

Hospital Antimicrobial Consumption Surveillance

Data for 2020 first half ***DRAFT**

KEY POINTS

- The median rate of systemic antibacterial consumption in 41 public acute hospitals in Ireland for the first half of 2020 was 78.9 defined daily doses per 100 bed days used (DDD/100BDU; range = 26.3 – 104.8), a slight increase from 78.1 DDD/100BDU in 2019
- The overall national consumption (mean) decreased from 77.8 in 2019 to 76.5 DDD/100BDU in the first half of 2020. In the underlying data (not shown), the overall DDD consumed for the first half of 2020 decreased by approximately 15% compared to the same quarters in 2019, and there was a corresponding reduction in the denominator. These changes are contemporaneous with changes to activity in acute services owing to the COVID-19 pandemic
- There was a slight increase in the consumption of third generation cephalosporins and carbapenems in the first half of 2020

Antimicrobial consumption data are collected using the Anatomical Therapeutic Chemical (ATC) classification system and defined daily dose (DDD) methodology developed by the WHO Collaborating Centre for Drug Statistics Methodology (Oslo, Norway). Using this method, the figures in this report refer to systemic **antibacterial** drugs only which are classed as J01. Please see the [web-report](#) on the HPSC website and general notes at the end of this report.

Table1. Annual rate of hospital consumption of systemic antibacterial drugs in DDD per 100 BDU

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020*
National median	71.3	73.2	76.7	75.6	73.9	73.0	76.8	77.9	79.5	78.1	78.9
National minimum	21.3	20.3	25.4	27.9	23.6	25.9	23.5	27.9	27.9	29.7	26.3
National maximum	111.8	122.7	115.1	101.8	113.4	100.3	107.2	116.8	117.2	112.5	104.8
Overall national mean	70.1	73.3	74.2	74	75.5	73.8	76.7	78.3	79.1	77.8	76.5

Note: *Results provisional to the end of 2020Q2

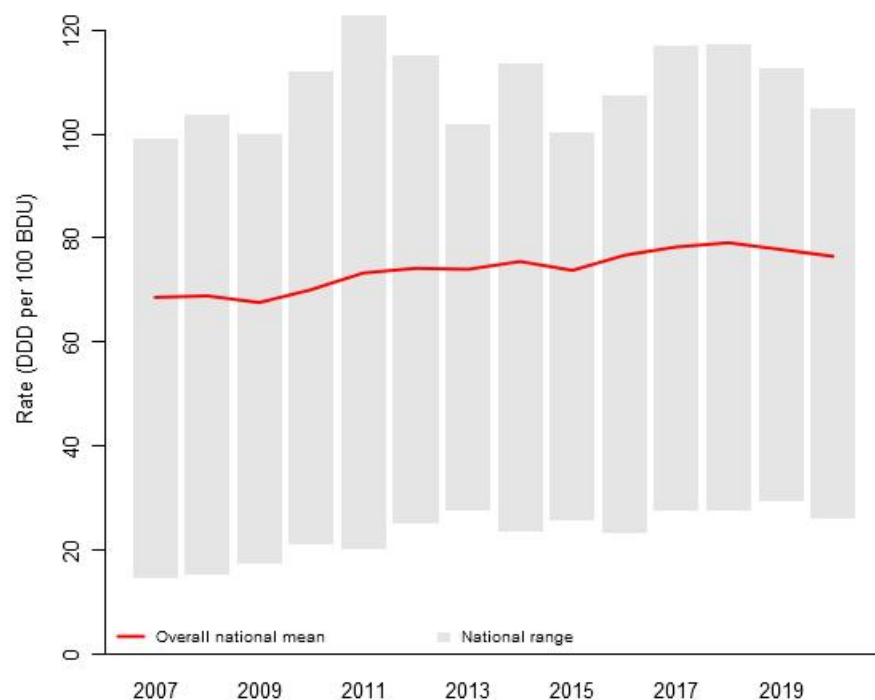


Figure 1. Annual rate of hospital consumption of systemic antibacterial drugs in DDD per 100 BDU. The grey bars show the range of use (lowest to highest) and the red line shows the national mean among acute hospitals

Note: *Results provisional to the end of 2020Q2

Table 2. Annual national hospital antibacterial consumption rate in DDD per 100 BDU by pharmacological subgroup (ATC level 3)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020*
Penicillins (J01C)	34	35.9	35.8	35.7	36.1	35.7	37.1	36.9	38.6	37.8	36.1
Cephalosporins, Monobactams and Carbapenems (J01D)	6	6	6.3	6.8	7.3	7.3	7.6	8.8	8.4	9	9.5
Sulfonamides and Trimethoprim (J01E)	2	2	2.3	2.1	2.2	2.1	2.3	2.4	2.6	2.8	2.4
Macrolides, Lincosamides and Streptogramins (J01F)	10.2	11.1	11.4	10.9	10.9	10.4	10.9	10.5	10.1	9.4	10.1
Aminoglycosides (J01G)	2.8	2.9	3	3.1	3.1	3	3.2	3.5	3.4	3.7	2.9
Quinolones (J01M)	4.8	4.9	5	4.6	4.6	4.5	4.3	4.5	4.3	3.3	3
Glycopeptides, Imidazoles and Nitrofurans (J01X)	7.9	7.9	7.8	8.1	8.5	7.8	8.1	8.4	8.2	8.4	8.2
Tetracyclines, Amphotericin and Other Systemic Antimicrobials	2.4	2.6	2.6	2.7	2.8	3	3.2	3.3	3.5	3.4	4.3

Note: *Results provisional to the end of 2020Q2

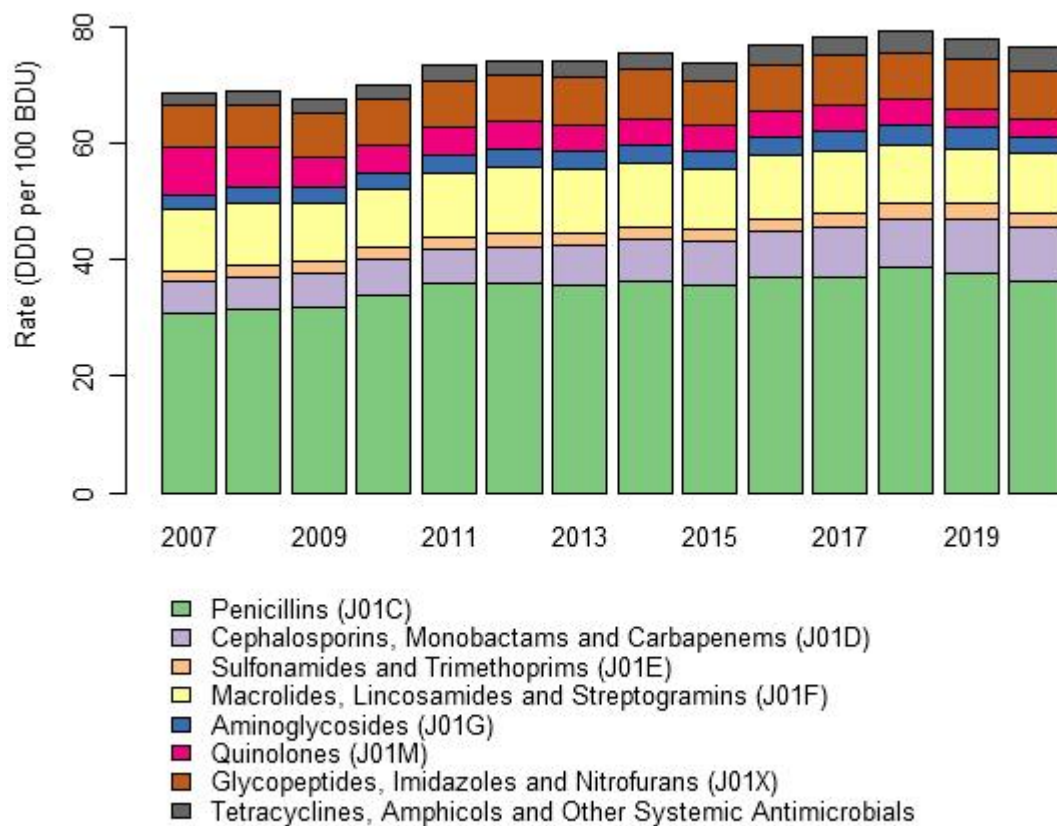


Figure 2. Annual national hospital antibacterial consumption rate in DDD per 100 BDU by pharmacological subgroup (ATC level 3). The colours in the bar show the proportion of total use that is accounted for by the subgroup

Note: values are overall means for the national data. Note: *Results provisional to the end of 2020Q2

Table 3. Annual national hospital consumption rate in DDD per 100 BDU of penicillin subgroups

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020*
Penicillins with extended spectrum (J01CA)	1.7	1.8	1.7	1.6	1.7	1.6	1.8	1.9	2.2	2.2	2
Beta-lactamase sensitive penicillins (J01CE)	5.5	5.4	4.5	4.5	4.5	4.2	4.2	3.9	3.9	3.5	2.9
Beta-lactamase resistant penicillins (J01CF)	8.3	8.6	8.3	8.3	8.5	8.3	8.5	9	9.1	8.9	8
Combinations of penicillins (J01CR)	18.4	20.1	21.4	21.2	21.4	21.5	22.8	22.1	23.4	23.1	23.1

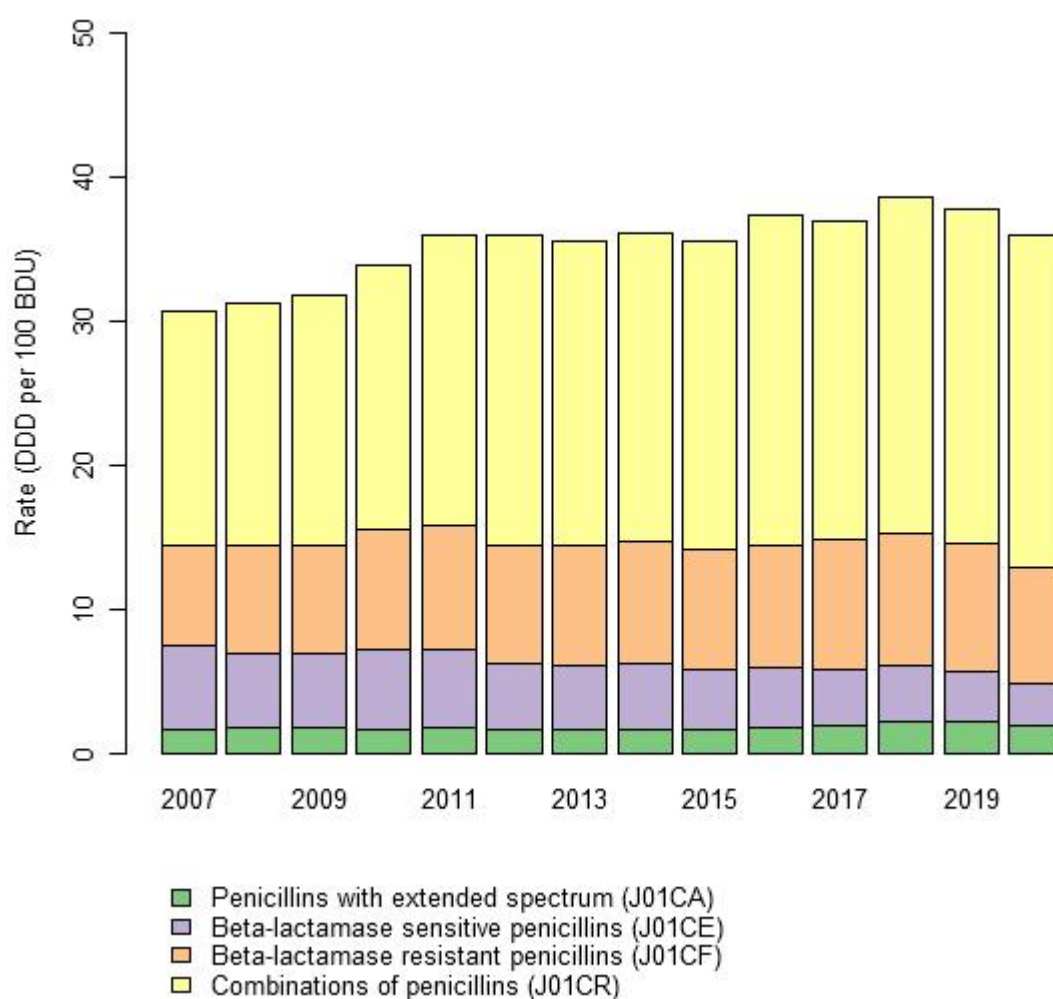


Figure 3. Annual national hospital consumption rate in DDD per 100 BDU of penicillin subgroups. The colours in the bar show the proportion of total use that is accounted for by the subgroup

Note: values are overall means for the national data. Note: *Results provisional to the end of 2020Q2

Table 4. Annual national hospital cephalosporin subgroup, monobactams and carbapenems consumption rate in DDD per 100 BDU

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020*
First-generation cephalosporins (J01DB)	0.2	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.6	0.6
Second-generation cephalosporins (J01DC)	2.5	2.4	2.5	2.5	2.4	2.5	2.5	2.7	2.6	2.8	2.7
Third-generation cephalosporins (J01DD)	1.7	1.6	1.7	1.7	1.8	1.8	2	3.1	3	3.1	3.6
Fourth-generation cephalosporins (J01DE)	0	0	0	0	0	0	0	0	0	0	0
Monobactams (J01DF)	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.4
Carbapenems (J01DH)	1.6	1.7	1.9	2.3	2.6	2.5	2.4	2.2	1.9	2	2.2
Other cephalosporins (J01DI)	0	0	0	0	0	0	0	0	0	0	0

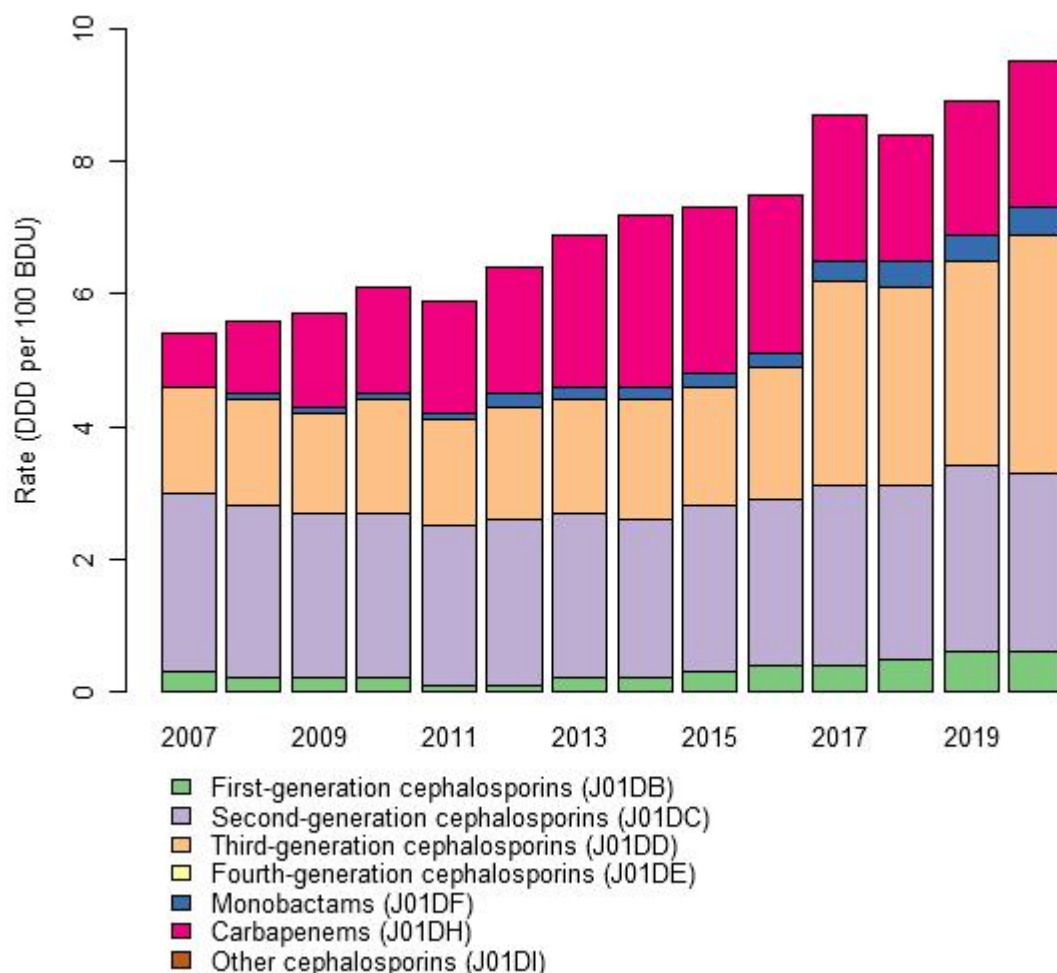


Figure 4. Overall annual national hospital cephalosporin subgroups, monobactam and carbapenem consumption rate in DDD per 100 BDU. The colours in the bar show the proportion of total use that is accounted for by the subgroup

Note: values are overall means for the national data. Note: *Results provisional to the end of 2020Q2

Table 5. Summary of data by hospital groups

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Note: values are overall means for the hospital groups. Note: *Results provisional to the end of 2020Q2

General Notes

Background

Using a protocol developed in conjunction with clinical pharmacists, quarterly antimicrobial data were extracted from appropriate hospital computer systems that record data on dispensed drugs. At the HPSC, the data from individual hospitals were converted to standardised units of doses. Only consumption relating to inpatients was taken further for rate calculation. HPSC's web-based analysis tool, MicroB used for data management.

In this report the Anatomical Therapeutic Chemical (ATC) index is used to classify all drugs used in human medicine into a hierarchical system with five levels. Each systemic antimicrobial substance in conjunction with the route of administration (oral or intravenous) is given a defined daily dose (DDD), which is the assumed average maintenance dose per day for a drug used for its main indication in adults. Figures in this report refer to systemic antibacterial drugs only which are classed as J01.

Limitations

The main limitation for the ATC-DDD system is that the quantities refer to the usual dose that would be prescribed for adults. There are many hospitals in the sample that provide maternity services and/or paediatric care, therefore there is an inherent bias in the system. A further limitation with the ATC-DDD system is that the measure is for the main indication only, but a single drug can be used to treat several different conditions. Additionally the rates for an individual hospital may vary due to changes in case-mix, guidelines for the optimal dosage regimen of an antimicrobial drug, and overall hospital activity levels.

The consumption data are based on the volume of antimicrobial drugs supplied to inpatient areas by hospital pharmacies. The data are not based on individual prescriptions and do not measure the appropriateness of antimicrobial therapy. Thus a hospital may report a high rate of antimicrobial consumption, but this rate may be appropriate to the specific patient population served by that hospital.

Measure Presented

Total acute inpatient antibacterial consumption in Defined Daily Doses per 100 Bed-Days Used (DDD/100BDU) for each hospital is presented. Acute inpatient means that data on drugs dispensed to outpatients, day cases and external facilities are excluded. The denominator data were obtained from the Business Intelligence Unit of the HSE.

Methodological Changes

Starting from 2017, returned items to the dispensary are subtracted from the overall consumption rates. For the 2017 Q1 and Q2 data, this has resulted in a decrease of the overall rate by 1.5-2% for the mean and median values of the major classes of drugs, with decreases to the total antibacterial consumption for individual hospitals ranging from 0% to 9%.

This report uses the 2020 version of the ATC/DDD calculation method, therefore, figures in this report will be different from prior reports. However, in this report historical data have been updated to reflect the current ATC/DDD designations of antimicrobial agents

Links

[Main HPSC reports on antimicrobial consumption in Ireland](#)

[European Surveillance of Antimicrobial Consumption Network \(ESAC-Net\)](#)

[Hospital Pharmacists Association of Ireland](#)

[WHO Collaborative Centre for ATC/DDD index](#)

[Antibiotics section on HPSC website](#)