



### EVENT REPORT

## ASPICON 2023: 5<sup>TH</sup> National Conference on Antimicrobial Stewardship Practices in India

Deepak Kumar\*, Organizing Team ASPICON 2023

Department of Medicine, All India Institute of Medical Sciences, Jodhpur, Rajasthan, India

\* **Corresponding author:** Deepak Kumar, Department of General Medicine & Division of Infectious Diseases, All India Institute of Medical Sciences, Rishikesh-242005, Rajasthan, India

Email: kumard@aiimsjodhpur.edu.in

### INTRODUCTION

Antimicrobial stewardship practices are crucial in combating the growing threat of antimicrobial resistance (AMR) worldwide. While much attention has been given to the appropriate use of antibiotics, it is equally important to address the responsible use of antifungal agents. In the Indian setting, the need for antifungal stewardship has become increasingly evident due to the rising incidence of fungal infections, particularly among immunocompromised individuals.

India, with its diverse population and high burden of infectious diseases, faces unique challenges in implementing effective antifungal stewardship practices. The country has witnessed a surge in fungal infections, such as Candidiasis, Aspergillosis and Mucormycosis, especially in the post-COVID-19 era. These infections are associated with rapid progression and an increase in mortality if not treated at the right time appropriately.

To address this issue, the Indian healthcare system must prioritize antifungal stewardship initiatives. This involves establishing guidelines and protocols for the appropriate use of antifungal agents, promoting surveillance of fungal infections and fostering collaboration between healthcare professionals, microbiologists and pharmacists. Additionally, raising

awareness among patients and the general public about the importance of responsible antifungal use can contribute to the overall success of stewardship efforts. By implementing effective antifungal stewardship practices, India can mitigate the emergence and spread of antifungal resistance, improve patient outcomes, and optimize healthcare resources.

In this context, the ASPICON 2023 was organized by All India Institute of Medical Sciences (Jodhpur), from 29<sup>th</sup> September to 1<sup>st</sup> October 2023 under the aegis of the Society of Antimicrobial Stewardship Practices (SASPI) in India with the following aim and objectives.

The theme of the event was 'Antifungal Stewardship'.

### AIM

The main aim of the ASPICON 2023 was to exchange knowledge, share best practices and collaborate to enhance the best antimicrobial stewardship practices in India, with a particular need to focus on "Antifungal Stewardship."

### OBJECTIVES

- 1) Awareness: Raise awareness among healthcare professionals about the importance of antifungal stewardship and the appropriate use of antifungal agents.

**Citation:-** Kumar D, et al. ASPICON 2023: 5th National Conference on Antimicrobial Stewardship in India. *JASPI*. 2023;2(1):59-67

- 2) Education and training: Development and implementation of educational programs and training initiatives to enhance the knowledge and skills of healthcare professionals regarding antifungal stewardship practices, including appropriate prescribing, dosage optimization and monitoring of antifungal therapy.
- 3) Guidelines and protocols: Develop evidence-based guidelines and protocols for appropriate use of antimicrobial and antifungal agents considering local epidemiology, resistance patterns and available resources.
- 4) Surveillance and monitoring: Establish robust surveillance systems to monitor antifungal resistance, utilization patterns and outcomes of antifungal therapy; regularly analyze and report data to identify trends, areas of improvement and potential interventions.
- 5) Antifungal stewardship teams: Establish multidisciplinary teams in healthcare facilities to promote collaboration, facilitate communication and implement strategies for optimizing antifungal therapy.
- 6) Antifungal formulary management: Develop and maintain an antifungal formulary that promotes the rational use of antifungal agents, considering efficacy, safety, cost-effectiveness and local resistance patterns.
- 7) Antifungal prescribing guidelines: Develop and disseminate evidence-based antifungal prescribing guidelines to assist healthcare professionals in making informed decisions regarding antifungal therapy, including appropriate drug selection, dosing and duration of treatment.
- 8) Evaluation and feedback

Day 1 – Hall A				
		Speaker	Moderator	Chairperson
9:00-9:30 am	<b>Inauguration</b>			
9:30-10:10 am	Antifungal Stewardship – Long way to go...	Dr Gopal Krishana Bohra	Dr Vinay R Pandit	Dr Arvind Mathur Dr Kuldeep Singh Dr M K Garg Dr Biswajeet Sahoo
10:10 – 10:50 am	Optimizing antifungal therapy in transplant settings – Impact of AMS	Dr Vidya Devarajan	Dr Manish Chaturvedy	Dr Nitin Bajpai Dr Rajesh Jhorawat
10:50 – 11:30 am	Enhancing care in Indian ICU – Vital role of AMS in combating CRO	Dr Vasant Nagvekar	Dr Saurabh Karmakar	Dr Pradeep Bhatia Dr Iadailang Tiewsoh Dr Daisy Kherra
11:30 – 12:00 pm	<b>Tea Break 1</b>			
2:00 – 12:40 pm	Role of Combination Antimicrobial Therapy – When, Where & How	Dr Umang Agarwal	Dr Gopal K Bohra	Dr Prasan Kumar Panda Dr Vibhor Tak Dr Alok Gupta

12:00 – 01:20 pm	FDC – Rational & irrational antimicrobials	Dr Arvind Kumar	Dr Deepak Kumar	Prof. Ratinder Jhaj Dr Vijay Kumar
01:20 – 02:00 pm	Bad bugs, no drug	Dr Sayantan Banerjee	Dr Prawin Kumar	Dr Debabrata Dash Dr Sarita Mohapatra Dr Parvinder Chawla
02:00 – 03:00 pm	Lunch Break	Poster Walk Through		Dr Naresh Midha Dr Parvinder Chawla
03:00 – 03:40 pm	Optimization in AMSP	Dr Ashish Kakkar	Dr Nusrat Shafiq	Dr Ayush Gupta Dr Sandhya K Bhat

### Day 1 – Hall B

12:40 – 01:50 pm	<b>Oral Case Presentation</b>	Dr Sarika Kombade Dr Jaykaran Charan Dr Satyendra Khichar
------------------	-------------------------------	---

### Day 2 – Hall A

		Speaker	Moderator	Chairperson
08:00 – 08:30 am	<b>Preliminary Round Quiz</b>			
08:30 – 09:00 am	Shorter is better	Dr Brad Spellberg	Dr Preeti Singh Dhoat	Dr Sarika Kombade Dr Asim Sarfaraz
09:00 – 09:30 am	Community IAS practices - Who are leaders and how?	Dr Santosh Kumar	Dr Pankaj Bhardwaj	Dr Mahendra Singh Dr Aroop Mohanty
09:30 – 12:00 pm	Experience Sharing from various INI's	SASPI Foundation members from INI Representative	Dr Shefali Gupta Dr Vivek Hada	

12:00 – 12:40 pm	PK – PD in Clinical Practices	Dr Puneet Dhamija	Dr Prasan Kumar Panda	Dr Sneha Ambwani Dr Aliza Mittal
2:40 – 1:20 pm	ICU Stewardship – Candidamia Bundle	Dr Sanjeev K Singh	Dr Sadik MD	Dr Navjot Kaur Dr Vidhi Jain Dr Amit Kumar Rohilla
01:20 – 02:00 pm	<b>Lunch Break</b>	Poster Walk through	Dr Sagar Khadanga Dr Ketan Priyadarshi Dr Amit Kumar Rohilla Dr Aliza Mittal	
02:30 – 03:00 pm	Nursing Antimicrobial Stewardship – What Intervention and how?	Dr Sagar Khadanga Dr Alkesh Khuran Dr Anand K Maurya	Mrs Ranjana Verma	Prof. Suresh K Sharma Mr Maneesh Sharma
			Mr Ganesh Nath Mrs. P. Vani	
03:00 – 03:30 pm	<b>Tea Break</b>			
03:30 – 04:30 pm	Quiz Stage Round	Dr Akshatha	Dr Durga Shankar Meena	Dr Mahendra Kumar Meena Dr Ketan Priyadarshi
04:30 – 05:00 pm	<b>Prize Distribution and Vote of Thanks</b>			

### Day 2 - Hall B

		Speaker	Moderator	Chairperson
09:30 – 10:10 am	Practical AMSP decision-making- case scenarios	Dr. Deepak Kumar	Dr Satyendra Kichar	Dr Amardeep Singh Dr Mahadev Meena
10:10 – 10:50 am	Therapeutic Drug Monitoring: Is it Essential or Dispensable	Dr Preeti Singh Dhoat	Dr Rachna Rohilla	Dr Gautam Bhandari Dr Lokesh Saini

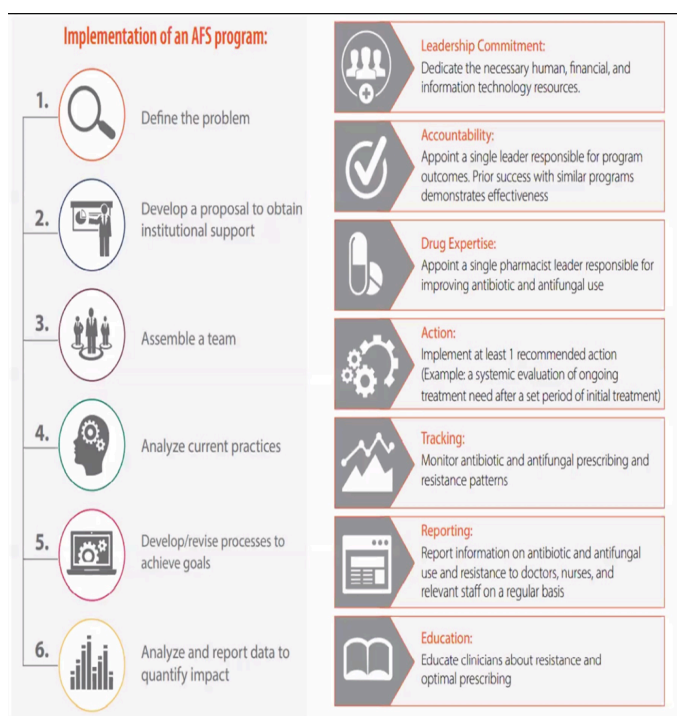
10:50 – 11:30 am	Practice-Changing Studies – Year 2022-23	Dr Durga Shankar Meena	Dr Ravisekhar Gadepalli	Dr Sivanantham Krishnamoorthi
11:30 – 12:00 pm	<b>Tea Break</b>			
12:00 – 01:20 pm	Interactive Case Studies: Hematology and Oncology ICU & Pulmonology	ICU Med Onco Pulmonary Medicines Residents	Dr MD Jamil	Dr Deepjyoti Kalita Dr Shyam Kishor Kumar Dr Ankur Sharma Dr Siyaram Didel Dr Naveen Dutt
01:20 – 02:00 pm	<b>Lunch Break</b>			
02:00 – 03:30 pm	<b>Oral Presentation - Research</b>		Dr Prasan Kumar Panda	Dr Vibhor Tak Dr Niyati Trivedi
03:40 – 04:20 pm	Diagnostic Stewardship - An Important Pillar	Dr Apurba Shankar Shastry	Dr Vibhor Tak	Dr Amarjeet Kumar Dr Rimple Jeet Kaur
04:20 – 05:30 pm	Debate : Meropenem v/s Piperacillin tazobactam in 3 <sup>rd</sup> generation cephalosporin Resistance Enterobacterales Infection	Dr Santhanam N Dr Neetha T R	Dr Debabrata Dash	Dr Arghya Das Dr Sourabha Kumar Patro Dr Durga Shankar Meena
	Debate: Empiric Therapy for candidemia In ICU –Yay or Nay	Dr Akshatha R Dr Yash Khatod		
05:30 pm Onwards	<b>General Body Meeting</b>			
08:00 pm Onwards	<b>GALA DINNER</b>			

## CONFERENCE DAY 1

Some of the key presentations of Day 1 of the conference are summarised below.

### *Antifungal stewardship long way to go....*

One of the primary challenges in antifungal stewardship (AFS) is the need for more awareness and understanding among healthcare professionals regarding the appropriate use of antifungal agents. Unlike antibiotics, which are widely prescribed, antifungal medications are often reserved for specific indications, such as invasive fungal infections or severe cases of fungal diseases. However, inappropriate prescribing practices, including overuse, underuse or incorrect dosing, can contribute to the development of antifungal resistance.



### *Optimizing Antibiotic therapy in transplant settings – Impact of AMS*

Optimizing antibiotic therapy is of paramount importance in transplant settings, where patients are particularly vulnerable to infections due to immunosuppression. Antimicrobial stewardship (AMS) programs are crucial in ensuring the appropriate and effective use of antibiotics in these settings. By implementing AMS strategies, healthcare providers can minimize the emergence of antibiotic resistance, reduce adverse events and improve patient outcomes. AMS programs in transplant settings aim to optimize antibiotic therapy by promoting evidence-based

prescribing practices. This involves the development of guidelines and protocols tailored to the unique needs of transplant patients, taking into account factors such as immunosuppression, organ type and risk of specific infections.

### *Enhancing care in Indian ICU- vital role of AMS in combating CRO*

In India, the prevalence of CRO infections in ICUs has been on the rise, leading to increased morbidity, mortality and healthcare costs. Factors such as overuse and misuse of antibiotics, inadequate infection control practices and limited access to newer antimicrobial agents contribute to the emergence and spread of CRO.

Publication: Bulletin of the World Health Organization; Type: Research  
Article ID: BLT.22.288797

#### Box 1. Key activities and indicators for assessing the implementation of an antimicrobial stewardship programme in Indian hospitals

##### Initiation phase (2019): process indicators

- Set up a hospital antimicrobial stewardship committee.
- Create an antibiotic policy based on the hospital antibiogram.
- Undertake point prevalence surveys of antimicrobial resistance from cultures.
- Record antibiotic consumption in intensive care units (days of therapy and defined daily doses).
- Initiate prescription audits for carbapenems and polymyxin prescriptions in intensive care units.
- Initiate formulary restrictions.
- Implement initial or minimal level of de-escalation of antibiotic use.<sup>a</sup>
- Organize awareness and education workshops for staff on antimicrobial stewardship

##### Expansion phase (2020): process and outcome indicators

- Expand the implementation of antimicrobial stewardship within hospital to increase the coverage to 10% of total beds (10% of intensive care beds and 10% of non-intensive care beds).
- Monitor adherence to hospital antibiotic policies.
- Continue capturing antibiotic consumption and prescription audits.
- Classify antibiotic consumption data as per the AWaRe classification of the WHO: Access, Watch or Reserve.<sup>13</sup>
- Record patients' clinical outcomes: cured and discharged; left hospital against medical advice; or died.

WHO: World Health Organization.

<sup>a</sup> De-escalation criteria were: stopping antibiotics within 5 days; changing from combination to monotherapy; and changing narrower spectrum intravenous drugs to oral formulations.

#### Antibiotic Stewardship Interventions

- Increasing the amount of blood sent for blood cultures  
From 4-5 ml in a single bottle to 16-20 ml divided into two bottles (paired blood cultures was made a standard practice)
- Billing package was made for paired blood culture at reduced price to encourage the healthcare staff to send only paired blood culture
- Inoculating body fluids from sterile sites directly into blood culture bottles
- Making viral PCR panels available in-house
- Making in-house fungal biomarker (Galactomannan)
- Stopping empirical use of high end antibiotics (colistin, polymyxin B, tigecycline, IV fosfomycin, minocycline)
- Involvement of Infectious Diseases Physician for management of MDR infections
- Audit and feedback to surgeons on prolonged use of surgical antibiotic prophylaxis
- Education of various stakeholders regarding AMS

#### Infection Control Practices

- Increasing availability of Hand sanitizers at bed side in general wards and outside door of each private room
- Education of nurses and doctors in device care bundles
- Audit and Feedback to stakeholders with regards to device care bundles
- Isolation of patients infected with MDR organisms (Especially CRAB and CRPA)

ASPICON2023

## Role of combination antimicrobial therapy – When, Where & How?

The role of combination antimicrobial therapy is essential in managing certain infections, especially when the patient is in sepsis.

- **Empiric combination therapy:** In some cases, empiric combination therapy may be recommended when the causative pathogen is unknown, or there is a high risk of multidrug-resistant organisms. This approach aims to provide broad-spectrum coverage and increase the likelihood of targeting the infecting organism.
- **Targeted Combination Therapy:** Once the causative pathogen is identified and its susceptibility profile is known, targeted combination therapy may be considered. This approach is often used for infections caused by certain organisms known to have intrinsic resistance mechanisms or infections that are difficult to treat or complicated persistent bacteremia. The combination of antibiotics with different mechanisms of action can enhance efficacy and prevent the development of resistance.
- **Synergy:** Combination therapy may also be employed to achieve synergistic effects. Synergy refers to the enhanced antimicrobial activity when two or more drugs are used together, resulting in a more significant impact than the sum of individual effects.

It is important to note that combination antimicrobial therapy should be guided by current guidelines and tailored to the specific clinical scenario. The decision to use combination therapy should be based on factors such as the severity of infection, the likelihood of resistance and the individual patient's characteristics. Regular assessment of therapy is necessary to ensure optimal treatment outcomes and minimize the risk of adverse effects.

### FDC – Rational & irrational antimicrobials

FDC (Fixed dose Combination) combines two or more active pharmaceutical ingredients in a single dosage form. Regarding antimicrobials, the rational use of FDCs is essential to ensure effective treatment and minimize the development of antimicrobial resistance. However, the irrational use of FDCs can harm patient health and contribute to the global problems of antimicrobial resistance.

## Treat infection, not colonization

- **Treat pneumonia**
  - not the tracheal aspirate
  - not endotracheal tube
- **Treat urinary tract infection**
  - not the indwelling catheter
  - not simple bacteriuria
- **Treat bacteremia**
  - not the catheter tip or hub
- **Treat bone infection**
  - not the skin flora



ASPICON2023

*JAMA Intern Med.* 2016 September 01; 176(9): 1254-1255. doi: 10.1001/jamainternmed.2016.3646.

### The New Antibiotic Mantra—"Shorter Is Better"

Brad Spellberg, MD

Los Angeles County+University of Southern California Medical Center, Los Angeles; Department of Medicine, Keck School of Medicine at University of Southern California, Los Angeles.

#### Infections for Which Short-Course Therapy Has Been Shown to Be Equivalent in Efficacy to Longer Therapy

Disease	Treatment, Days	
	Short	Long
Community-acquired pneumonia <sup>1-3</sup>	3-5	7-10
Nosocomial pneumonia <sup>4,7</sup>	≤8	10-15
Pyelonephritis <sup>10</sup>	5-7	10-14
Intraabdominal infection <sup>11</sup>	4	10
Acute exacerbation of chronic bronchitis and COPD <sup>12</sup>	≤5	≥7
Acute bacterial sinusitis <sup>13</sup>	5	10
Cellulitis <sup>14</sup>	5-6	10
Chronic osteomyelitis <sup>15</sup>	42	84

Abbreviation: COPD, chronic obstructive pulmonary disease.

ASPICON2023

## CONFERENCE DAY 2

The day started with the preliminary round of the Quiz competition.

The honorary speaker, Dr Brad Spellberg, delivered the opening presentation on 'Shorter is Better' through virtual mode.

It was followed by a session on 'Community IAS practices- who are leaders and how'.

It was followed by sharing experiences by representatives from different Institutes of National Importance (INI) on AMS activities.

*Some key presentations from Day 2 of the conference were as follows:*

## Practical AMSP decision-making- case scenarios

### Why do we want stewardship in our daily practices?

Effects of antibiotic stewardship on the incidence of infection and resistant bacteria and *Clostridioides difficile* infection are summarized in the Table.

Bacteria	% reduction	IR	95% CI	P value
MDR GNB	51	0.49	0.35-0.68	<0.0001
ESBL-G NB	48	0.52	0.27-0.98	0.043
MRSA	37	0.63	0.45-0.88	0.0065
<i>C. difficile</i> infection	32	0.68	0.53-0.88	0.0029
<b>ASPs are more effective when co-implemented with</b>				
IPC interventions	-	0.69	0.54-0.88	0.0030
Hand hygiene	-	0.34	0.21-0.54	<0.0001

Aspects of practical decision-making in AMSP include indication of antibiotic, choice of antibiotic, dose and dosing interval, route of administration, appropriateness of culture, therapeutic drug monitoring, duration of treatment, de-escalation, source control, infection prevention and control practices.

All the above aspects were discussed in various clinical syndromes like acute bronchitis, rhino-sinusitis, community-acquired pneumonia, prosthetic joint infection, urinary tract infection, ventilator-associated pneumonia, CRBSI, Candidemia and *Clostridioides difficile* infection through case based approach.

The home messages from the session were

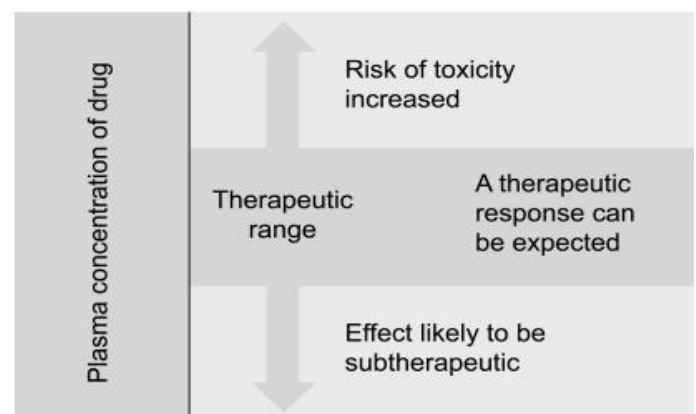
- Small steps of stewardship always have a high impact on patient outcome

- Hand hygiene is the step of IPC in wards and ICU
- Clinicians should be aware of updates about MIC of isolates
- A combined approach would be the key to AMSP

### Therapeutic drug monitoring: is it essential or dispensable?

Therapeutic drug monitoring (TDM) involves using drug concentration measurements in body fluids to manage drug therapy for the cure/ alleviation/ prevention of disease.

The goal of the TDM is to individualize patient therapeutic regimens for optimal patient benefits, and it is achieved by maintaining the plasma/blood concentration of the drug within the therapeutic range, which is the dose range of the drug that has shown to be efficacious without causing toxic effects.



Indications of TDM include the following.

- Drugs with narrow therapeutic index. e.g.- Phenytoin, Digoxin
- Drugs exhibiting large changes in response with small changes in plasma concentrations (i.e. non-linear kinetics), e.g., Theophylline
- Drugs with poor and erratic absorption.
- Drugs with wide inter-individual variability in metabolism.
- Patient exhibiting signs and symptoms of toxicity (e.g. persistent nausea with theophylline intake)
- To minimize the risk of toxicity and determine drug abuse.
- Patients on multiple drug therapy.
- Coexisting GI, hepatic or renal disease.
- To identify the poison and to determine its severity.



- Drugs with poorly defined endpoints (e.g. immunosuppressants) or where signs of overdose and underdose are challenging to distinguish.
- To assess medicine compliance in certain cases.

Plasma drug concentration measurements alone may be **helpful** in **several circumstances**, although each indication may not apply equally to every drug. TDM has proven benefits like improved compliance, decreased toxicity, more time in therapeutic range, fewer adverse effects, and shorter ICU and hospital stays.

However, factors like **high costs** and **invasiveness** of the process limit its usage in routine clinical practice. Further, the processes that influence drug utilization in the body decrease the overall effectiveness of TDM.

### **Practice changing studies- Year 2022-23**

*Studies discussed in the session were as follows.*

1. MERCY Randomized clinical trial- comparing continuous versus intermittent meropenem administration in critically ill patients with sepsis. (JAMA, June 2023)
2. AMBITION trial- Single-dose liposomal Amphotericin B treatment for cryptococcal meningitis. (NEJM, March 2022)
3. OVERCOME trial- Colistin monotherapy versus combination therapy for carbapenem-resistant organisms. (NEJM, December 2022)
4. Comparison of 8 versus 15 days of antibiotic therapy for *Pseudomonas aeruginosa* ventilator-associated pneumonia in adults: a randomized, controlled, open-label trial. (Intensive Care Medicine, 2022)
5. 1,3-  $\beta$ -D- glucan- guided antifungal therapy in adults with sepsis: the CandiSep randomized clinical trial (Intensive care medicine, 2022)

Also, the following seven categories of change barriers published by Cabana et al. in JAMA were discussed in this session.

1. Lack of awareness (don't know guidelines exist)
2. Lack of familiarity (know guidelines exist but don't know the details)
3. Lack of agreement (don't agree with recommendations)
4. Lack of self-efficacy (don't think they can do it)
5. Lack of outcome expectancy (don't think it will work)
6. Inertia (don't want to change)
7. External barriers (want to change but blocked by system factors)

### **Interactive case studies: Haemato-oncology, ICU & Pulmonology**

Three cases were discussed by the residents of the respective departments on invasive candidiasis, febrile neutropenia and VAP caused by CRE. Through the cases, interactive discussion was conducted on developing a syndromic approach and multidisciplinary management and choosing appropriate antibiotics, escalation and de-escalation.

### **RESEARCH PRESENTATIONS AND COMPETITIONS**

Around 30 posters were assessed by a panel of esteemed judges – Dr Sagar Khadanga, Dr Ketan Priyadarshi, Dr Amit kumar Rohilla and Dr Aliza Mittal. Oral Research presentations were conducted under the moderation of Dr Prasan Kumar Panda.

The final stage round of the National ASPICON Quiz was conducted in hall B on Day 2 of the conference.

*The conference finally concluded with a prize distribution ceremony and a vote of thanks from the organizers.*