be categorically agreed. The categorical disagreement was further characterized into minor error (mE), major error (ME), and very major error (VME). When result in one method is intermediate and other method is susceptible or resistant, it is said to be mE. When reference method yields resistant category and test method yields susceptible category, this is called as very ME. When reference method result is susceptible and test method result is resistant, it is said to be ME.

Results:

Assessment of categorical Agreement and disagreement was done. *Pseudomonas aeruginosa* has better agreement than Enterobacterales and least agreement was seen in *Acinetobacter*

Conclusion:

The goal of diagnostic stewardship is to optimize patient management through continuous improvement in diagnostic care. Timely efforts are required for the early initiation of therapeutic interventions in sepsis, especially in critical illness when prompt administration of active antimicrobial agents is the keystone of sepsis management. DST by disk diffusion is a promising AST method that reduces TAT to 24 h after a blood culture is flagged positive.

14. The Final Frontier of Antibiotics: Retrospective Mapping of Resistance, Utilization, and Survival in ICU Patients Battling Multidrug-Resistant Infections

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Background:

Multidrug-resistant (MDR) infections are increasingly prevalent in ICUs, complicating empirical antimicrobial choices. Antimicrobial resistance surveillance through antibiograms and outcome analysis is vital to guide stewardship.

Aims and Objectives:

To analyse empirical antimicrobial use, resistance trends, and clinical outcomes in ICU patients with MDR infections and assess concordance with the antibiogram data.

Methods:

A single-centre retrospective study was conducted at tertiary centre (Jan 2023–Nov 2024), including critically ill adult patients diagnosed with MDR infections. Data on antimicrobial use, resistance profiles, and clinical outcomes (mortality, ICU stay) were extracted from records and compared against institutional antibiogram trends. The comparison between appropriate vs inappropriate empirical therapy was analysed by using appropriate statistical tests. The P-value <0.05 was considered as statistically significant.

Results:

Among ICU isolates, MRSA accounted for 46.7% of *S. aureus* pyogenic infections, while 7.1% of *Enterococcus faecalis* urine isolates were vancomycin-resistant. Blood isolates of *Enterobacteriales* showed 86.5% susceptibility to carbapenems and 76.9% to piperacillin-tazobactam. Respiratory isolates like *A. baumannii* and *K. pneumoniae* had poor susceptibility (<70%), reinforcing the need for tailored regimens. Early appropriate empirical therapy significantly reduced mortality and ICU stay ($P<0.05$). Inappropriate therapy and delays were associated with poorer outcomes. Antibiotic de-escalation based on culture results showed no increase in mortality and contributed to reduced resistance burden.

In ICU isolates, *A. baumannii* and *K. pneumoniae* showed extensive drug resistance, with 0% carbapenem sensitivity; colistin remained 100% effective in both. Minocycline and cefiderocol were effective against *A. baumannii*, while aztreonam–avibactam was preferred in suspected NDM-producing *Klebsiella*. *Enterococcus* spp. showed 7.1% VRE, with vancomycin effective in 92.9% of cases. Fluoroquinolones were largely ineffective across organisms, underscoring the need for tailored, antibiogram-driven empirical therapy.

Conclusions:

Empirical antibiotic strategies informed by local antibiogram trend improves outcome in critically ill MDR-infected patients. Continuous resistance surveillance and stewardship-driven de-escalation are critical to optimizing ICU antimicrobial protocols and combating AMR.

Keywords:

Antimicrobial stewardship, ICU, multidrug resistance, antibiogram, empirical therapy, de-escalation, India

15. “Comparative Efficacy and Safety of Itraconazole, SUBA-Itraconazole, and Voriconazole in Recalcitrant Dermatophytosis: A Randomized Open label active comparator clinical Trial”

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Background

Recalcitrant dermatophytosis poses a significant therapeutic challenge in India, driven by emerging antifungal resistance and suboptimal outcomes despite prolonged therapy. Itraconazole remains the standard of care, with recent guidelines supporting the use of SUBA-itraconazole for improved bioavailability. While early evidence suggests a potential role for voriconazole, direct head-to-head comparisons among these agents are lacking, underscoring the need for well-designed trials to guide optimal treatment strategies.

Objectives

To evaluate and compare the clinical efficacy, safety, pharmacokinetics, dermatokinetics, and immunomodulatory effects (IgE levels) of itraconazole, SUBA-itraconazole, and voriconazole in patients with recalcitrant dermatophytosis.

Methods

This prospective, randomized, open-label trial enrolled 45 patients with recalcitrant dermatophytosis, randomized equally into three parallel arms (n = 15 each) receiving itraconazole 200 mg OD, SUBA-itraconazole 130 mg OD, or voriconazole 400 mg OD for 8 weeks. Clinical cure was assessed using a composite Total Symptom Score (TSS), while mycological cure was determined via direct KOH mount. Skin scrapings were also collected for fungal culture and antifungal susceptibility testing (AFST). Serum IgE levels were measured at baseline and end of therapy. Both intention-to-treat and per-protocol analyses were performed, with safety monitored through serial organ function tests and adverse event reporting.

Results

Complete cure rates were 53.8%, 75%, and 84.6% (per-protocol), and 60%, 60%, and 73.3% (ITT) for itraconazole, SUBA-itraconazole, and voriconazole, respectively; differences were not statistically significant. Clinical and mycological cure rates followed a similar pattern, with no statistically significant differences. Relapse within 3 months occurred in 28.5% (itraconazole), 22.2% (SUBA-itraconazole), and 18.2% (voriconazole) of cured patients (p=0.875). Of the 45 enrolled patients, dermatophyte cultures were positive in 32 cases, with the *Trichophyton mentagrophytes/interdigitale* complex identified as the predominant species. Antifungal susceptibility testing revealed elevated minimum inhibitory concentrations (MICs) for terbinafine in the majority of isolates, whereas MICs for itraconazole and voriconazole were uniformly low (<1 µg/mL), indicating preserved in vitro susceptibility. A decline in total IgE levels was observed in all arms. Adverse events were more frequently reported in the Voriconazole group, including transient elevations in liver enzymes and visual disturbances; however, no serious adverse events or deaths occurred in any group.

Conclusion

Voriconazole demonstrated numerically higher cure rates, suggesting its potential role in recalcitrant dermatophytosis.

Keywords

Recalcitrant Dermatophytosis, Itraconazole, SUBA-Itraconazole, Voriconazole, Immunomodulation, IgE.

16. Clinical and Antimicrobial Stewardship impact of Matrix assisted laser desorption ionisation time of flight mass spectrometry (MALDI –TOF MS) in blood stream infection diagnostics: A Retrospective analysis from a quaternary care center in Chennai, India.

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Introduction: Blood stream infections (BSI) are associated with high morbidity and mortality and hence rapid identification of pathogens is pivotal for timely targeted antimicrobial therapy. Each hour of delay in antimicrobial administration was associated with an average decrease in survival of 7.6%. Conventional methods like biochemical tests often require 48–72hrs to yield species level identification, delaying definitive clinical decisions. MALDI-TOF MS offers rapid and species level identification within 2 to 24hrs after blood culture bottle flagged positive.

Objectives:

To evaluate the turnaround time and accuracy for MALDI-TOF MS for identification of BSI.

To analyse the role of MALDI –TOF MS in antimicrobial stewardship focussing on early intervention and reduction in broad spectrum antibiotic use.

Materials and methods: A retrospective observational study, which included all the blood culture sets received in the Department of Microbiology from February to July 2025. Samples were incubated in an automated BacT/ALERT 3D system (Biomérieux, France) and analysed after the system flagged them positive. Samples were analysed by Gram's staining followed by inoculation in Blood agar, Chocolate agar and MacConkey agar as per standard protocols and kept for 18–24hrs incubation at 37°C and chocodip as need be. Colonies were mounted on a slide and prepared for analysis using VITEK MS system software version 3.0 according to manufacturer's instructions. The identification was considered correct if the confidence values were between 60% and 99.9%, as indicated by the manufacturer.

Results: Out of 3731 blood culture samples received, 402 cultures (10.77%) yielded growth while 1.1% (43 samples) were identified as contaminants, rate within acceptable quality standards (<3%) as per ASM guidelines. The contaminants were followed up with appropriate corrective and preventive action and taken as a routine AMS indicator for continuous follow up. Among the 402 positive cultures, 296 (73.6%) were Monobacterial, 38 (9.4%) had yeast growth and 68 samples (16.9%) were Polymicrobial. Among 296 Monobacterial isolates, 260 (87.8%) showed rapid identification by MALDI-TOF MS and 36 (12.1%) showed no result. Among 296 isolates, 31 blood culture sets were requested for Biofire Filmarray Blood culture identification panel (BCID II) and all the results (100%) correlated well with MALDI TOF. Genus level concordance was observed in 100% of samples (260/260) while species level concordance was 97.6% (254/260). The average turnaround reporting time from blood culture positivity to identification was 2–24hrs. Antibiotic modifications were made in 32% (94) of patients after identification by MALDI-TOF MS. Appropriate targeted therapy was newly initiated in 19.5% (57) of patients. Decalation of antibiotics were happened in 12.5% (37) of patients. Cost of bacterial identification by MALDI-TOF MS was only 17–32% of the cost of conventional identification methods.

Conclusion: The integration of MALDI –TOF MS into BSI diagnostics significantly enhanced antimicrobial stewardship outcomes in our setting. By providing accurate species level identification within 2–24hrs after culture positivity, MALDI –TOF MS enabled early identification, timely antibiotic optimization and cost effective stewardship impact.

17. Faecal Microbiota Transplantation in the Management of MDR Gram-Negative Colonization: A Systematic Review

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Background:

The rise of multidrug-resistant (MDR) Gram-negative organisms like Carbapenem-Resistant Enterobacteriaceae (CRE), Extended-Spectrum Beta-Lactamase (ESBL) producers, and MDR Pseudomonas and Acinetobacter is a serious global health concern. These pathogens colonize the gut, serving as reservoirs for future infections, especially in immunocompromised patients. Antibiotics have limited success in decolonization and may harm the microbiome. Faecal microbiota transplantation (FMT) offers a promising, non-antibiotic strategy by restoring microbial diversity and colonization resistance.

Aims & Objectives: This systematic review aims to evaluate the clinical efficacy and safety of FMT in eradicating intestinal colonization with MDR Gram-negative organisms in human subjects.

Material & Methods:

We systematically searched PubMed, Scopus and Embase for studies published between January 2010 and July 2025. Search terms included combinations of "fecal microbiota transplantation" OR "FMT" AND "multidrug-resistant" AND ("Gram-negative" OR "Enterobacteriaceae" OR "CRE" OR "ESBL"). Eligible studies were clinical reports involving human subjects receiving FMT for decolonization of MDR Gram-negative organisms. Reviews, animal or in-vitro studies and those limited to Clostridium difficile infection (CDI) were excluded.

Results:

A total of 28 studies (2 RCTs, 6 prospective, 3 retrospective, 2 case series, 15 case reports) involving around 360 patients aged 6 months to >70 years were included. Most were immunocompromised (Hematopoietic Stem Cell Transplantation, CDI, Spinal cord injury). Targeted organisms were mainly CRE/Carbapenemase-Producing Enterobacteriaceae and ESBL-E, with some Pseudomonas and Acinetobacter; Vancomycin-Resistant Enterococci frequently co-occurred. FMT protocols varied. Decolonization rates were 41% in RCTs (vs 29% controls), 37.5–87.5% in cohorts, 40–71% in case series, and often 100% in case reports. Adverse events were mostly mild, with one graft-versus-host disease. Meta-analysis was not feasible due to heterogeneity.

Conclusion:

FMT shows considerable promise as a safe and effective strategy for gut decolonization of MDR Gram-negative organisms. Further large-scale trials and standardized protocols are needed to confirm its role in routine clinical practice.

18. Efficiency of Advanced Oxidation Processes (AOPs) in Removing Antibiotic Residues and Resistance Genes from Wastewater: A Systematic Review for Antimicrobial Stewardship Integration

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Background:

Antimicrobial resistance (AMR) poses a growing global health threat, undermining decades of progress in infectious disease control. While Antimicrobial Stewardship (AMS) programs have improved the rational use of antibiotics in clinical settings, environmental sources—particularly wastewater—serve as significant reservoirs of antibiotic residues and resistance genes (ARGs). Antibiotics, often excreted unmetabolized, enter municipal and hospital wastewater, where conventional treatment plants are inadequate for their complete removal. This allows sub-therapeutic antibiotic levels and ARGs to persist and promote resistance. While AMS traditionally focusses on the judicious use of antimicrobials within the clinical setup, its scope must now include downstream interventions that can minimize the release and spread of potential determinants of resistance. Therefore, this systematic review aims to provide an insight into the removal efficiency of antibiotics residues and ARGs.

Aims & Objectives:

- To assess the removal efficiency (%) of antibiotic residues and the reduction of antibiotic-resistance genes using different Advanced Oxidative Processes (AOPs)
- To identify any toxic transformation products formed during AOP treatment and their potential ecological risks and incorporate the findings into AMS framework
- To synthesize findings into recommendations, for integrating AOPs into a broader framework of AMS.

Material & Methods:

A systematic literature search (PubMed, Embase, Scopus) using a custom-made search string containing the keywords 'Wastewater', 'Antibiotic Residue', 'Antibiotic Resistance Gene' and 'Advanced Oxidative Process' identified 117 articles published from January 2020 to June 2025. 28 studies meeting inclusion criteria were reviewed.

Results:

AOPs effectively reduce antibiotic residues, yet complete ARG removal is inconsistent. Moreover, high removal rates do not guarantee ecological safety, as residual antibiotic levels and increased effluent toxicity remain concerns. This highlights a disconnect between chemical degradation and biological risk mitigation.

Conclusion:

AOPs hold promise for mitigating AMR through wastewater treatment. However, their application must extend beyond antibiotic degradation to address ARG persistence and ecotoxicity. A holistic, environmentally integrated AMS approach is vital.

Keywords:

Antimicrobial Resistance, Advanced Oxidation Processes, Wastewater, Antibiotic Residues, Resistance Genes, Antimicrobial Stewardship, Ecopharmacology

19. An Open-label, Randomized, Pragmatic Clinical Trial Comparing The Current Clinical Practices To Pharmacologist Guided Optimization Of Antimicrobial Therapy Based On Average Creatinine-Urea Clearance In Critically-ill Patients- Interim analysis of a pilot study

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Background:

Conventional dosing of renally cleared antimicrobials in critically-ill patients is complicated by fluctuating renal function, often resulting in sub-therapeutic exposure or toxicity. This may contribute to treatment failures, longer ICU stays, and antimicrobial resistance. Employing average creatinine-urea clearance (Avg. Cr-Ur Cl) to personalize dosing is a novel strategy, with limited clinical evidence to date.

Aims & Objectives: To rationalize the overuse/misuse of the reserve drugs in intensive care units and to avoid emergence of drug resistance.

Material & Methods:

This open-label, stratified-block randomized (1:1), pilot study was conducted in a tertiary care ICU (Oct 2024–June 2025). Adults (18–75 years) on ≥ 1 renally-cleared antimicrobial and likely to stay in CCU for >24 h were randomized to intervention (pharmacologist-guided optimization using Avg. Cr-Ur Cl from 8-hour urine collection) or control (usual care). The primary outcome was change in SOFA score (Δ SOFA) at 72h and day 7. Key secondary outcomes includes, dose optimization events, ICU length-of-stay (LOS), 28-day mortality, ventilator-free days, antimicrobial consumption (DOT/LOT ratio).

Results:

Thirty-two patients (SOFA < 10 vs ≥ 10) were randomized (Group A/intervention n=17, Group B/control n=15). At 72h, median Δ SOFA in SOFA ≥ 10 subgroup was -3 ($-3, 0.5$) in Group A vs -1 ($-2.75, 1.5$) in Group B; by day 7, -1 ($-5.5, 3$) vs -2.5 ($-3.75, -1.25$), respectively. Twenty dose optimization events occurred in Group A. Median ICU LOS was 7 (4.75, 8.75) days in Group A vs 10 (8, 26) in Group B in SOFA < 10 subgroup; 28-day mortality was 40% vs 33.3%. Acceptance rate of recommendation was 83.3%.

Conclusion:

Pharmacologist-guided dosing using Avg. Cr-Ur Cl is feasible with high acceptance (83.3%), reduces Δ SOFA at day 3 (SOFA ≥ 10) and shortens ICU stay, Challenges include multifactorial disease progression. Larger, adequately powered trials are warranted to confirm mortality and stewardship benefits.

20. Adverse Drug Reactions to Vancomycin in the Paediatric Population: A Case Series

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Background:

Vancomycin is used in the management of gram-positive infections caused by Methicillin-Resistant *Staphylococcus aureus* (MRSA) and *Clostridioides difficile*. Despite its therapeutic benefits, vancomycin causes adverse drug reactions (ADRs), particularly hypersensitivity reactions such as Vancomycin Infusion Reaction (VIR) or "Red Man Syndrome." VIR is a non-IgE-mediated pseudo-allergic reaction primarily linked to rapid infusion rates and mediated through Mas-related G protein-coupled receptor member X2 (MRGPRX2). Identifying such reactions in children, especially neonates, can be challenging due to nonspecific clinical features and underdeveloped immune responses. This case series highlights vancomycin-induced hypersensitivity reactions following intradermal test dose in infants and neonates which is an underreported occurrence, aiming to highlight early recognition, management, and implications for clinical practice.

Case Series:

Fourteen paediatric patients aged between 22 days, and 18 months had hypersensitivity reactions following vancomycin administration, out of which 13 experienced it to test dose and one to first full dose. Symptoms resolved either spontaneously or after administration of pheniramine maleate in all cases. Based on clinical picture and culture sensitivity, vancomycin was discontinued in all children and alternate antimicrobials were administered.

Discussion:

This case series highlights that adverse drug reactions (ADRs) in paediatric age group to vancomycin test dose, primarily presenting as rash, redness, and swelling. Despite changing brands after initial reactions, ADRs persisted in children. Both these brands were used in adults during this period, but no ADRs were reported. This difference may be due to MRGPRX2-mediated mast cell activation, with paediatric skin showing greater mast cell density, vascular permeability, and immature immune regulation, leading to local reactions.

Conclusion: Vancomycin-induced hypersensitivity in children, though usually mild, requires early recognition and proper management to avoid serious outcomes. In spite of importance of test dose it is neglected at times which may result in unwanted consequences.

20. Adverse Drug Reactions to Vancomycin in the Paediatric Population: A Case Series

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Background:

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Conclusion: Vancomycin-induced hypersensitivity in children, though usually mild, requires early recognition and proper management to avoid serious outcomes. In spite of importance of test dose it is neglected at times which may result in unwanted consequences.

21. Assessing the In-Vitro activity of Cefepime–Enmetazobactam and Plazomicin in ESBL and AmpC Beta Lactamase Co-Producing Enterobacterales Isolates Causing UTIs in a Tertiary Health-care Setup.

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Background:

Enterobacterales producing ESBLs and ACBLs are resistant to oxyimino-cephalosporins and commonly cause urinary and bloodstream infections, complicating treatment. Their resistance genes, often present on plasmids, enable β -lactam antibiotic breakdown and are often linked to increased virulence and hence morbidity and mortality. Non-ACBL inducing carbapenems like Meropenem are often considered drugs of choice in upper UTI's.

Cefepime, a fourth-generation cephalosporin, is approved for treating serious infections such as uUTI, cUTI, pyelonephritis, and pneumonia, especially caused by ACBLs; however, it is ineffective against ESBL-producing strains.

Enmetazobactam is a new penicillanic acid sulfone β -lactamase inhibitor (BLI), structurally similar to tazobactam, but with an added methyl group that gives it a zwitterionic (net neutral) charge, improving its ability to penetrate bacterial cells. It has a strong inhibitory activity against CTX-M, ESBLs, and other class A β -lactamases. Since cefepime is not significantly hydrolyzed by most AmpC and OXA β -lactamases, it serves as an ideal partner for combination with enmetazobactam, especially when they both have matching pharmacokinetics.

Plazomicin is a next-generation aminoglycoside antibiotic that targets the bacterial 30S ribosomal subunit, thus inhibiting protein synthesis with concentration-dependent kinetics. It has demonstrated potent efficacy against Enterobacterales, even those resistant to other aminoglycosides.

Aims & Objectives : Assessment of the in-vitro activity of Cefepime – Enmetazobactam and Plazomicin in ESBL and AmpC Beta Lactamase Co-Producing Enterobacterales causing UTI and their comparison with existing treatment options

Material & Methods: Over a period of two months from May-June, 2025, urine samples from patients diagnosed with UTI were prospectively collected at a tertiary care hospital. Enterobacterales isolates were screened and confirmed for ESBL and AmpC coproduction using standard phenotypic methods. The in-vitro susceptibility to Cefepime–Enmetazobactam and Plazomicin was assessed using Kirby–Bauer disk diffusion (KBDD) method and interpreted using CLSI guidelines M100 35Ed.

Results: A total of 100 Enterobacterales ESBL + ACBL co-producing isolates were analysed in the study. Neither agents were found to be non-inferior in their in vitro efficacy against ESBL + ACBL co-producing isolates, and their efficacy was comparable to carbapenems.

Conclusion:

This prospective observational study highlights the potent in vitro activity of Cefepime–Enmetazbactam and Plazomicin against ESBL and AmpC coproducing Enterobacterales in UTIs. These findings support their potential utility as therapeutic options in cases of antimicrobial resistance, especially as carbapenem-sparing drugs

22. Antibiotic Resistance Patterns in Vancomycin-Resistant Enterococci: A Systematic Review and Meta-Analysis Including Real-World Data from a Cancer Hospital in India

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Background:

Vancomycin-resistant Enterococci (VRE) have emerged as significant nosocomial pathogens, especially in immunocompromised populations such as cancer patients. With increasing reliance on alternative agents like Linezolid, Daptomycin, Teicoplanin, and Tigecycline, understanding global resistance trends is critical for informed clinical decision-making.

Aims & Objectives:

To assess global resistance patterns of VRE to key antibiotics (Linezolid, Daptomycin, Teicoplanin, Tigecycline) through a systematic review and meta-analysis, and to integrate real-world susceptibility data from a tertiary care cancer hospital in India

Material&Methods:

A systematic review of 30 Pub Med indexed studies reporting antibiotic susceptibility in VRE (*E. faecium* and *E. faecalis*) was conducted. Data on resistance rates to Linezolid, Daptomycin, Teicoplanin, and Tigecycline were extracted. Meta-analysis was performed using random-effects models. Heterogeneity was assessed via the I^2 statistic. Additionally, a retrospective analysis of antimicrobial susceptibility testing (AST) results from VITEK 2 (May 2021 – April 2025) was included from an oncology-focused microbiology laboratory, using 1,834 single, non-duplicate VRE isolates.

Results:

Pooled resistance among VRE isolates was estimated as follows: Linezolid 3.1% (95% CI: 1.9–4.5%), Daptomycin 1.2% (95% CI: 0.4–2.3%), Teicoplanin 9.6% (95% CI: 6.3–13.8%), and Tigecycline 2.9% (95% CI: 1.6–4.8%). Resistance rates were higher in *E. faecium* compared to *E. faecalis*. The in-house cancer dataset (n=1,834) reported Linezolid resistance at 2.5% and Teicoplanin resistance at 7.2%, closely aligning with global estimates.

Conclusion:

This meta-analysis confirms that resistance to Linezolid and Tigecycline remains low in VRE globally, while Teicoplanin resistance is more variable. The inclusion of cancer patient-specific data strengthens the clinical relevance of these findings and highlights the importance of continuous local surveillance to guide antimicrobial stewardship in high-risk populations.

23. Assessment of Surgical Antimicrobial Prophylaxis and impact of implementation of an Antimicrobial Stewardship intervention in patients undergoing clean and clean-contaminated surgery at a tertiary care hospital

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Dr. Swagata Brahmachari, Professor, Department of General Surgery, AIIMS Bhopal.

Background:

Surgical Antimicrobial Prophylaxis (SAP) is a critical component in preventing Surgical Site Infections (SSIs), particularly in clean and clean-contaminated surgeries. However, inappropriate practices in antimicrobial choice, timing, and duration contribute to the emergence of antimicrobial resistance (AMR). Rational antimicrobial use through Antimicrobial Stewardship Programs (AMSP) is essential to optimize SAP.

Objectives:

To assess the appropriateness of SAP in clean and clean-contaminated surgeries and evaluate the impact of AMSP interventions.

Methods:

This prospective interventional study was conducted over a period of 19 months in patients undergoing clean and clean-contaminated surgery in the Department of General Surgery. The study included three phases: a pre-intervention audit, AMSP intervention (including training sessions, focus group discussions), and a post-intervention evaluation. Data were assessed for compliance with SAP guidelines according to ICMR Treatment Guidelines for Antimicrobial Use in Common Syndromes 2022 and WHO AWaRe (Access, Watch, Reserve) Antibiotic Book, 2022 and also observed the SSI incidence and DDD/100 patients days were calculated. Intervention was planned with the analysed data of pre-intervention phase. In the post-intervention phase, the same parameters were re-evaluated to assess improvements in guideline compliance.

[Ethics committee approval number: AIIMS/BPL/IECSR/JAN/23/PG/01]

Results:

An analysis of 238 participants from both the phases revealed that a significant improvement in compliance with SAP guidelines was observed post-intervention. Education and training led to increased awareness and appropriate choice of antimicrobials. Prospective audits with feedback promoted timely administration and restricted prophylaxis duration to the recommended 24-hour period. FGDs identified local practice gaps. These interventions collectively resulted in higher rates of appropriate antimicrobial use, a notable reduction in total antimicrobial consumption (DDD/100 patient-days), and a decline in SSI incidence in the post-intervention group.

Conclusion:

AMSP interventions can lead to improved compliance with SAP guidelines and rational antimicrobial use, demonstrating a reduction in SSI rates and antimicrobial burden.

24. Comparative Effectiveness of Conventional and 3D-Bioprinted Biofilm models in studying resistant microbial strains: A meta-analytic review of predictive and Clinical outcomes

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Background:

Antimicrobial resistance causes 1.3 million direct and 5 million indirect deaths annually- surpassing TB, HIV and malaria with estimated 39 million deaths and 28 million people in poverty by 2050. Nosocomial infections affect over 25% in developing countries, with 60.6% of isolates resistant and 40000 annual deaths. Biofilms cause 80% of chronic infections, resisting antimicrobials 10-1000x more than planktonic forms, forming in device and non-device infections (cystic fibrosis, diabetic foot etc.,). Factors like hydrodynamics, quorum-sensing and shear stress worsen outcomes: longer stays, ICU admissions, recurrence and 30-day mortality. Flow-cell systems enable biofilm study, but are low-throughput with imaging and removal issues. 3D-bioprinting offers customizable, realistic models, supporting robust biofilm formation and better in vivo simulation

Aims & Objectives:

1. Assess the predictive accuracy of conventional vs 3D-bioprinted flow-cell in stimulating in-vivo biofilm behavior
2. Assess methodological factors influencing model performance
3. Quantify key effect sizes to guide model selection for predicting treatment outcomes

Material & Methods:

We conducted PRISMA-guided systematic review (2008-2025) across PubMed, Scopus, and Web of Science comparing conventional and 3D-bioprinted flow-cell biofilm models of *Pseudomonas aeruginosa*, *Escherichia coli*, *Staphylococcus aureus* and *Candida albicans*. We used a random-effects model to calculate effect size and heterogeneity (I²).

Results:

A total of 42 studies satisfied the inclusion criteria, showing enhanced growth (31.6-38.2%), biomass (18.6-25.6%), surface roughness (33.8-42.1%) and increased minimum biofilm inhibitory (4-8X) and eradication concentration (2-4X) indicating stronger biofilm resilience, lower treatment efficacy and infection persistence by 3D-bioprinting. There was a moderate heterogeneity (I²) (56%) due to differences in materials and microbial strains

Conclusion:

3D-bioprinting enables accurate modelling of biofilm behavior, host-pathogen interactions, supports personalized therapies, antimicrobial stewardship (pre-treatment testing) and novel strategies (eg; nano-particles, photodynamic therapy, visco-elastic matrix targeting agents, CRISPR-Cas, quorum sensing inhibitors) to combat AMR.

25. Evaluating the association between antibiotic consumption using Defined Daily Dose (DDD) score and Antibiogram to assess the prevalence of Antimicrobial Resistance (AMR) in a Tertiary Care Hospital: A Prospective, Observational Study.

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Background:

Antimicrobial Resistance (AMR) is a growing global threat, projected to cause over 10 million deaths annually by 2050. Misuse of antibiotics increases resistance, treatment costs, and harms both patients and hospital ecosystems. Effective control includes Antimicrobial Stewardship Programme's (AMSPs), Infection Control Teams, WHO's ATC/DDD metrics, Antibiogram, and AWARe Classification. These tools guide proper antibiotic use, improve outcomes, and responsible antibiotic prescribing.

Aims & Objectives:

1. To estimate the usage of antimicrobials from inpatient hospital prescription database.
2. To assess the rationality of Antimicrobial's usage based on AWARe Classification.
3. To evaluate the relationship between Daily Defined Dose (DDD) with Antimicrobial Resistance (AMR) using Antibiogram.

Material & Methods:

The study will assess inpatient antibiotic use in a tertiary care hospital using WHO's 2024 ATC/DDD index and AWARe classification. Data on patient demographics, antibiotic usage, and microbiological tests will be collected. Antibiograms will be analyzed to correlate antibiotic consumption with resistance patterns.

Results:

A study of 613 patients from 2 months revealed that most of them were aged 19–60 years (66.39%) and majority are males (54.48%). The average hospital stay was over 10 days for 48.45% of patients.

Piperacillin/Tazobactam had the highest consumption of 8410.5 grams among all the antimicrobials in the study though used in only 100 patients. The most used antimicrobial among the patients was Cefuroxime (n=392) with a total consumption of 2983.53 grams followed by Metronidazole (n=170). Among the Daily Defined Dose (DDD) of the individual drugs, Cefuroxime had the highest DDD of 1543.92 followed by Metronidazole.

Most antibiotics were from the Watch group (58.95%), followed by Access (35.42%), Reserve (1.2%).

Conclusion:

An Antimicrobial Stewardship Program (AMSP) promotes safe antibiotic use, reducing resistance also aids hospitals in rational prescribing, reserving high-end antibiotics, and selecting proper antimicrobials using AWARe classification. Incorporating DDD scores and antibiograms enhances treatment and prevents AMR. This approach yields a win-win situation for multiple disciplines to combat AMR.

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1. To analyze the performance of Galactomannan Antigen Detection assay in cases of **clinically suspected Pulmonary Aspergillosis**

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Background:

Pulmonary aspergillosis is a lung infection caused by the fungus *Aspergillus*, which is commonly found in the environment. It can lead to different types of disease depending on the person's health and immune status. Diagnosing Pulmonary aspergillosis early is challenging because of nonspecific radiological and clinical features and occur late in the course of the disease. To improve early diagnosis, non-invasive tests like the Galactomannan antigen detection assay have become important.

Aims & Objectives:

To evaluate the diagnostic performance of Galactomannan antigen detection as a screening tool and to isolate *Aspergillus* species from BAL specimens obtained from patients of clinically suspected Pulmonary aspergillosis.

Material & Methods:

Prospective observational study was conducted with BAL specimen collected from the patients with clinical and radiological suspicion of Pulmonary Aspergillosis over a period of 45 days. The samples were subjected to direct microscopy and were inoculated onto SDA plates and were incubated at both 25°C and 37°C. Additionally, BAL samples were subjected to GM Rapid Antigen testing, which provides rapid results that can guide early therapeutic intervention while awaiting culture confirmation..

Results:

During this study period, BAL of total of 25 patients of suspected cases, tested for GM antigen detection. This assay has increased sensitivity for early detection of Aspergillosis when compared to conventional workflow.

Conclusion:

The GM antigen detection assay in BAL fluid is a highly sensitive and reasonably specific tool for diagnosing pulmonary aspergillosis in clinically suspected cases. It is especially valuable for early detection in high-risk, immunocompromised patients, and can guide timely antifungal therapy initiation.

2. Tracing the Epidemiological Evidence of Fatal Necrotizing Skin infection by **Saksenaea vasiformis** through Molecular analysis

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Introduction: *Saksenaea vasiformis* is an emerging non -sporulating zygomycete, mainly causing subcutaneous and disseminated infections with high mortality. As compared to other Mucorales, it causes infection even in an immuno-competent host also.

Materials and methods:

Case history-

A 68-year-old male patient with chronic obstructive pulmonary disease presented with 2 weeks duration of fever and breathlessness and 4 days duration of multiple tender slightly warm subcutaneous tender nodules on arms, thighs and back of trunk

with surface showing bluish red color. On second day of admission most of these ulcerated and similar new lesions appeared. The case was misdiagnosed and patient was started on antibiotics. A fine needle aspiration cytology from the skin lesion showed non-septate ribbon-like hyphae branching at obtuse angles. The patient deteriorated and died before starting antifungals. The diagnosis was made posthumously.

Isolate was identified by fungal culture and sequencing of the ITS region of the rDNA. Environmental samples were also processed to identify the source of infection.

Result:

Saksenaea vasiformis was identified by ITS sequencing. Virulence factors of the isolate was studied by various biochemical tests. Environmental samples also yielded the same pathogen. Phylogenetic analysis of the strains concluded the source of infection.

Discussion and Conclusion:

Saksenaea spp. is sometimes missed or causes delay in diagnosis due to its non-sporulating nature. *Saksenaea vasiformis*, *Saksenaea erythrospora* are present in environment and cause infections due to insect bite, trauma, contamination of abraded skin etc. Early diagnosis and administration of antifungals can avert the eventual lethal outcome of the disease. ITS sequencing and Phylogenetic analysis help to study the emergence of new species as well as tracing the source of infection.

3. Novel Strategies to Combat Antimicrobial Resistance in the Post-Antibiotic Era: A narrative review

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Background:

The antimicrobial resistance (AMR) has become a “silent pandemic” with many diseases being resistant to the traditional antimicrobials currently present. The limitations of conventional antibiotics and the slow progress in the development of the newer ones necessitate the need for newer innovative multi-targeted strategies.

Aims & Objectives:

To review and synthesize key scientific advances in non-conventional strategies to combat the antimicrobial resistance, focusing on newer emerging modalities with novel mechanism of action.

Material & Methods:

This review evaluates a spectrum of non-conventional antimicrobial modalities and enabling technologies that includes the resurgence of bacteriophage therapy, the development of CRISPR-based antimicrobials, the evolution of antimicrobial peptides (AMPs) and the application of anti-virulence and anti-biofilm agents to disarm pathogens. The diverse strategies examined here represent a vital and expanding pipeline of non-conventional antimicrobials, signifying a major expansion of the therapeutic landscape beyond conventional antibiotics.

Results:

- Bacteriophage therapy: Mainly targets the resistant pathogens
- CRISPR – Based antimicrobials : Microbiome sparing action targeting only the

disease-causing pathogens enabling targeted eradication

- Antimicrobial peptides: Re-engineered for greater stability, multifunctionality, and reduced resistance induction
- Anti-virulence and anti-biofilm agents: Inhibit bacterial communication (quorum sensing), toxin production, and nutrient acquisition rendering the pathogen harmless and host response eliminating the pathogen naturally.
- Host-directed therapies: Targeting host immune pathways to improve pathogen clearance and reduce immunopathology
- Nanotechnology: Facilitating both intrinsic antimicrobial action and targeted delivery systems
- AI and synthetic biology platforms: Revolutionizing drug discovery through rapid design build test learn cycles

Conclusion:

The future of AMR mitigation lies in an integrated, precision-based, and personalized therapeutic framework. These novel strategies promise to reshape infectious disease treatment but require adaptive regulatory, economic, and clinical infrastructure for successful translation into widespread clinical use.

Key words: Antimicrobial resistance, bacteriophage therapy, CRISPR-Cas antimicrobials, antimicrobial peptides, anti-virulence therapy, host-directed therapy, nanotechnology, artificial intelligence.

4. Cryptococcal Lymphadenitis Masquerading as Tuberculosis in an HIV-Positive Patient

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Background:

Cryptococcosis is an opportunistic fungal infection predominantly affecting immunocompromised individuals, especially those with advanced HIV/AIDS. While pulmonary and central nervous system involvement are common, lymphadenopathy as the predominant presentation is rare and may closely mimic tuberculosis, resulting in diagnostic delays and inappropriate treatment.

Objectives:

To present a rare case of cryptococcal lymphadenitis in an HIV-positive patient initially suspected to have tubercular lymphadenitis, and to highlight the importance of microbiological confirmation prior to initiating antitubercular therapy (ATT) to prevent antimicrobial resistance.

Methods:

A 24-year-old HIV-positive female (CD4 count: 13/ μ L) presented with high-grade fever, productive cough, significant weight loss, and bilateral cervical and submandibular lymphadenopathy. Chest imaging revealed bilateral centrilobular nodules with tree-in-bud appearance, patchy consolidation, and necrotic mediastinal lymphadenopathy. FNAC from cervical lymph nodes demonstrated numerous encapsulated yeast-like organisms with narrow-based budding, suggestive of *Cryptococcus* spp., confirmed by periodic acid-Schiff (PAS) and India ink staining. CSF and BAL samples also revealed cryptococcal organisms, with CSF culture confirming *Cryptococcus neoformans*.

Results:

The initial provisional diagnosis of tubercular lymphadenitis was revised to disseminated cryptococcosis. ATT was withheld, and the patient received induction antifungal therapy with liposomal Amphotericin B and Flucytosine. She demonstrated

marked clinical improvement and was discharged after completing the induction phase.

Conclusions:

In high tuberculosis burden settings, empirical ATT in HIV-positive patients with lymphadenopathy should be avoided without laboratory confirmation. Such an approach risks mismanagement, drug toxicity, and contributes to antimicrobial resistance. Early utilization of cytopathology, fungal cultures, and antigen-based diagnostics enables accurate diagnosis and targeted therapy, as demonstrated in this case.

Keywords: Cryptococcosis, HIV, Lymphadenitis, Antimicrobial Resistance, Antitubercular Therapy, FNAC

5. Invasive Fungal Infection Mimicking Sarcoidosis: A Diagnostic Dilemma

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Background: Sarcoidosis is a granulomatous disease with multisystem involvement with variable clinical presentation. It can mimic infectious diseases, malignancy and other autoimmune diseases. Among these invasive fungal infections, those caused by *Aspergillus* species pose significant diagnostic challenges in resource-limited settings. Uniqueness of the case: This case report describes an unusual case of invasive fungal infection mimicking sarcoidosis and lymphoma.

Case Presentation: A 41-year-old immunocompetent male presented with intermittent fever for 2.5 months, weight loss, abdominal pain and dry cough. Imaging showed hepatosplenomegaly with multiple hypo-enhancing lesions and mediastinal and abdominal lymphadenopathy. Elevated serum ACE levels (73 U/L) and non-necrotic lymphadenopathy on PET-CT pointed toward sarcoidosis. EBUS-TBNA was inconclusive, showing only reactive lymphadenitis. Steroids were initiated empirically. Subsequent fungal culture from the EBUS-TBNA specimen grew *Aspergillus fumigatus*, confirming invasive fungal infection. Steroids were stopped, and antifungal treatment commenced.

Discussion and Conclusion: Invasive fungal infections can mimic sarcoidosis both radiologically and biochemically. This case highlights the importance of establishing a tissue diagnosis before starting immunosuppressive therapy. A thorough evaluation, including fungal cultures, is essential to avoid diagnostic pitfalls and therapeutic adverse effects.

6. A retrospect record based study of bacteriological isolates from stool samples : A tertiary care hospital study in Goa

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Background:

Diarrhoea is one of the major public health concern at the international level, mainly in developing countries like India. They remain the major contributors to acute enteric infections and diarrhoea mainly in children and in adults.

Aims & Objectives:

This study aims to isolate the pathogens from stool specimens of diarrhoeal cases and to determine the antimicrobial susceptibility pattern in tertiary care setup which includes inpatients and outpatients.

Material & Methods :

An Institutional based Retrospective Cross-sectional study was carried out among 837 members which includes both children and adult population with diarrhoea from January 2025 to June 2025 in Goa.

Method of Analysis:

Stool specimen was collected from all participants who presented with diarrhoea. A wet mount preparation was done and looked for the presence of RBCs, Pus cells and any other parasites/ eggs/ larvae.

Identification of Growth:

Specimen was processed for the identification of Salmonella, Shigella and Vibrio species using MacConkey agar, Xylose Lysine Deoxycholate agar, Thiosulphate Citrate Bile salts Sucrose agar and further Biochemical tests done. The antimicrobial susceptibility pattern of isolates was performed using the Kirby-Bauer disc diffusion technique. The data was entered into Biomerieux VITEK 2 release version 9 for confirmational identification of species.

Results:

A total of 837 samples were collected, in which 248 were males (29.6%), 318 were females (37.9%) and 271 were children (32.3%) over a period of 6 months from January to June. 15 samples showed Salmonella and Shigella. Vibrio species were not isolated. Salmonella cases were 7 (46.6%) and Shigella were 8 cases (53.3%). Majority of the infected patients belong to pediatric age group.

Antibiotic sensitivity:

Among Salmonella isolates, highest Sensitivity was observed to Levofloxacin (86%), Ciprofloxacin (88%), and Azithromycin (75%). Resistance was seen to Ampicillin (82%), Chloramphenicol (78.9%) and Cotrimoxazole (57.2%).

Most of the Shigella isolates were sensitive to Ciprofloxacin (88%), Levofloxacin (82%) and Meropenem (72%), and resistant to Ampicillin (75%), Tetracycline (72%), Cotrimoxazole (69%) and Chloramphenicol (62%). Multi-drug resistance was noted in 2 (98.57%) and 1 (92.5%) of Salmonella and Shigella cases.

Conclusion:

Out of 837 samples analysed, 7 samples were positive for Salmonella of which 3 were from pediatric age group, 1 from geriatric age group and 3 from middle age group. 8 samples were positive for Shigella of which 5 samples were from Pediatric age group and 3 samples from middle age group. Was equally distributed among both genders.

Keywords:

Diarrhoea, Salmonella, Shigella, Antimicrobial Susceptibility.

7. From Swab to Spectrum: A Study of Ear Pathogens and Their Antimicrobial Resistance Pattern in a Tertiary Care Centre

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Background: Otitis and other ear infections are common clinical presentations in ENT practice. With the increasing burden of multidrug-resistant organisms, accurate identification of causative pathogens and their resistance profiles is crucial for guiding empirical therapy. Continuous monitoring is therefore essential in tertiary care hospitals.

Aims & Objectives: To determine the spectrum of pathogens causing ear infections and to study their antimicrobial resistance patterns, with a focus on Pseudomonas species, the most common isolate.

Material & Methods:

- **Study:** A prospective observational study was conducted over six months (Jan–Jun 2025) in the Department of Microbiology, ESIC Medical College and Hospital, K.K Nagar, Chennai.
- **Sample size:** 61 patients presented with signs of ear infections.
- **Sample collection:** Ear swabs were collected under aseptic precautions.
- **Processing:** Standard microbiological techniques like specimen collection, direct microscopy, primary culture, biochemical/automated identification methods and AST were done.
- **Identification:** Isolates identified up to species level.
- **Antimicrobial Susceptibility Testing (AST):** Performed using the Kirby–Bauer disk diffusion method, interpreted as per recent CLSI guidelines.

Results: Out of 61 ear swab samples, the following organisms were isolated:

Resistance pattern in *Pseudomonas* isolates (n=35):

Conclusion: *Pseudomonas* species was the predominant pathogen in ear infections in this cohort, exhibiting considerable resistance to aminoglycosides and fluoroquinolones. The identification of multidrug-resistant isolates, including MRSA and non-fermenting Gram-negative bacilli, underscores the need for continuous surveillance, judicious antibiotic use, and effective antimicrobial stewardship programs to improve patient outcomes. Encouraging rational prescribing practices and enhancing awareness are vital to slow the progression of resistance. Therefore, regular audits are indispensable to uphold quality standards within the healthcare system.

8. Evaluation Of In Vitro Activity Of Eravacycline In Carbapenemase Producing Enterobacterales At A Tertiary Care Cancer Centre.

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BACKGROUND: Eravacycline is a synthetic, novel fluorocycline antibiotic of the class tetracycline that has a broad spectrum of activity against carbapenem resistant enterobacterales, gram positive bacteria and anaerobes. The aim of this study was to evaluate the invitro effectiveness of eravacycline in clinical isolates of carbapenemase producing enterobacterales and its comparison with tigecycline.

MATERIALS AND METHODS: A Prospective Observational study conducted in the Department of Microbiology, Tata Memorial Hospital, Mumbai from November 2024 – June 2025 in 100 carbapenemase producing isolates obtained from various clinical specimens representing IAI, UTI, sepsis etc. Carbapenem resistant enterobacterales isolates were identified using Vitek 2 and the resistant genotypes were detected using a rapid immunochromatographic lateral flow assay test. The MIC values were obtained using E strips of Eravacycline tested with a 0.5 McF isolate on Mueller Hinton agar plates.

RESULTS: Out of 100 isolates, 52 (52%) were *Klebsiella pneumoniae*. 42 (42%) were *Escherichia coli*, 6 were *Enterobacter cloacae* (6%). 52 (52%) of them were NDM only isolates, 29 (29%) were coproducers of NDM and OXA 48. Eravacycline was susceptible in 48 (92%) of NDM only isolates, 25 (86%) of NDM and OXA 48, 4 (100%) NDM and KPC

isolates and 7 (88%) OXA 48 only isolates.

CONCLUSION: Eravacycline exhibited an excellent spectrum of activity against multidrug resistant pathogens, like carbapenemase-producing *E. coli* and *K. pneumoniae*. The existence of an oral formulation renders eravacycline the sole contemporary, broad-spectrum tetracycline suitable for sequential therapy in severe infections, including cUTI and cAIs. Additional advantages encompass the ease of administration as a monotherapy, the potential for once-daily dosing, effective lung penetration, and encouraging efficacy against bacterial biofilm formation.

9. Rationality Assessment Tool-Based Assessment of Antimicrobial Prescriptions: Findings from a Multicentric Point Prevalence Survey in India

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Background:

Point Prevalence Surveys (PPS) play a vital role in assessing antibiotic use and prescribing practices. This substudy uses the Antimicrobial Rationality Assessment Tool (AmRAT-2.0) to assess prescription rationality across five participating tertiary care hospitals in India.

Aims & Objectives:

To evaluate the rationality of systemic antimicrobial prescriptions in tertiary care hospitals across India. To identify inappropriate prescribing patterns with respect to antibiotic choice, dose and duration

Material & Methods:

This substudy was carried out as part of the PPS, including medical, surgical and intensive care units. Patterns of antimicrobial use with indications, purpose, rationality assessment (according to the AmRAT 2.0 tool) and isolated pathogens were evaluated by the site team. At the second level, two experts (with nearly 5 years of experience in audit and feedback) reviewed the observations using the same tool in a blinded manner.

Results:

Across the five sites, a total of 495 prescriptions were evaluated, of which 379 (77%) were found to be rational and 116 (23 %) were assessed as irrational at the level of the participating site. Among the irrational prescriptions, 72 (62%) had an incorrect choice, 35 (30%) had an incorrect dose, and 53 (45%) had an incorrect duration of therapy. There was concordance between the site-level and Level 2 assessments in 373 (75%) prescriptions.

Conclusion:

Significant inter-site variability in prescription appropriateness was observed, highlighting the need for: Audit-feedback, Strengthening of institutional antibiotic guidelines, and Incorporating AmRAT-based periodic audits can help improve antimicrobial use practices.

10. Impact of Multidrug-Resistant Organisms on Routine Antibigrams of Blood Culture and the Role of Improper Blood Culture Collection

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Background:

Blood culture is a critical diagnostic tool for identifying bloodstream infections and guiding antimicrobial therapy. However, improper blood collection techniques can significantly compromise the quality of results, leading to contamination, false-positive growth, or underrepresentation of true pathogens. This not only skews routine antibiogram data but may also contribute to the apparent rise in multi-drug resistant organisms (MDROs).

Objectives :

To evaluate the impact of MDROs on routine antibiogram and the reliability of routine antibiogram and to assess the role of improper sampling .

Methods:

A retrospective analysis of blood culture reports and antibiograms over six months was performed to identify the frequency of MDROs and their correlation with documented contamination rates . When MDRO is reported as a hospital contaminant, it indicates that the multidrug-resistant organism was likely introduced during sample collection or handling often due to poor infection control or environmental contamination rather than being the true cause of infection, and may not reflect the patient's clinical condition. Concurrently, A structured questionnaire-based survey was conducted among healthcare professionals involved in sample collection across various departments. Questions focused on knowledge and adherence to standard blood culture collection protocols, including skin antisepsis, volume of blood, timing, and number of sets collected .Thumbprints of 30 residents and healthcare workers were collected before and after handwashing from different wards to assess hand hygiene effectiveness.

Results:

A total of 335 blood culture isolates were analyzed , of which 43 isolates (12.83%) were identified as multidrug-resistant organisms (MDROs), while the remaining 292 isolates (87.16%) were classified as non-MDROs . Among the predominant organisms, *Escherichia coli* and *Klebsiella* species exhibited notable variations in antimicrobial susceptibility patterns between MDRO and non-MDRO groups

For *Escherichia coli*, Meropenem susceptibility was observed to be 80% among non-MDRO isolates, compared to 41.4% overall, including MDROs. Gentamicin susceptibility was observed at 66.7% in non-MDROs, decreasing to 34.5% overall, including MDROs . Similarly, Ceftriaxone susceptibility was observed at 53.3% in non-MDROs and 17.2% in MDROs. Levofloxacin susceptibility remained consistently low across both groups, observed at 6.6% in non-MDROs and 3.4% in MDROs.

For , *Klebsiella* species Meropenem susceptibility was observed at 55% in non-MDRO isolates and 21% overall, including MDROs. Piperacillin-Tazobactam susceptibility was reported at 36.3% in non-MDROs and 14% overall, including MDROs. Susceptibility to Ceftriaxone and Levofloxacin remained low in both groups, observed at 9.1% in non-MDROs and 3.6% overall, including MDROs.

The survey revealed variable adherence to standard blood culture collection protocols, with notable gaps in hand hygiene, use of antiseptics, and training. Only 50% of respondents identified the correct blood culture collection site, while 75% used the recommended antiseptic and sterile gloves. Despite 80.6% practicing hand hygiene, just 27.8% had received formal training highlighting critical gaps that may impact culture quality and antibiogram reliability .

Thumbprint cultures from 30 residents showed microbial growth even after handwashing .

Conclusion:

Routine antibiograms are at risk of distortion, leading to inappropriate empirical antibiotic use. Inadequate blood culture collection affects result accuracy and may

inflate MDRO prevalence. Strengthening training, protocol adherence, and hygiene enforcement to improve diagnostic reliability and antimicrobial stewardship.

Keywords:

Blood culture, Multidrug-resistant organisms (MDROs),Antibiogram ,Sample contamination, Hand hygiene ,Antimicrobial resistance.

11. Antimicrobial Susceptibility of Fosfomycin in Uropathogens from Nephrology and Urology Patients at a Tertiary Care Center.

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Background:

Urinary tract infections (UTIs) are among the most frequently encountered community-acquired infections by healthcare professionals. Currently, nitrofurantoin is often prescribed empirically for lower UTIs. However, widespread and improper use of antimicrobial agents has led to a rise in multidrug-resistant (MDR) uropathogens. According to existing literature, fosfomycin emerges as a potential alternative treatment option against MDR pathogens.

Aims & Objectives:

To assess the susceptibility pattern of Fosfomycin among Multidrug-Resistant (MDR) and Extended Spectrum β -Lactamase (ESBL) producing uropathogens isolated from patients in the Nephrology and Urology departments.

Material and Methods:

We conducted a retrospective review of culture reports for uropathogens isolated from the Nephrology and Urology departments between July 2023 and June 2025. Urine samples were inoculated onto MacConkey agar and nutrient agar plates using a calibrated loop and incubated aerobically at 37°C for 24 hours. A single colony count exceeding 10^5 CFU/mL of urine was deemed significant. Following identification through biochemical tests, antibiotic susceptibility testing was performed using the Kirby-Bauer disc diffusion method. Bacterial suspensions standardized to 0.5 McFarland were inoculated onto Mueller-Hinton agar plates, and testing was carried out in accordance with Clinical and Laboratory Standards Institute (CLSI) guidelines.

Results:

Significant growth of pathogenic bacteria was observed in 2814 samples out of 10,524 urine samples from nephrology and urology departments. A breakdown of 2814 culture positives showed 40.15% susceptibility towards Fosfomycin. Among these 1817(65%) are Multidrug resistant (MDR) organisms, 358(12.7%) are Extended Spectrum β Lactamase (ESBLs) producers, 407(14.4%) are Carbapenem resistant Enterobacteriaceae (CREs) were isolated. Fosfomycin showed 37.3% susceptibility towards MDROs, 43.2 % towards ESBLs, 40.05% towards CREs.

Conclusion:

Our results demonstrated that Fosfomycin exhibited a higher susceptibility rate compared to other antimicrobials against the uropathogens identified in our study. The use of high-level antibiotics contributes to an increased burden of antimicrobial resistance through selective pressure. Given the limited availability of alternative treatment options for these resistant pathogens, Fosfomycin—available in oral form, administered as a single dose, and showing minimal cross-resistance to other

antibiotics—may serve as a viable alternative therapy for uncomplicated lower urinary tract infections.

Keywords: Antimicrobial resistance, Fosfomycin, Urinary tract infections

12. PLHIV: A Complex Interplay of Polymicrobial Infections Including Syphilis, Tuberculosis, Cryptococcosis, and Herpes Simplex

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Introduction

People living with HIV (PLHIV) are predisposed to multiple opportunistic infections owing to severe immunosuppression. Central nervous system (CNS) infections such as tuberculosis, cryptococcosis, neurosyphilis, and herpes simplex virus (HSV) disease often present with overlapping features, making timely and accurate diagnosis difficult. Polymicrobial involvement adds further complexity, especially in settings with limited access to advanced microbiological or molecular diagnostics.

Case Discussion

We describe a 28-year-old man with advanced HIV infection (CD4 count: 51/μL) who presented with fever, genital ulcers, altered sensorium, and right hemiplegia. The presence of genital ulcers and reactive RPR with supportive CSF findings suggested neurosyphilis, and ceftriaxone therapy was initiated. Brain imaging revealed multiple ring-enhancing lesions, interpreted initially as tuberculomas, prompting anti-tubercular therapy. However, patient had persistent fever, persistently positive serum cryptococcal antigen along with new-onset seizures necessitated reconsideration, leading to the diagnosis of disseminated cryptococcosis with CNS cryptococcomas. Antifungal therapy with liposomal amphotericin B, flucytosine, and subsequently fluconazole was administered. Concurrent herpes labialis and genital herpes were treated with acyclovir. He developed Trimethoprim – Sulfamethoxazole induced pancytopenia for which it was discontinued. During the course, the patient developed aspiration pneumonia requiring intensive supportive care. A coordinated, multidisciplinary management strategy eventually achieved clinical stabilization.

Conclusion

This case illustrates the diagnostic and therapeutic challenges of polymicrobial CNS infections in PLHIV. The overlapping clinical and radiological manifestations of cryptococcomas and tuberculomas highlight the need for repeated diagnostic reassessment. Tailored antimicrobial therapy and multidisciplinary input are key to favorable outcomes. Vigilance for concurrent infections must remain a cornerstone in the management of advanced HIV, as timely recognition significantly impacts prognosis.

13. Breast Lump Caused by *Dirofilaria repens*: A Rare Cause of the 'Dancing Sign' and an Overlooked Differential in Subcutaneous Nodules

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Background

Human dirofilariasis is a mosquito-borne zoonotic infection caused primarily by *Dirofilaria repens* in the Indian subcontinent. The primary definitive hosts for *Dirofilaria*

repens are domestic and wild canids, including dogs, foxes, and wolves, which harbor the adult worms and produce microfilariae. Humans are accidental hosts and are infected by mosquitoes carrying the larvae. The infection most commonly presents as isolated subcutaneous or ocular nodules. Systemic involvement is rare. Breast involvement is uncommon and can mimic neoplastic lesions, leading to diagnostic dilemmas. A well-known ultrasonographic feature in parasitic breast nodules is the “dancing sign,” traditionally associated with *Wuchereria bancrofti*. This sign, however, is not pathognomonic and can mislead diagnosis if other filarial species are not considered.

Novelty/Uniqueness of the Case

This case describes a rare instance of *Dirofilaria repens* infection presenting as a breast lump with internal motility on ultrasonography. The detection of both adult worms and peripheral microfilariae, with confirmatory species-specific PCR, makes this a diagnostically significant case. The demonstration of classic morphological features of *D. repens* in both adult and microfilarial forms highlights the importance of microscopy in endemic settings. The case emphasizes that *D. repens* should be considered in the differential diagnosis of parasitic breast lesions, especially in areas where zoonotic filariasis is prevalent.

Case History

A 53-year-old postmenopausal woman (P2L2), with a history of hypertension and type 2 diabetes mellitus, presented with a painless, slowly growing lump in the upper outer quadrant of her right breast, measuring approximately 2 × 2 cm. She denied any history of trauma, fever, or systemic symptoms. There was no personal or family history of malignancy. She apparently noticed the lesion one month back. Ultrasonography revealed a hypoechoic lesion with internal undulating movements—referred to as the “dancing sign.”

Surgical excision of the lump under local anesthesia was performed. On immersion of the tissue in distilled water, multiple actively motile adult worms were observed emerging spontaneously, suggesting a parasitic etiology.

Microscopy Findings

- **Adult Worm Morphology (Direct Light Microscopy):**
Long, slender, cylindrical worms with tapered ends.
Cuticle demonstrated prominent longitudinal ridges and fine transverse striations, creating a serrated external appearance—a characteristic feature of *Dirofilaria repens*. Internal structures included a digestive tract and reproductive organs.
No sheath or external ornamentation seen, ruling out other sheathed filarial worms.
- **Peripheral Blood Smear (Post-DEC Provocation, Giemsa stain):**
Unsheathed microfilariae, measuring ~300–370 µm in length.
Smooth, curved body with a tapered anterior end and a blunt tail.
Somatic nuclei did not extend to the tail tip, a classic feature of *D. repens* microfilariae.
Background was clean, with minimal inflammatory and eosinophilic reaction.

Discussion & Conclusion

This case reinforces the critical insight that the “dancing sign” on breast ultrasonography, though classically attributed to *Wuchereria bancrofti*, may also be produced by *Dirofilaria repens*. Accurate morphological identification of the worm and its microfilariae is crucial. The presence of adult worms in the excised tissue and provoked peripheral microfilaremia confirmed the diagnosis. PCR testing further established species identity:

- Forward primer: 5'-CGGGATCCAACATGGCTATTATTC-3'
- Reverse primer: 5'-CGGAATTCCTAGCCGTTTGAAACAC-3'

PCR from the adult worm confirmed *D. repens*, while PCR and antigen detection for *W. bancrofti* were negative, supporting a diagnosis of localized zoonotic dirofilariasis. The patient was treated postoperatively with Diethylcarbamazine (DEC) at 6 mg/kg/day in three divided doses for 21 days to eliminate residual microfilariae. She remained asymptomatic at subsequent follow-up.

This case highlights the importance of maintaining a high index of suspicion for zoonotic filarial infections in unusual anatomical sites. In endemic regions, parasitic infections should be considered early in the differential diagnosis of mobile subcutaneous or breast nodules to prevent misdiagnosis and unnecessary interventions.

Keywords

Dirofilaria repens; breast lump; dancing sign; zoonotic filariasis.

14. Importance of diagnostic and antimicrobial stewardship in the management of invasive pulmonary mucormycosis: A case report

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Background:

Invasive pulmonary mucormycosis is a life-threatening fungal infection, where prompt diagnosis with immediate report communication is a need. Moreover, such cases are to be managed by a multidisciplinary team. We present a case of probable invasive pulmonary mucormycosis case in a diabetic male

Aims & Objectives: To highlight the following:

1. Appropriate sample collection
2. Reduce TAT for direct microscopy
3. Need for prompt reporting of direct microscopy results.
4. Administration of amphotericin B and withdrawal of voriconazole

Case history:

A 50-year-old male presented to Department of Tuberculosis and Respiratory Medicine with the complaint of cough with sputum production for one month, hemoptysis for 20 days, breathlessness for 15 days, and left-sided chest pain for 7 days. Routine investigations revealed Hb1Ac of 11, TLC 11000, 88% neutrophil. HRCT thorax revealed thick peripheral rim of consolidation with ground glass opacities (reverse halo sign), adjacent interlobular septal thickening in left lower lobe of left lung with mild pleural effusion with fissural extension. There were no AFB and fungal elements in the sputum sample. However, broad-aseptate hyphae were observed in the KOH wet mount of BAL sample. The report was communicated to the concerned consultant and they withdrew voriconazole and administered amphotericin B. Raised blood sugar was managed by administration of sc inj Insulin. Moreover, on endoscopy, PNS revealed a black-scar over the middle turbinate of the left nostril. The patient pulmonologist, CTVS & ENT surgeon, endocrinologist is admitted and being managed by a multidisciplinary team comprising, radiologist and microbiologist.

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Strong suspicion of pulmonary mucormycosis in diabetic patients presenting with hemoptysis should be there. Here, appropriate sample should be sent for microbiological evaluation. Moreover, prompt diagnosis and communication with management by a multidisciplinary team should be done to reduce the morbidity and mortality.

15. Bacteriological Culture Profile Of Isolates From Urine Samples: A 6 Month Retrospective Study In A Tertiary Care Hospital In Goa

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Background:

Urinary tract infection is common microbial infection in all ages and sexes. It is the most common bacterial infection acquired in the community and hospitals. Although generally self- limiting, treatment with antibiotic leads to rapid resolution of symptoms.

Objective:

The present study was undertaken to determine the urinary tract infection caused by bacterial isolates in a tertiary care hospital including admitted patients of all age groups and gender. Urine samples were tested in the microbiology department and antimicrobial susceptibility was noted.

Methods:

The study was done over a period of 6 months from January to June 2025 using Biomerieux VITEK 2 release version 9. The isolates were tested and the antimicrobial susceptibility was noted.

Result:

A total number of 10,957 samples of urine were tested over the study period out of which 1826 showed growth of isolates (16%)

The organisms which were isolated were *Escherichia coli* (35.44%), *Klebsiella* species (28.05%), *Citrobacter* species (5.69%), *Acinetobacter* species (5.20%), *Pseudomonas aeruginosa* (9.58%), *Enterococcus* species (14.62%) and *Proteus mirabilis* (1.36%).

The antibiotic susceptibility for Gram positive organisms shown was Vancomycin (67.41%), Linezolid (65.16%), Ciprofloxacin (57.68%), Tetracycline (41.57%), Nitrofurantoin (25.46%). The antibiotic susceptibility for Gram negative bacteria shown was Meropenem (46%), Nitrofurantoin (37.22%), Chloramphenicol (34.17%), Co-trimoxazole (28.05%), Ceftriaxone (18%).

The study included 27.49% patients from Surgery department wards, 35.15% from Medicine department wards, 25.73% from Obstetrics and Gynaecology wards of which antenatal were 17.46% and 10.5% from Paediatric wards.

64.44% of female patients were infected and 35.56% of male patients.

Conclusion:

Urinary tract pathogens can infect all age groups. Females were infected more than males. Antenatal population also showed high infectivity rates and hence needs timely treatment with appropriate antibiotics to avoid complications.

Key words:

Antibiotic susceptibility, *Escherichia coli*, *Klebsiella*, *Acinetobacter*, *Citrobacter*, *Enterococcus*, *Proteus Mirabilis*

16. Clinical Pharmacologists as the Cornerstone of Antimicrobial Stewardship in India: A Policy to Practice Perspective

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Background

Antimicrobial resistance (AMR) has been called one of the most critical threats to public health in the modern era, significantly influencing morbidity, mortality, and economic costs globally. In India, the challenge is acute due to an extensive infectious disease burden combined with high rates of antimicrobial misuse and a healthcare system where insurance coverage is below 15%, leaving most patients to pay out of pocket [1]. AMR rates are especially alarming for pathogens like *Escherichia coli* and *Klebsiella pneumoniae*, with up to 84% fluoroquinolone resistance and nearly 59% carbapenem resistance reported [2]. Clinical pharmacologists, with expertise in drug dynamics and pharmacotherapeutics, have become central to these stewardship missions, especially in countries navigating significant systemic and infrastructural challenges, such as India [1].

Case Discussion

Policy Framework and Implementation:

India's national battle with AMR is anchored by policies like the National Action Plan on AMR (NAP-AMR), which fosters multi-sectoral engagement and stricter antibiotic controls. Kerala's Public-Private Partnership (PPP) stands out as a successful regional AMS model, coordinating public/private healthcare and customizing guidelines to match local resistance trends [3]. Despite sophisticated policymaking efforts, implementation barriers—such as inconsistent leadership responsibility, gaps in laboratory infrastructure, and limited regulatory enforcement—persist at the institutional level [1].

Role and Impact of Clinical Pharmacologists:

Clinical pharmacologists have emerged as essential team members bridging these gaps. Their skillset allows them to tailor antimicrobial regimens based on pharmacokinetic and pharmacodynamic principles, especially for vulnerable populations like ICU patients and neonates [4]. Additionally, they are integral to collaborative, multidisciplinary stewardship teams, often acting as coordinators among infectious disease physicians, microbiologists, and pharmacists, and serving as educators for rational antibiotic use [1]. They influence hospital policy by managing formularies, developing antibiotic restriction policies, and leading audit-feedback cycles to optimize prescribing practices. Evidence shows that their involvement drives more appropriate antibiotic use and improved patient outcomes.

Barriers and Best Practices:

Key challenges include a shortage of trained clinical pharmacologists and limited formal AMS education for clinicians, which restrict sustainable program growth. Diagnostic limitations such as insufficient laboratory services – further complicate timely, targeted antimicrobial therapy [1].

Nonetheless, positive case studies highlight clinical pharmacologists' value:

- The Kerala Public-Private Partnership illustrates how stakeholder engagement, coordinated training, and localized guidelines translate to better stewardship and guideline adoption [4].

- In one tertiary hospital's NICU program, clinical pharmacologist leadership directly led to decreased antibiotic use and lower mortality and sepsis rates over just six months [5].
- In a South Indian ICU, consultative stewardship involving clinical pharmacologists reduced inappropriate prescriptions by over 70% [1].

Conclusion:

Clinical pharmacologists stand at the interface of AMR policy and practice, bringing specialized expertise necessary for the design, implementation, and assessment of AMS programs in India. While innovative state and institutional models showcase their impact, the road ahead includes overcoming persistent educational, infrastructural, and cultural obstacles. Multi-sector collaboration, robust regulatory mechanisms, and the digital transformation of AMS processes will be vital for future progress.

Empowering this cadre is critical for safeguarding the effectiveness of antimicrobials and advancing patient care outcomes nationwide.

17. Phage–Antibiotic Combination for Multidrug–Resistant Infections: A Systematic Review of Preclinical and Clinical Evidence

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The rising prevalence of multidrug-resistant (MDR) bacteria poses a critical threat to public health. Bacteriophage therapy, which uses viruses that selectively infects and lyses bacteria, re-emerged as a potential adjunct to antibiotics. Phages are specific to bacterial hosts, replicates at infection sites, and degrades biofilms. Preclinical and clinical evidence suggested that combining phages with antibiotics enhances bacterial eradication and reduces resistance development, known as phage–antibiotic synergy. However, the efficacy and safety of this combination remained incompletely characterized.

Aims & Objectives: This systematic review aimed to evaluate whether adjunctive phage therapy improves clinical and microbiological outcomes compared to antibiotic therapy alone in MDR infections, using evidence from animal and human studies.

Material & Methods:

A comprehensive search of PubMed, EMBASE, MEDLINE and SCOPUS was conducted and selected articles published from inception of time to till July 2025, studies on combined phage–antibiotic therapy against MDR bacterial infections are considered for screening. Eligible studies of randomized controlled trials, non-randomized comparative studies, cohort studies, case series, and controlled animal experiments were included. Dual independent reviewers screened the studies & extracted the data on study characteristics, antibiotic regimens, outcomes. Primary outcomes were clinical improvement and microbiological eradication; secondary outcomes included mortality, time to resolution, resistance emergence, and adverse events.

Results:

Total results were compiled after the screening of total 2833 articles according to our search strategy. All the studies reported clinical improvement in 78–93% of patients and microbiological eradication in 61–87%, with evidence that phages resensitized bacteria to previously ineffective antibiotics. However, the evidence base largely consisted of small case series and compassionate use reports, with few randomized

trials. Considerable heterogeneity existed in phage types, dosing schedules, administration routes, and antibiotic regimens.

Conclusion:

This review synthesized the existing evidence on phage–antibiotic combination therapy for MDR infections, highlighting its therapeutic potential and limitations, and identified methodological gaps to guide future well-designed studies

18. Cutaneous Histoplasmosis: A fungal wolf in Leprosy's clothing: A Case Report

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Background:

Cutaneous histoplasmosis is an uncommon entity, particularly in immunocompetent individuals, and may clinically mimic other dermatoses. Misdiagnosis and inappropriate antifungal treatment may result in disseminated lesions. Here, we emphasize the need for heightened clinical suspicion and early fungal diagnostics with appropriate treatment.

Novelty: We reported a rare case of primary cutaneous histoplasmosis in an immunocompetent individual clinically mimicking borderline leprosy. Diagnosis was confirmed by the growth of tuberculate macroconidia on fungal culture and PAS-positive yeast-like structures on biopsy.

Case Presentation:

A 54-year-old female with no known comorbidities presented to the Dermatology OPD with the complaint of multiple small blisters over the fingers, recurring exclusively during the rainy season. A skin biopsy was suggestive of borderline leprosy, following which she was treated with dapsone, rifampicin, and clofazimine.

On follow-up, the patient reported progressive lesions. Following this skin scraping was sent for fungal culture, which showed growth of *Histoplasma capsulatum* over SDA medium, that was identified by the presence of multiple tuberculate macroconidia. On repeat biopsy, no AFB were seen on H& E, however, PAS staining revealed numerous encapsulated fungal organisms. The patient was managed by oral itraconazole. However, the lesions did not resolve.

Then, super-bioavailability itraconazole was started and the clinical manifestations improved.

Discussion & Conclusion:

This case illustrates a rare presentation of localized cutaneous histoplasmosis in an immunocompetent host and the challenges of distinguishing it from granulomatous diseases like leprosy. *Histoplasma* infection predominantly affects immunocompromised individuals and primarily affects the pulmonary system of those with occupational or environmental exposure to contaminated soil or droppings. A high index of suspicion and timely fungal diagnosis are essential to avoid misdiagnosis and inappropriate therapy hence diagnostic stewardship, is vital in such cases.

Keywords:

Cutaneous histoplasmosis, leprosy, itraconazole, diagnostic stewardship.

19. In Vitro Activity of Ceftaroline Against Methicillin-Resistant Staphylococcus aureus

(MRSA)

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Background:

Methicillin-resistant *Staphylococcus aureus* is a major cause of hospital-acquired infections, contributing significantly to morbidity, mortality, prolonged hospital stays, and increased healthcare costs. Ceftaroline, a fifth-generation broad-spectrum cephalosporin, has been approved by the FDA for the treatment of community-acquired pneumonia and ABSSSI caused by susceptible organisms, including MRSA. This study evaluates the in vitro activity of Ceftaroline against MRSA isolates from hospitalized patients.

Aims & Objectives:

1. To evaluate the in vitro activity of Ceftaroline against MRSA isolates obtained from pus, abscess, aspirate, or tissue samples from patients diagnosed with ABSSSI.
2. To compare the susceptibility of MRSA to Ceftaroline with other commonly used antibiotics, including Vancomycin, Linezolid, Teicoplanin, and Daptomycin.

Methods:

1. MRSA screening was performed using the Cefoxitin (30 µg) disc diffusion method as per CLSI guidelines.
2. Identification of *S.aureus* and antimicrobial susceptibility testing (Vancomycin, Linezolid, Teicoplanin, and Daptomycin) were carried out using the VITEK-2 system.
3. Susceptibility to Ceftaroline was determined using the E-test method, following CLSI standards.

Results:

Among the tested isolates, only 49.2% showed a MIC of ≤ 0.5 µg/mL for Vancomycin, and 95% exhibited an MIC of 2 µg/mL for Linezolid. In contrast, the percentage of MRSA isolates with MIC values of ≤ 0.5 µg/mL was significantly higher for the other agents: Teicoplanin (100%), Ceftaroline (92.5%), and Daptomycin (90.98%).

Conclusion:

Ceftaroline demonstrated superior in vitro activity against MRSA compared to Vancomycin, with a higher proportion of susceptible isolates. These findings suggest that Ceftaroline could serve as a promising therapeutic alternative for the management of MRSA-related infections, particularly in cases of ABSSSI.

20. Lenacapavir in HIV Management: A New Era of Antiretroviral Therapy: A Narrative Review

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Background:

HIV remains a major global public health issue. As of the end of 2024, around 40.8 million people were living with HIV, with 1.3 million newly diagnosed cases. Despite the availability of drugs for HIV therapy, the development of new agents remains essential

due to the emergence of drug resistance. Lenacapavir, the first-in-class capsid inhibitor, targets the viral capsid through a novel mechanism distinct from other drug classes. It was recently approved for pre-exposure prophylaxis and is also used in combination with other antiretroviral agents for the treatment of multidrug-resistant HIV-1.

Aims & Objectives: To provide a comprehensive overview of Lenacapavir, focusing on its pharmacological properties, clinical trial evidence, safety and efficacy.

Material & Methods:

A literature search was performed using PubMed, Scopus, and EMBASE to identify publications available up to June 2025. The search terms included “lenacapavir,” “HIV capsid inhibitor,” “antiretroviral therapy,” “multidrug-resistant HIV,” and “pre-exposure prophylaxis.” Both clinical trials and review articles were considered eligible for inclusion. Only articles published in English were reviewed

Results:

Lenacapavir acts by targeting the HIV capsid, disrupting multiple stages of the viral lifecycle including proviral integration, viral assembly, and release—ultimately leading to non-infectious viral particles. Its oral formulation has low bioavailability with a half-life of 10–12 days, whereas the subcutaneous depot formulation supports biannual dosing due to its prolonged half-life of 8–12 weeks and a T_{max} of approximately 80 days. The drug is >98% protein-bound and primarily eliminated unchanged in feces, undergoing minor CYP3A and UGT1A1 metabolism. Plasma levels are reduced by CYP3A4 inducers. In the Phase 3 CAPELLA trial, lenacapavir achieved a $\geq 0.5 \log_{10}$ viral load reduction in 88% of participants by Day 14 and maintained viral suppression in 81–83% through Week 52, even with limited background therapy. Resistance mutations (e.g., M66I, Q67H) were observed primarily in the context of poor adherence. The Phase 2 CALIBRATE study in treatment-naïve individuals showed 85–90% suppression at Week 54. In the PURPOSE trials, lenacapavir administered every six months for PrEP demonstrated up to 96% reduction in HIV incidence, with mild injection-site reactions being the most common adverse event.

Conclusion:

Lenacapavir is a potent, long-acting agent effective in MDR HIV and recently approved for PrEP. Its unique mechanism offers advantages in treatment and prevention. Further studies in pregnant, lactating women, and pediatric populations are needed to expand its role in preventing HIV transmission.

21. Understanding Public and Health Care Workers Apprehension during the 2025 COVID-19 Resurgence

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Background:

The reappearance of COVID-19 cases in 2025 has triggered renewed concern among healthcare professionals and the general population. Understanding public perception, preparedness, and associated challenges is vital for designing effective public health responses.

Objective:

To assess awareness, opinions, and readiness of healthcare workers and the general community during the COVID-19 resurgence in India (2025).

Methods:

A descriptive, cross-sectional study was conducted using a structured online questionnaire. Responses were collected from participants across various Indian states, covering demographics, information sources, perceived severity of the wave, preparedness levels, PPE availability, and attitudes toward booster vaccination

preparedness levels, PPE availability, and attitudes toward booster vaccination.

Results:

More than 100 participants were analyzed:

- **Demographics:** About 70% were from healthcare backgrounds
The remaining 30% were from the general public
- **Awareness & Information:** All respondents were aware of rising COVID-19 cases
Main information sources: digital media and online platforms
- **Perception of Severity:** Responses were mixed; many were uncertain or did not view this wave as more severe
- **Vaccination & Boosters:** Most acknowledged vaccine protection
Several expressed doubts regarding additional booster doses
- **Preventive Practices:** Most participants reported using masks and maintaining hygiene at least occasionally
- **Healthcare Readiness:**
Many healthcare workers felt only "somewhat prepared"
Challenges included staff shortages and inadequate protective gear
- **Mental Health & Concerns:**
Common issues: emotional fatigue, fear of lockdowns, rising cases and fear of morbidity among comorbid patients, and public noncompliance

Conclusion:

The study reveals varying levels of preparedness and significant concern. Reinforcing healthcare infrastructure, improving public communication, and supporting mental health are critical to controlling future COVID-19 waves.

Keywords: COVID-19, public awareness, healthcare preparedness, booster acceptance, mental health, 2025 wave, India

22. Bacteriological Profile of Uropathogens in Women of Reproductive Age Group

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Background : Urinary tract infections (UTIs) are one of the most common community and nosocomial infections encountered by clinicians in developing countries. Nearly half of the women population experience at least 1 episode of UTI in their lifetime, with 20–40% of them exhibiting recurrent episodes. It is a common complication during pregnancy, occurring in about 8.8% of pregnant women in India. To prescribe appropriate antibiotic therapy, the physician must have the required information about the pathogen causing the infection as well as their susceptibility patterns especially oral antimicrobials when prescribed on out-patient basis.

Aims & Objectives: To determine the bacteriological profile of uropathogens among women of reproductive age group & to determine the antimicrobial resistance pattern among commonly prescribed oral antimicrobials for UTI.

Material & Methods: It was a record based retrospective study. All women of reproductive age group, who were diagnosed with UTI and significant bacteriuria during the study period of January 2021 to December 2022. The uropathogens isolated from the samples were subjected to VITEK-2 (bioMérieux, France) for identification and antimicrobial susceptibility testing (AST). The details obtained will be entered in Microsoft Excel and were coded and statistically analysed by frequency and percentage.

Results: A total of 553 women of reproductive age group, were diagnosed with UTI during the study period. In this study, we have observed that UTI is common among the WRAG, especially at the younger age of 18–30 years. In our patients, the incidence of UTI as increased with the higher the parity of pregnancy. The common uropathogen causing UTI are *E. coli* and *Staphylococcus* sp among Gram negative and Gram-positive pathogens, respectively. The *E. coli* isolates are resistant to common oral AMA like Ampicillin, amoxiclav, ciprofloxacin but nitrofurantoin have been observed to have lesser resistance. The isolation rate of MRSA is high in UTI among our patients, a matter of concern, hence the clinicians should be vigilant about the MRSA causing UTI among women of reproductive age group, which in turn increases morbidity in these patients.

Conclusion: In our study women younger age i.e., 18–30 years and higher parity of pregnancy have higher risk of having UTI. The isolation of MDR gram negative pathogens, which are resistant to commonly prescribed oral AMA, is of concern.

Key words: UTI, Women, reproductive age, *E.coli*, AMR, Oral AMA

23. Renal Mucormycosis in a Critically Ill Patient: A Lethal Sequela of Repeated Urological Instrumentation

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Background:

Mucormycosis is a rare medical condition that is caused by taxonomy of Mucorales, the most common being *Rhizopus arrhizius*. Though immunocompromised status is considered the main predisposing factor, there have been case reports suggesting critically ill patients, especially those undergoing repeated invasive procedures, may

also be susceptible. We report a case of isolated renal mucormycosis in a critically ill patient likely prompted by repeated urological interventions, highlighting the diagnostic and therapeutic dilemma faced during the management of the case due to multiple existing comorbidities.

Case History:

We report a case of a female in her 50s with no prior comorbidities, who initially presented with urinary complaints, later diagnosed with urosepsis and acute renal failure secondary to bilateral obstructive hydronephrosis. Despite initial management with percutaneous nephrostomy (PCN) and antibiotics, her condition deteriorated. Cultures from the drains grew *Rhizopus*, confirming renal mucormycosis. Treatment with liposomal amphotericin B was initiated, along with dialysis. Surgical nephrectomy was considered but was not performed due to high surgical risk. However, due to worsening sepsis, along with multiorgan dysfunction, patient succumbed to death.

Discussion:

Mucormycosis is a rare angio-invasive fungal infection with a substantial degree of fatality. One unique entity seen in India is the increasing prevalence of renal mucormycosis in immunocompetent hosts. The management of mucormycosis comprises early initiation of therapy, source reduction in the form of surgical debridement, antifungal therapy, and treatment of underlying comorbidity. Although PCN is a valuable therapeutic tool, its potential role in promoting infections like mucormycosis, particularly in high-risk individuals, warrants careful procedural asepsis and vigilant postoperative monitoring.

Conclusion:

Thus, the case highlights significance of maintaining a high index of suspicion for mucormycosis in patients with urosepsis who have undergone multiple urological interventions and show poor response to antimicrobial therapy.

24. A Study on Bacterial Culture and Antibiotic Sensitivity Pattern of Ear Discharge In Chronic Otitis Media

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Objectives:

This study aims to evaluate the Bacterial profile of micro organisms causing mucosal type, chronic otitis media and compare their Antibiotic sensitivity pattern to available antibiotics.

Methods: This retrospective clinical study was conducted over 24 months in ENT Department, AIIMS Mangalagiri. Aural swabs were collected from 221 patients clinically diagnosed with mucosal type, chronic otitis media using sterile swabs and sent for culture and sensitivity testing. Identification of organisms was done using standard microbiological techniques. Antibiotic susceptibility was tested using Kirby –Bauer disc diffusion method.

Results:

out of 221 samples, 94 % showed positive Bacterial growth. The most commonly isolated organisms were *Pseudomonas aeruginosa* (43%), *Staphylococcus aureus* (37%), *Proteus mirabilis* (5%) and *Escherichia coli* (4 %). *Pseudomonas aeruginosa* showed highest sensitivity to Neosporin H and ciprofloxacin ear drops while *Staphylococcus aureus* was most sensitive to Neosporin H. Resistance to commonly used antibiotics such as Ampicillin and cotrimoxazole was noted.

Conclusion: The bacteriological profile of chronic otitis media showed a high prevalence of pseudomonas aeruginosa, followed by staphylococcus aureus & klebsiella species with different distributions in different age groups. The study highlights the importance of culture and sensitivity testing in treating chronic otitis media.

Empirical therapy should be re-evaluated periodically to reduce Antibiotic resistance and improve clinical outcomes.

KEY WORDS: Chronic otitis media, mucosal type, bacterial profile and antibiotic sensitivity.

25. Prevalence of Synergy between Ceftazidime/Avibactam with Aztreonam among Carbapenem resistant gram negative bacilli in a tertiary care hospital

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Introduction: Since the introduction of antibiotics, the emergence of microbial resistance was inevitable. Despite the availability of a variety of antibiotics, resistance to multiple types has quickly become prevalent. Carbapenems and polymyxins are commonly viewed as the final line of defense. With carbapenem resistance on the rise and colistin's usage limited due to its toxicity, the combination of ceftazidime/avibactam (CZA) has been adopted as an alternative to colistin. However, the efficacy of CZA is constrained. Aztreonam (ATM) is used to treat specific Gram-negative infections resistant to other medications but its use is restricted; when paired with CZA, its effectiveness broadens. Nonetheless, instances of treatment failures have been observed with the CZA-ATM combination. This study investigates failure of synergy with in-vitro tests, emphasising the need for strategies to combat drug resistant pathogens.

Methodology: Cross-sectional observational study conducted at Dr D Y Patil Medical College, Pune between 1st April 2022 and 30th June 2022. Processed 444 among which 87 Carbapenem Resistant Enterobacterales and Carbapenem Resistant Pseudomonas aeruginosa resistant to CZA and ATM, were included in the study and subjected to synergy by stacking CZA and ATM E-test strips on MHA with test organism lawn. Data analyzed using excel

Results: 87 isolates, 61 Klebsiella pneumoniae(Kpn), 21 Escherichia coli(Eco) and 5 Pseudomonas aeruginosa(Pae). Of isolates tested for synergy 5 showed no synergy, 3 Kpn, 1 Eco and 1 Pae, Kpn was isolated from pus and blood, Eco from peritoneal fluid, Pae from pus.

Conclusion: The combination works, but the instances where the synergy fails and this failure which is insignificant now will surely rise exponentially in future. We have to be mindful of this and are in urgent need of newer antibiotics or combinations. As a first step towards a brighter future, it is imperative to use antibiotics judiciously and practice antibiotic holiday.

26. Cerberus Otitis- Acinetobacter Baumannii-Mediated Fulminant Otitis Media
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Background: Carbapenem-Resistant *Acinetobacter baumannii* (CRAB) is a formidable nosocomial pathogen, particularly within the intensive care unit (ICU). While commonly associated with ventilator-associated pneumonia and bloodstream infections, its role as a primary pathogen in otogenic sepsis is exceptionally rare and portends a challenging clinical course due to extensive multidrug resistance

AIM and OBJECTIVES–Our Aim is to present a case of AOM in an ICU patient with ear swab culture positive for CRAB and discuss clinical management and outcomes.

Case Presentation

We present the case of an adult patient admitted to the medical ICU who developed acute otitis media (AOM) secondary to CRAB, identified via swab culture. The infection occurred in the context of immunocompromised, multisystemic infection. This otogenic focus was subsequently implicated as a likely source of occult sepsis, complicating the patient's management.

Patient developed acute onset severe excruciating earache and ear fullness and sudden onset hearing loss with pus discharge. otoscopy finding show perforation, congested tympanic membrane with pus discharge. Swab culture sensitivity reveals CRAB +ve with resistance to multiple drugs. patient was initiated immediately on Injection polymyxin B and minocycline with colistin. patient started showing clinical improvement with resolution of the pus discharge and restoration of hearing.

INTERPRETATION

This case illustrates a novel and severe manifestation of CRAB infection, which we propose under the colloquial designation "Cerberus Otitis" to reflect its multidrug-resistant (MDR), multi-headed challenges and dire prognosis. It underscores the necessity for meticulous otologic examination in septic ICU patients and reinforces the critical importance of antimicrobial stewardship and infection control protocols to mitigate the spread of such pan-resistant organisms in high-acuity settings.

CONCLUSION

This case highlights the importance of microbiological evaluation in ICU patients with AOM and the challenge posed by CRAB. Early detection and tailored antibiotic treatment are critical for successful management.

Keywords: *Acinetobacter baumannii*, Carbapenem-Resistant, Nosocomial Infection, Otitis Media, Intensive Care Units, Sepsis, Multidrug Resistance



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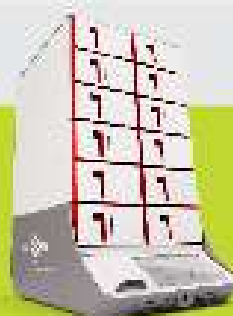
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