

## National aggregated antibacterial usage rates in Australian hospitals

January 2022 – December 2023

Antibacterial utilisation rates provided in this report are calculated using the number of defined daily doses (DDDs) of the antibacterial class consumed each month per 1,000 occupied bed days using aggregated data from all hospitals currently contributing to NAUSP. Aggregated usage rates of all antibacterials by all contributing hospitals are shown for the total acute use (excluding emergency department and theatre) and for critical care. Rates are also reported for 6 target antibacterial classes, and national critical care and non-critical care rates are shown for individual agents within the 6 target classes.

DDD values for each antimicrobial are assigned by the World Health Organization based on the “assumed average maintenance dose per day for the main indication in adults”. DDDs are reviewed annually by the WHO as dosing recommendations change over time. For more information refer to: [https://www.whocc.no/atc\\_ddd\\_methodology/purpose\\_of\\_the\\_atc\\_ddd\\_system/](https://www.whocc.no/atc_ddd_methodology/purpose_of_the_atc_ddd_system/).

Usage rates for this reporting period include data from 228 hospitals. Critical care rates include data from 133 contributors. Some hospitals were unable to submit data for this reporting period and comparator rates may vary from previous reports.

Enquiries regarding this report should be directed to the Program Manager, NAUSP (email: [Health.NAUSPhelp@sa.gov.au](mailto:Health.NAUSPhelp@sa.gov.au)).

### 1. AGGREGATED NATIONAL ANTIBACTERIAL USAGE IN ACUTE CARE SETTINGS

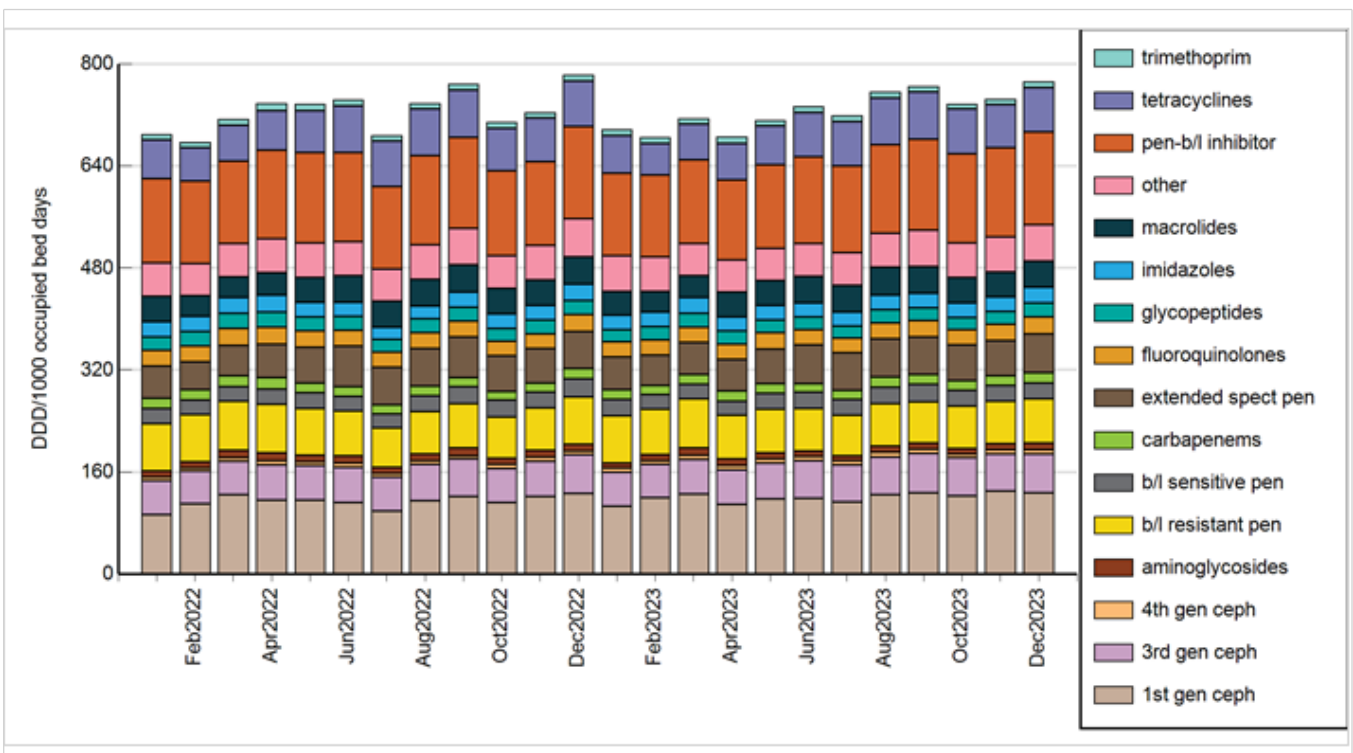


Chart 1: Acute aggregated antibacterial usage rates, NAUSP-contributor hospitals, January 2022 - December 2023 (excludes emergency department and operating theatre)

## 2. TOTAL CRITICAL CARE ANTIBACTERIAL USE (ALL CLASSES)

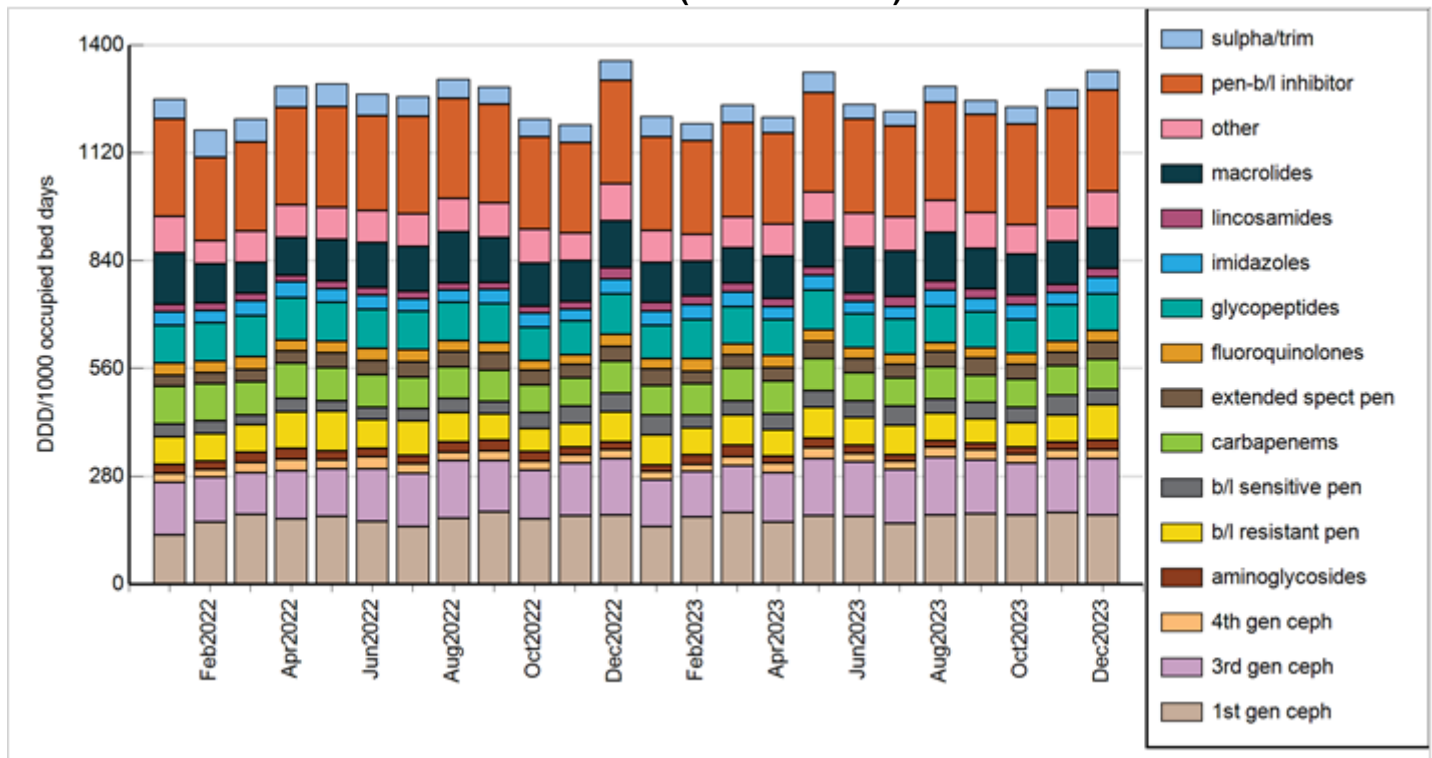


Chart 2: Total Critical Care antibacterial use, NAUSP-contributor hospitals, January 2022 - December 2023

## 3. AGGREGATED NATIONAL USE OF SELECTED CLASSES OF ANTIBACTERIALS

Aggregated acute hospital inpatient usage rates for 3<sup>rd</sup>/4<sup>th</sup> generation cephalosporins, glycopeptides, carbapenems, fluoroquinolones, aminoglycosides and anti-pseudomonal penicillin/β-lactamase inhibitor combinations are displayed for the period January 2022 to December 2023 in charts 3 and 4. Aggregated inpatient usage rates exclude usage in emergency and the operating theatre settings. In the following charts, C denotes aggregate rate for all contributors.

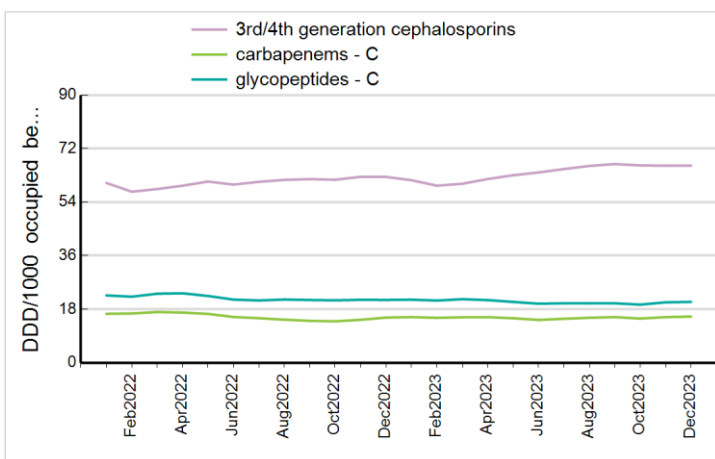


Chart 3: Total hospital usage of 3rd/4th generation cephalosporins, glycopeptides and carbapenems

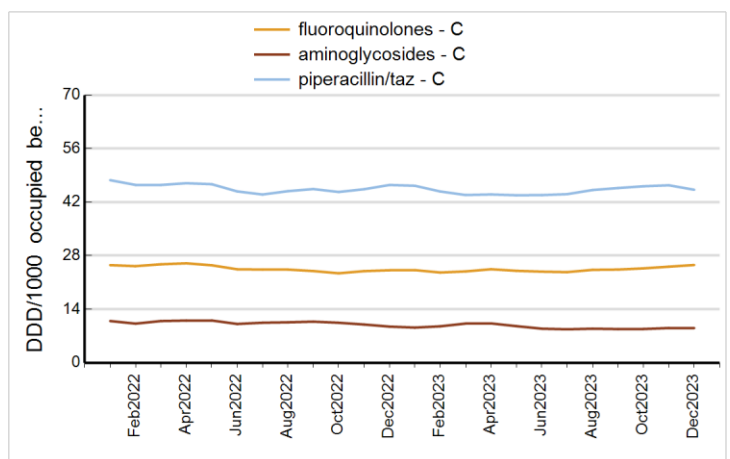


Chart 4: Total hospital usage of fluoroquinolones, aminoglycosides and anti-pseudomonal penicillins plus β-lactamase inhibitor

#### 4. CRITICAL CARE COMPARED TO OTHER HOSPITAL USAGE (NON-CRITICAL CARE)

Usage rates for Critical Care compared to non-Critical Care for each antimicrobial class are shown in charts 5 - 10. Higher usage rates in Critical Care compared to non-Critical Care are expected, based on the density of usage in these areas.

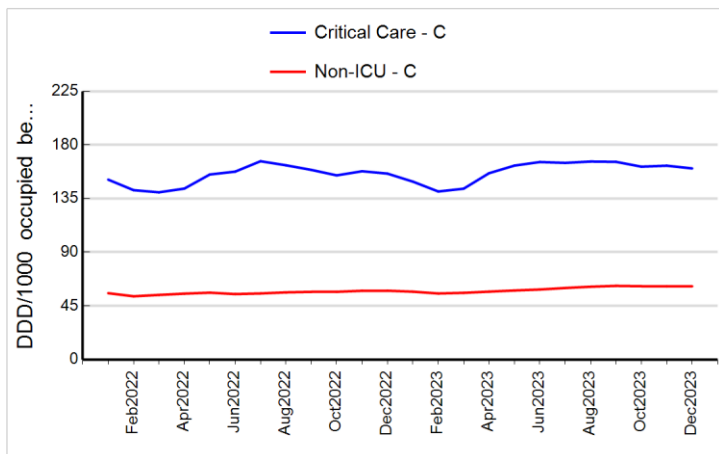


Chart 5: 3rd/4th generation cephalosporins

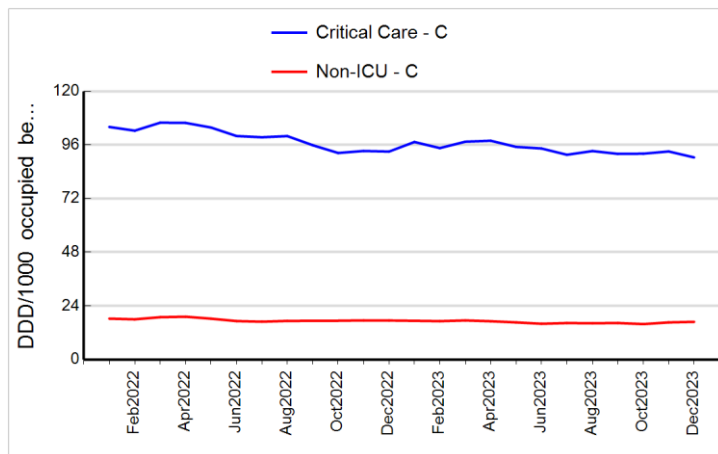


Chart 6: glycopeptides

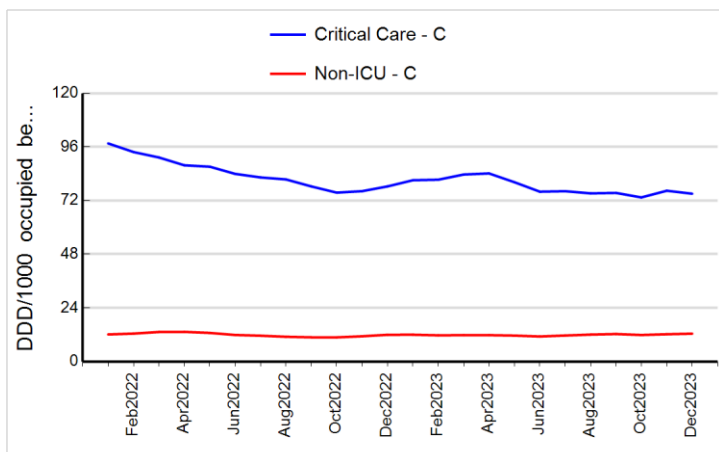


Chart 7: carbapenems

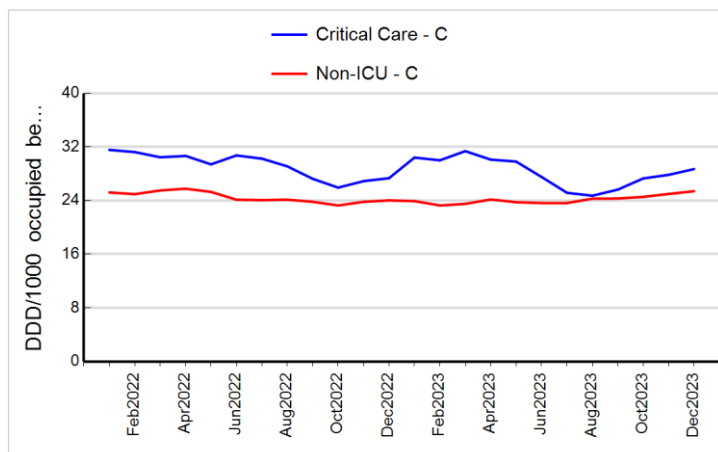


Chart 8: fluoroquinolones

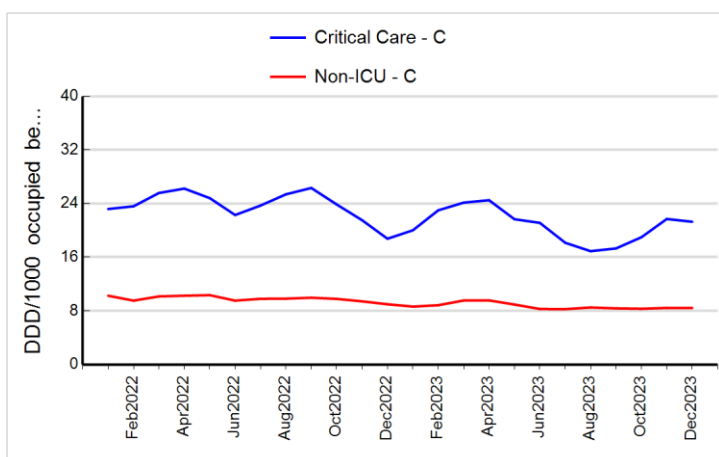


Chart 9: aminoglycosides

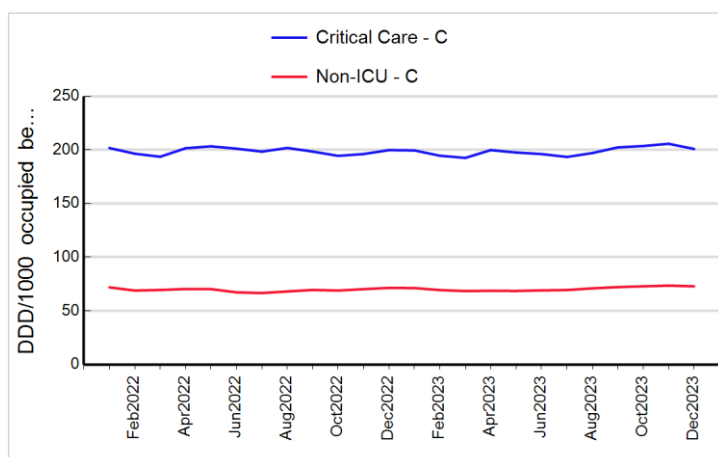


Chart 10: parenteral penicillins / beta-lactamase inhibitors

## 5. CRITICAL CARE USAGE RATES FOR INDIVIDUAL ANTIMICROBIALS

Critical Care antimicrobial utilisation rates for individual agents within reported classes are shown in the Charts 11 - 16 below.

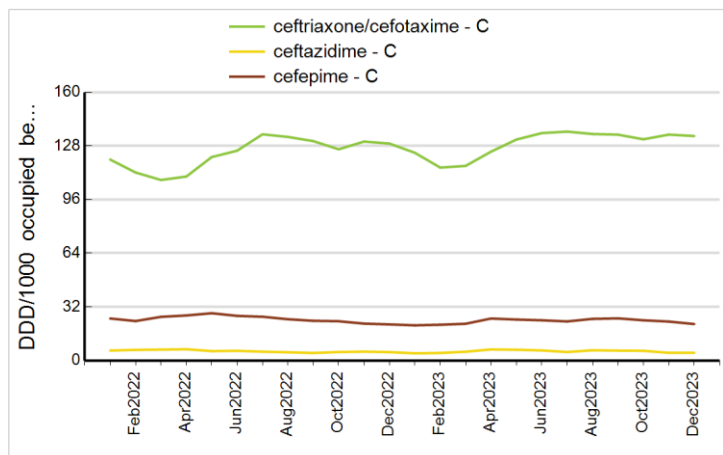


Chart 11: 3rd/4th generation cephalosporins (ceftriaxone and cefotaxime grouped together)

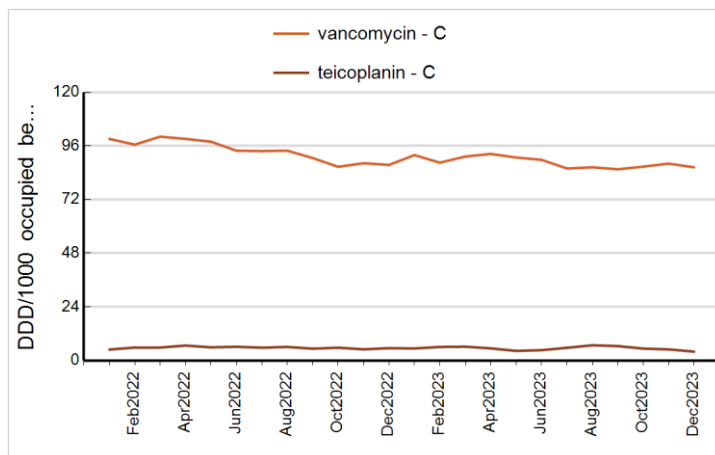


Chart 12: glycopeptides

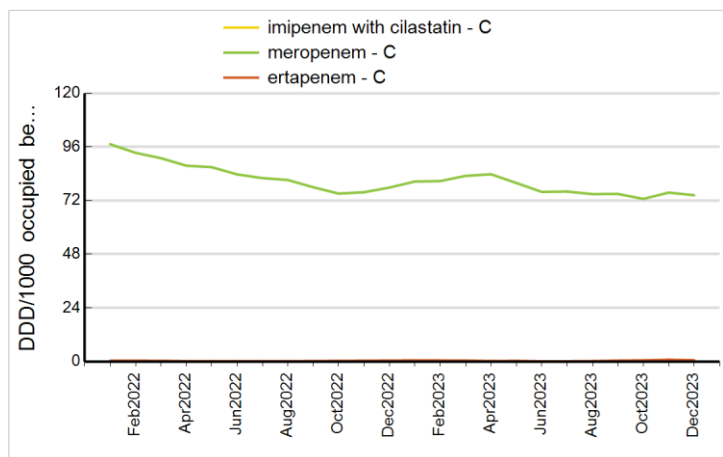


Chart 13: carbapenems

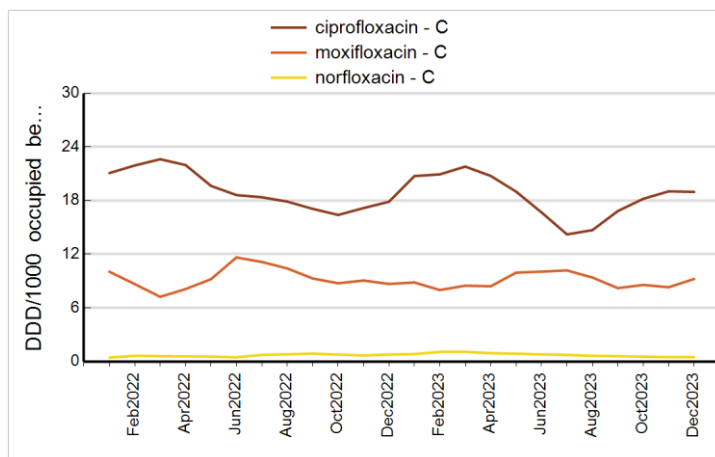


Chart 14: fluoroquinolones

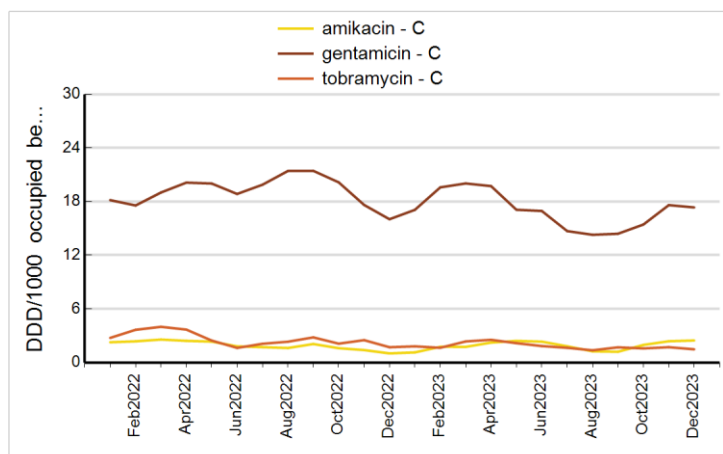


Chart 15: aminoglycosides

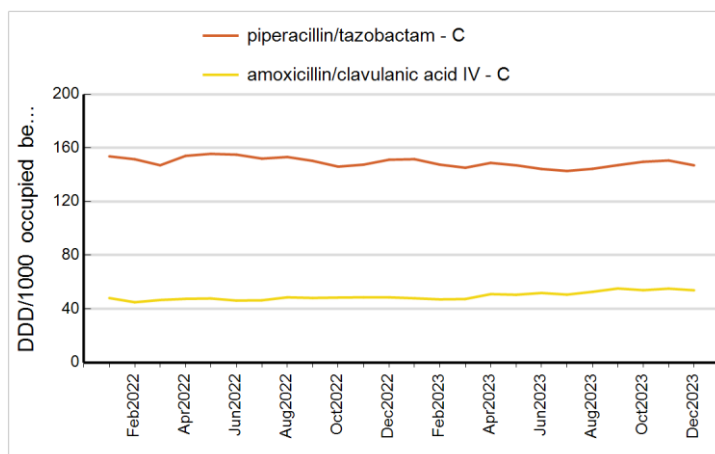


Chart 16: parenteral penicillin / beta-lactamase inhibitors

## 6. NON-CRITICAL CARE ANTIMICROBIAL USAGE RATES FOR INDIVIDUAL ANTIMICROBIALS

Non-Critical Care antimicrobial utilisation rates for individual agents within reported classes are shown in Charts 17 - 22 below.

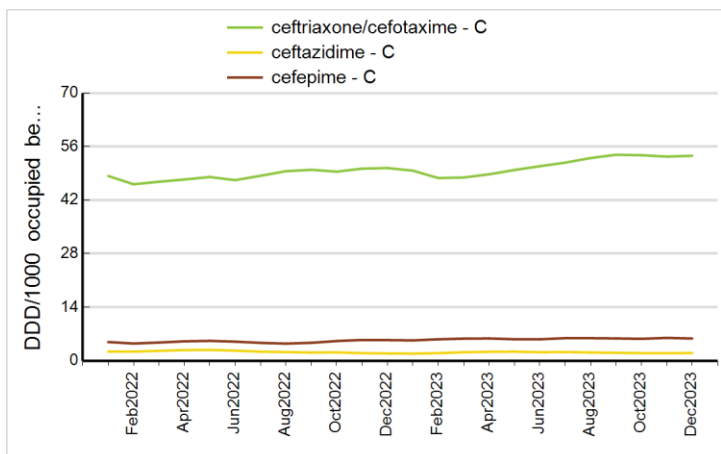


Chart 17: 3rd/4th generation cephalosporins (ceftriaxone and cefotaxime grouped together)

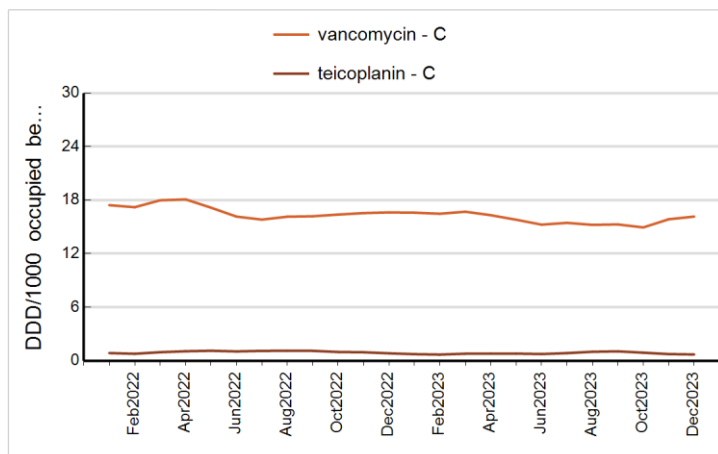


Chart 18: glycopeptides

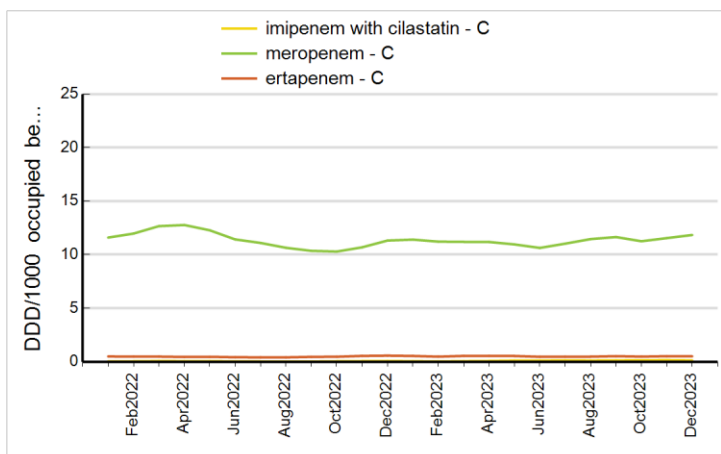


Chart 19: carbapenems

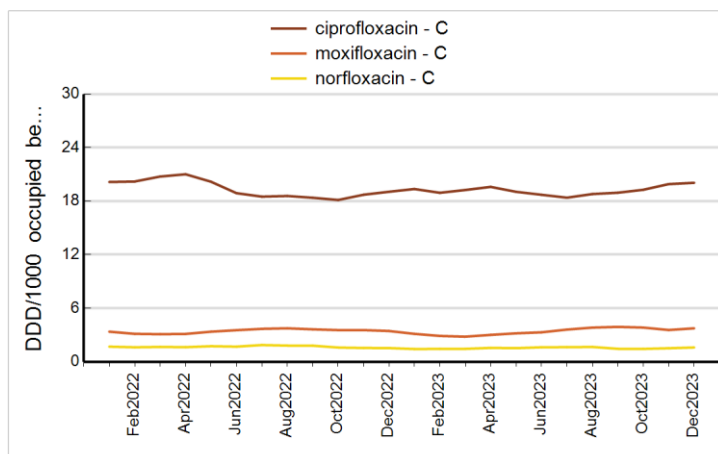


Chart 20: fluoroquinolones

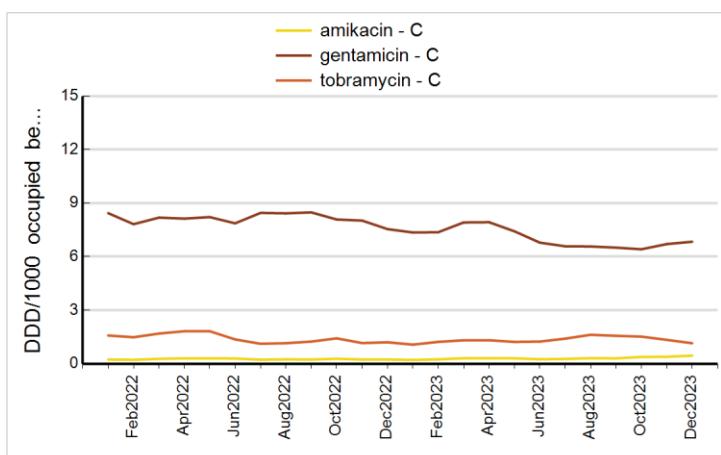


Chart 21: aminoglycosides

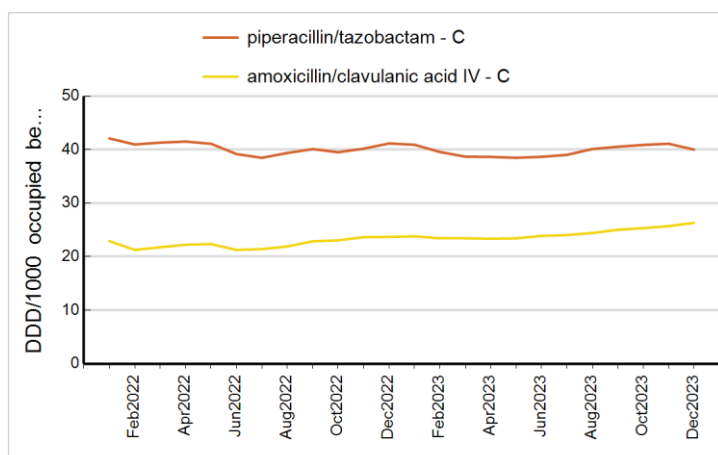


Chart 22: parenteral penicillin / beta-lactamase inhibitors

**This report includes data from the following hospitals:**

- NSW:** ARMIDALE HOSPITAL, AUBURN HOSPITAL, BANKSTOWN HOSPITAL, BATEMANS BAY DISTRICT HOSPITAL, BATHURST BASE HOSPITAL, BELLINGER RIVER DISTRICT HOSPITAL, BELMONT HOSPITAL, BLACKTOWN HOSPITAL, BLUE MOUNTAINS HOSPITAL, BOWRAL HOSPITAL, BRISBANE WATERS PRIVATE HOSPITAL, BROKEN HILL BASE HOSPITAL, CAMPBELLTOWN HOSPITAL, CAMPBELLTOWN PRIVATE HOSPITAL, CANTERBURY HOSPITAL, CESSNOCK DISTRICT HOSPITAL, CHRIS O'BRIEN LIFEHOUSE, COFFS HARBOUR HOSPITAL, CONCORD HOSPITAL, COOMA HOSPITAL, DUBBO BASE HOSPITAL, FAIRFIELD HOSPITAL, FORSTER PRIVATE HOSPITAL, GLEN INNES DISTRICT HOSPITAL, GLOUCESTER SOLDIERS' MEMORIAL HOSPITAL, GOSFORD HOSPITAL, GOSFORD PRIVATE HOSPITAL, GOULBURN BASE HOSPITAL, GRIFFITH BASE HOSPITAL, GUNNEDAH HOSPITAL, HORNSBY KU-RING-GAI HOSPITAL, HURSTVILLE PRIVATE HOSPITAL, INSTITUTE OF RHEUMATOLOGY AND ORTHOPAEDICS, INVERELL DISTRICT HOSPITAL, JOHN HUNTER HOSPITAL, KAREENA PRIVATE HOSPITAL, KURRI KURRI HOSPITAL, LINGARD PRIVATE HOSPITAL, LITHGOW HOSPITAL, LIVERPOOL HOSPITAL, MACKSVILLE DISTRICT HOSPITAL, MAITLAND HOSPITAL, MAITLAND PRIVATE HOSPITAL, MANNING BASE HOSPITAL, MAYO PRIVATE HOSPITAL, MILTON-ULLADULLA HOSPITAL, MOREE HOSPITAL, MORUYA HOSPITAL, MT DRUITT HOSPITAL, MUSWELLBROOK HOSPITAL, NARRABRI HOSPITAL, NEPEAN HOSPITAL, NEWCASTLE MATER, NORTHERN BEACHES HOSPITAL, ORANGE HEALTH SERVICE, PRINCE OF WALES HOSPITAL, QUEANBEYAN HOSPITAL, ROYAL NORTH SHORE HOSPITAL, ROYAL PRINCE ALFRED HOSPITAL, RYDE HOSPITAL, SCOTT MEMORIAL HOSPITAL, SHELLHARBOUR HOSPITAL, SHOALHAVEN HOSPITAL, SINGLETON DISTRICT HOSPITAL, SOUTH EAST REGIONAL HOSPITAL, ST GEORGE HOSPITAL, ST VINCENT'S HOSPITAL SYDNEY, ST VINCENT'S PRIVATE HOSPITAL LISMORE, SUTHERLAND HOSPITAL, TAMWORTH HOSPITAL, WAGGA WAGGA BASE HOSPITAL, WESTMEAD HOSPITAL, WOLLONGONG HOSPITAL, WYONG HOSPITAL
- NT :** ALICE SPRINGS HOSPITAL, DARWIN PRIVATE HOSPITAL, GOVE DISTRICT HOSPITAL, KATHERINE DISTRICT HOSPITAL, TENNANT CREEK HOSPITAL
- QLD:** BUDERIM PRIVATE HOSPITAL, BUNDABERG HOSPITAL, CABOOLTURE HOSPITAL, GOLD COAST PRIVATE HOSPITAL, GREENSLOPES HOSPITAL, GYMPIE HEALTH SERVICE, HERVEY BAY HOSPITAL, IPSWICH HOSPITAL, JOHN FLYNN PRIVATE HOSPITAL, KILCOY HOSPITAL, KINGAROY HOSPITAL, MACKAY BASE HOSPITAL, MAREEBA HOSPITAL, MARYBOROUGH HOSPITAL, MATER BUNDABERG, MATER HOSPITAL BRISBANE, MATER MACKAY, MATER MOTHERS' HOSPITAL, MATER PRIVATE HOSPITAL BRISBANE, MATER PRIVATE HOSPITAL SPRINGFIELD, MATER REDLAND PRIVATE, MATER ROCKHAMPTON, MT ISA HOSPITAL, NAMBOUR GENERAL HOSPITAL, PINDARA PRIVATE HOSPITAL, QUEEN ELIZABETH 2 JUBILEE HOSPITAL, REDCLIFFE HOSPITAL, REDLAND HOSPITAL, ROYAL BRISBANE AND WOMEN'S HOSPITAL, ST ANDREW'S WAR MEMORIAL HOSPITAL, ST STEPHEN'S HOSPITAL HERVEY BAY, ST VINCENT'S PRIVATE HOSPITAL BRISBANE, ST VINCENT'S PRIVATE HOSPITAL NORTHSIDE, ST VINCENT'S PRIVATE HOSPITAL TOOWOOMBA, STARS - SURGICAL TREATMENT AND REHABILITATION SERVICES, SUNSHINE COAST UNIVERSITY HOSPITAL, THE PRINCE CHARLES HOSPITAL, TOOWOOMBA HOSPITAL, TOWNSVILLE HOSPITAL, WARWICK HOSPITAL, WESLEY HOSPITAL
- SA :** ASHFORD HOSPITAL, BURNSIDE WAR MEMORIAL HOSPITAL, CALVARY ADELAIDE PRIVATE HOSPITAL, CALVARY CENTRAL DISTRICTS HOSPITAL, CALVARY NORTH ADELAIDE HOSPITAL, FLINDERS MEDICAL CENTRE, FLINDERS PRIVATE HOSPITAL, GAWLER HEALTH SERVICE, LYELL MCEWIN HOSPITAL, MEMORIAL HOSPITAL, MODBURY HOSPITAL, MOUNT BARKER DISTRICT SOLDIERS MEMORIAL HOSPITAL, MT GAMBIER HOSPITAL, NOARLUNGA HOSPITAL, PORT LINCOLN HOSPITAL, QUEEN ELIZABETH HOSPITAL, ROYAL ADELAIDE HOSPITAL, SOUTH COAST DISTRICT HOSPITAL, ST ANDREW'S HOSPITAL
- TAS:** CALVARY LENA VALLEY HOSPITAL, CALVARY ST. JOHN'S HOSPITAL, HOBART PRIVATE HOSPITAL, LAUNCESTON GENERAL HOSPITAL, MERSEY COMMUNITY HOSPITAL, NORTH WEST REGIONAL HOSPITAL, ROYAL HOBART HOSPITAL
- VIC:** ALBURY WODONGA - ALBURY, ALBURY WODONGA - WODONGA, ALFRED HOSPITAL, ANGLISS HOSPITAL, AUSTIN HOSPITAL, BALLARAT BASE HOSPITAL, BENDIGO HEALTH, BOX HILL HOSPITAL, CENTRAL GIPPSLAND HEALTH, FRANKSTON HOSPITAL, GEELONG HOSPITAL, GRAMPIANS HEALTH - HORSHAM, HOLMESGLEN PRIVATE HOSPITAL, JOHN FAWKNER PRIVATE HOSPITAL, MAROONDAH HOSPITAL, MERCY WOMEN'S HOSPITAL, PETER MACCALLUM CANCER CENTRE, ROSEBUD HOSPITAL, ROYAL MELBOURNE HOSPITAL, SANDRINGHAM HOSPITAL, SOUTH EASTERN PRIVATE HOSPITAL, ST JOHN OF GOD GEELONG, ST VINCENT'S HOSPITAL MELBOURNE, ST VINCENT'S PRIVATE EAST MELB, ST VINCENT'S PRIVATE FITZROY, ST VINCENT'S PRIVATE HOSPITAL KEW, ST VINCENT'S PRIVATE HOSPITAL WERRIBEE, SWAN HILL DISTRICT HEALTH, THE NORTHERN HOSPITAL, WARRNAMBOOL BASE HOSPITAL, WERRIBEE MERCY HOSPITAL, WEST GIPPSLAND HOSPITAL, WESTERN HEALTH FOOTSCRAY, WESTERN HEALTH SUNSHINE
- WA :** ALBANY HOSPITAL, ARMADALE KALAMUNDA GROUP, BENTLEY HEALTH SERVICE, BROOME HOSPITAL, BUNBURY REGIONAL HOSPITAL, BUSSELTON HEALTH, DERBY HOSPITAL, FIONA STANLEY HOSPITAL, GERALDTON HOSPITAL, HEDLAND HEALTH CAMPUS, HOLLYWOOD PRIVATE HOSPITAL, JOONDALUP HEALTH CAMPUS, KALGOORLIE HEALTH CAMPUS, KARRATHA HEALTH CAMPUS, KATANNING HEALTH SERVICE, KING EDWARD MEMORIAL HOSPITAL, KUNUNURRA HOSPITAL, MOUNT HOSPITAL, NARROGIN HOSPITAL, NORTHAM HOSPITAL, ROCKINGHAM HOSPITAL, ROYAL PERTH HOSPITAL, SIR CHARLES GAIRDNER HOSPITAL, ST JOHN OF GOD MIDLAND, ST JOHN OF GOD SUBIACO

<b>ANTIBACTERIAL CLASSES</b>			
<b>Alimentary antibiotics</b>	fidaxomicin	<b>Lincosamides</b>	clindamycin
	paromomycin		lincomycin
	rifaximin		azithromycin
<b>Aminoglycosides</b>	amikacin	<b>Macrolides</b>	clarithromycin
	gentamycin		erythromycin
	neomycin		roxithromycin
	tobramycin		spiramycin
<b><math>\beta</math>-lactamase inhibitor combinations</b>	amoxicillin - clavulanate		<b>Monobactams</b>
	piperacillin - tazobactam	<b>Nitrofurans derivatives</b>	nitrofurantoin
<b><math>\beta</math>-lactamase resistant penicillins</b>	dicloxacillin	<b>Polymyxins</b>	colistin
	flucloxacillin		polymyxin B
<b><math>\beta</math>-lactamase sensitive penicillins</b>	benzathine benzylpenicillin	<b>Second-generation cephalosporins</b>	cefaclor
	benzylpenicillin		cefamandole
	phenoxymethylpenicillin		cefotetan
	procaine benzylpenicillin		cefoxitin
doripenem	cefuroxime		
<b>Carbapenems</b>	ertapenem	<b>Steroid antibacterials</b>	fusidic acid
	imipenem - cilastatin	<b>Streptogramins</b>	pristinamycin
	meropenem	<b>Streptomycins</b>	streptomycin
	meropenem - vaborbactam	<b>Sulfonamide-trimethoprim combinations</b>	sulfamethoxazole - trimethoprim
	amoxicillin	<b>Tetracyclines</b>	doxycycline
ampicillin	minocycline		
pivmecillinam	tetracycline		
temocillin	tigecycline		
<b>First-generation cephalosporins</b>	cefalexin	<b>Third-generation cephalosporins</b>	cefixime
	cefalotin		cefotaxime
	cefazolin		ceftazidime
<b>Fluoroquinolones</b>	ciprofloxacin		ceftazidime - avibactam
	levofloxacin		ceftriaxone
	moxifloxacin	<b>Trimethoprim</b>	trimethoprim
	norfloxacin	<b>Other (including other cephalosporins and penems)</b>	ceftaroline fosamil
<b>Fourth-generation cephalosporins</b>	cefepime		ceftolozane - tazobactam
	cefpime		daptomycin
<b>Glycopeptides</b>	dalbavancin		faropenem
	oritavancin		fosfomicin
	teicoplanin		linezolid
	vancomycin		rifampicin
<b>Imidazole derivatives</b>	metronidazole	tedizolid	
<b>Intermediate-acting sulfonamides</b>	sulfadiazine		