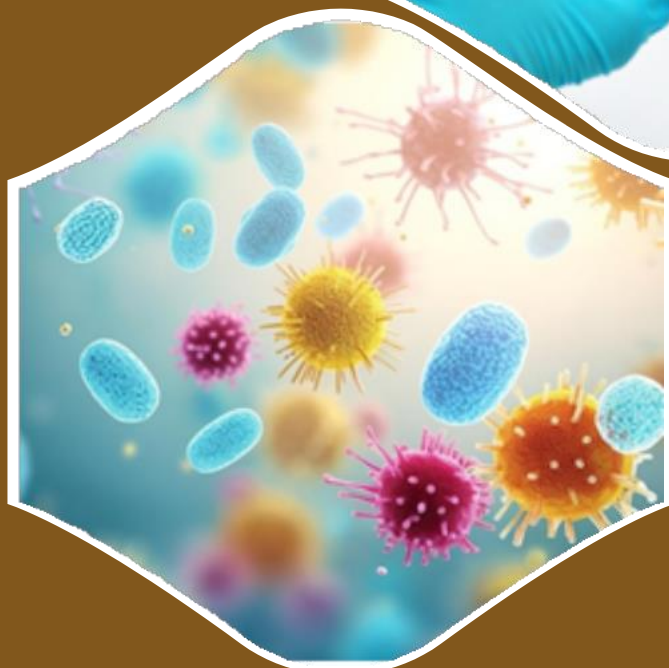




TELANGANA STATE ANTIMICROBIAL RESISTANCE SURVEILLANCE NETWORK ANNUAL REPORT

1st JANUARY-31st DECEMBER 2024

**Nodal Center-Osmania Medical
college
Microbiology Department
Hyderabad**

Supported by:

National Programme on AMR
Containment, NCDC, DGHS
Ministry of Health & Family Welfare



Ministry of Health & Family Welfare
Government of India

ANNUAL REPORT

Telangana State Antimicrobial Surveillance Network (TARS-Net)

Reporting period

January 01st – December 31st 2024



Nodal Center- Osmania Medical College, Microbiology Department, Hyderabad Supported
by

National Programme on AMR Containment, National Centre for Disease Control (NCDC)
Directorate General of Health Services

Ministry of Health & Family Welfare Government

Table of Contents

Contents

Table of Contents	2
Acknowledgement	3
<i>Acronyms</i>	4
<i>List of Tables</i>	5
<i>List of Figures</i>	6
<i>1.Executive Summary</i>	7
<i>2.Telangana State AMR Surveillance Network (TARS-Net)Report</i>	8
2.1Introduction	8
2.2. Findings	11
2.2.1 Data Deduplication	11
2.2.2Gender distribution of reported AMR data	12
2.2.3AMR profile of priority pathogens	15
2.2.3.1 Gram-Positive Cocci	15
<i>Staphylococcus aureus</i>	15
<i>Enterococcus species</i>	17
2.2.3.2 Gram-Negative Bacilli	19
2.2.3.2.1 <i>Enterobacteriaceae</i>	19
<i>Escherichiacoli</i>	19
<i>Klebsiella species</i>	21
2.2.3.2.2 Non-Fermenting Gram-Negative Bacilli.....	23
<i>Pseudomonas species</i>	23
<i>Acinetobacter species</i>	25
2.3 Discussion.....	27
2.4 AnnexureI	28
Government Colleges	28
Private Institutions	28

Acknowledgement

Osmania Medical College, Osmania General Hospital Hyderabad, Microbiology Department, nodal center for Telangana State Antimicrobial Resistance Surveillance Network, is very glad to publish its first annual report, 1 January -31 December 2024.

We express our deepest of the gratitude to Dr Lata Kapoor , Additional Director, NCDC and AMR surveillance secretariat, NCDC, New Delhi, for their guidance and support to conceptualize and formulate Telangana State Antimicrobial Resistance Surveillance-TARS network as a part of National programme on Antimicrobial Resistance Containment .

We are highly indebted and express our gratitude to Dr. A Narendra kumar (Director of Medical Education) ,Shri Dr.P.Shashikala Reddy (Ex-Principal), Dr.G.Jyothi Lakshmi (Ex-HOD),and Dr.K.Madhurima (Ex-Nodal Officer), for all administrative support in successful rolling out of the TARSNET network.

We also want to thank, all Allied Hospitals and the network sites, who had submitted their data in the timely manner and participated actively in training sessions and online meetings for improving the TARSNET data management.

The annual TARSNET report generated provides critical insights into state's antimicrobial resistance pattern. It will leverage evidence-based interventions, policies, and programs that will mitigate the threat of AMR and preserve the effectiveness of antibiotics for the treatment of infectious diseases in our state and country.

Dr.B.M.Shanker Venkatesh
HOD, Microbiology
Osmania Medical College

Dr.B.Raja Rao
Principal
Osmania Medical College

Dr.M.L.kavitha Latha
Nodal Officer-AMR,
Associate Professor, Microbiology
Osmania Medical College,
Osmania Hospital, Hyderabad

Acronyms

AMR	Antimicrobial Resistance
Amox-clav	Amoxicillin/ Clavulanic acid
AST	Antimicrobial Susceptibility Testing
BMD	Broth Micro dilution
CBDDR	Centre for bacterial Diseases and Drug Resistance
CLSI	Clinical & Laboratory Standards Institute
CSV	Comma Separated Value
EQAS	External Quality Assessment Scheme
GLASS	Global Antimicrobial Resistance and Use Surveillance System
IPD	Inpatient Department
ICU	Intensive Care Unit
ID	Identification
IQC	Internal Quality Control
LIMS	Laboratory Information Management System
MRSA	Methicillin-Resistant <i>Staphylococcus aureus</i>
NARS-Net	National Antimicrobial Resistance Surveillance Network
NFGNB	Non-fermenting Gram-negative bacilli
NCDC	National Centre for Disease Control
NRL	National Reference Laboratory
OPD	Outpatient Department
OSBF	Other Sterile Body Fluids
PA	Pus Aspirate
R I S	Resistant Intermediate Sensitive
TMP-SMX	Trimethoprim- Sulfamethoxazole
SOP	Standard Operating Procedure
TARSNET	Telangana state Antimicrobial Resistance Surveillance Network
VBA	Visual Basic Application
VRE	Vancomycin-Resistant <i>Enterococcus species</i>
WHO	World Health Organization

List of Tables

Table1	Priority Pathogens and specimens included under AMR Surveillance
Table2	Distribution of priority pathogen isolates based on specimen type
Table3	Distribution of isolates by specimen type
Table4	Specimen type wise distribution of isolates
Table5	Distribution of priority pathogen isolates by location type
Table6	Resistance profile of <i>Staphylococcus aureus</i>
Table7	Resistance profile of <i>Enterococcus</i> species
Table8	Resistance profile of <i>Escherichia coli</i>
Table9	Resistance profile of <i>Klebsiella</i> species
Table 10	Resistance profile of <i>Pseudomonas</i> species
Table11	Resistance profile of <i>Acinetobacter</i> species in Inpatient and Emergency ward.

List of Figures

- Figure 1 National AMR Surveillance Network laboratories under TARS-Net as of March 2024
- Figure 2 Distribution of priority pathogen isolates and unique patient isolates
- Figure 3 Distribution of isolates by location type
- Figure 4 Distribution of priority pathogen isolates by location type
- Figure 5 Resistance profile of *S. aureus* in blood
- Figure 6 Resistance profile of *Enterococcus* species in blood
- Figure 7 Resistance profile of *Escherichia coli* isolated from blood
- Figure 8 Resistance profile of *Klebsiella* species isolated from blood
- Figure 9 Resistance profile of *Pseudomonas* species isolated from blood
- Figure 10 Resistance profile of *Acinetobacter* species isolated from blood Inpatient and Emergency ward.

1. Executive Summary

The Telangana State AMR surveillance network (TARS-Net) under the National Programme on AMR Containment, coordinated by the National Centre for Disease Control (NCDC), has been established in December 2023 to include 13 laboratories in 10 Districts. For the surveillance of TARSNET sites, Osmania Medical College, Hyderabad is being selected as the state nodal centre for AMR surveillance.

NCDC was designated by the Ministry of Health and Family Welfare (MoHFW), Government of India as the National Coordinating Centre (NCC) for AMR surveillance and for submitting data to the WHO's Global Antimicrobial Resistance Surveillance and Use System

WHONET work shop in Telangana state is conducted in December 2023. Hands on training was provided to the bacteriologists and HODs of microbiology of all 13 sites regarding WHONET configuration, data entry, analysis of antibiotic sensitivity report and preparation of antibiograms of each lab. The current report covers the data submitted by TARS-Net sites during the reporting period from 1st January 2024 to 31st December 2024 and includes surveillance data from 13 sentinel sites in 10 districts of Telangana.

Hands on training on the antibiotic sensitivity testing (AST) of the priority pathogens has been done for all the TARSNET sites. Simultaneously, regular monthly data quality meetings with NCDC officer were also conducted for state sites in order to improve the quality of data, which enabled real time correction of data. Data manager and Lab technician at Osmania Medical College, state nodal centre trained on bacteriology testing methods and data compilation using WHONET for collating and analyzing quality data of the state sites.

Quality data at the sites being monitored through online calls using WHONET as a platform and feedbacks on the data is shared with the sites to improve the data quality. All the sites enrolled in National EQAS scheme and are also performing internal quality control to ensure quality of antibiotic discs and culture media to maintain the microbiology laboratory standards.

This is the first annual AMR Surveillance report from the state of Telangana for the data of the year 2024, which is being developed with the support from AMR Programme Unit at National Centre for Disease Control, Delhi. This report includes data of 16,274 priority pathogen isolates reported by 13 sites for the period from 1st January to 31st December 2024.

2. Telangana State AMR Surveillance Network (TARS-Net) Report

2.1 Introduction

Antimicrobial resistance (AMR) is recognized as one of the top ten public health threats by the World Health Organization (WHO).

OMC Hyderabad became the part of National AMR Surveillance Network (NARS-Net) in 2018 .Since then OMC has been submitting their surveillance data to NCDC. State AMR Surveillance was initiated in 2023 which includes 13 medical Colleges/ laboratories in 10 districts of the state (as of March2025) to ensure geographic representation. The surveillance data submitted by the TARS-Net sentinel sites is analyzed after validation at OMC Hyderabad, which is designated as nodal centre for State AMR Surveillance in the state of Telangana.

Under the TARS-Net, 11 government medical colleges and 2 private medical colleges are performing WHONET data entry and submitting their data on priority pathogens and antibiotic sensitivity pattern to nodal center from January 2024.

The TARS-Net sentinel sites conduct laboratory-based AMR surveillance of nine priority bacterial pathogens namely

1. *Staphylococcus aureus*
2. *Enterococcus* species
3. *Escherichia coli*
4. *Klebsiella* species
5. *Pseudomonas* species
6. *Acinetobacter* species
7. *Salmonella enteric serotype Typhi and Paratyphi*
8. *Shigella* species
9. *Vibrio cholera*

Table1: Priority Pathogens and specimens included under AMR Surveillance

Clinical Specimen	Laboratory case-definition	Priority pathogens under AMR Surveillance
Blood		<i>Enterococcus</i> species <i>Staphylococcus aureus</i> <i>Escherichia coli</i> <i>Klebsiella</i> species <i>Acinetobacter</i> species <i>Pseudomonas</i> species <i>Salmonella enterica</i> serovar Typhi <i>Salmonella enterica</i> serovar Paratyphi
Urine	Clinically significant bacteria	<i>Enterococcus</i> species <i>Escherichia coli</i> <i>Klebsiella</i> species <i>Acinetobacter</i> species <i>Pseudomonas</i> species
Pus Aspirate	Growth of pathogenic bacteria from aspirated purulent material from a closed infected site	<i>Enterococcus</i> species <i>Staphylococcus aureus</i> <i>Escherichia coli</i> <i>Klebsiella</i> species <i>Acinetobacter</i> species <i>Pseudomonas</i> species
Other sterile body fluids*	Growth of pathogenic bacteria from a sterile body fluid specimen	<i>Enterococcus</i> species <i>Staphylococcus aureus</i> <i>Escherichia coli</i> <i>Klebsiella</i> species <i>Acinetobacter</i> species <i>Pseudomonas</i> species
Stool	Isolation of pathogen from stool	<i>Salmonella enterica</i> serovar Typhi <i>Salmonella enterica</i> serovar Paratyphi <i>Shigella</i> species <i>Vibrio cholera</i>

NCDC provides technical support through online zoom calls with all the sentinel sites on proper sample collection, culture methodology, Identification and Antibiotics sensitivity testing and Data management. Osmania medical college as a state nodal centre performs and confirms alerts by doing AST using Broth micro dilution as per the AMR Program SOP.

TELANGANA STATE TARS –Net SITES MAP



Figure1- National AMR Surveillance Network laboratories under NARS-Net as of March 2025

WHONET 2024 an open source offline system for entries and analysis of antibiotic sensitivity test pattern performed by Manual and automated systems. We follow the CLSI guidelines to designate the zone size as Intermediate, Resistance and Sensitive to all antibiotics tested.

The data submitted is validated for quality through monthly zoom meetings for the sentinel sites conducted by NCDC Officer.

Sentinel sites perform internal quality control using ATCC strains as per SOP and also participate in EQAS for Bacteriology with CMC Vellore .Antibiotic resistance alert isolates of public health concern are being shipped to NCDC regularly.

The Annual report of AMR Data from January 2024 to December 2024 has been submitted as a single file cumulative of all the sentinel sites' data and deduplication was done before compiling and developing the final report.

2.2. Findings

This TARS-Net report includes data of 16,274 priority pathogen isolates reported by 13 sites in 2024 (List at Annexure-1). The data reported was cleaned at OMC Hyderabad and validated at NCDC before analysis and preparation of the annual report. The AMR alert bacterial isolates confirmed at AMR-NRL at NCDC are included in the report

2.2.1 Data Deduplication

Deduplication of reported data of 16,274 isolates using WHONET revealed 15,674 isolates data from unique patients, which has been further taken for AST analysis. Figure2 depicts the distribution of AMR surveillance priority pathogen isolates before and after de duplication.

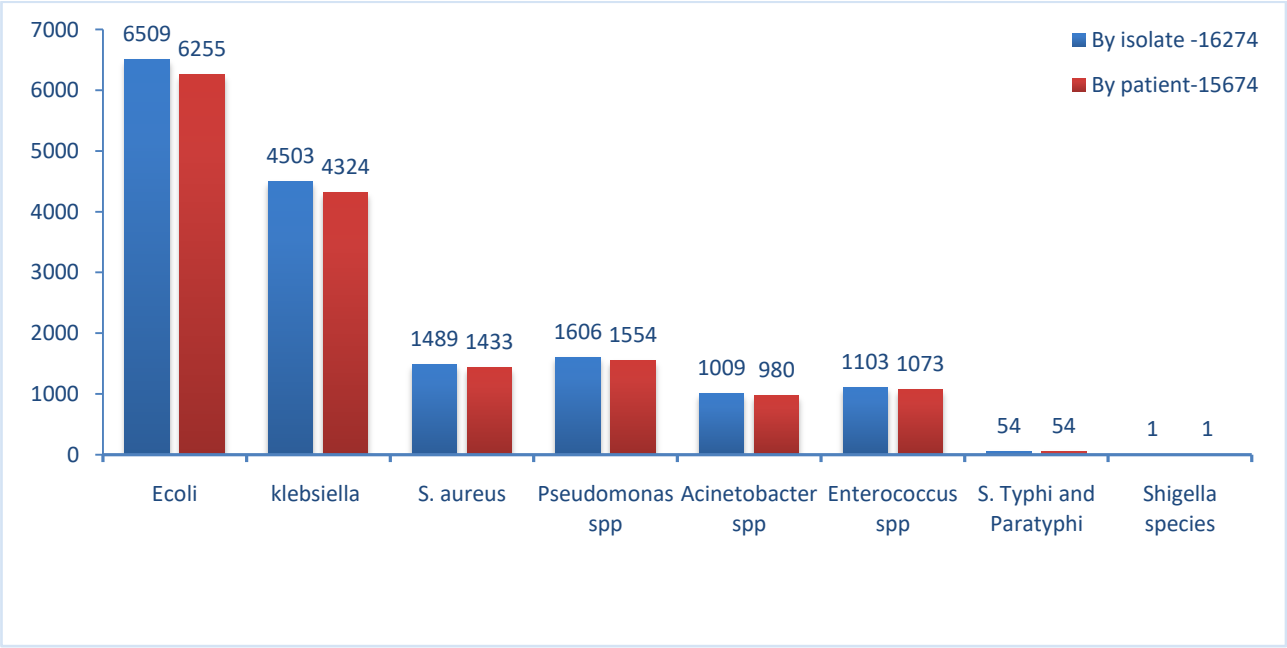
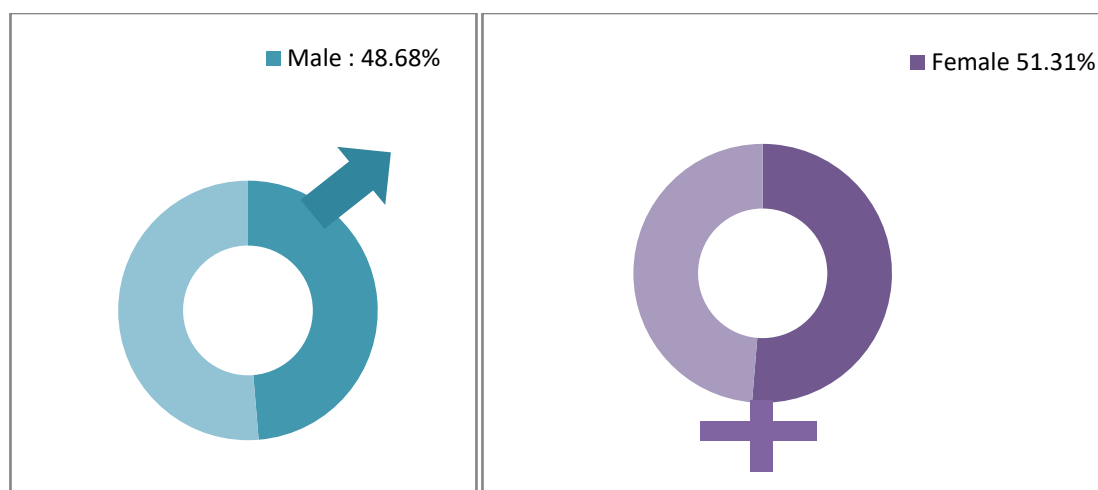


Figure2-Distribution of priority pathogen isolates and unique patient isolates



2.2.2 Gender distribution of reported AMR data

In the AMR surveillance data reported under TARS-Net during 2024, the highest numbers of isolates in this report are from urine specimens (52%) and least from OSBF (2%) and stool (0.006%)(Table 2).

Specimen Type	Number of isolates (%)
Urine	8199 (52.30%)
Blood	2539 (16.19%)
Pus Aspirate	4593 (29.59%)
Other sterile body fluids	342 (2.18%)
Stool	1 (0.006%)
Total	15,674

Table 2: Distribution of Number of isolates based on specimen type (N=15,674)

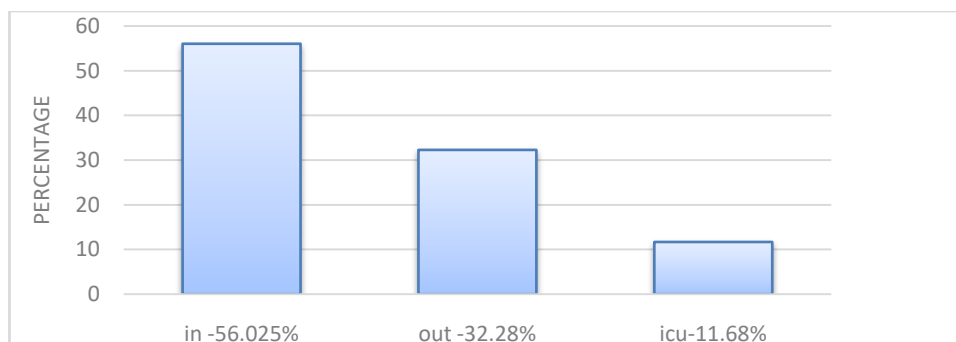
From urine specimens, *E. coli* (58%) was the most commonly isolated pathogen, from blood specimens the most common priority pathogen isolated was *Klebsiella* species (35%); among pus aspirates was *S.aureus* (26%). *Klebsiella* species (32%) and *E. coli* (30%) were the most commonly isolated pathogens from other sterile body fluids (Table 3).

Priority pathogen	Blood		Pus aspirate		OSBF		Urine	
	N	(%)	N	(%)		(%)	N	(%)
<i>S. aureus</i>	227	11%	1190	26%	16	5%	x	
<i>Enterococcus species</i>	290	11%	139	3%	12	4%	632	8%
<i>Escherichia Coli</i>	295	12%	1083	24%	102	30%	4775	58%
<i>Klebsiella species</i>	890	35%	1171	25%	111	32%	2152	26%
<i>Salmonella Typhi and Paratyphi</i>	54	2%	x	X	x	X	x	X
<i>Pseudomonas species</i>	288	11%	731	16%	59	17%	476	6%
<i>Acinetobacter species</i>	495	19%	279	6%	42	12%	164	2%
Total	2539	(100%)	4593	(100%)	342	(100%)	8199	(100%)

Table3-Distribution of isolates by specimen type (N= 15,674)

Priority Isolates	<i>S.aureus</i>		<i>Enterococcus</i> spp.		<i>Escherichia Coli</i>		<i>Klebsiella</i> spp.		<i>Salmonella Typhi and Paratyphi</i>		<i>Pseudomonas</i> spp.		<i>Acinetobacter</i> spp.	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Blood	227	15%	290	27%	295	4%	890	20%	54	100%	288	18%	495	50%
Pus aspirates	1190	83%	139%	12%	1083	17%	1171	27%	x	x	731	47%	279	28%
OSBF	16	1%	12%	1%	102	1%	111	2%	x	x	59	3%	42	4%
Urine	x		632%	58%	4775	76%	2152	49%	x	x	476	30%	164	16%
Stool	x		x		x		x		1		x		x	
Total	1433		1073		6255		4324		55		1554		980	

Table 4 –Specimen type wise distribution of isolates (N=15,674)



*IN–Inpatient also included emergency; OUT–Outpatient; ICU–Intensive care Units

Figure 3 -Distribution of isolates by location type (N=15,674)

In the 2024 AMR surveillance data, the majority of isolates were from patients admitted in hospital wards (IPD- 56%) whereas the least number of isolates belonged to patients from ICU. Almost a third of the isolates (32%) were from patients visiting the outpatient clinics. About 12% of the priority pathogens were isolated from Intensive care units (Fig.3).

Priority Pathogen	Inpatient		Outpatient		I.C.U.	
	N	(%)	N	(%)	N	(%)
<i>Escherichia coli</i>	3365	(38%)	2418	(47%)	472	(25%)
<i>Klebsiella</i> species	2493	(28%)	1183	(23%)	648	(35%)
<i>Salmonella Typhi</i> and Paratyphi	30	(0.3%)	24	(0.40%)	0	0
<i>Pseudomonas</i> species	883	(10%)	447	(8%)	224	(12%)
<i>Acinetobacter</i> species	708	(8%)	125	(2%)	147	(8%)
<i>S. aureus</i>	701	(7%)	620	(12%)	112	(6%)
<i>Enterococcus</i> species	602	(6%)	243	(4%)	228	(12%)
<i>Shigella</i> species	0	0	0	0	1	0.05%
Total	8782		5060		1832	

Table5 - Distribution of priority pathogen isolates by location type (N=15,674)

Among the inpatients, the most commonly isolated priority pathogen was *Escherichia coli* (38%) followed by *Klebsiella* spp.(28%),however an inverse scenario was seen in Intensive care units where in *Klebsiella* spp. (35%) was the most commonly isolated pathogen followed and *Escherichia coli*(25%)and *Pseudomonas* spp.(12%), *Enterococcus* spp. (12%)(Table5). *Escherichia coli* was also the most commonly isolated pathogen from Outpatient clinics (47%) In contrast, the least commonly isolated pathogen amongst all of the location types was *Salmonella* Typhi and *Paratyphi* and *Shigella* species (Table 5).

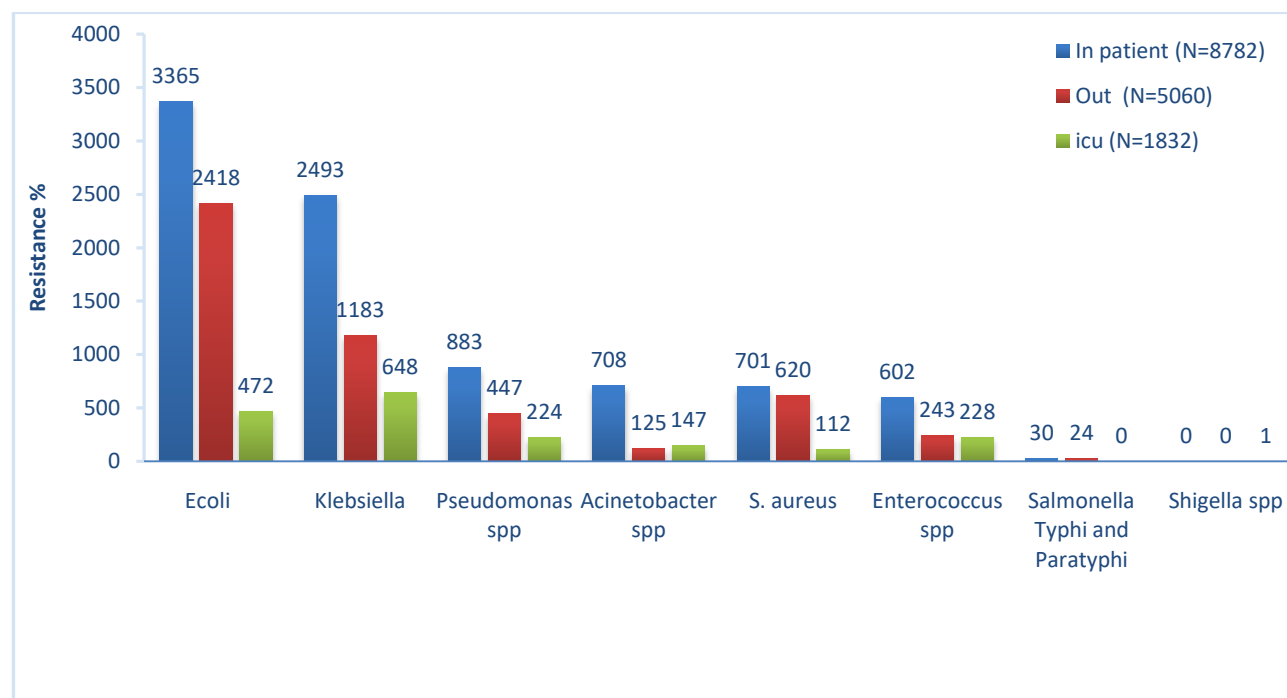


Figure 4-Distribution of priority pathogen isolates by location-type

2.2.3AMR profile of priority pathogens

2.2.3.1 Gram-Positive Cocci

The AMR surveillance under TARS-Net covers the two most prevalent Gram-positive bacteria human pathogens i.e., *Staphylococcus aureus* and *Enterococcus* species.

Staphylococcus aureus

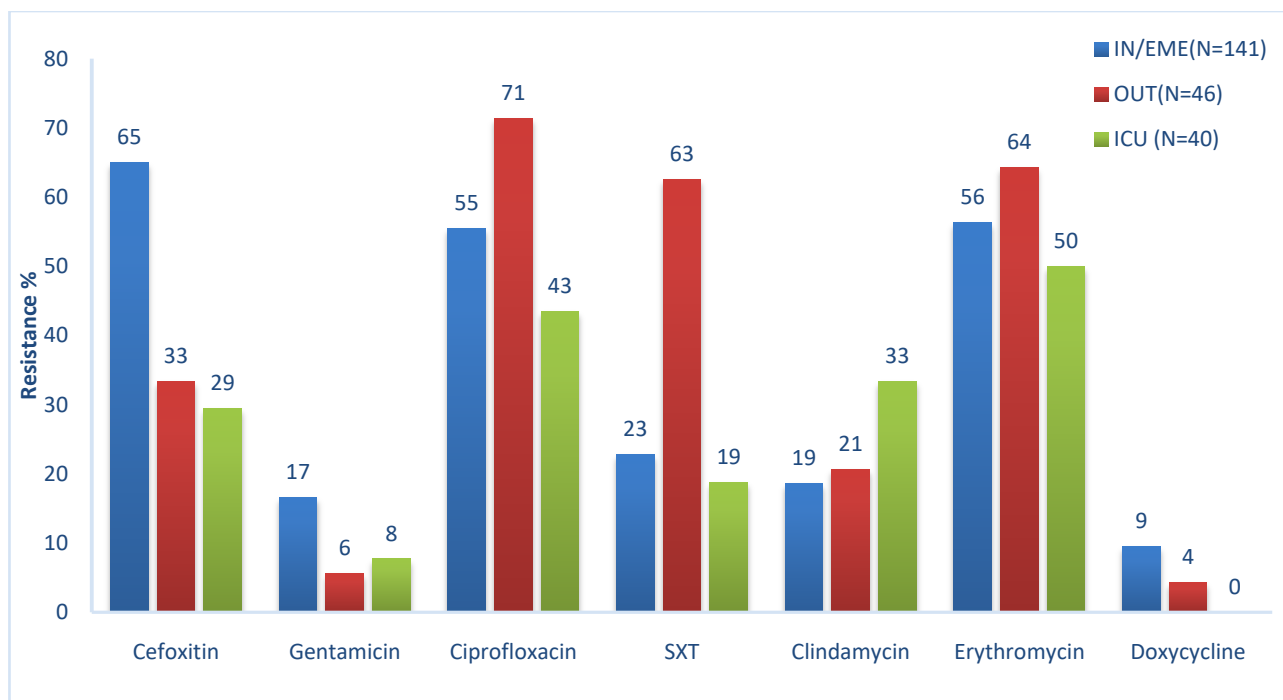
Total numbers of Isolates 1433, Isolation rates from specimen types like blood (15%), pus aspirates (83%) and other sterile body fluids 1% respectively (Table 4).

Among *staphylococcus aureus* isolated from blood, ciprofloxacin and erythromycin resistance was noted to be (56%) followed by cefoxitin (53%). A similar resistance pattern was also seen in other specimen types like pus aspirate and sterile body fluids (Table -6).

Antibiotic Tested	BLOOD(N- 227)		PUS (N-1190)		OSBF(N-16)	
	Number Tested	%R	Number Tested	%R	Number Tested	%R
Cefoxitin	121	53	719	43	4	100
Gentamicin	171	13	886	15	10	10
Ciprofloxacin	127	56	663	61	9	89
Trimethoprim/Sulfamethoxazole	111	28	706	23	12	17
Clindamycin	158	22	973	21	11	36
Erythromycin	139	56	827	57	12	58
Linezolid	189	0	1013	0	13	0
Teicoplanin	52	2	276	0.36	8	0
Doxycycline	91	7	685	4	4	0

*TMP/SMX-Trimethoprim/sulfamethoxazole.

Table 6-Resistance profile of Staphylococcus aureus (N=1433)



*TMP/SMX-Trimethoprim/sulfamethoxazole.

Figure 5– Resistance profile of *S. aureus* in blood (N=227)

Enterococcus species

Enterococcus species contributed 10% amongst nine priority pathogens isolated by the surveillance sites while contributing to 46% of the Gram-positive cocci (Table 4). A total of *Enterococcus species* isolates data were submitted by the TARS Net sites of which 1073 isolates were from unique patients (Fig. 2). Upon analysis of 1103 unique patient isolates, isolation rates from specimen types like urine (58%), blood (27%), pus aspirates (12%) and other sterile body fluids 1% respectively (Table 4).

Among *Enterococcus species* isolated from blood, erythromycin resistance was noted to be 73% followed by Ampicillin (91%). A similar resistance pattern was also seen in other specimen types like pus aspirate and sterile body fluids (Table -7).

Antibiotic Tested	BLOOD (N -290)		Urine (N -632)		PUS (N-139)		OSBF (N-12)	
	Number Tested	%R	Number Tested	%R	Number Tested	%R	Number Tested	%R
Ampicillin	209	91	414	69	95	66	5	100
Gentamicin - high	189	13	279	25	75	20	2	0
Erythromycin	262	73	x	x	100	71	12	83
Linezolid	256	0	501	0	113	0	11	0
Vancomycin	259	3	383	0.26	103	2	6	0
Teicoplanin	178	13	324	21	78	10	7	29
Doxycycline	178	9	224	21	68	6	3	33
Cefoxitin	x	x	26	-	x	x	x	x
Nitrofurantoin	x	x	494	26	x	x	x	x
Tetracycline	x	x	171	67	x	x	x	x

*Alert pathogens confirmed at NRL,NCDC only were included in the data

Table 7-Resistance profile of Enterococcus species (N=1,073)

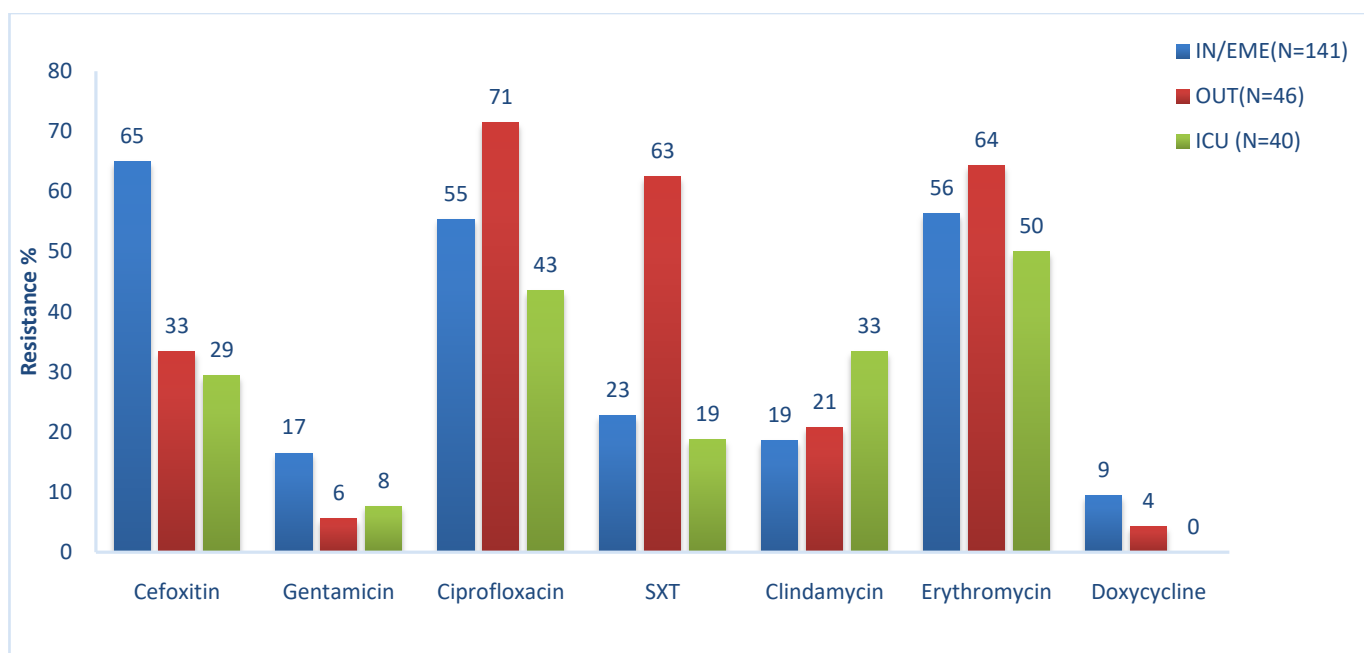


Figure 6-Resistance profile of Enterococcus species in blood (N=290)

2.2.3.2 Gram-Negative Bacilli

Under NARS Net, the seven Gram-negative bacilli of public health importance are included in AMR surveillance. These are *Escherichia coli*, *Klebsiella* species, *Pseudomonas* species, *Acinetobacter* species, *Salmonella enterica* serovar Typhi and Paratyphi, *Shigella* species.

2.2.3.2.1 Enterobacteriaceae

Data of 13,682 isolates of *E. coli*, *Klebsiella* species, *Salmonella enterica* serovar Typhi and Paratyphi and *Shigella* species was submitted by network sites from 13,168 unique patients.

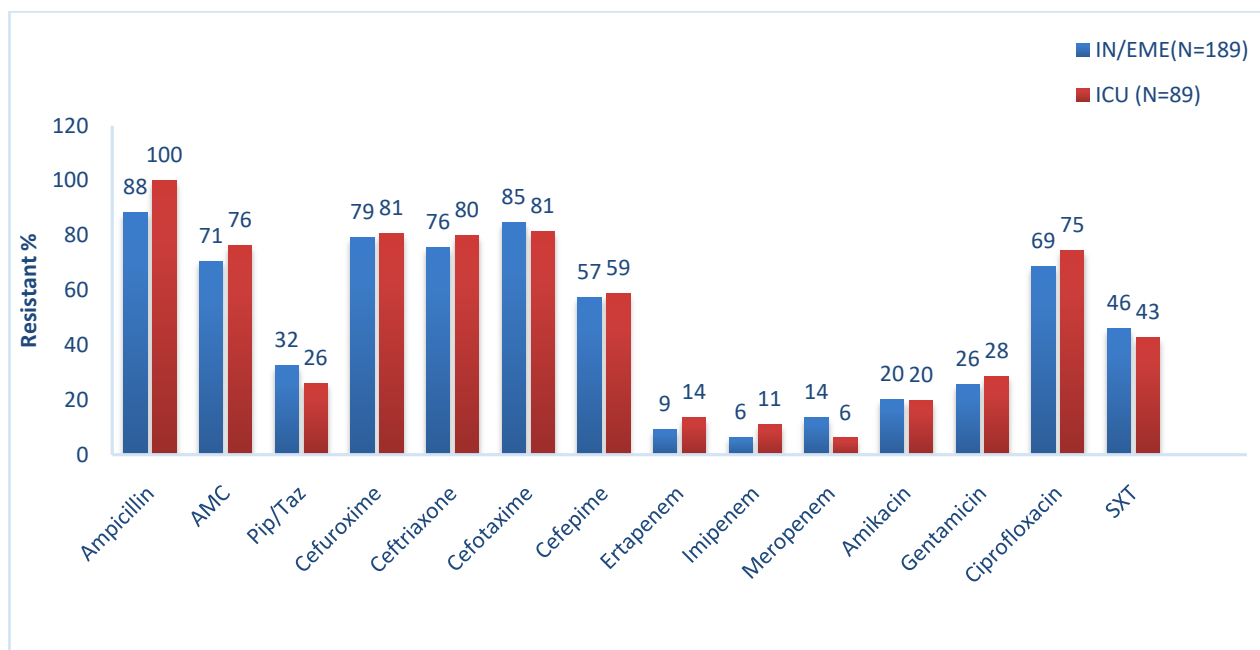
Escherichia coli

A total of 6,509 *E. coli* isolates were reported from 6,255 unique patients. These isolates contributed to one-third of the unique patient AST data during the year 2024 (Fig.2). *E. coli* was most commonly isolated from the urine samples (76%) followed by pus aspirate (17%), blood (4%) and sterile body fluids (1%) (Table4). Regarding the resistance pattern, the highest resistance was observed to ampicillin among all the specimen types (Table8). A high proportion of resistance to ciprofloxacin was observed with 70% resistance in blood isolates and 63% in OSBF isolates. Forty four percentage of resistance to trimethoprim- sulfamethoxazole was seen among blood isolates, similar pattern was observed for other specimen types.

Among the third generation cephalosporins, 85% resistance to cefotaxime was observed in blood isolates and 35% in urine isolates. Imipenem resistance in *E. coli* was observed to be 7% in blood Isolates and 64% in urine isolates (Table 8). Colistin susceptibility testing has been done using the broth micro dilution method as per CLSI document M02 and M100

Antibiotic Tested	BLOOD (N-295)		URINE (N-4775)		OSBF (N-102)		PUS (N-1083)	
	Number	%R	Number	R%	Number	%R	Number	%R
Ampicillin	134	91	2024	42	62	97	662	61
Amoxicillin	155	71	3132	66	46	76	639	59
Piperacillin/ tazobactam	231	31	3538	74	81	32	854	79
Cefuroxime	139	81	3172	66	21	86	584	54
Ceftriaxone	206	77	3878	81	21	86	728	67
Cefotaxime	119	85	1682	35	72	82	491	45
Cefepime	197	58	3051	64	46	83	723	67
Ertapenem	72	11	1518	32	71	42	278	26
Imipenem	185	7	3053	64	23	35	464	43
Meropenem	171	11	1687	35	47	21	608	56
Amikacin	253	21	4222	88	51	16	891	82
Gentamicin	253	26	4283	89	91	29	755	70
Ciprofloxacin	231	70	3681	77	63	30	686	63
Trimethoprim /sulfamethoxazole	199	44	1185	25	59	76	637	59
Colistin	161	0	2345	0	52	0	472	0
Fosfomicin	0	0	1038	22	52	0	0	0
Nitrofurantoin	0	0	3879	81	0	0	0	0
Doxycycline	0	0	0	0	2	0	30	2

Table 8 -Resistance profile of *Escherichia coli*



*(Total blood samples are 295 , in that outpatient samples 17 are not shown in graph)

Figure 7-Resistance profile of *Escherichia coli* in blood (N=278)

Klebsiella species

In the current data reporting period, 4,503 *Klebsiella* species isolates were reported of which 4,324 were from unique patients. The isolation rate of *Klebsiella* spp. in data reported by the sentinel sites was highest from urine (49%) followed by pus aspirate (27%), blood (20%) and OSBF (2%) (Table 4).

Among the urine isolates, one-third of the isolates tested against amino glycosides namely amikacin (48 %) were found to be resistant; eight of every 10 isolates of *Klebsiella* spp. from urine were found to be resistant to third generation cephalosporins. With respect to carbapenem resistance in urine isolates, resistance to ertapenem (47%) was highest.

Like urine isolates, *Klebsiella* species from blood showed high level of resistance to the third generation cephalosporins. Imipenem resistance in *Klebsiella* species isolated from blood was observed to be 21% whereas 7% resistance was observed in urine isolates. (Table 9)

Klebsiella species' location type wise AST data revealed similar resistance pattern like other priority pathogens wherein higher resistance was seen in isolates from inpatient compared to intensive care units and outpatient departments (Fig. 8).

Antibiotic Tested	BLOOD(N- 890)		URINE(N-2152)		PUS (N-1171)		OSBF (N-111)	
	Number	%R	Number	%R	Number	%R	Number	%R
Ampicillin	557	86	1500	71	718	81	49	78
Piperacillin/ tazobactam	685	48	1543	32	929	36	79	44
Cefuroxime	500	84	1102	79	284	77	22	77
Ceftriaxone	679	88	1656	70	774	80	72	86
Cefotaxime	420	91	800	73	490	83	55	71
Cefepime	483	65	1423	45	827	47	65	52
Ertapenem	90	47	669	17	236	28	26	35
Imipenem	577	21	1490	7	577	8	44	18
Meropenem	450	49	613	24	648	16	48	19
Amikacin	765	48	1906	24	993	33	98	35
Gentamicin	789	37	1947	22	759	37	79	38
Ciprofloxacin	701	51	1626	39	753	53	70	57
Trimethoprim /sulfamethoxazole	694	50	1399	34	737	50	62	48
Colistin	429	0	1204	0	579	0	49	0
Doxycycline	7	14	1812	36	57	11	2	50

Table 9 -Resistance profile of Klebsiella species (N= 4324)

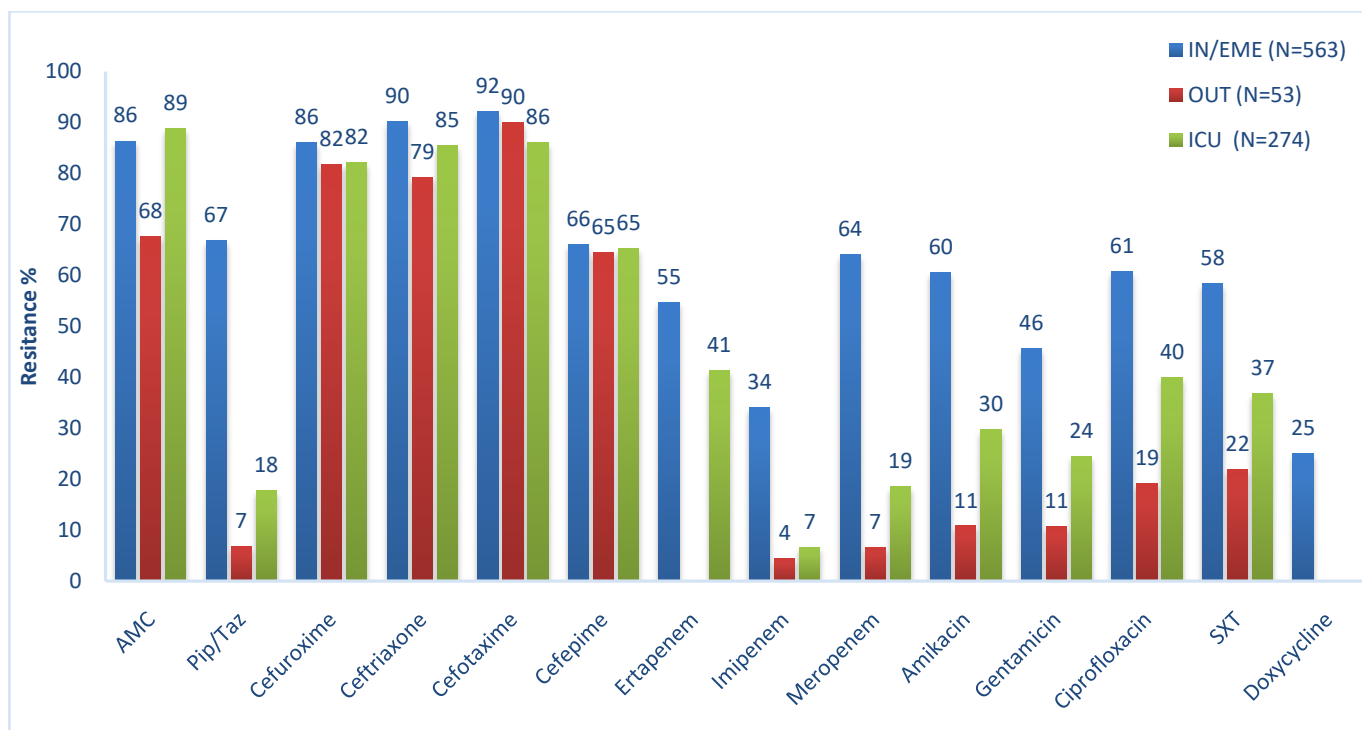


Figure 8-Resistance profile of *Klebsiella* species isolated from blood (N=890)

2.2.3.2.2 Non-Fermenting Gram-Negative Bacilli

Among the non-fermenting Gram-negative bacilli (NF GNB) included in the data submitted during Jan-Dec 2024 from the TARS-Net sentinel sites, *Pseudomonas* species was the most frequently isolated pathogen from 1606 unique patients followed by *Acinetobacter* species (1554)(Fig2). Among the NFGNB, *Pseudomonas* species was the predominant isolate among inpatients, while *Acinetobacter* species was the predominant isolate among the patients in ICU (Table 5).

Pseudomonas species

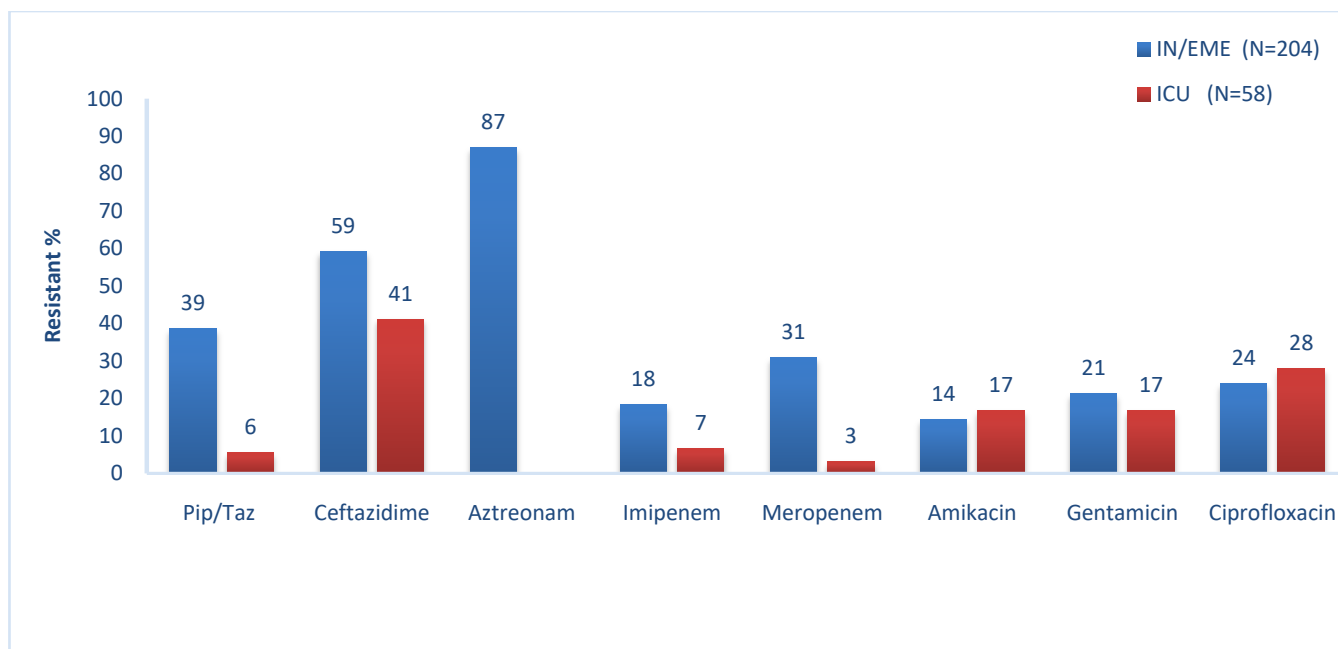
Surveillance sites in 2024 submitted data of 1606 isolates of *Pseudomonas* spp. from 1554 unique patients (Fig2). *Pseudomonas* spp. Isolates included in the data during current reporting period

were most commonly isolated from pus aspirate (47%), urine (30%), blood (18%), and other sterile body fluids (3%) (Table 4).

Isolates of *Pseudomonas spp.* from blood cultures of patients in Intensive care units, Inpatient departments showed highest resistance to ceftazidime and ciprofloxacin, Piperacillin/ tazobactam among the tested antibiotics (Fig.9).

Antibiotics Tested	BLOOD (N -288)		URINE (N-476)		PUS (N-731)		OSBF (N-59)	
	Number Tested	%R	Number Tested	%R	Number Tested	%R	Number Tested	%R
Piperacillin/ tazobactam	210	30	358	42	590	21	46	22
Ceftazidime	201	55	328	66	604	49	49	37
Aztreonam	78	85	97	67	73	56	6	67
Imipenem	122	14	270	25	351	14	15	13
Meropenem	132	21	254	31	425	14	20	10
Amikacin	151	14	369	29	525	14	47	26
Gentamicin	153	18	255	40	360	31	29	34
Nitrofurantoin	2	0	2	100	2	100	x	x
Ciprofloxacin	187	22	332	49	504	38	40	30
Colistin	74	0	172	0	276	0	15	0

Table 10 -Resistance profile of Pseudomonas species (N=1554)



Pip/Taz: Piperacillin/ tazobactam, in total blood out patients are 26 only not shown in graph

Figure 9 -Resistance profile of Pseudomonas species in blood (N=288)

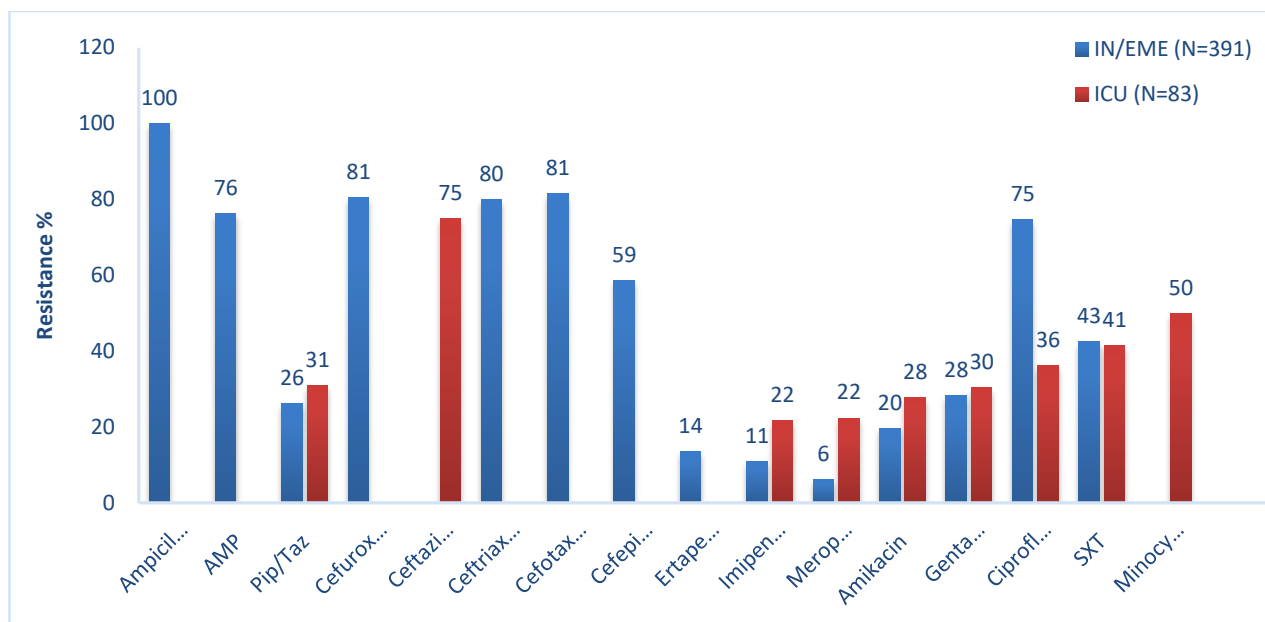
Acinetobacter spp.

Data of a total of 1009 *Acinetobacter* species isolates was submitted by network sites during this reporting period Jan2024–Dec2024, of which 980 were from unique patients. Among all specimen types under the program, *Acinetobacter species* was most commonly isolated from blood (50%) followed by pus aspirate (28%), urine (16%) and other sterile body fluids (4%). (Table 4)

Blood isolates of *Acinetobacter species* showed high resistance to ceftazidime (88%). Fifty percent of blood isolates are resistant to minocycline (Table 11).

Antibiotic Tested	BLOOD(N -495)		URINE(N-164)		PUS (N-279)		OSBF (N-42)	
	Number	%R	Number	%R	Number	%R	Number	%R
Ampicillin /sulbactam	124	83	35	80	17	71	7	86
Piperacillin /Tazobactam	389	56	127	42	220	45	26	50
Ceftazidime	346	88	93	78	171	73	33	70
Imipenem	201	26	75	19	130	13	10	50
Meropenem	289	49	93	25	161	24	20	35
Amikacin	373	43	126	39	224	53	34	38
Gentamicin	443	41	142	33	213	54	35	43
Ciprofloxacin	355	50	117	65	209	61	30	53
Trimethoprim/sulfamethoxazole	394	45	118	47	166	61	22	55
Colistin	126	0	29	0	98	0	10	0
Minocycline	28	50	11	27	35	37	3	33
Tetracycline	0	0	38	58	0	0	0	0

Table11- Resistance profile of Acinetobacter species (N = 980)



*(Total blood samples are 495 , in that outpatient samples 21 are not shown in graph)

Figure 10 - Resistance profile of Acinetobacter species in blood (N=495)

2.3 Discussion

This report is the annual report of the Telangana State AMR Surveillance Network for the year 2024. Antimicrobial resistance surveillance data provides base line data for Antibiotic stewardship program and helps in strengthening the infection prevention and control at facility level, State & National level.

Antimicrobial resistance surveillance can be controlled by developing an institutional antibiotic policy which is made accessible and followed by all the prescribing doctors of the facility.

Stringent infection prevention and control practices will aide in combating Antimicrobial resistance.

2.4 Annexure I

List of TARS-Net sites that contributed AMR data for the period January 2024 to December 2024

Government Colleges

1. OSMANIA MEDICAL COLLEGE AND HOSPITALS.HYDERABAD
2. GANDHI MEDICAL COLLEGE, HYDERABAD
3. KAKATIYA MEDICAL COLLEGE, WARANGAL
4. GOVERNMENT MEDICAL COLLEGE, ADILABAD
5. GOVERNMENT MEDICAL COLLEGE, NIZAMABAD
6. GOVERNMENT MEDICAL COLLEGE, MAHABOONNAGAR
7. GOVERNMENT MEDICAL COLLEGE,SIDDIPET
8. GOVERNMENT MEDICAL COLLEGE, NALGONDA
9. GOVERNMENT MEDICAL COLLEGE, SURYAPET
10. GOVERNMENT MEDICAL COLLEGE, SANGA REDDY
11. ALL INDIA INSTITUTE OF MEDICAL SCIENCES, BIBINAGAR

Private Institutions

12. KAMINENI INSTITUTE OF MEDICAL SCIENCES (KIMS), HYDERABAD
13. APOLLO INSTITUTE OF MEDICAL SCIENCES & RESEARCH, HYDERABAD



OSMANIA MEDICAL COLLEGE