सत्यमेव जयते

Ministry of Health and Family Welfare
Government of India

Surveillance of Antimicrobial Consumption under National Antimicrobial Consumption Network (NACNET) & State Antimicrobial Consumption Network (SACNET)

Report of NACNET & SACNET sites for 2024

National Programme on AMR Containment

National Centre for Disease Control (NCDC), Directorate General of Health Services

Antimicrobial Resistance Stewardship – Our Role, Our Responsibility
Judicious Use of Antimicrobials-Key to contain AMR

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Abbreviations

AMR	Antimicrobial Resistance
ASP's	Antimicrobial Stewardship Programs
ATC	Anatomical Therapeutic Chemical
AWaRe	Access, Watch, Reserve
Cap.	Capsule
DDD	Defined Daily Dose
g	Gram
GMC	Government Medical College
Inj.	Injection
mg	Milligram
NACNET	National Antimicrobial Consumption-Network
SACNET	State Antimicrobial Consumption-Network
G-SACNET	Gujarat State Antimicrobial Consumption Network
K-SACNET	Kerala State Antimicrobial Consumption Network
NCDC	National Centre for Disease Control
NR	Not Recommended
SUs	Standard units
Tab.	Tablet
UTs	Union Territories
WHO	World Health Organization

List of tables and figures

Executive Summary

National Centre for Disease Control (NCDC) serves as the Nodal agency for the National Programme on AMR Containment in India. Monitoring antibiotic usage is one of the critical components of this program. To support this initiative, NCDC established the National Antibiotic Consumption Network (NACNET) at Medical College Hospitals since 2018 and this is being scaled up gradually. Under this network, participating sites collect data on antibiotic consumption within their health facilities and report it to the NCDC. In 2025, as an extension to NACNET, NCDC established the State Antibiotic Consumption Network (SACNET) in two States using the Hub and Spoke Model and collated data for 2024.

This report presents findings of compiled and analyzed antibiotic consumption data from 66 network sites (which included both National and State network sites) for the year 2024. The findings revealed considerable variability in antibiotic usage across 66 tertiary care institutions. Notably, there was excessive consumption of "Watch" antibiotics, which are associated with a higher risk of resistance, and insufficient use of "Access" antibiotics, which are recommended as first-line treatments. The consumption of "Access" antibiotics ranged from 15% to 85% with only one institution exceeding 85% of consumption from the "Access" category. Consumption of "Reserve" antibiotics, which are intended for last-resort situations, accounting for 0-9% of total consumption across the sites.

The most frequently consumed antibiotics varied across institutions, with Ceftriaxone, Azithromycin, Amoxicillin and clavulanic acid, Metronidazole and Doxycycline being the most common.

Overall, the findings highlight the inconsistent implementation of antimicrobial stewardship programs and adherence to treatment guidelines, emphasizing the need for targeted interventions to optimize antibiotic use at NACNET and SACNET sites.

Background

One of the most important concerns for global public health is the growing threat of antimicrobial resistance (AMR) (1). In 2021, we estimated 4.71 million (95% UI 4.23 – 5.19) deaths were associated with bacterial AMR, including 1.14 million (1:00 – 1.28) deaths attributed to bacterial AMR(2). WHO estimates that AMR may become the world's top cause of mortality by 2050, accounting for 10 million fatalities each year, with India being particularly vulnerable due to its dense population, high disease burden, and diverse health care practices(3). From 1990 to 2021 deaths from AMR increased by over 80% for adults 70 years and older (2). The misuse of antibiotics in the medical, veterinary and agricultural sector including inappropriate prescribing of antibiotics contribute to the rise of AMR,(4).

On September 26, 2024, at the UN General Assembly, world leaders acknowledged that AMR is an urgent threat to human health, economic development, and global equity. The assembly resolved to review current progress, pinpoint critical gaps, and invest immediately in sustainable, multisectoral solutions. This accelerated effort is necessary to safeguard the effectiveness of medicine and help achieve the Sustainable Development Goals. So, by 2030, the use of WHO "Access" group antibiotics is expanded from the 2023 global target, and now the aim is to achieve at least 70% overall human antibiotic use globally (taking into account national contexts), through investing in and strengthening stewardship programmes (5).

National Centre for Disease Control, New Delhi is the nodal agency for the National Programme on AMR Containment, which encourages rational antibiotic use (6). One of the objectives of this programme is to carry out surveillance of antibiotic usage in healthcare settings across India. Under the AMR programme, National Antibiotic Consumption-Network (NACNET) comprising of Government tertiary health care facilities was established across 25 States and 6 Union territories (UTs) in a phased manner (Fig. 1). The National Antibiotic Consumption-Network (NACNET) collects data from tertiary care hospitals and cannot be extrapolated to community settings.

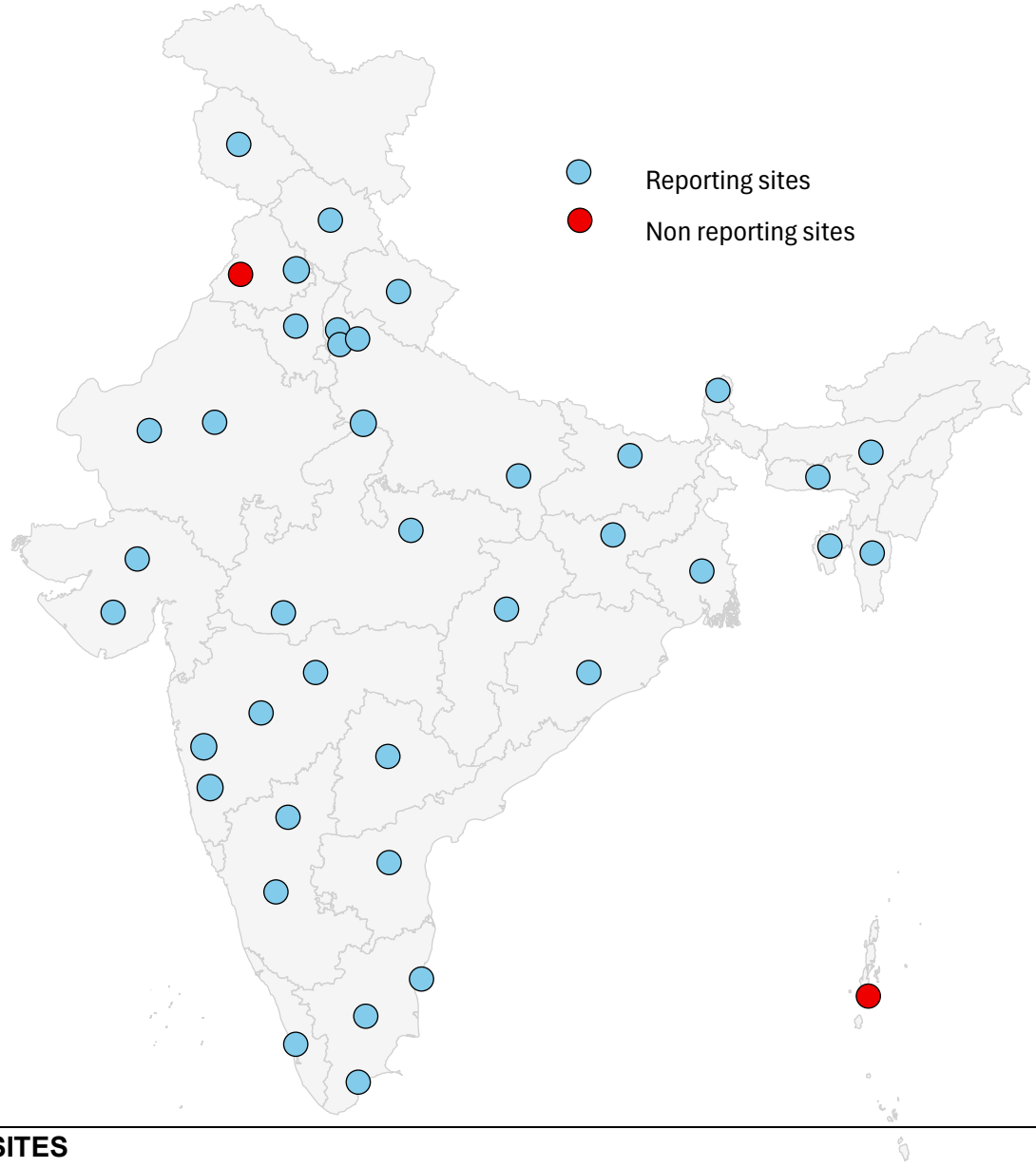
State Antibiotic Consumption Network (SACNET) was established in the States of Gujarat & Kerala using the Hub and Spoke model. Ahmedabad and Trivandrum (both of them NACNET sites) were enrolled as Nodal/Hub institutes with 18 and 11 institutes enrolled as spokes

respectively.

This report is a collation of antibiotic usage data submitted to NCDC by 38 NACNET and 28 SACNET locations for the year 2024. The WHO's AWaRe (Access, Watch, and Reserve) categorization system (7) and Defined Daily Doses (DDD) have been used to evaluate the antibiotic usage. Data on antibiotic usage may be utilized to:

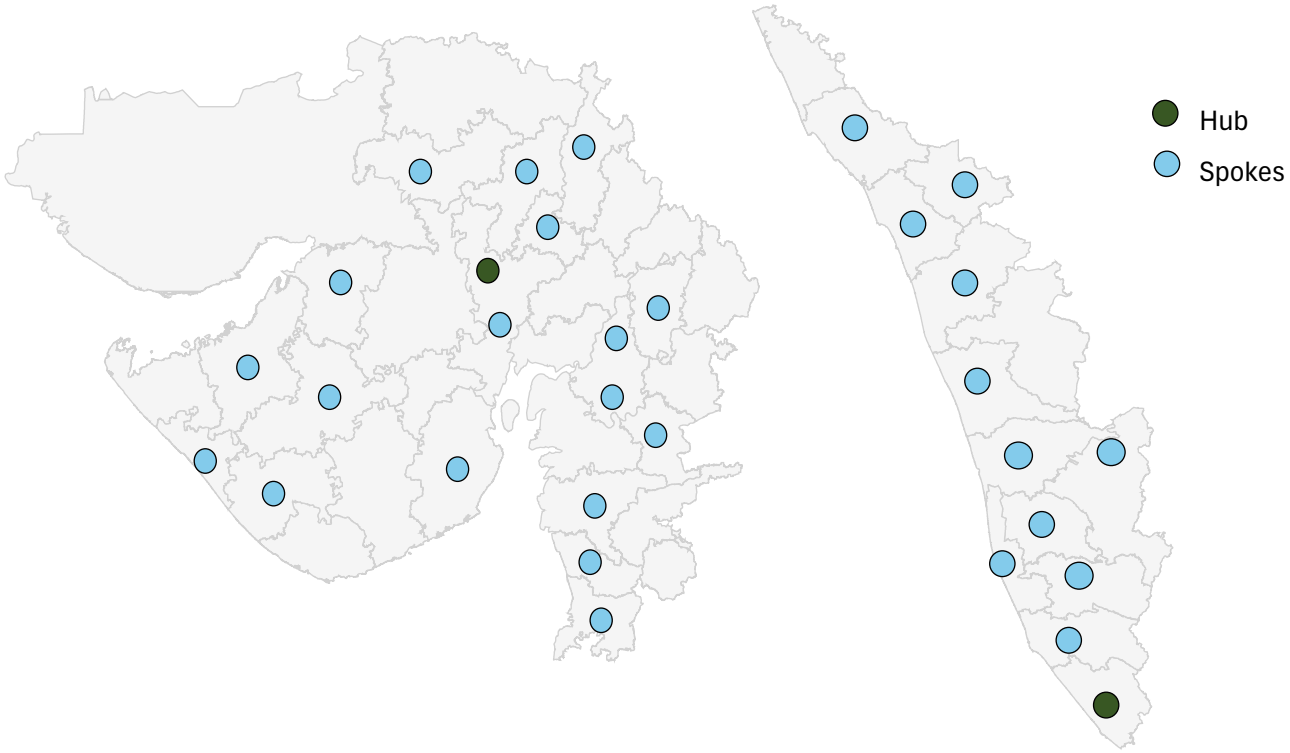
- recognize and detect changes in antibiotic exposure and use;
- develop interventions to address the identified problems;
- monitor the impact of interventions;
- ensure prescribing practices adhere to appropriate guidelines; and
- Promote awareness of the adverse effects of inappropriate antibiotic use.

Figure 1: Location of National Antibiotic Consumption Network (NACNET) sites



NACNET SITES					
1	BJMC, Ahmedabad	15	GMC, Aurangabad	29	LLRMMC, Meerut
2	BJMC, Pune	16	OMC, Hyderabad	30	CMCH, Coimbatore
3	GMC, Chandigarh	17	GMC, Guntur	31	MAMC, Delhi
4	GMC, Kanpur	18	GMC, Agartala	32	SPMC, Bikaner
5	LHMC, Delhi	19	SCBMC&H, Cuttack	33	KIMS, Hubballi
6	MMC & RI, Mysore	20	GMC& H, Jammu	34	IGMC&RI, Puducherry
7	SMSMC, Jaipur	21	PGIMS, Rohtak	35	NAMOMERI, Silvassa
8	VMMC, Delhi	22	RIMS, Ranchi	36	GMC, Goa
9	GMC, Trivandrum	23	IGIMS, Patna	37	SNTM, Sikkim
10	KAPVGMC, Trichy	24	GMC, Haldwani	38	GMC, Patiala
11	GMC, Guwahati	25	JLNMMC, Raipur	39	ZMC, Mizoram
12	NEIGRIHMS, Shillong	26	GMC, Bhopal	40	A&N IMS, Port Blair
13	MHMMC, Indore	27	CSTM, Kolkata		
14	IGMC, Shimla	28	GMERSMC&H, Valsad		

Figure 2: Location of State Antibiotic Consumption Network (SACNET) sites



GUJARAT (G-SACNET)	
1	**Govt. MCH, Ahmedabad (HUB)**
2	GMERS MCH Vadnagar, Mahesana
3	GMERS MCH Dharpur, Patan
4	GMERS MCH Sola, Ahmedabad
5	GMERS MCH Gandhinagar
6	GMERS MCH Himatnagar
7	GMERS MCH Gotri, Vadodara
8	Govt. MCH, Vadodara
9	GMERS MCH Godhara
10	GMERS MCH Rajpipala
11	Govt. MCH, Surat
12	GMERS MCH Valsad
13	GMERS MCH Navsari
14	Govt. MCH, Bhavnagar
15	GMERS MCH Porbandar
16	Govt. MCH, Jamnagar
17	Govt. MCH, Rajkot
18	GMERS MCH Junagadh
19	GMERS MCH Morbi

KERALA (K-SACNET)	
1	**GMCH, Trivandrum (HUB)**
2	TDMC, Alappuzha
3	GMC, Kottayam
4	GMC, Kollam
5	GMC, Konni
6	GMC, Ernakulam
7	GMC, Idukki
8	GMC, Thrissur
9	GMC, Manjeri
10	GMC, Kozhikode
11	GMC, Pariyaram, Kannur
12	GMC, Wayanad

Methodology

The antibiotic consumption data collection, compilation and report preparation was done as follows:

Selection of sites

The sites which had compiled the antibiotic consumption data for the year 2024 have been included in this report. A total of 66 sites comprising of both National and State Network sites had shared their antibiotic consumption data for the year 2024.

The site list is provided in Fig. 1

Training

The pharmacists recruited under the programme undergo induction and refresher trainings. The trainings cover:

- Collection of antibiotic consumption data from the central stores/ pharmacy;
- Collection of bed occupancy data from the medical records department;
- Compilation of the data in the excel template provided by NCDC;
- Calculation of DDD and DDD/100-bed-days using the WHO AMC tool 2019 as per the WHO ATC-DDD methodology; and
- Analysis of the compiled data for AWaRe classification and top 5 antibiotics.

The SOP for AMC Tool was shared with all the newly recruited pharmacists for ready reference.

Inclusion criteria

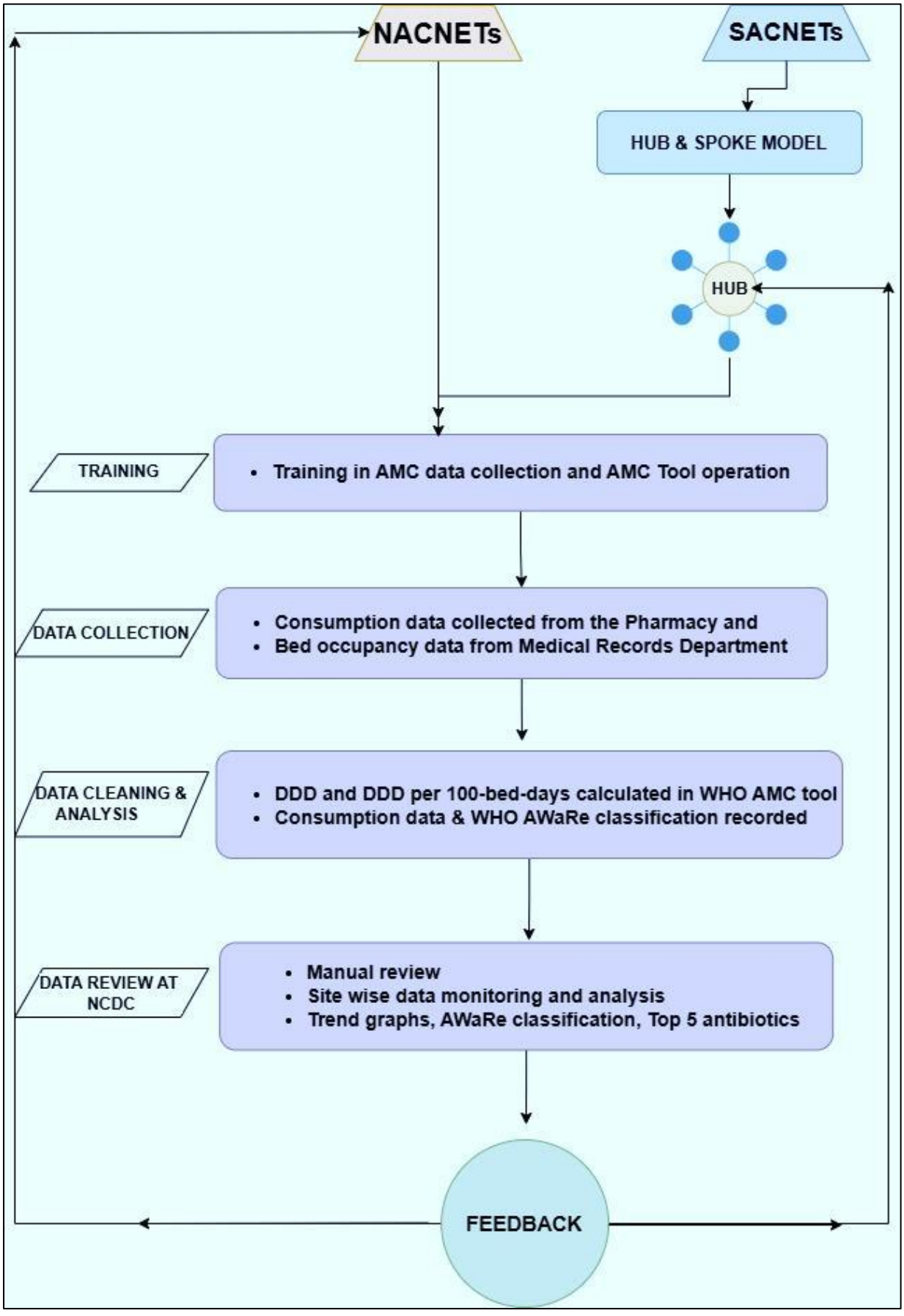
- Antibiotics consumed at the inpatient facilities of NACNET & SACNET sites
- Antibiotics prescribed through oral and parenteral routes

Exclusion criteria

- Antibiotics prescribed in any other route e.g. topical preparations, eye/ear drops, gel, and suppositories
- Other antibiotics like antifungal, antiviral, antitubercular, antiprotozoals

Antibiotics were classified in J01 and P01 groups under the WHO Anatomical Therapeutic Chemical (ATC) classification system. We reported consumption estimates in standard units (SUs) defined as the smallest dose of formulation like one tablet or capsule for oral solids, and one vial or ampoule for injectable antibiotics.

Figure 3: Mechanism of data collection and feedback to sites



Measures of antibiotic consumption

Antibiotic consumption was measured in Defined Daily Doses.

- Defined Daily Dose: The assumed average maintenance dose per day for a drug used for its main indication in adults (5). WHO AMC Tool 2019 v.1.9.0 was used to calculate DDDs of each volume of antibiotics.
- Bed occupancy: Bed occupancy rate for each month was calculated using the formula – Bed occupancy rate / Bed days = Occupied beds / Available beds,
- DDD/100-bed-days: This was calculated using the total number of beds for all sites and using the bed occupancy rate as 100%.

Data collection and analysis

At the site level, data collection is done by the pharmacist. The steps include:

- Consumption data is collected from the central drug store of the health facility.
- Bed occupancy data is sourced from the Medical Records Department.
- Consumption data is recorded in a master sheet along with their WHO AWaRe (Access-Watch-Reserve) classification.
- After data entry, data was imported in WHO AMC Tool 2019 v.1.9.0, to calculate the DDD and the Annual DDD/100-bed-days for each antibiotic.
- DDD/100-bed-days calculated month wise for each antibiotic and consolidated.

In case of SACNET sites after data entry and, data was shared with the Hub site

- The Hub site compiled the data for all the spoke sites along with the WHO AWaRe (Access-Watch-Reserve) classification of the antibiotic.

Overview at NCDC:

- Manual review of antibiotic consumption was done to check for inconsistencies.
- The sites were consulted for confirmation.
- Analysis of the data done using trend graphs based on AWaRe classification, antibiotics used against priority pathogens.
- The consumption data for the year 2024 of 66 sites compiled and consolidated using MS-Excel.
- After data entry, data was imported into WHO AMC Tool 2019 v.1.9.0, to calculate DDD of each antibiotic.
- DDD/100-bed-days was calculated for each antibiotic and consolidated.
- Consolidated data was then analysed for the indicators mentioned below.

Indicators monitored

Antibiotic consumption is organized using the following key indicators:

- Annual consumption in terms of DDD/100-bed-days
- AWaRe classification of antibiotics
- List of top-5 antibiotics used
- Group wise antibiotic consumption
- Route of administration of antibiotics

Results

This report presents antibiotic consumption of 38 NACNET sites and 28 SACNET sites for the year 2024. Total bed strength and bed occupancy of the sites is given in Table 1.

Table 1: NACNET and SACNET sites Bed Occupancy and Bed strength Rates

S. No.	Site Code	Bed Strength	Bed Occupancy Rate
1	NAC 1	3200	100%
2	NAC 2	1296	82%
3	NAC 3	1017	79%
4	NAC 4	1055	100%
5	NAC 5	1431	61%
6	NAC 6	888	64%
7	NAC 7	2461	19%
8	NAC 8	2873	100%
9	NAC 9	3695	100%
10	NAC 10	1832	79%
11	NAC 11	2776	87%
12	NAC 12	596	64%
13	NAC 13	1513	100%
14	NAC 14	873	90%
15	NAC 15	1665	66%
16	NAC 16	3667	82%
17	NAC 17	1267	100%
18	NAC 18	1413	100%
19	NAC 19	2518	100%
20	NAC 20	2316	68%
21	NAC 21	2080	87%
22	NAC 22	2191	57%
23	NAC 23	1167	84%
24	NAC 24	782	72%
25	NAC 25	1340	63%
26	NAC 26	2000	65%
27	NAC 27	167	100%
28	NAC 28	770	70%
29	NAC 29	960	75%
30	NAC 30	2300	60%
31	NAC 31	1383	62%
32	NAC 32	2560	100%
33	NAC 33	2400	100%
34	NAC 34	800	60%
35	NAC 35	650	100%
36	NAC 36	1491	74%
37	NAC 37	876	100%
38	NAC 39	413	60%

G-SACNET SITES*			
1	GJ1	3200	100%
2	GJ2	650	82%
3	GJ3	750	79%
4	GJ4	770	100%
5	GJ5	790	61%
6	GJ6	770	64%
7	GJ7	850	19%
8	GJ8	1513	100%
9	GJ9	330	100%
10	GJ10	354	79%
11	GJ11	1000	87%
12	GJ12	770	64%
13	GJ13	330	100%
14	GJ14	846	90%
15	GJ15	330	66%
16	GJ16	1678	82%
17	GJ17	1618	100%
18	GJ18	800	100%
19	GJ19	330	100%
K-SACNET SITES*			
1	KL1	3695	87%
2	KL2	1051	57%
3	KL3	2094	84%
4	KL4	480	72%
5	KL5	300	63%
6	KL6	600	65%
7	KL7	300	100%
8	KL8	1436	70%
9	KL9	556	75%
10	KL10	3513	60%
11	KL11	850	62%
Total Beds		**87960**	

**NOTE: G-SACNET sites include 2 NACNET sites & K-SACNET sites include 1 NACNET site.*

Bed strength of the sites ranged from 167 to 3695 and Bed occupancy ranged from 19% to 100%. For the computation of consolidated antibiotic consumption, a Bed Occupancy of 100% has been assumed for the sake of uniformity.

Site-wise antibiotic consumption

Annual antibiotic consumption

Overall amongst the 66 sites, the annual antibiotic consumption showed a wide range from 12 DDD/100 Bed days to 1267 DDD/100 Bed days. Majority of the sites (44 sites) have reported antibiotic consumption ≤ 200 DDD/100 Bed days.

The annual antibiotic consumption of Gujarat State network sites ranged from 55 DDD/100 Bed days to 856 DDD/100 Bed days and that of Kerala State network sites was 35 DDD/100 Bed days to 519 DDD/100 Bed days.

Table 2: Annual antibiotic consumption for the year 2024

S. No.	Antibiotic Consumption (DDD/100 Bed Days)	Number of sites
1	Up to 100	29
2	101-200	15
3	201-300	6
4	301-400	5
5	401-500	4
6	>500	7
Total		**66**

Seven sites recorded consumption below 50 DDD/100 Bed Days (5 NACNETs & 2 SACNETs) and two sites (NACNETs) recorded consumption above 1000 DDD/100 Bed Days.

Figure 4a: Annual antibiotic consumption of NACNET sites (n=38)

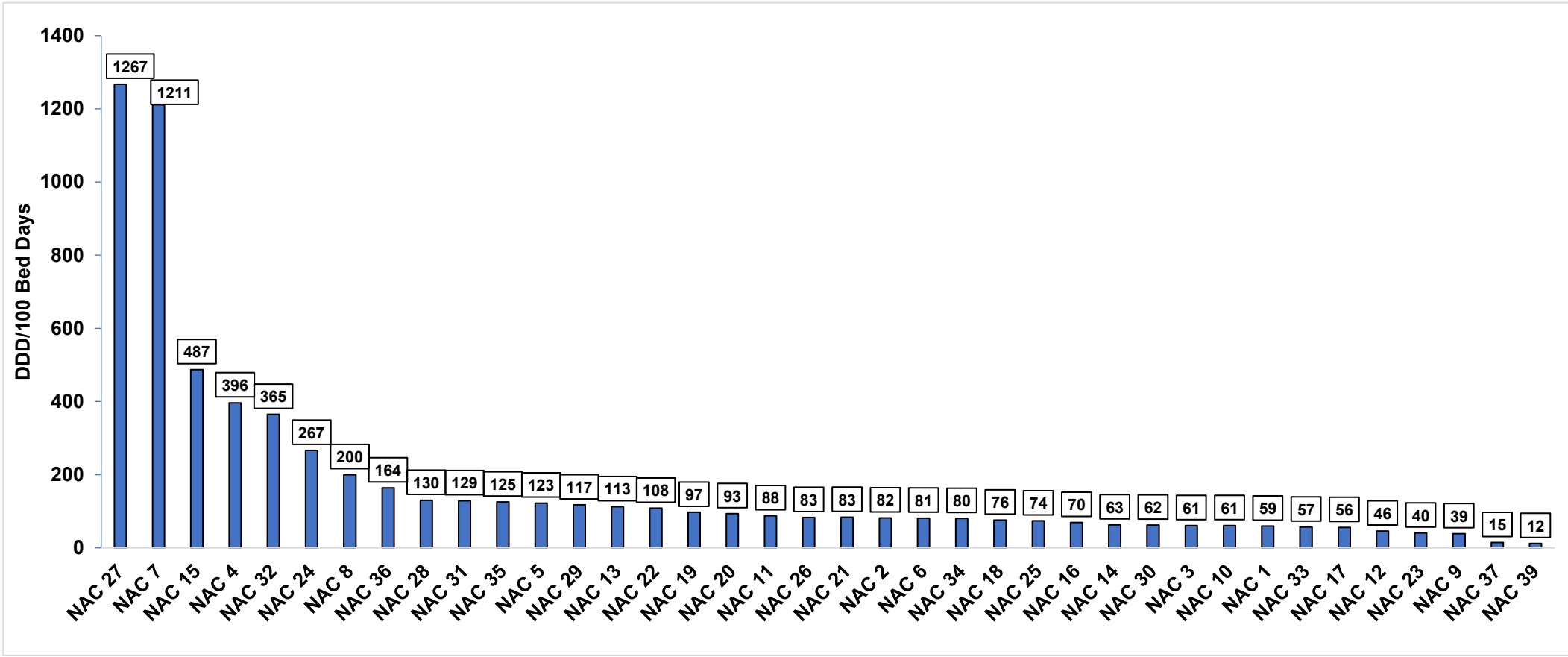


Figure 4b: Annual antibiotic consumption of G-SACNET sites (n=18)

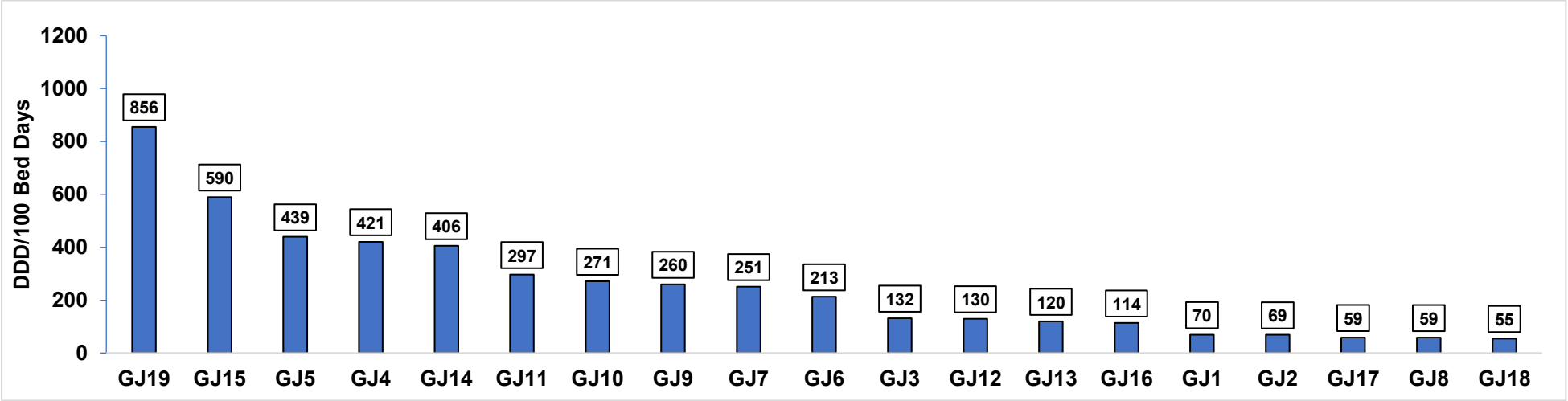
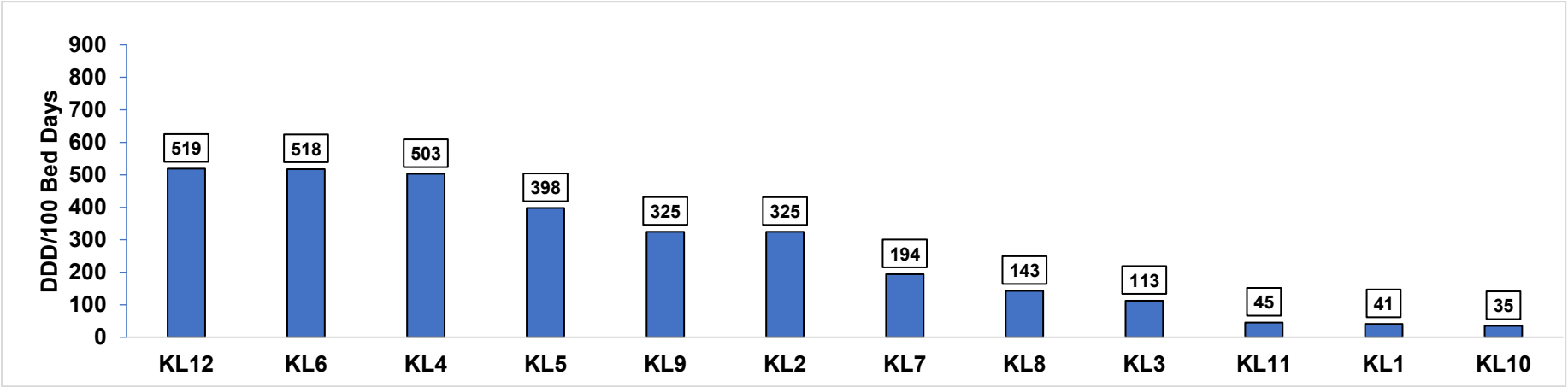


Figure 4c: Annual antibiotic consumption of K-SACNET sites (n=12)



AWaRe category-wise antibiotic consumption

Only fifteen sites (one site has recorded 85%) have reported majority i.e., more than 50% of antibiotic consumption from **Access** category rest all sites have reported maximum antibiotic consumption from **Watch** category. Twelve sites have recorded consumption of below 30% from **Access** category. Three sites have recorded >5% antibiotic consumption from **Reserve** category of antibiotics. Fourteen sites have reported >5% antibiotic consumption from WHO **Not Recommended (NR)** category of antibiotic of which three sites have reported more that 10% antibiotic consumption from **NR** category.

In case of Gujarat, only three sites have reported 50% of antibiotic consumption from **Access** category, rest of all the sites have reported maximum antibiotic consumption from **Watch** category with one of the sites reporting 79% consumption from **Watch** category. Whereas in case of Kerala, 9 out of 12 sites have reported 50% of antibiotic consumption from **Access** category and 3 sites have reported maximum antibiotic consumption from **Watch** category with one of the sites reporting 72% consumption.

Figure 5a: WHO AWaRe category wise antibiotic consumption of NACNET sites (n=38)

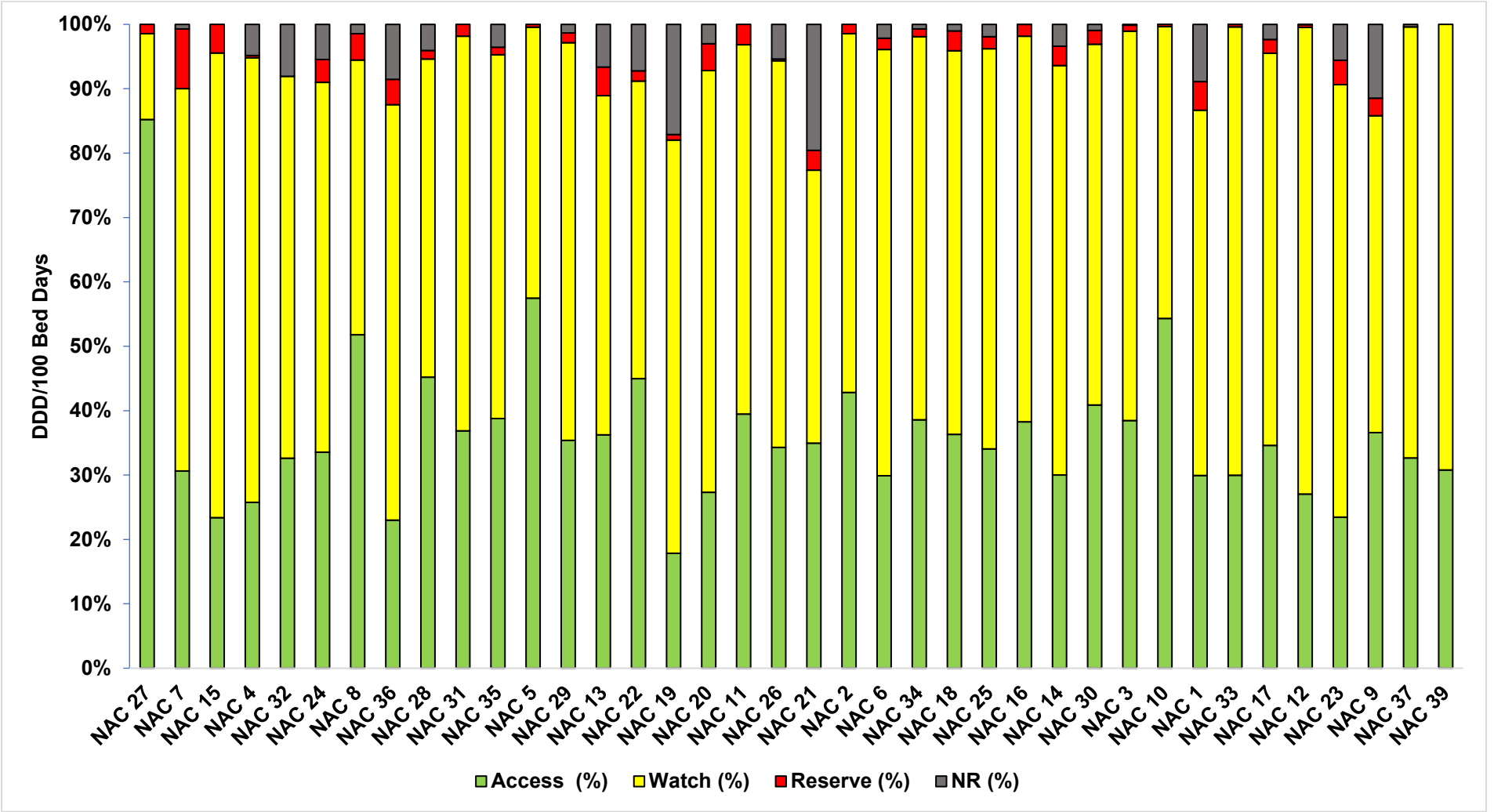


Figure 5b: WHO AWaRe category wise antibiotic consumption of G-SACNET sites (n=19)

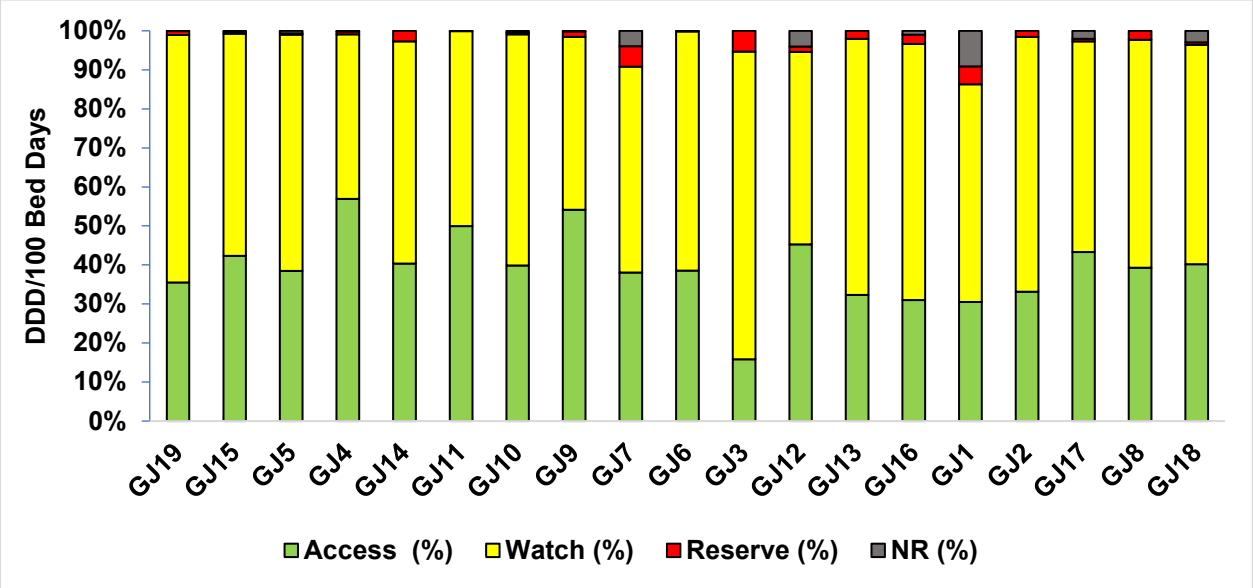
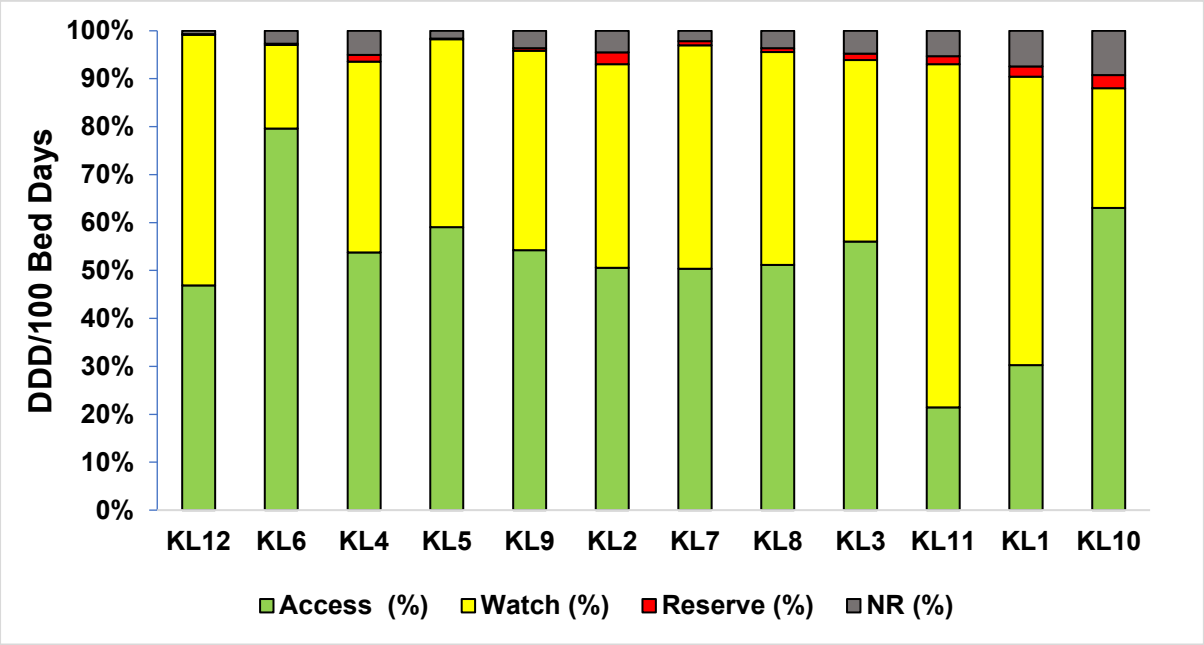


Figure 5c: WHO AWaRe category wise antibiotic consumption of K-SACNET sites (n=12)



Top five antibiotics consumed

Ceftriaxone **(Watch)**, Azithromycin **(Watch)**, Amoxycillin and Clavulanic Acid (**Access)**, Metronidazole **(Access)** followed by Doxycycline **(Access)** were the most commonly consumed antibiotics across the NACNET sites.

Two of the sites have reported Linezolid **(Reserve)** among top five antibiotics consumed in the site. Seven sites have reported consumption of Cefoperazone & Sulbactum **(NR)**, Ofloxacin & Ornidazole **(NR)** and Ceftriaxone & Sulbactum **(NR)** amongst top five antibiotics consumed at the site.

The G-SACNET sites reported Azithromycin **(Watch)** , Amoxycillin and Clavulanic Acid **(Access),** Metronidazole **(Access)**, Doxycycline **(Access)**, Ceftriaxone **(Watch)** and Cefixime **(Watch)** as the most commonly consumed antibiotics. One of the sites had reported Cefoperazone &Sulbactum **(NR)** among its top five antibiotics consumed.

Similar pattern has been seen in K-SACNET sites which reported Amoxycillin and Clavulanic Acid **(Access)**, Azithromycin **(Watch)**, Doxycycline **(Access)**, Cefixime **(Watch)**, Gentamicin **(Access)** and Ciprofloxacin **(Watch)** as the top five antibiotics consumed. Similar to the G-SACNET trend, two sites reported Cefoperazone & Sulbactum **(NR)** among top five antibiotics consumed by the sites.

Figure 6a: NACNET sites reporting top five antibiotics consumed

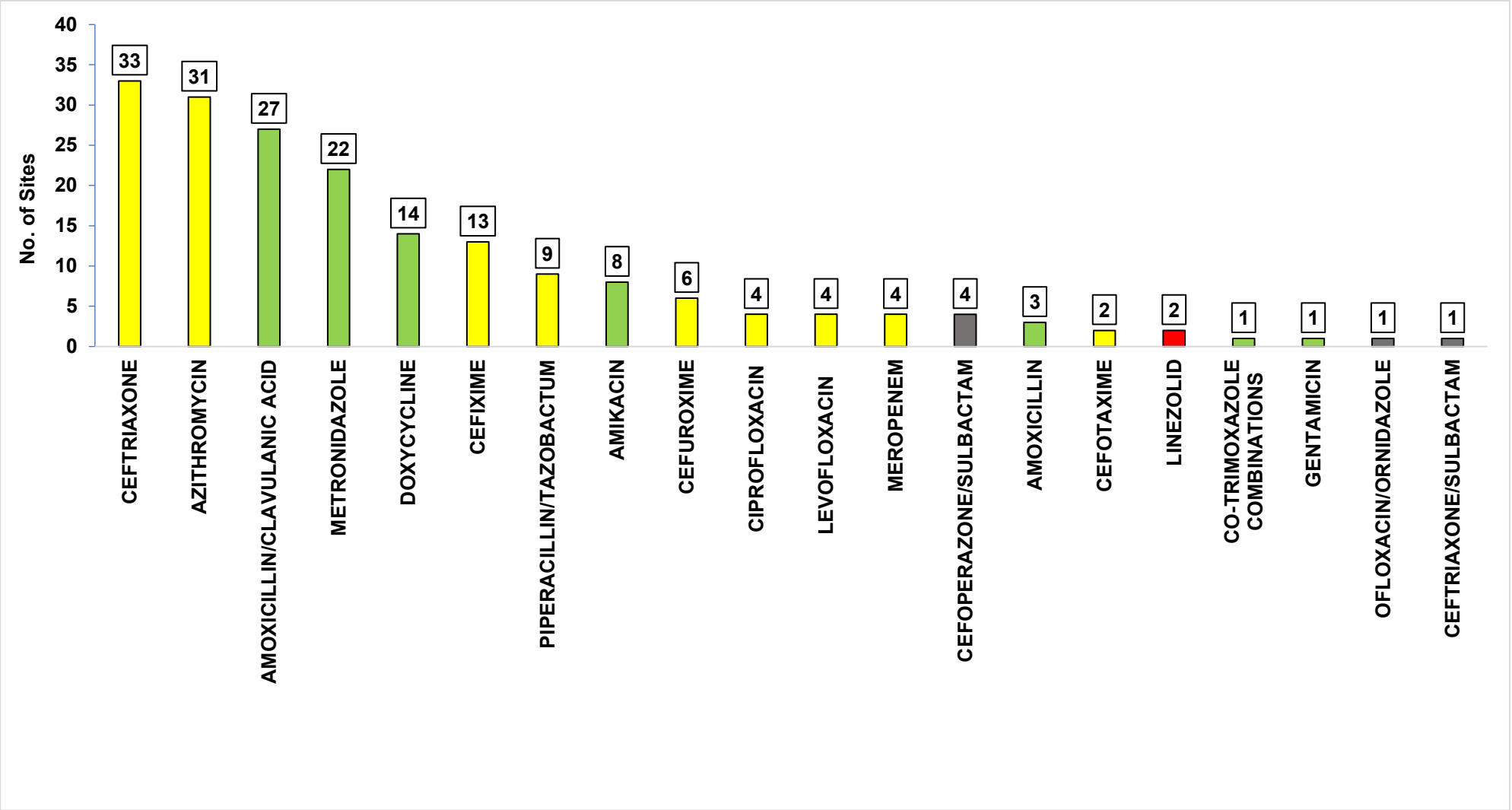


Figure 6b: G-SACNET sites reporting top five antibiotics consumed

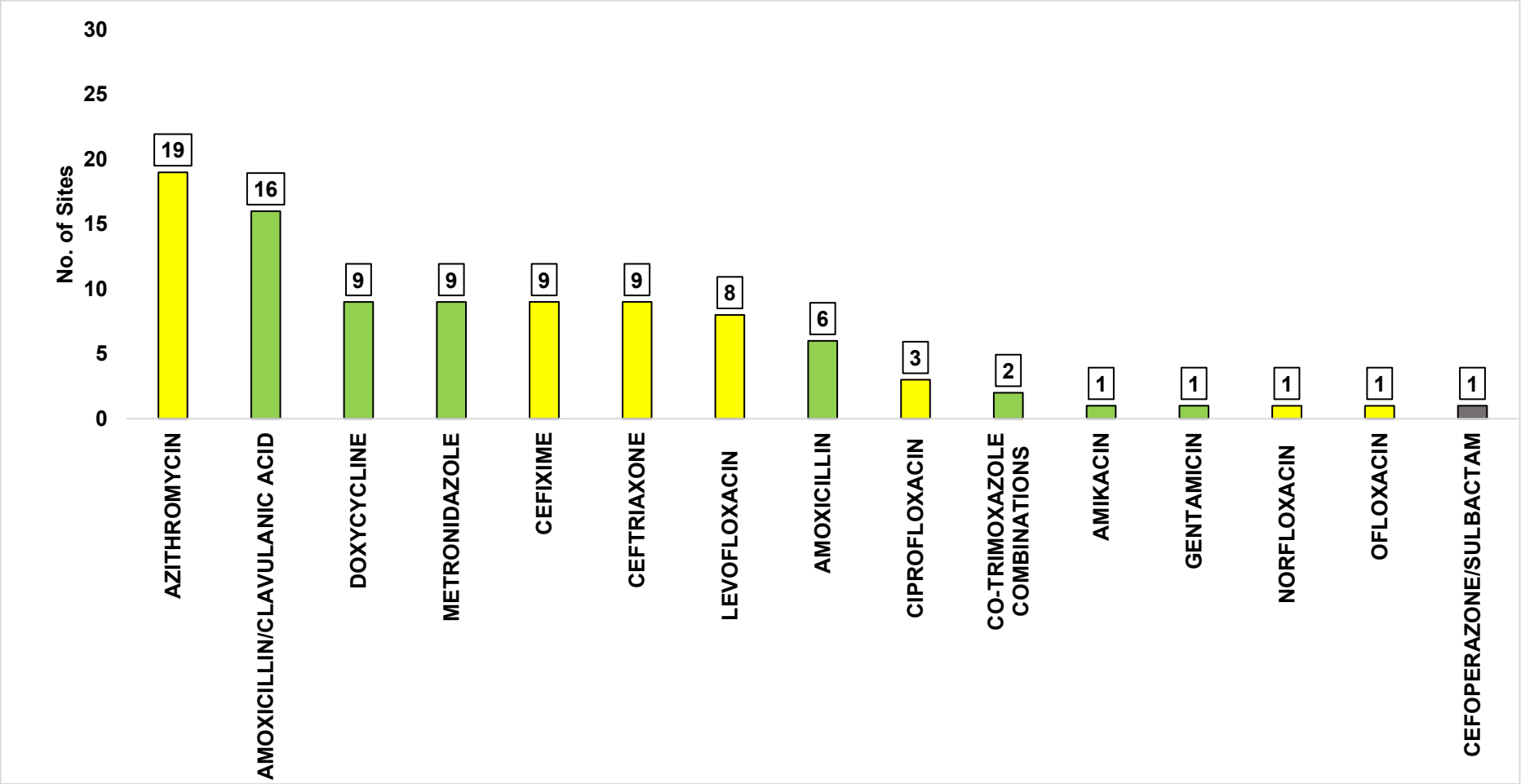
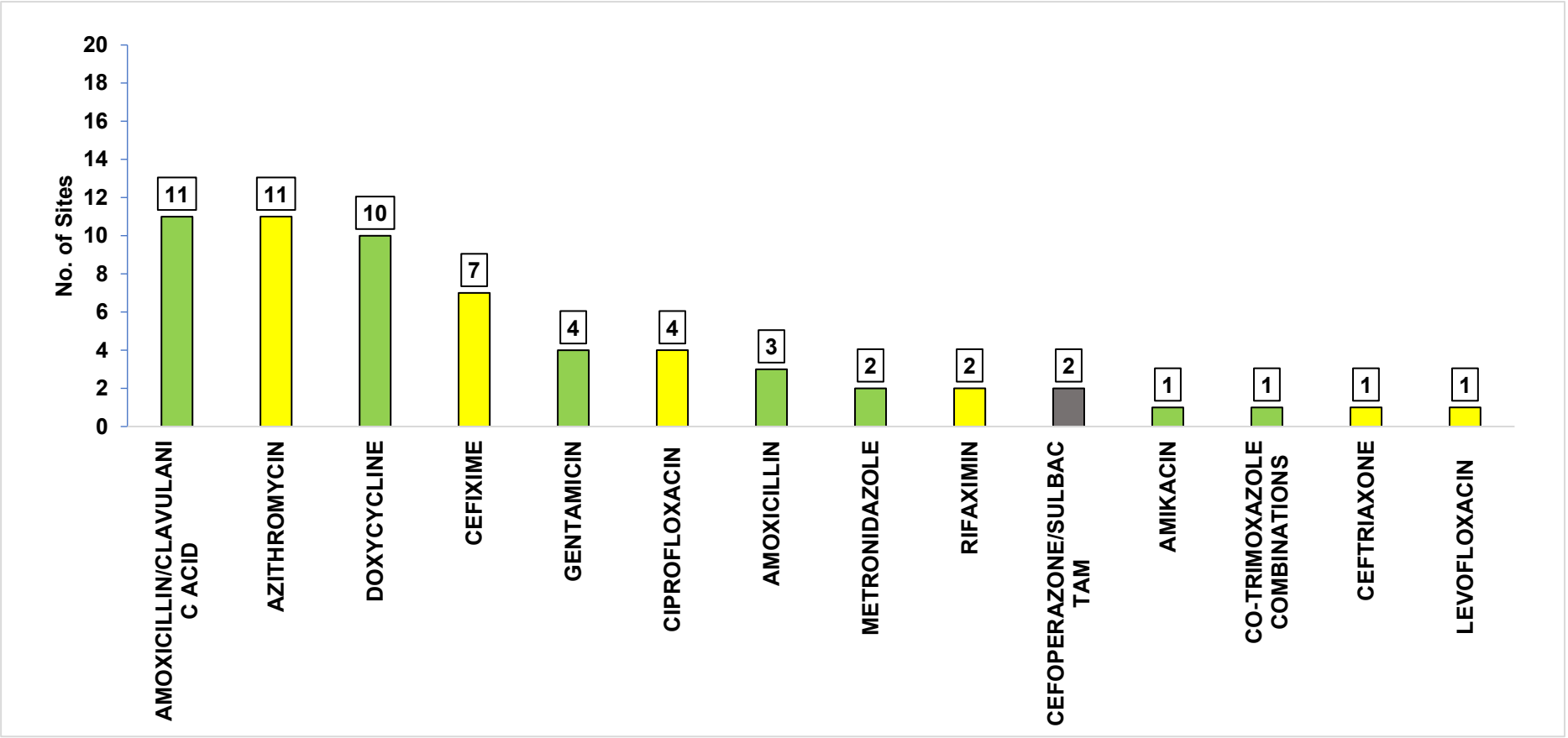


Figure 6c: K-SACNET sites reporting top five antibiotics consumed



Category wise antibiotic consumption

Cephalosporins **(Watch)** remain the most widely consumed antibiotic group across the majority of reporting sites followed closely by Beta-lactam/Beta-lactamase inhibitor combinations **(Access)**. Macrolide **(Watch)**, Tetracyclines **(Access)** and Fluroquinolones **(Watch)** also show substantial usage and are consistently represented in many sites. One site demonstrates exceptionally high Tetracycline consumption accounting for 73% of the total consumption at the site from this group. Additionally, one site displays a notable consumption of Oxazolidinones **(Reserve)**, indicating a measurable use of Reserve-category antibiotics.

G-SACNET sites have also shown consumption amongst the same categories as that of the overall trend in their antibiotic consumption. Four sites have shown noticeable consumption from Oxazolidinones **(Reserve)** and one site has shown significant consumption from WHO **Not Recommended** group of antibiotics.

Similarly K-SACNET sites have also shown the same trend as that of the overall and G-SACNET sites with the exception of Fluroquinones **(Watch)** which have been replaced by Penicillins **(Access)**.

Figure 7a: Category-wise antibiotic consumption at NACNET sites (n=35)

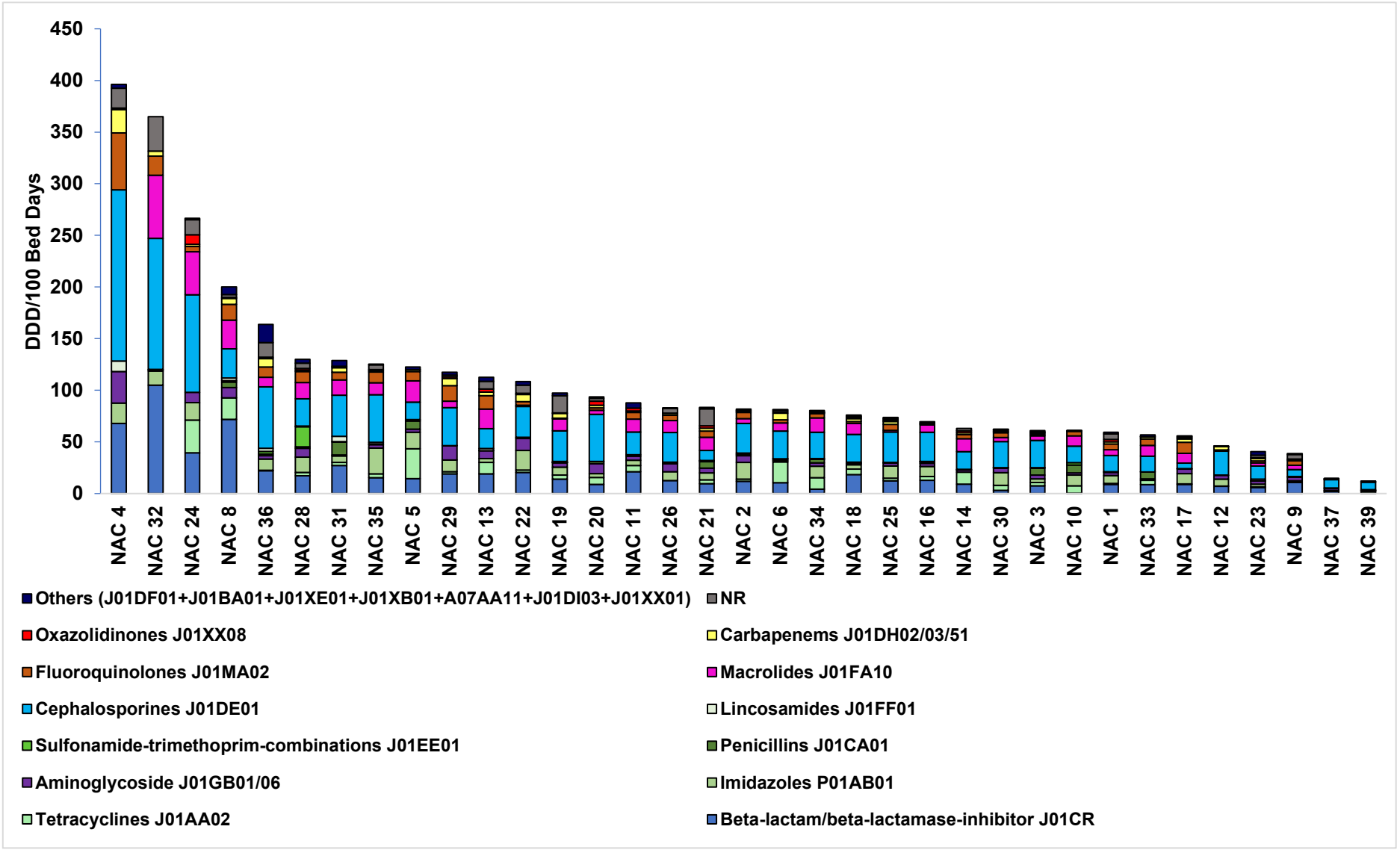


Figure 7b: Category-wise antibiotic consumption at NACNET sites with antibiotic consumption >500 DDD/100 Bed Days (n=3)

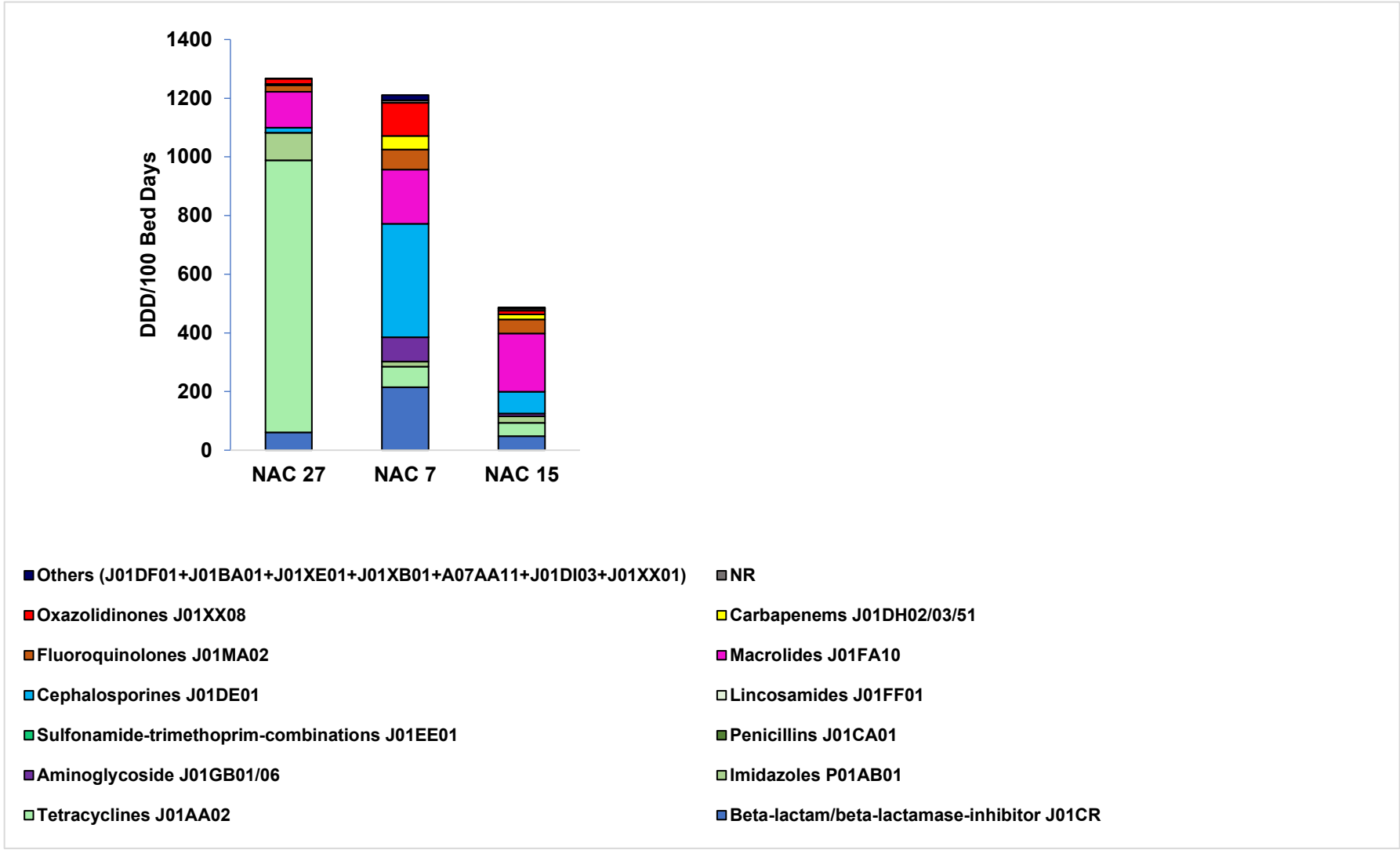


Figure 7c: Category-wise antibiotic consumption at G-SACNET sites (n=19)

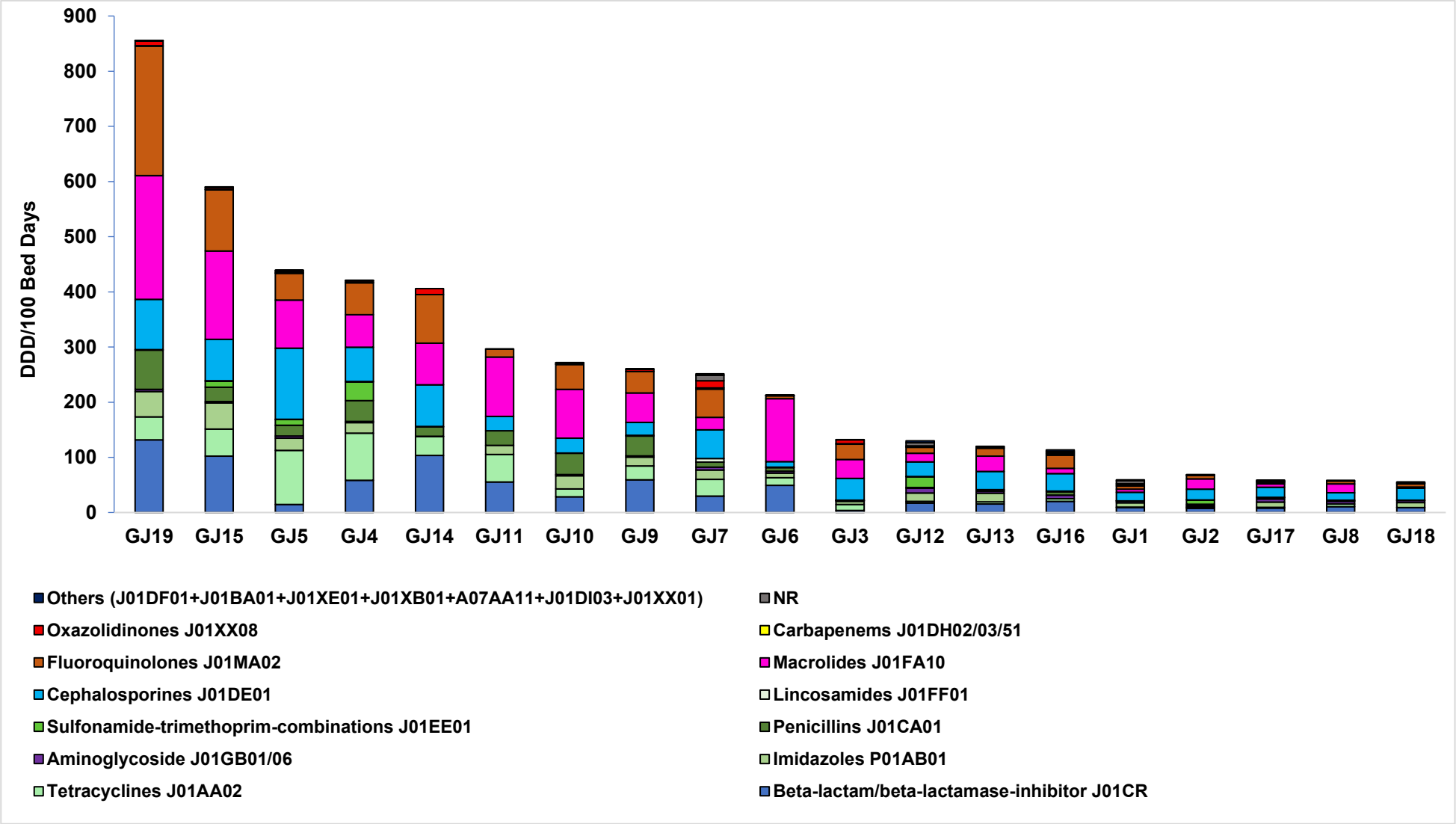
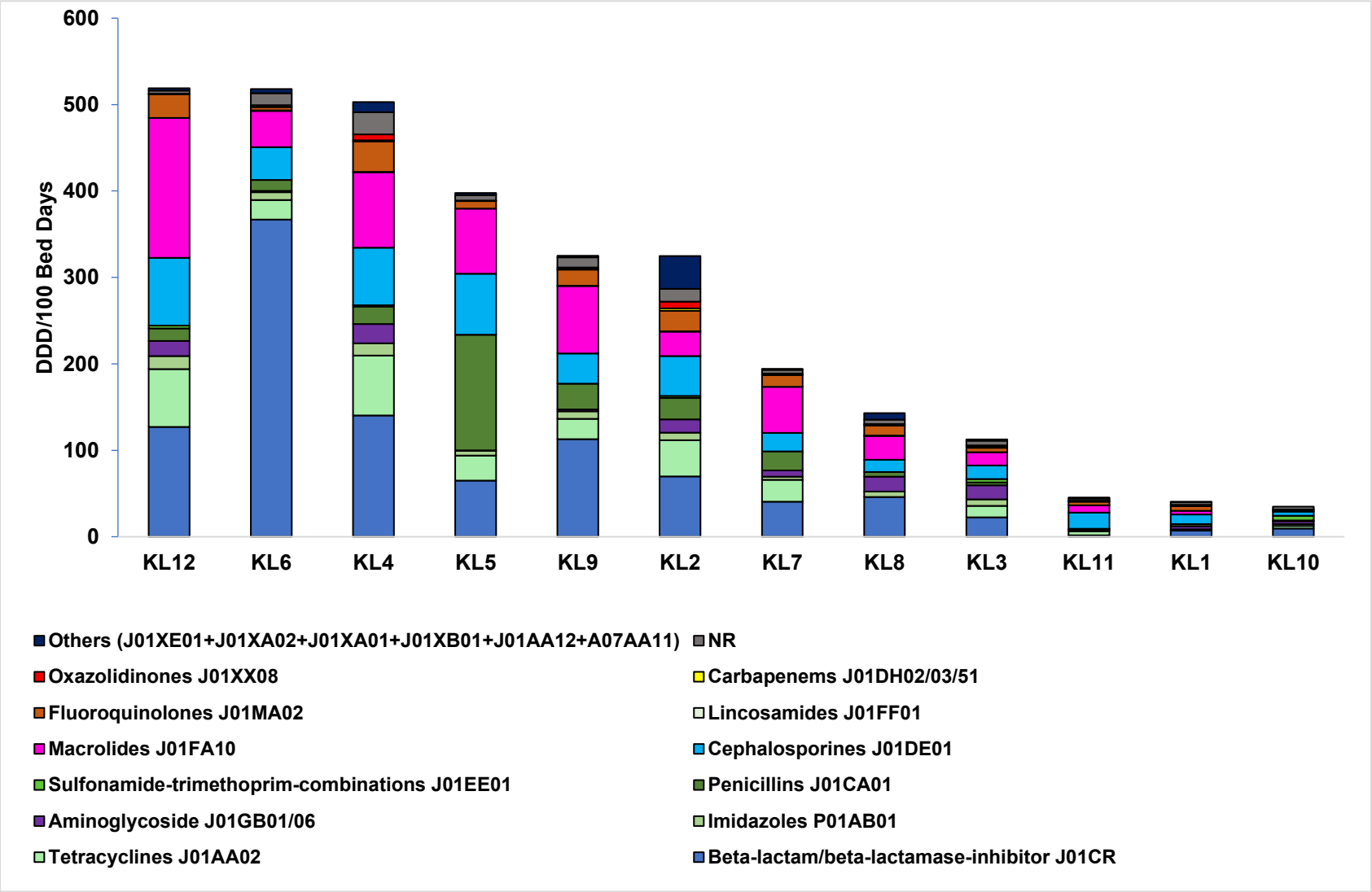


Figure 7d: Category-wise antibiotic consumption at K-SACNET sites (n=12)



Antibiotic consumption by Route of administration

Overall, antibiotic consumption is higher by oral route as compared to parenteral in 44 sites. Five sites reported >80% consumption by parenteral route with one site reporting 100% consumption.

In case of G-SACNET sites, 5 sites reported more than 50% antibiotic consumption by parenteral route. 10 sites reported ≥85% consumption of antibiotics by oral route with one of the sites reporting 100% consumption from oral route.

All the 12 sites of K-SACNET have reported more than 50% antibiotic consumption by oral route with one of the sites reporting 98.1% consumption of antibiotics from oral route. Parenteral route consumption of antibiotics in the sites ranged from 49.6% to 1.9%.

Figure 8a: Antibiotic consumption by route of administration at NACNET sites (n=38)

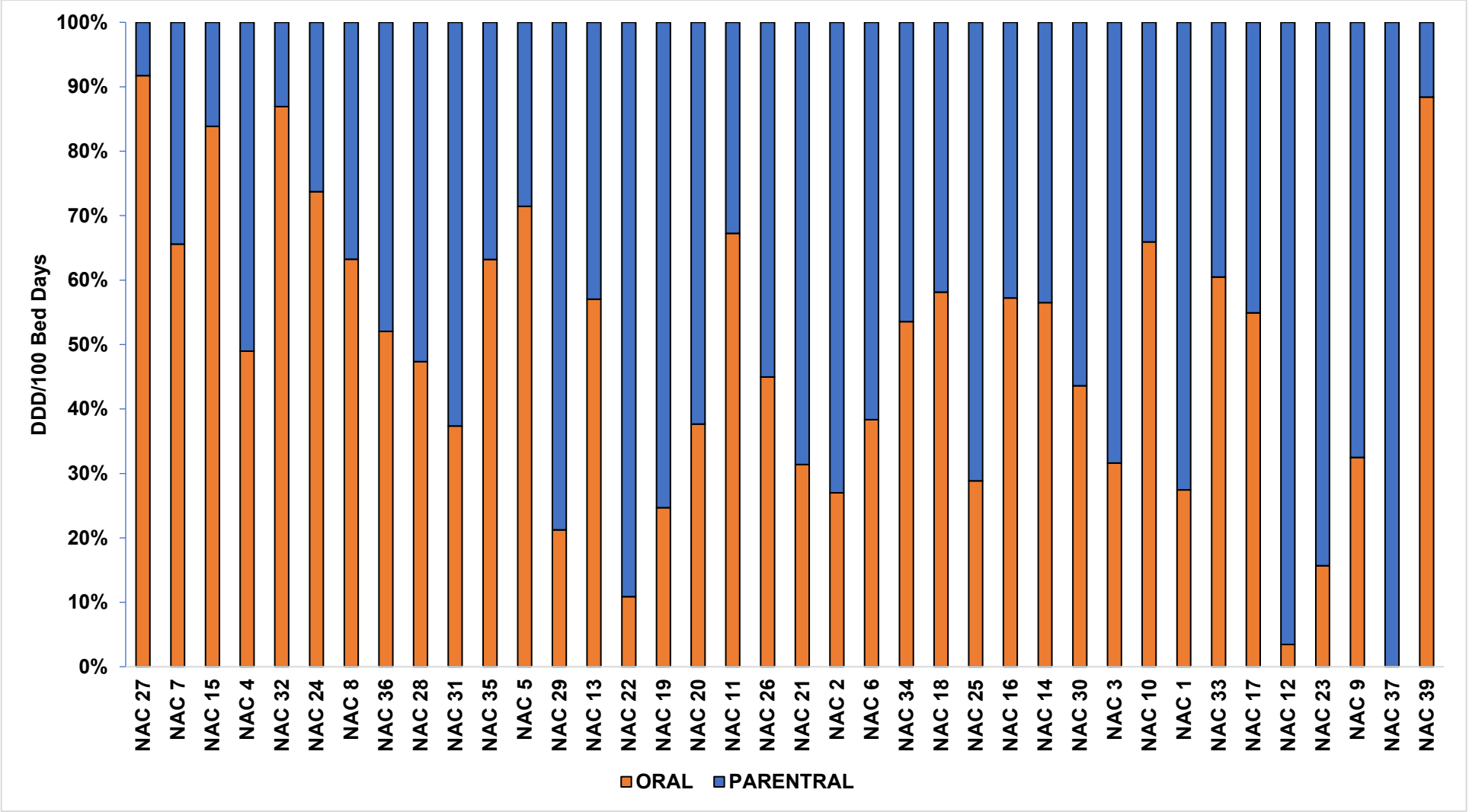


Figure 8b: Antibiotic consumption by route of administration at G-SACNET sites (n=19)

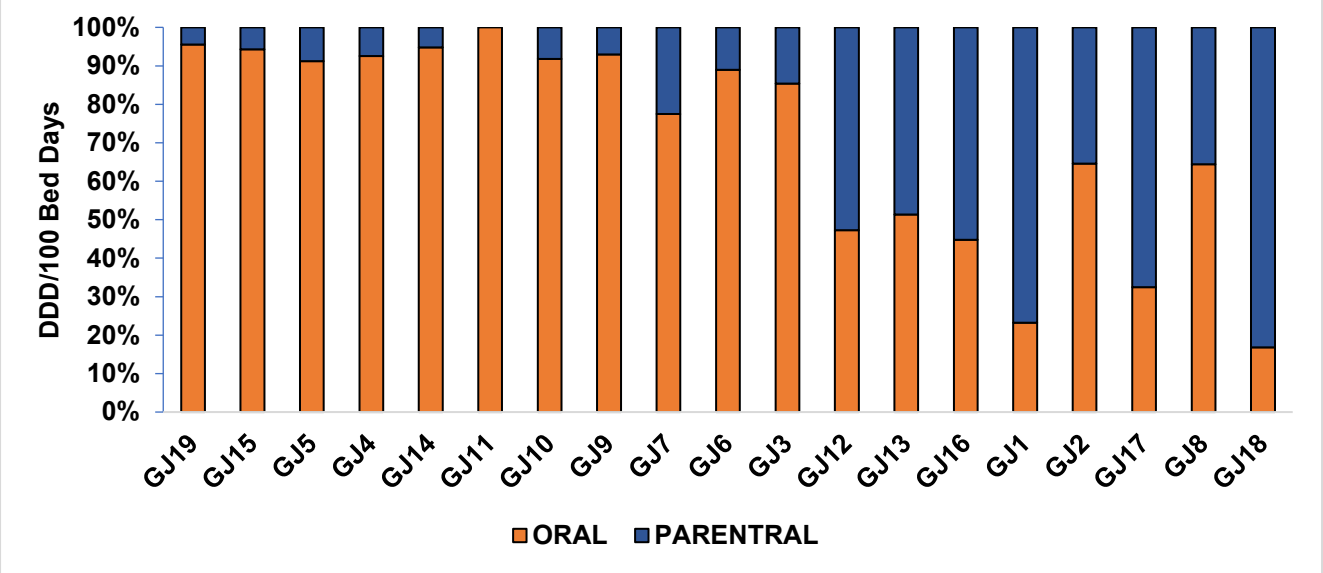
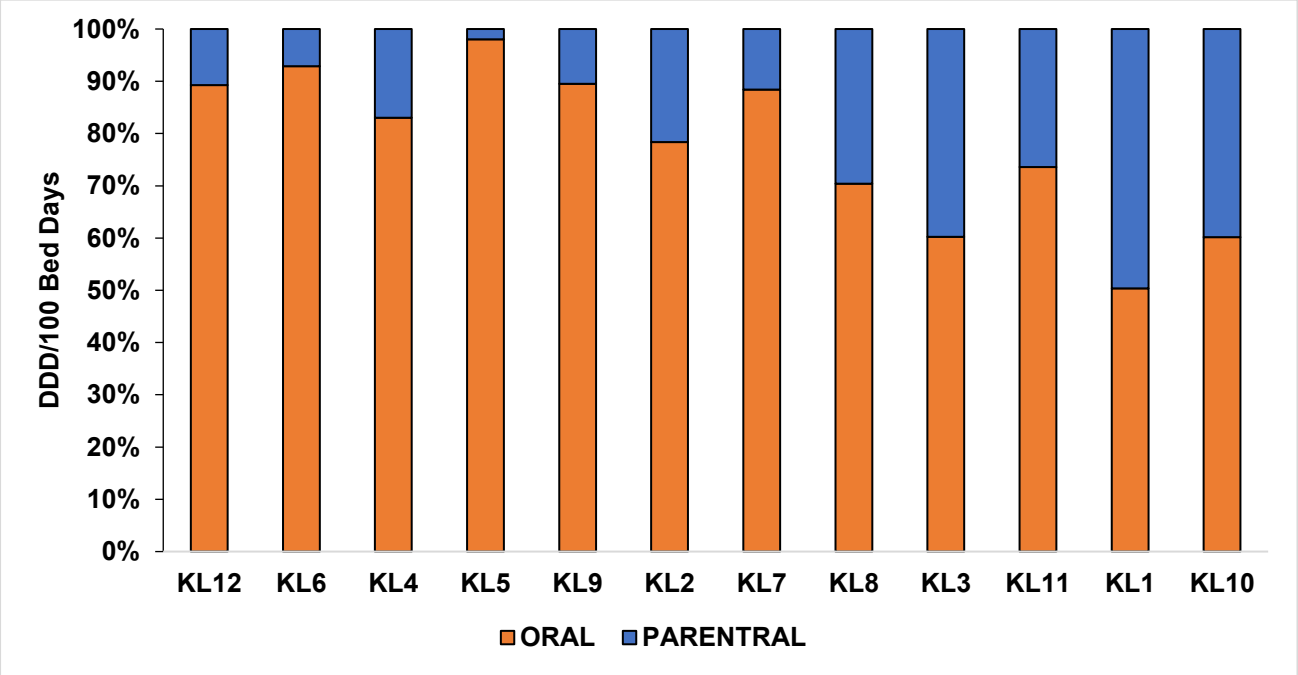


Figure 8c: Antibiotic consumption by route of administration at K-SACNET sites (n=12)



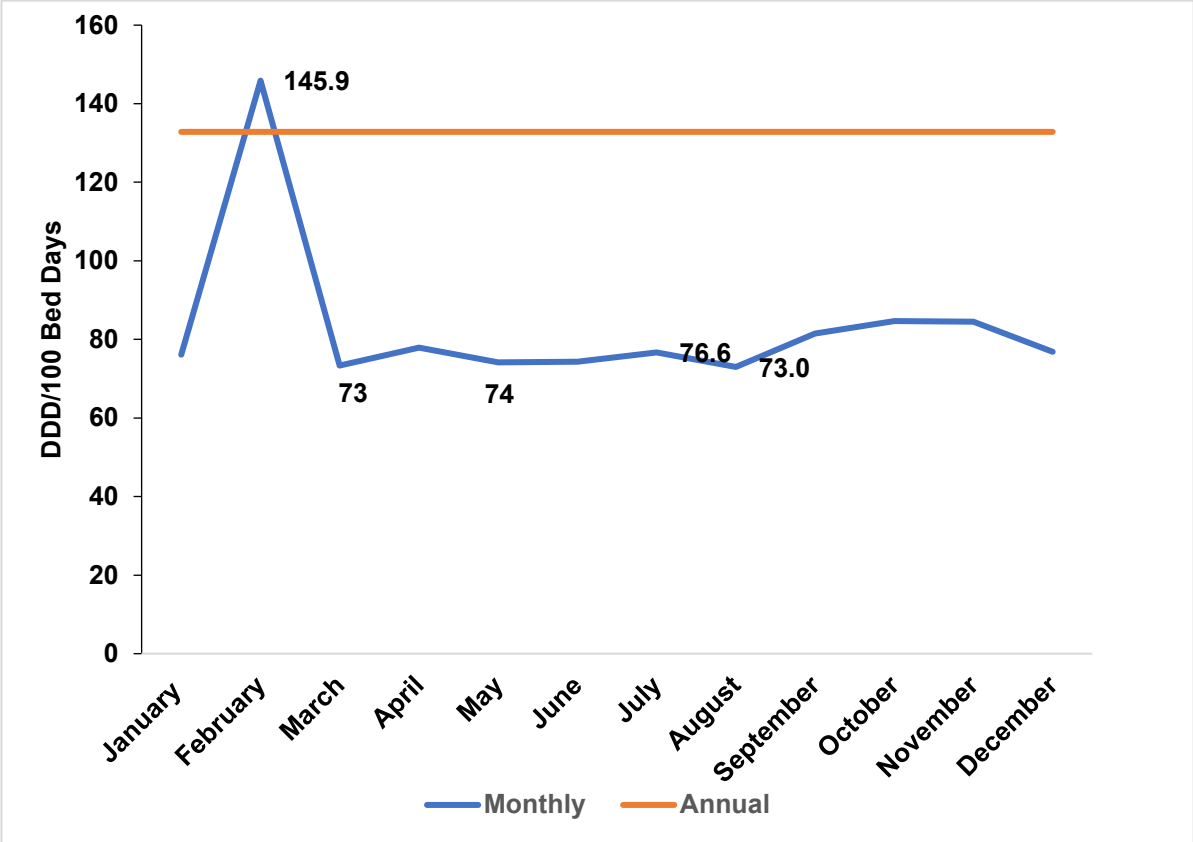
Consolidated antibiotic consumption

Consolidated antibiotic consumption of NACNET & SACNET sites (n=66) during 2024 was 132.8 DDD/100 Bed days. Antibiotic consumption from oral route is 92.9 DDD/100 Bed days and from parenteral route is 39.9 DDD/100 Bed days.

Month-wise antibiotic consumption

The antibiotic consumption peaked during the month of February.

Figure 9: Month-wise antibiotic consumption during 2024

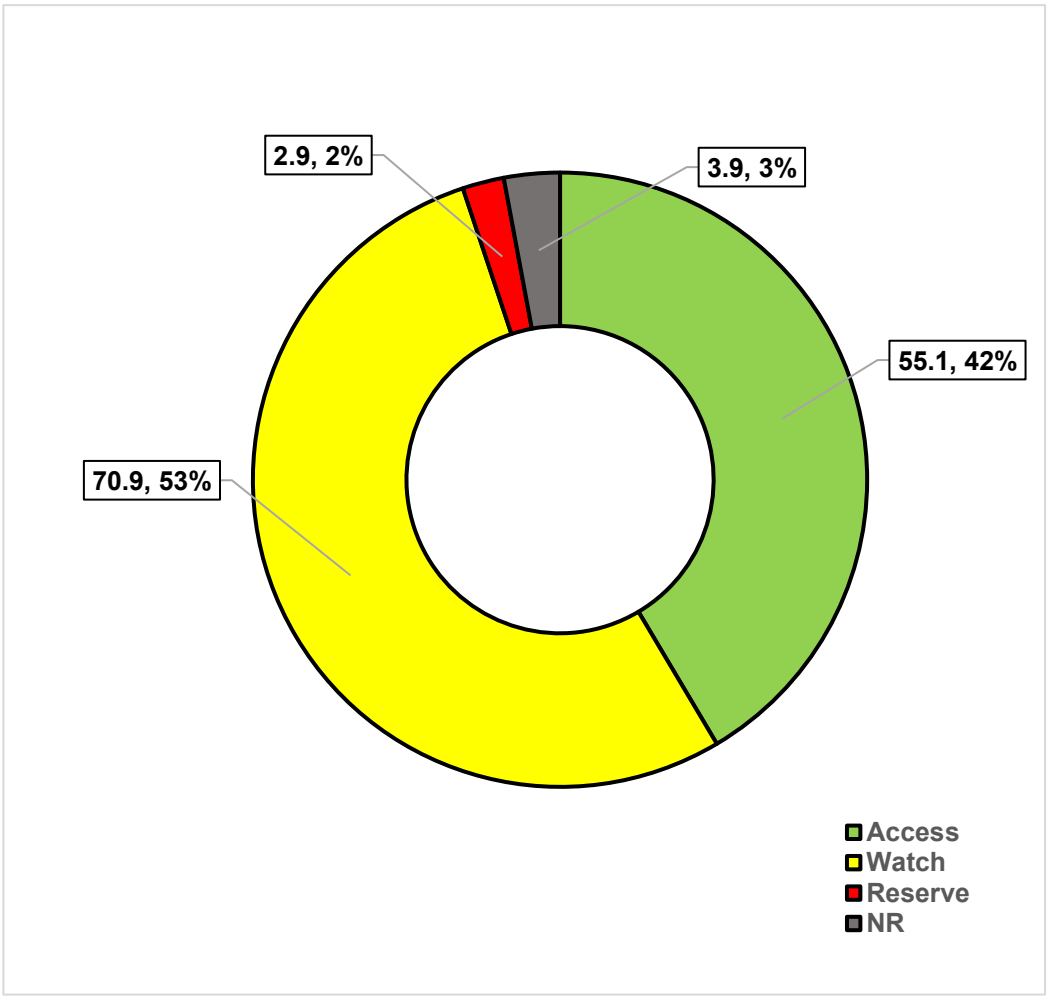


Note: The month-wise trend is for 35 NACNET sites as 3 sites submitted annual data only

AWaRe category-wise antibiotic consumption

Access category consumption has been recorded at 42% as against WHO's recommendation of 70% or above at National level (8). Consumption from **Reserve** and **Not Recommended** categories has been recorded at 2% and 3% respectively.

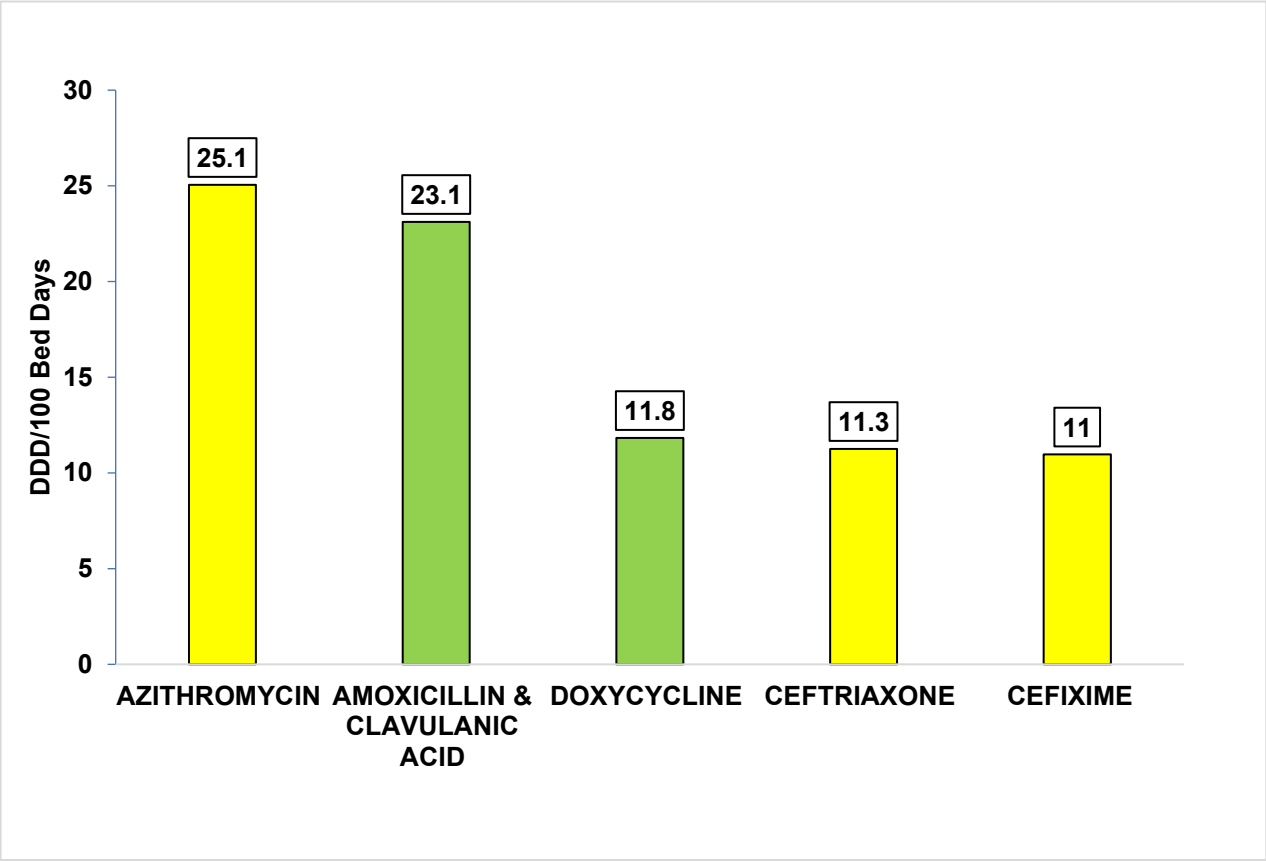
Figure 10: WHO AWaRe category- wise antibiotic consumption during 2024



Top five antibiotics consumed

Azithromycin (Watch), Amoxycillin and Clavulanic Acid (Access), Doxycycline (Access) followed by Ceftriaxone (Watch), and Cefixime (Watch) were the most commonly consumed antibiotics.

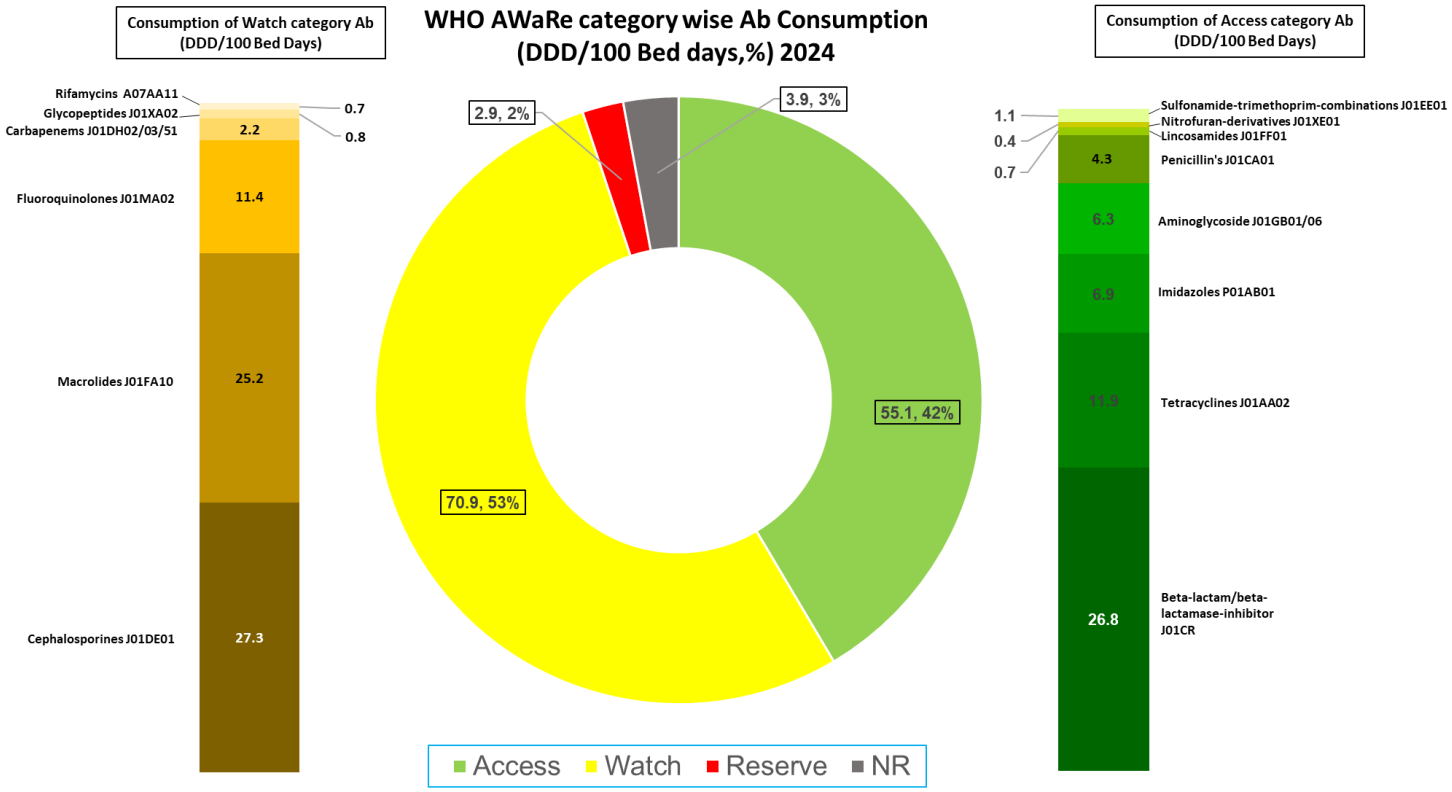
Figure 11: Top 5 Antibiotics consumed during the year 2024



Category wise antibiotic consumption

Cephalosporins (**Watch**, 20%), Beta lactam/ beta lactamase inhibitors (**Access**, 20%) followed by Macrolides (**Watch**, 19%), Tetracyclines (**Access**, 9%) and Fluoroquinolones (**Watch**, 8%) are the most commonly consumed group of antibiotics. Oxazolidinones (**Reserve**) account for 2% consumption whereas consumption from WHO **Not Recommended** group of antibiotics is 3%.

Figure 12: Category-wise antibiotic consumption during 2024



Discussion

The surveillance conducted under the National Antimicrobial Consumption Network (NACNET) and two State Antibiotic Consumption Network (SACNET) sites in 2024 revealed significant variations in antibiotic usage across the 66 participating tertiary care institutions with some institutions reporting exceptionally high consumption.

An analysis based on the WHO's AWaRe classification raised several concerns. The "Access" category, which generally includes first-line treatments, displayed a wide range of consumption, with consolidated consumption of 42% ranging from 21.4% to 85.2% while the "Watch" category accounted for the majority of consumption in many institutions. The excessive reliance on "Watch" antibiotics, which are associated with a higher risk of resistance, highlights the need for improved antimicrobial stewardship. Nine out of twelve sites from Kerala reported ≥50% consumption from Access category as against only three sites from Gujarat highlighting the need for data driven action at the respective sites.

Reserve group antimicrobials should be treated as "last resort" options. Two sites have reported consumption of reserve category drugs among top 5 antibiotics consumed at the respective sites which raises concerns and hence requires strengthening of local antimicrobial stewardship practices in these sites. As the use of Reserve category antimicrobials is a last resort and hence it is imperative to keep the consumption of this group of antimicrobials to a minimum. It is also relevant to note that consumption data has been sourced from the pharmacy of the hospital and did not include any out-of-pocket purchase of antimicrobials by the patients. The use of " non-recommended (NR)" antibiotics (3%) ranged from 0-19% across all sites which is again a matter of concern. It is also relevant to note that consumption data has been sourced from the pharmacy of the hospital and did not include any out-of-pocket purchase of antimicrobials by the patients.

Overall, the findings point to significant gaps in the rational use of antibiotics. The overuse of "Watch" antibiotics and the variability across sites suggest inconsistent implementation of antimicrobial stewardship programs (ASPs) and limited adherence to Standard Treatment guidelines. These challenges underline the urgent need for targeted interventions to optimize antibiotic use at all NACNET and SACNET sites.

Limitation

The consumption data compiled in this report is from the hospital pharmacy which only caters to in-patients of the hospital. Any antimicrobials prescribed to the patients that were purchased from other sources is not included, including antimicrobials prescribed to outpatients.

Conclusion

Analysis of antimicrobial consumption across the the sites presents an interesting picture of the pattern and overall usage of antimicrobials. Linking consumption data with antimicrobial resistance will lead to a better understanding of the AMR issues in these facilities. Continued monitoring of the usage of Watch and Reserve category antimicrobials will support antimicrobial stewardship practices. Surveillance of antimicrobial consumption and use at the hospital level is an important tool in our fight against antimicrobial resistance.

Recommendations

- Strengthen Stewardship Programs:
    - Expand antimicrobial stewardship training at all NACNET sites, focusing on the judicious use of antibiotics and adherence to standard treatment guidelines.
    - Encourage hospitals to meet established benchmarks for AMSP.
- Data-Driven Interventions:
    - Use site-specific consumption data to identify and address inappropriate prescribing patterns.
- Promote "Access" Category Antibiotics:
    - Increase the use of "Access" antibiotics by improving awareness and availability, while reducing dependence on "Watch" and "Reserve" categories.
- Monitor and Evaluate:
    - Linking antimicrobial consumption with antimicrobial resistance data to guide antimicrobial stewardship activities.
    - Establish continuous monitoring mechanisms to evaluate the impact of interventions on antibiotic consumption and resistance trends.

By implementing these measures, NACNET and SACNET sites can optimize antibiotic use, reduce the emergence of resistance, and contribute to the broader goal of containing antimicrobial resistance in India. These actions will not only improve patient outcomes but also protect the effectiveness of antibiotics for future generations.

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