SURVEILLANCE AND MONITORING

# Antimicrobial consumption in the EU/EEA (ESAC-Net)

## Annual Epidemiological Report for 2024

## Key findings

- For 2024, 28 countries (26 European Union (EU) Member States and two European Economic Area (EEA) countries – Iceland and Norway) reported data on antimicrobial consumption (AMC).
- AMC is expressed as the number of defined daily doses (DDD) per 1 000 inhabitants per day. The Anatomical Therapeutic Chemical (ATC) classification index of 2025 was used for the analysis of 2024 data.
- Results of the five-year linear trend analyses for the period 2020−2024 included in this report are affected by the temporary reduction in AMC during the COVID-19 pandemic years of 2020 and 2021, especially total consumption and community consumption of antibacterials for systemic use (ATC J01). For a longer time series, please refer to ECDC's AMC dashboard available on the ECDC website.

## Risk to the successful achievement of EU AMC targets in 2030

- In 2024, the EU population-weighted mean total consumption (community and hospital sectors combined) of antibacterials for systemic use (ATC group J01) was 20.3 DDD per 1 000 inhabitants per day (country range 9.8−29.9). This was 2% higher than in 2019 (baseline year), and 4.4 DDD per 1 000 inhabitants per day higher than the 2030 target of 15.9 DDD per 1 000 inhabitants per day.
- The EU population-weighted mean percentage of consumption of World Health Organization (WHO) AWaRe Access group antimicrobials was 60.3% in 2024 (country range 38.6%−80.9%). This was 1.0 percentage points lower than 2019 (baseline year) and 4.7 percentage points below the 2030 target of $\geq$ 65%.

## Increases and large variations in relative antimicrobial consumption across EU/EEA countries

### *Community (primary care sector)*

- In the community, the EU/EEA population-weighted mean consumption of antibacterials for systemic use (ATC group J01) was 18.8 DDD per 1 000 inhabitants per day (country range: 9.0–27.8) in 2024. For the EU/EEA overall, there was a statistically significant increasing trend between 2020 and 2024.
- At EU/EEA level, the most consumed subgroup of antimicrobials was penicillins (J01C) (47%), followed by macrolides, lincosamides and streptogramins (J01F) (18%); cephalosporins and other beta-lactams (J01D) (11%); tetracyclines (J01A) (9%); quinolones (J01M) (6%); other antibacterials (J01X) (5%); sulfonamides and trimethoprim (J01E) (3%), and 'minor groups combined' (J01B, J01G and J01R) (0.4%). Between 2020 and 2024, statistically significant increasing trends were observed for penicillins (J01C) and macrolides, lincosamides and streptogramins (J01F), while statistically significant decreasing trends were observed for 'minor groups combined' (J01B, J01G, and J01R) and other antibacterials (J01X).
- The EU/EEA population-weighted mean ratio of consumption of mainly 'broad-spectrum' penicillins, cephalosporins, macrolides (except erythromycin) and fluoroquinolones to the consumption of narrow-spectrum penicillins, cephalosporins and erythromycin in the community was 4.6 (country range: 0.1–49.1). During the period 2020–2024, a statistically significant increasing trend was observed for this ratio in the EU/EEA overall.

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### *Hospital sector*

- In the hospital sector, the EU/EEA population-weighted mean consumption of antibacterials for systemic use (ATC group J01) was 1.67 DDD per 1 000 inhabitants per day in 2024 (country range 0.79–2.50). Between 2020 and 2024, no statistically significant trend was observed in the EU/EEA overall.
- At EU/EEA level, the most commonly consumed subgroup in 2024 was penicillins (J01C) (34%), followed by cephalosporins and other beta-lactams (J01D) (28%); other antibacterials (J01X) (11%); quinolones (J01M) (9%); macrolides, lincosamides and streptogramins (J01F) (8%); sulfonamides and trimethoprim (J01E) (4%); tetracyclines (J01A) (3%) and 'minor groups combined' (J01B, J01G, and J01R) (3%). Between 2020 and 2024, statistically significant increasing trends were observed at EU/EEA level for tetracyclines (J01A) penicillins (J01C), cephalosporins and other beta-lactams (J01D) and other antibacterials (J01X). During the same period, significantly decreasing trends were observed at EU/EEA level for sulfonamides and trimethoprim (J01E), macrolides, lincosamides and streptogramins (J01F), quinolones (J01M) and 'minor groups combined' (J01B, J01G, and J01R).
- In 2024, the proportion of mainly 'broad-spectrum' antimicrobials (ATC groups J01XA, J01DD, J01DE, J01DF, J01DH, J01MA, J01XB, J01CR05, J01XX08, J01XX11, and J01XX09) consumed out of all hospital sector consumption of antibacterials for systemic use was 39.6% (country range 18.3%–63.9%). During the period 2020–2024, there was no statistically significant trend detected for the EU/EEA overall.
- The EU population-weighted mean percentage of WHO AWaRe Reserve group antimicrobials consumed in the hospital sector was 5.4% (country range 0.7%–14.4%) in 2024. A statistically significant increasing trend was observed between 2020 and 2024 for the EU/EEA overall.

## Public health conclusions

- The poor progress towards the EU targets on antimicrobial consumption and the continued increase in the consumption of WHO AWaRe Reserve group antimicrobials highlights the need to strengthen efforts to address unnecessary and inappropriate antimicrobial use at all levels of healthcare (i.e. community, hospital and long-term care sectors) in the EU/EEA.
- As emphasised in the Council Recommendation on stepping up EU actions to combat antimicrobial resistance in a One Health approach (2023/C 220/01), national action strategies should include key elements to promote prudent use of antimicrobials, including antimicrobial stewardship programmes integrated into good diagnostic practices, and infection prevention and control activities. The Council Recommendation also emphasises the importance of the timely availability of standardised data on antimicrobial consumption for benchmarking, and on antimicrobial resistance for clinical guidance.

# Background

Antimicrobial resistance (AMR) is considered one of the main threats to public health in the EU and the EEA [1], with over 35 000 deaths attributable to infections with antibiotic-resistant bacteria estimated in 2020 [2]. Antimicrobial use exerts ecological pressure on bacteria and contributes to the emergence and selection of resistant types, which is why ensuring prudent antimicrobial use is the key to an effective response to AMR. The importance of AMC surveillance data to guide and evaluate interventions targeting AMR is highlighted at both EU [3] and global level [4-5].

# Data sources and methods

The European Surveillance of Antimicrobial Consumption Network (ESAC-Net) is an EU/EEA-wide network of national surveillance systems providing European reference data on AMC. The network is coordinated by the European Centre for Disease Prevention and Control (ECDC) and covers all EU/EEA countries.

This report is mainly based on data reported to ESAC-Net for the period 2020 to 2024, and for 2019 to 2024 in order to monitor the progress towards the EU targets on antimicrobial consumption. Data were retrieved from the ECDC EpiPulse Cases (EPC) system on 1 October 2025. EPC is a system for the collection, storage, analysis and dissemination of data on communicable diseases and special health issues, also allowing for the correction and supplementation of historical data at any time. The latest report therefore supersedes previous reports and reflects the most recent available data.

# Methodological framework

AMC reported through ESAC-Net refers to the volume of antimicrobials sold, dispensed or reimbursed within a setting, and does not reflect the actual use (e.g. ingestion, inhalation or injection) of antimicrobials. Consumption is measured through sales data (sales or distribution reports from wholesalers, pharmacies or market research companies) or reimbursement data (financial claims from legitimate beneficiaries, from prescribers or from dispensing pharmacies, including information from national drug registers).

AMC data are reported for the community (primary care) and hospital sectors separately. If it was not possible to differentiate between AMC in the community and hospital sectors, data could be reported as 'total care', including both community and hospital sectors combined. However, this is not the preferred option for reporting and is only acceptable if the data cannot be subdivided by sector [6]. An overview of national data sources and healthcare sector coverage is available in Table 1.

To ensure standardisation and comparability, ESAC-Net uses the World Health Organization (WHO) Anatomical Therapeutic Chemical (ATC)/Defined Daily Dose (DDD) index to classify antimicrobial substances and measure AMC. For the collection of 2024 data, and for historic data updates, DDD listed in the ATC/DDD Index for 2025 were used [7]. For more information on the ATC/DDD methodology, please refer to the Guidelines for ATC classification and DDD assignment published by the WHO Collaborating Centre for Drug Statistics Methodology [8].

Methenamine (ATC J01XX05) has been included among the antibacterials for systemic use (J01) since 2000 although it is a urinary tract antiseptic rather than an antimicrobial. Methenamine consumption is comparatively high in the Nordic region and is usually excluded in national reports on antimicrobial consumption from these countries. The ESAC-Net framework is strictly based on the ATC system and therefore includes methenamine in the rates of consumption of antibacterials for systemic use, which has an impact on comparability with national reports and with other EU/EEA countries where methenamine consumption is low or non-existent.

For a detailed description of the ESAC-Net methodology, including meta data specifications, please refer to the latest ESAC-Net reporting protocol [6].

# Antimicrobial consumption indicators

ESAC-Net monitors several AMC indicators, providing standardised metrics to enable benchmarking and trend analyses. A subset of the indicators is presented in this report, and more are available from ECDC's online AMC database [9].

## Defined daily doses (DDD) per 1 000 inhabitants per day

The number of defined daily doses (DDD) per 1 000 inhabitants per day provides a rough estimate of the proportion of the population treated daily with antimicrobials. DDD is a technical unit for measurement of AMC which does not necessarily reflect the recommended dose for treatment. To calculate population-based rates of AMC, the Eurostat population data for each respective country and year was used [10], unless the country provided an alternative denominator directly to ECDC [6]. In accordance with the WHO definition, the number of days per year is fixed to 365, and does not take leap years into account [11].

Total consumption (community and hospital sectors combined) of antibacterials for systemic use (ATC group J01) expressed as DDD per 1 000 inhabitants per day is the primary ESAC-Net indicator. This indicator has been selected as the primary harmonised outcome indicator by an expert group convened by ECDC, the European Food Safety Authority (EFSA) and the European Medicines Agency (EMA) [12]. It is also the main indicator recommended by the Council to set up an EU target for AMC [3] (see section 'EU targets on antimicrobial consumption'). In addition, this report also presents data measured as DDD per 1 000 inhabitants per day for several antimicrobial subgroups and separately for the community and the hospital sector. Additional data are available from ECDC's online AMC database [9].

## ECDC/EFSA/EMA secondary AMC indicators

The ECDC/EFSA/EMA secondary AMC indicators aim to describe the relative distributions of antibacterials for systemic use (ATC J01), mainly according to their spectrum of activity (e.g. broad- versus narrow-spectrum) and separately for the community and the hospital sectors [12].

The secondary AMC indicator for the community sector is the ratio of consumption of mainly broad-spectrum penicillins, broad-spectrum cephalosporins, macrolides (except erythromycin) and fluoroquinolones (ATC groups J01(CR+DC+DD+(FA– FA01)+MA)) to the consumption of narrow-spectrum penicillins, narrow-spectrum cephalosporins and erythromycin (ATC groups J01(CA+CE+CF+DB+FA01)).

The secondary AMC indicator for the hospital sector is the proportion of glycopeptides (ATC group J01XA), third and fourth-generation cephalosporins (J01DD and J01DE), monobactams (J01DF), carbapenems (J01DH), fluoroquinolones (J01MA), polymyxins (J01XB), piperacillin and enzyme inhibitor (J01CR05), linezolid (J01XX08), tedizolid (J01XX11), and daptomycin (J01XX09) out of total hospital consumption of antibacterials for systemic use.

## World Health Organization (WHO) Access, Watch and Reserve (AWaRe) classification of antimicrobials

The WHO Access, Watch and Reserve (AWaRe) classification of antimicrobials is a tool to evaluate and monitor antibiotic use and support antibiotic stewardship efforts, emphasising the importance of prudent use of antimicrobials [13-14]. WHO AWaRe Access antimicrobials are mostly first- and second-line therapies that offer the best therapeutic value, while minimising the potential for AMR. WHO AWaRe Watch antimicrobials have a broad spectrum of activity and stewardship efforts should limit their empiric use to severe infections or infections with bacteria that are more likely to be resistant to Access antimicrobials. WHO AWaRe Reserve antimicrobials include antimicrobials of last-resort and should be saved for treatment of infections caused by multidrug-resistant organisms. The analysis is based on the latest classification, published by WHO in 2025 [13].

This report presents data on the percentage of WHO AWaRe Access group antimicrobials consumed in the community and hospital sectors combined, as well as the percentage of Reserve group antimicrobials in the hospital sector. More data, presented according to the AWaRe classification, are available from ECDC's online AMC database [9].

The denominator used for WHO AWaRe group percentages includes consumption of all antibacterials for systemic use (ATC J01), as well as the additional antimicrobials outside of the J01 group listed in the WHO AWaRe index. Methenamine (ATC J01XX05) is not assigned to any WHO AWaRe category and is therefore included in the Unclassified group when analysing WHO AWaRe percentages. This may affect the WHO AWaRe group percentages for EU/EEA countries with a proportionally high consumption of methenamine.

# Population-weighted mean consumption rates

All EU mean and EU/EEA mean AMC rates presented in this report are population-weighted. These were calculated by multiplying the AMC rate for each country with the corresponding Eurostat population, summarising all products and dividing the sum by the total population of all countries included. Annual population data were retrieved from the Eurostat online database on 25 August 2025 [10].

As the EU and EU/EEA population-weighted means are used to assess trends across multiple countries over time, the countries included in the calculation (and hence the population under surveillance) needs to be consistent across all years included. The EU/EEA population-weighted means might therefore differ slightly depending on the years included, the countries' reporting activity during this period and possible imputations used to account for missing data (see details below).

## Missing data

When national data were missing in EPC, imputations or data retrieved from external data sources were sometimes used to calculate the population-weighted means. The choices to include imputations and the related methodology were based on the number of years of missing data and access to alternative external data sources. No imputations were performed and no external data sources were used to calculate EU/EEA means outside of the ATC J01 group.

For Czechia, data disaggregated by community and hospital sectors were not available for 2020 and were imputed using the national sectors- and antimicrobial group-specific community-to-hospital sector ratios from 2021 to the national total antimicrobial group specific consumption data reported for 2020. These imputations were used for all the population-weighted means for antibacterials for systemic use (ATC J01) included in this report. For Cyprus, no data were available for 2023, and data from 2020–2022 were not disaggregated by sector. For total consumption of ATC J01, the missing 2023 data were imputed by using the mean of the 2022 and 2024 data points. No imputations were performed for sector-specific data. For Germany, imputations to account for missing hospital sector data for the years 2020–2022 for ATC group J01 were done by using the overall EU/EEA community-to-hospital sector ratio. For Sweden, no data were reported to ECDC for the period 2022–2024 due to national reporting restrictions. The latest available data, submitted for 2022 and in an aggregated format outside of EPC, were used for 2023 and 2024. While data for Czechia were imputed for all population-weighted mean calculations for ATC J01 included in this report, data for Germany were only imputed for total consumption of ATC J01, and data for Cyprus and Sweden were only imputed for total consumption of ATC J01 and the percentage of WHO AWaRe Access group consumption.

For Denmark, 2024 data were exceptionally submitted outside of EPC due to reorganisations at the data holder agency. Due to differences in reporting frameworks, the external data were not directly comparable to data previously reported to ESAC-Net. Liechtenstein does not report data to ESAC-Net and is therefore not included in any EU/EEA population-weighted means.

## Trend analyses

To assess the statistical significance of trends, a linear regression model was applied to the five-year time series using STATA/SE 17.0. To describe the trends, the terms 'increase' or 'decrease' were only used if the p-value for the regression coefficient was statistically significant ($p \leq 0.05$).

For national data, trend analyses were only performed for countries reporting data for all years during the period 2020–2024, and when there were no major changes to their national surveillance frameworks.

No trend analyses were performed for antimycotics and antifungals for systemic use (ATC groups J02 and D01B), due to recent introduction of formulation-specific DDD assignments for parenteral amphotericin B (ATC J02AA01). As the information needed to apply this update is incomplete in ESAC-Net data reported before 2024, historical data can only be partially updated, with a subsequent impact on the 2020–2024 time series.

# EU targets on antimicrobial consumption

In 2023, the Council of the European Union adopted a Council Recommendation on stepping up EU actions to combat antimicrobial resistance in a One Health approach (2023/C 220/01), which invites EU Member States to take appropriate national measures to reduce human AMC. This reduction is measured as two concrete AMC targets set at EU level for 2030, with corresponding individual recommended targets for each Member State based on the national situation in 2019 [3].

The first EU AMC target is to reduce the population-weighted total consumption of antibacterials for systemic use (ATC J01), measured as DDD per 1 000 inhabitants per day in the community and hospital sectors combined, by 20% by 2030 compared with 2019 (baseline year), i.e. from 19.9 DDD per 1 000 inhabitants per day in 2019 to 15.9 DDD per 1 000 inhabitants per day in 2030. To help reach the EU target, Member State reductions in AMC were recommended, ranging from 3% to 27% between 2019 and 2030, depending on the total consumption in the baseline year (see Table 2 for details).

The second EU AMC target is to have at least 65% of WHO AWaRe group antibiotic consumption coming from the Access group by 2030 [3]. All individual Member States are recommended to reach the same target as set at EU level. For this year's report, all results have been updated according to the latest AWaRe classification published in September 2025 [13], including the historical data. The EU target is more ambitious than the global target of at least 60% of Access group consumption, as defined by WHO in their 13th General Programme of Work 2019–2023 [15], but lower than the 70% threshold suggested at the United Nations General Assembly High-Level Meeting on Antimicrobial Resistance in 2024 [5].

# Findings

## Data availability

Data from 28 countries, including 26 EU Member States and two EEA countries (Iceland and Norway), were included in the analyses. AMC data were mainly based on sales of antimicrobials, or a combination of sales and reimbursement data (Table 1). Definitions and coverage of healthcare sectors varied between countries; Finland included consumption in remote primary care centres and nursing homes in the hospital sector data, and Portugal's hospital sector data only refers to antimicrobials consumed in public hospitals on the mainland. Not all countries included data from long-term care facilities when reporting to ESAC-Net; Ireland and Norway reported incomplete long-term care facilities data, and the Netherlands did not report any long-term care facilities data at all (Table 1). This results in an underestimation of total AMC in these countries and affects the general comparability of AMC with other countries. For the remaining countries, long-term care facility AMC was mainly reported as community sector data, or partly with community data and partly with hospital sector data. Lithuania reported all long-term care facility consumption with the hospital sector data. These differences affect comparability of sector-specific data between countries.

**Table 1. ESAC-Net antimicrobial consumption data sources and inclusion of data from long-term care facilities (LTCF), EU/EEA countries, 2024**

| Country | Community sector data source | Hospital sector data source | LTCF inclusion (Sector) |
|---|---|---|---|
| Austria | R | S | Yes (C/H) |
| Belgium | R | R | Yes (C) |
| Bulgaria | S | S | Yes (C/H) |
| Croatia | R | R | Yes (C) |
| Cyprus | R | S/R | Yes (C/H) |
| Czechia | S/R | S/R | Yes (C/H) |
| Denmark | S | S | Yes (C) |
| Estonia | S | S | Yes (C/H) |
| Finland* | S | S | Yes (C/H) |
| France** | S | S | Yes (C/H) |
| Germany | R | Other | Yes (C) |
| Greece | S/R | S | Yes (C/H) |
| Hungary | S | S | Yes (C) |
| Iceland | S | S | Yes (C) |
| Ireland | S | S | Partly (C) |
| Italy | S/R | R | Yes (C/H) |
| Latvia | S | S | Yes (C) |
| Liechtenstein | ND | ND | ND |
| Lithuania | S | S | Yes (H) |
| Luxembourg | R | S | Yes (C) |
| Malta | S/R | S/R | Yes (C) |
| Netherlands | S | S | No |
| Norway | S/R | S | Partly (C) |
| Poland | S | S | Yes (C) |
| Portugal*** | R | S/R | Yes (C) |
| Romania | S | R | Yes (C/H) |
| Slovakia | S | S | Yes (C/H) |
| Slovenia | S/R | S/R | Yes (C) |
| Spain | S/R | S/R | Yes (C) |
| Sweden | ND | ND | ND |

*LTCF: Long-term care facility, S= sales data, R= reimbursement data, C= LTCF data included with community sector data, H=LTCF data included with hospital sector data, C/H = LTCF data partly reported with community data and partly with hospital sector data, ND= no data.*

** Finland included consumption in remote primary care centres and nursing homes in hospital data.*
*** France reports AMC from nursing homes partly with community sector data and partly with hospital sector data; LTCF AMC is included in the hospital sector data.*
**** Portugal's hospital sector data only refers to antimicrobials consumed in public hospitals on the mainland.*

# Progress towards the EU targets on antimicrobial consumption

## Total consumption (community and hospital sectors combined) of antibacterials for systemic use (ATC group J01)

In 2024, the EU population-weighted mean total consumption (community and hospital sectors combined) of antibacterials for systemic use (ATC group J01) was 20.3 DDD per 1 000 inhabitants per day, which was 2% higher than in the target baseline year (2019). For the EU overall, there was a statistically significant increasing trend detected for the last five years between 2020 and 2024, which remained significant when expanded to include all EU/EEA countries (Table 2).

At EU/EEA country-level, total AMC in 2024 ranged from 9.8 DDD per 1 000 inhabitants per day in the Netherlands to 29.9 in Greece. Among the 26 EU/EEA countries reporting data for all years during 2020–2024, a majority (15 countries) showed a significantly increasing trend between 2020 and 2024, while no country had a significant decreasing trend during the same period. Trend analyses are affected by the fact that community consumption of antibacterials for systemic use was considerably lower in 2020 and 2021 than in previous years due to the ongoing COVID-19 pandemic [16-17]. For a longer time series including pre-pandemic years, please refer to ECDC's AMC dashboard available on the ECDC website [9].

A majority of the EU countries (17/25 countries) had a higher consumption in 2024 compared to the target's baseline year of 2019, and no country had yet reached its 2030 target (Table 2).

## Percentage of WHO AWaRe Access group antimicrobials consumed out of total consumption (community and hospital sectors combined)

The EU population-weighted mean percentage of WHO AWaRe Access group antimicrobials was 60.3% in 2024, which was 1.0 percentage points lower than in 2019 (baseline year) and 4.7 percentage points below the 2030 target of $\geq$ 65%. For the EU overall, there was no statistically significant trend detected for the last five years between 2020 and 2024 (Table 3).

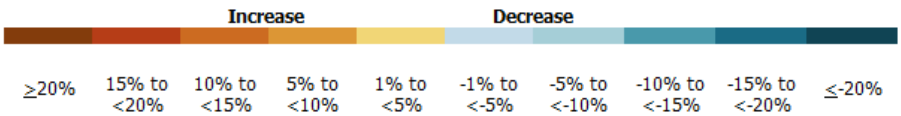
At EU/EEA country-level, the percentage ranged between 38.6% (Slovakia) and 80.9% (Iceland). Three countries (Finland, France and the Netherlands) had significant increasing trends for the last five years between 2020 and 2024.

Among the EU countries, nine countries had already reached the 2030 target of $\geq$ 65%, however all these countries were already at the target in 2019 (baseline year). Among the 25 Member States providing data for all years during the period 2019–2024, a majority (13 countries) had a higher percentage of consumption for WHO AWaRe Access group antimicrobials in 2024 than in 2019 (Table 3).

**Table 2. Total consumption (community and hospital sectors combined) of antibacterials for systemic use (ATC group J01), (expressed as DDD per 1 000 inhabitants per day), with related EU AMC target framework, EU/EEA countries, 2019–2024**

| Country | 2020 | 2021 | 2022 | 2023 | 2024 | Trend 2020–2024 | | 2030 EU AMC target[a] | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Baseline 2019 | Target 2030 | Recommended reduction (%) 2019–2030 | Observed change (%) 2019–2024 |
| Austria | 8.8 | 8.8 | 10.5 | 11.3 | 11.8 | | ↑ | 11.6 | 11.2 | -3% | +2% |
| Belgium | 16.7 | 17.4 | 20.5 | 20.6 | 20.6 | | ↑ | 21.4 | 17.5 | -18% | -4% |
| Bulgaria | 24.0 | 25.9 | 27.1 | 26.3 | 23.4 | | | 21.7 | 17 | -18% | +8% |
| Croatia | 15.7 | 18.2 | 20.2 | 21.2 | 22.0 | | ↑ | 18.8 | 17.1 | -9% | +17% |
| Cyprus | 28.9 | 25.0 | 33.5 | | 23.5 | | NA | 30.1 | 22.0 | -27% | -22% |
| Czechia[b] | 13.4 | 13.7 | 17.1 | 18.1 | 19.0 | | NA | 16.9 | 15.4 | -9% | +12% |
| Denmark[c] | 14.3 | 14.4 | 15.2 | 16.2 | 16.1 | | NA | 15.3 | 13.9 | -9% | +5% |
| Estonia | 10.5 | 10.1 | 12.4 | 12.7 | 13.0 | | ↑ | 11.8 | 11.4 | -3% | +10% |
| Finland | 11.9 | 11.3 | 12.5 | 12.9 | 13.7 | | ↑ | 14.7 | 13.4 | -9% | -7% |
| France | 20.3 | 21.5 | 24.3 | 24.1 | 26.5 | | ↑ | 25.1 | 18.3 | -27% | +6% |
| Germany | | | | 13.3 | 13.8 | | NA | | 11.5 | -9% | NA |
| Greece[b] | 28.1 | 23.5 | 32.9 | 28.5 | 29.9 | | NA | 34.1 | 24.9 | -27% | -12% |
| Hungary | 11.2 | 11.9 | 14.4 | 14.2 | 13.7 | | | 14.4 | 13.1 | -9% | -5% |
| Iceland | 16.5 | 16.8 | 18.6 | 18.5 | 19.6 | | ↑ | 19.3 | NA | | +2% |
| Ireland | 18.6 | 17.8 | 23.1 | 22.4 | 23.0 | | | 22.8 | 16.6 | -27% | +1% |
| Italy | 18.4 | 17.5 | 21.9 | 23.1 | 22.3 | | | 21.7 | 17.8 | -18% | +3% |
| Latvia | 11.9 | 11.6 | 14.9 | 14.9 | 15.4 | | ↑ | 13.9 | 12.6 | -9% | +11% |
| Lithuania | 14.2 | 14.1 | 18.5 | 18.7 | 19.7 | | ↑ | 16.3 | 14.7 | -9% | +21% |
| Luxembourg | 16.1 | 15.9 | 19.1 | 20.2 | 21.6 | | ↑ | 21.1 | 17.3 | -18% | +2% |
| Malta | 16.6 | 15.8 | 24.0 | 22.9 | 24.8 | | | 20.7 | 17.0 | -18% | +20% |
| Netherlands | 8.5 | 8.3 | 9.1 | 9.6 | 9.8 | | ↑ | 9.5 | 9.2 | -3% | +4% |
| Norway | 13.9 | 14.0 | 15.3 | 15.5 | 16.1 | | ↑ | 14.9 | NA | | +8% |
| Poland | 18.5 | 20.6 | 24.1 | 23.2 | 22.6 | | | 23.6 | 17.2 | -27% | -4% |
| Portugal | 15.2 | 15.3 | 18.8 | 19.7 | 20.8 | | ↑ | 19.3 | 17.6 | -9% | +8% |
| Romania | 25.2 | 25.7 | 27.6 | 27.4 | 25.2 | | | 25.8 | 18.8 | -27% | -2% |
| Slovakia | 14.4 | 16.0 | 20.8 | 20.1 | 20.4 | | | 19.3 | 17.6 | -9% | +5% |
| Slovenia | 10.2 | 10.2 | 12.4 | 13.4 | 14.4 | | ↑ | 13.0 | 11.8 | -9% | +11% |
| Spain | 19.7 | 20.0 | 23.2 | 24.1 | 24.2 | | ↑ | 24.9 | 18.2 | -27% | -3% |
| Sweden[c] | 10.3 | 10.1 | 11.2 | | | | NA | 11.8 | 11.4 | -3% | NA |
| **EU/EEA[d]** | **16.4** | **16.4** | **19.4** | **20.1** | **20.2** | | ↑ | **19.8** | **NA** | | |
| **EU[e]** | **16.4** | **16.5** | **19.4** | **20.1** | **20.3** | | ↑ | **19.9** | **15.9** | **-20%** | **+2%** |

**Progress towards EU target**



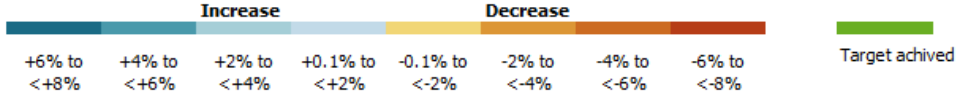

*= Total care data (community and hospital sectors combined) not reported.*
*The symbols ↑ and ↓ indicate a statistically significant increasing and decreasing trend.*
*NA = Not applicable. Trend analyses were not performed because of missing data, changes in the type of data or change in data process.*

*a) As per the Council Recommendation on stepping up EU actions to combat antimicrobial resistance in a One Health approach (2023/C 220/01) [3]. Only relevant to EU Member States and excluding EEA countries (Iceland and Norway).*
*b) Czechia and Greece changed their data collection process during the period, which could have an impact on comparability with previous years.*
*c) External data were used for Denmark in 2024 and Sweden in 2022, with an impact on data comparability to previous years.*
*d) EU/EEA refers to the population-weighted mean consumption, based on data from all 27 current EU Member States and two EEA countries (Iceland and Norway). Imputations have been included as described in the 'Methods' section.*
*e) EU refers to the population-weighted mean consumption, based on data from all 27 current EU Member States. Imputations have been included as described in the 'Methods' section.*

**Table 3. Percentage (%) of WHO AWaRe Access group antimicrobials consumed out of total AWaRe consumption (community and hospital sectors combined), EU/EEA countries, 2019–2024**

| Country | 2020 | 2021 | 2022 | 2023 | 2024 | Trend 2020–2024 | | 2030 EU AMC target of ≥ 65% Access group[a] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Baseline 2019 (%) | Increase needed 2019-2030 to reach >=65% target (percentage points) | Observed change 2019-2024 (percentage points) |
| Austria | 60.9 | 60.5 | 60.5 | 62.6 | 64.2 | | | 59.4 | 5.6 | +4.8 |
| Belgium | 67.2 | 68.3 | 69.4 | 68.8 | 68.3 | | | 67.8 | None | +0.5 |
| Bulgaria | 40.5 | 38.3 | 40.7 | 42.0 | 40.7 | | | 45.1 | 19.9 | -4.4 |
| Croatia | 61.7 | 60.3 | 60.1 | 60.7 | 61.3 | | | 63.0 | 2.0 | -1.7 |
| Cyprus | 44.3 | 48.3 | 55.4 | | 43.2 | | NA | 48.9 | 16.1 | -5.7 |
| Czechia[b] | 62.5 | 61.9 | 59.8 | 61.3 | 59.4 | | NA | 61.3 | 3.7 | -1.9 |
| Denmark[c] | 79.0 | 79.3 | 80.1 | 80.1 | 80.0 | | NA | 78.4 | None | +1.6 |
| Estonia | 61.1 | 63.7 | 64.0 | 64.2 | 64.2 | | | 61.3 | 3.7 | +2.9 |
| Finland | 70.3 | 70.4 | 72.3 | 74.0 | 75.7 | | ↑ | 73.2 | None | +2.5 |
| France | 70.5 | 72.4 | 71.4 | 72.8 | 74.8 | | ↑ | 72.0 | None | +2.8 |
| Germany | 60.4 | 60.4 | 60.4 | 60.4 | 62.8 | | NA | | | NA |
| Greece[b] | 48.6 | 51.9 | 42.6 | 42.0 | 43.0 | | NA | 46.8 | 18.2 | -3.8 |
| Hungary | 51.0 | 49.2 | 49.1 | 50.3 | 51.2 | | | 50.5 | 14.5 | +0.7 |
| Iceland | 83.0 | 83.3 | 83.7 | 82.1 | 80.9 | | | 82.9 | NA | -2.0 |
| Ireland | 70.8 | 73.7 | 74.0 | 75.1 | 74.8 | | | 70.3 | None | +4.5 |
| Italy | 47.2 | 47.8 | 47.2 | 50.8 | 51.3 | | | 48.9 | 16.1 | +2.4 |
| Latvia | 69.4 | 71.2 | 70.8 | 71.6 | 67.7 | | | 68.6 | None | -0.9 |
| Lithuania | 67.6 | 70.5 | 70.7 | 66.6 | 64.6 | | | 68.3 | None | -3.7 |
| Luxembourg | 60.2 | 60.6 | 60.8 | 61.7 | 60.5 | | | 59.5 | 5.5 | +1.0 |
| Malta | 54.7 | 58.0 | 55.0 | 56.0 | 55.1 | | | 49.9 | 15.1 | +5.2 |
| Netherlands | 70.1 | 70.2 | 71.0 | 71.8 | 71.5 | | ↑ | 71.2 | None | +0.2 |
| Norway | 58.8 | 58.8 | 62.0 | 61.4 | 60.9 | | | 64.1 | NA | -3.2 |
| Poland | 62.9 | 60.9 | 56.7 | 60.4 | 56.5 | | | 60.4 | 4.6 | -3.8 |
| Portugal | 61.6 | 61.6 | 61.0 | 62.5 | 61.4 | | | 61.4 | 3.6 | -0.1 |
| Romania | 49.9 | 49.0 | 50.3 | 51.2 | 49.0 | | | 52.8 | 12.2 | -3.8 |
| Slovakia | 43.6 | 40.2 | 37.7 | 41.7 | 38.6 | | | 42.4 | 22.6 | -3.7 |
| Slovenia | 70.3 | 69.6 | 72.2 | 73.3 | 70.2 | | | 73.1 | None | -2.9 |
| Spain | 61.9 | 62.3 | 61.2 | 61.8 | 61.0 | | | 63.0 | 2.0 | -2.0 |
| Sweden[c] | 68.0 | 67.6 | 69.0 | | | | NA | 71.0 | None | NA |
| **EU/EEA[d]** | **60.5** | **60.8** | **60.0** | **61.6** | **60.3** | | | **61.3** | **NA** | |
| **EU[e]** | **60.5** | **60.8** | **59.9** | **61.6** | **60.3** | | | **61.2** | **3.8** | **-1.0** |

**Progress towards EU target**




*= Total care data (community and hospital sectors combined) not reported.*
*The symbols ↑ and ↓ indicate a statistically significant increasing and decreasing trend.*
*NA = Not applicable. Trend analyses were not performed because of missing data, changes in the type of data or change in data process.*

*a) As per the Council Recommendation on stepping up EU actions to combat antimicrobial resistance in a One Health approach (2023/C 220/01) [3]. Only relevant to EU Member States and excluding EEA countries (Iceland and Norway).*
*b) Czechia and Greece changed their data collection process during the period, which could have an impact on comparability with previous years.*
*c) External data were used for Denmark in 2024 and Sweden in 2022, with an impact on data comparability to previous years.*
*d) EU/EEA refers to the population-weighted mean consumption, based on data from 26 current EU Member States and two EEA countries (Iceland and Norway). Imputations have been included as described in the 'Methods' section.*
*e) EU refers to the population-weighted mean consumption, based on data from 26 current EU Member States. Imputations have been included as described in the 'Methods' section.*

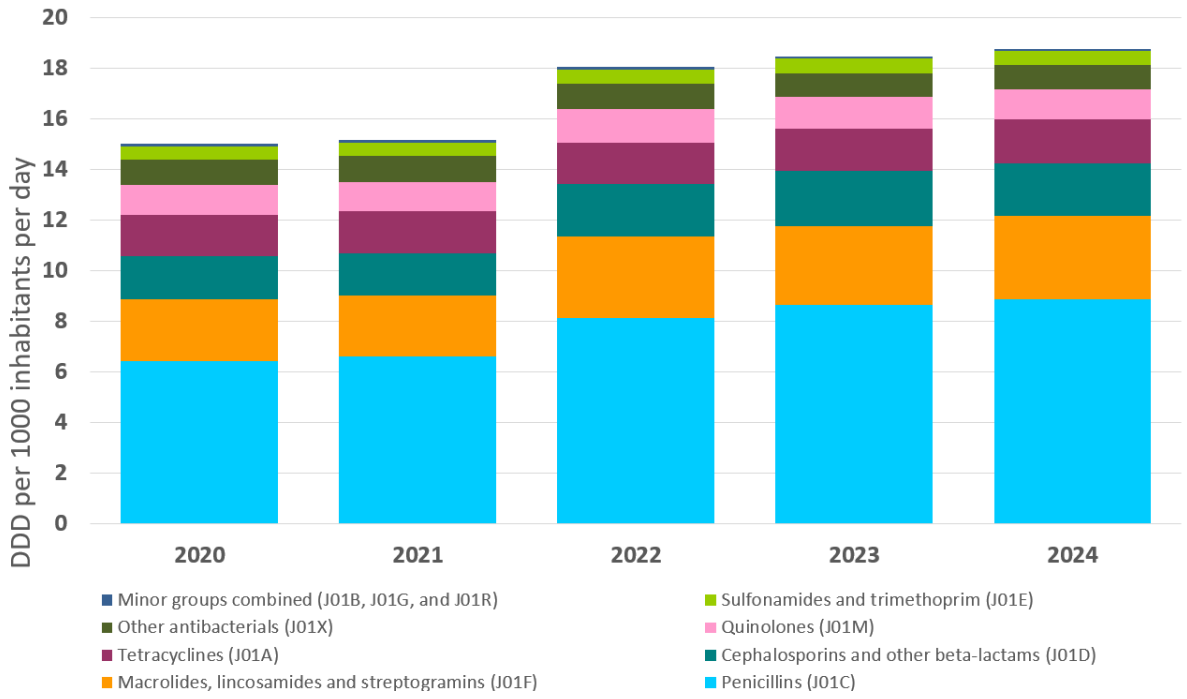
## Community consumption of antibacterials for systemic use (ATC group J01)

The EU/EEA population-weighted mean consumption of antibacterials for systemic use in the community (i.e. outside of the hospital sector) was 18.8 DDD per 1 000 inhabitants per day in 2024. At country level, community consumption ranged from 9.0 DDD per 1 000 inhabitants per day in the Netherlands to 27.8 in Greece. There was a statistically significant increasing trend detected for the EU/EEA overall between 2020 and 2024. At country level, statistically significant increasing trends were observed for 17 countries, while no country had a significant decreasing trend during the same period (Table 4). Trend analyses are affected by the fact that community consumption of antibacterials for systemic use was considerably lower in 2020 and 2021 than in previous years due to the ongoing COVID-19 pandemic [16-17]. For a longer time series including pre-pandemic years, please refer to ECDC's AMC dashboard available on the ECDC website [9].

The community consumption of major sub-groups of antibacterials for systemic use (ATC group J01) between 2020 and 2024 is presented in Figure 1. At EU/EEA level in 2024, the most commonly consumed sub-group was penicillins (J01C) (47%), followed by macrolides, lincosamides and streptogramins (J01F) (18%); cephalosporins and other beta-lactams (J01D) (11%); tetracyclines (J01A) (9%); quinolones (J01M) (6%); other antibacterials (J01X) (5%); sulfonamides and trimethoprim (J01E) (3%), and 'minor groups combined' (J01B, J01G and J01R) (0.4%). Between 2020 and 2024, statistically significant increasing trends were observed for penicillins (J01C) and macrolides, lincosamides and streptogramins (J01F), while statistically significant decreasing trends were observed for 'minor groups combined' (J01B, J01G, and J01R) and other antibacterials (J01X). Country-level antibacterial subgroups distributions are available in ECDC's online AMC database [9].

The ratios of consumption of mainly broad-spectrum (ATC groups J01(CR+DC+DD+(FA–FA01)+MA)) to narrow-spectrum (ATC groups J01(CA+CE+CF+DB+FA01)) antimicrobials in the community sector are presented in Table 5. In 2024, the EU/EEA population-weighted mean ratio was 4.6, ranging from 0.1 in Norway to 49.1 in Hungary. During the period 2020–2024, a statistically significant increasing trend was observed for the EU/EEA overall. At country level, a statistically significant increasing trend was observed for Bulgaria, and statistically significant decreasing trends were observed for seven countries (Belgium, Estonia, France, Ireland, Luxembourg, Portugal and Spain).

**Figure 1. Community consumption of antibacterials for systemic use (ATC group J01) by subgroup (ATC level 3), EU/EEA population-weighted mean*, 2020–2024 (expressed as DDD per 1 000 inhabitants per day)**




**EU/EEA refers to the population-weighted mean consumption, based on reported or imputed community sector data, as described in the 'Methods' section.*

**Table 4. Community consumption of antibacterials for systemic use (ATC group J01), EU and EEA countries, 2020–2024 (expressed as DDD per 1 000 inhabitants per day)**

| Country | 2020 | 2021 | 2022 | 2023 | 2024 | Trend 2020–2024 | |
|---|---|---|---|---|---|---|---|
| Austria | 7.1 | 7.2 | 8.8 | 9.5 | 10.0 | | ↑ |
| Belgium | 15.3 | 16.0 | 19.0 | 19.1 | 19.0 | | ↑ |
| Bulgaria | 22.0 | 23.7 | 25.5 | 24.6 | 21.4 | | |
| Croatia | 14.0 | 16.2 | 18.2 | 19.1 | 19.8 | | ↑ |
| Cyprus | | | | | 22.0 | | NA |
| Czechia | | 10.9 | 13.9 | 15.0 | 16.5 | | NA |
| Denmark[a] | 12.5 | 12.6 | 13.3 | 14.3 | 14.4 | | NA |
| Estonia | 8.8 | 8.7 | 10.8 | 11.2 | 11.3 | | ↑ |
| Finland | 10.0 | 9.4 | 10.5 | 11.1 | 11.9 | | ↑ |
| France | 18.7 | 19.9 | 22.6 | 22.3 | 24.7 | | ↑ |
| Germany | 8.9 | 8.1 | 10.0 | 11.7 | 12.1 | | ↑ |
| Greece[b] | 26.4 | 21.8 | 31.2 | 26.7 | 27.8 | | NA |
| Hungary | 10.0 | 10.8 | 13.4 | 13.1 | 12.7 | | |
| Iceland | 15.4 | 15.7 | 17.5 | 17.4 | 18.4 | | ↑ |
| Ireland | 17.1 | 16.3 | 21.5 | 20.7 | 21.1 | | |
| Italy | 16.5 | 16.0 | 20.0 | 21.2 | 20.4 | | |
| Latvia | 10.0 | 10.2 | 13.4 | 13.3 | 13.7 | | ↑ |
| Lithuania | 11.9 | 12.1 | 16.2 | 16.3 | 17.4 | | ↑ |
| Luxembourg | 14.8 | 14.6 | 17.6 | 18.7 | 20.1 | | ↑ |
| Malta | 14.4 | 14.1 | 21.7 | 20.9 | 22.6 | | ↑ |
| Netherlands | 7.8 | 7.6 | 8.3 | 8.8 | 9.0 | | ↑ |
| Norway | 12.8 | 12.8 | 14.0 | 14.2 | 14.8 | | ↑ |
| Poland | 17.1 | 19.2 | 22.7 | 21.8 | 21.2 | | |
| Portugal | 13.7 | 13.7 | 17.1 | 18.0 | 19.0 | | ↑ |
| Romania | 23.7 | 24.3 | 26.2 | 25.8 | 23.5 | | |
| Slovakia | 13.2 | 14.5 | 19.7 | 19.0 | 19.3 | | |
| Slovenia | 8.8 | 8.7 | 11.0 | 11.9 | 12.8 | | ↑ |
| Spain | 18.2 | 18.5 | 21.7 | 22.5 | 22.7 | | ↑ |
| Sweden[a] | 8.9 | 8.7 | 9.6 | | | | NA |
| **EU/EEA[c]** | **15.0** | **15.2** | **18.1** | **18.5** | **18.8** | | ↑ |

*= Community sector data not reported.*
*The symbols ↑ and ↓ indicate a statistically significant increasing and decreasing trend.*
*NA = Not applicable. Trend analyses were not performed because of missing data, changes in the type of data or change in data process.*

*a) External data were used for Denmark in 2024 and Sweden in 2022, with an impact on data comparability to previous years.*
*b) Greece changed data collection process during the period, with an impact on data comparability to previous years.*
*c) EU/EEA refers to the population-weighted mean consumption, based on data from 25 current EU Member States and two EEA countries (Iceland and Norway). Imputations have been included as described in the 'Methods' section.*

**Table 5. Ratio of consumption (DDD per 1 000 inhabitants per day) of broad-spectrum penicillins, cephalosporins, macrolides (except erythromycin) and fluoroquinolones to consumption of narrow-spectrum penicillins, cephalosporins and erythromycin in the community, EU/EEA countries, 2020–2024**

| Country | 2020 | 2021 | 2022 | 2023 | 2024 | Trend 2020–2024 | |
|---|---|---|---|---|---|---|---|
| Austria | 3.5 | 3.7 | 3.9 | 4.1 | 3.8 | | |
| Belgium | 2.1 | 1.9 | 1.7 | 1.7 | 1.6 | | ↓ |
| Bulgaria | 4.9 | 5.6 | 5.8 | 8.7 | 9.8 | | ↑ |
| Croatia | 5.7 | 6.4 | 5.3 | 6.2 | 5.7 | | |
| Cyprus | | | | | 31.7 | | NA |
| Czechia | | 5.0 | 4.3 | 4.1 | 4.0 | | NA |
| Denmark[a] | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | | NA |
| Estonia | 3.3 | 3.3 | 3.3 | 3.1 | 3.1 | | ↓ |
| Finland | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | | |
| France | 1.1 | 1.0 | 1.0 | 0.9 | 0.8 | | ↓ |
| Germany | 1.6 | 1.6 | 1.5 | 1.8 | 1.5 | | |
| Greece[b] | 4.42 | 4.3 | 6.6 | 6.8 | 6.8 | | NA |
| Hungary | 15.2 | 20.7 | 24.7 | 97.9 | 49.1 | | |
| Iceland | 0.5 | 0.5 | 0.4 | 0.4 | 0.5 | | |
| Ireland | 1.0 | 0.9 | 0.9 | 0.8 | 0.8 | | ↓ |
| Italy | 8.1 | 8.3 | 9.4 | 9.5 | 9.3 | | |
| Latvia | 2.2 | 2.6 | 2.5 | 2.7 | 3.6 | | |
| Lithuania | 1.2 | 1.6 | 1.5 | 2.4 | 1.9 | | |
| Luxembourg | 3.2 | 3.1 | 3.0 | 2.6 | 2.7 | | ↓ |
| Malta | 19.1 | 18.5 | 24.5 | 20.8 | 23.0 | | |
| Netherlands | 1.6 | 1.5 | 1.4 | 1.4 | 1.4 | | |
| Norway | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | | |
| Poland | 3.3 | 3.5 | 3.1 | 2.9 | 3.4 | | |
| Portugal | 5.8 | 5.8 | 5.6 | 5.4 | 5.4 | | ↓ |
| Romania | 4.7 | 5.3 | 4.3 | 5.1 | 7.5 | | |
| Slovakia | 9.3 | 12.5 | 14.1 | 12.9 | 15.0 | | |
| Slovenia | 2.1 | 2.3 | 1.6 | 1.5 | 1.7 | | |
| Spain | 2.5 | 2.5 | 2.4 | 2.2 | 2.2 | | ↓ |
| Sweden[a] | 0.2 | 0.2 | | | | | NA |
| **EU/EEA[c]** | **3.5** | **3.8** | **3.9** | **5.6** | **4.6** | | ↑ |

*= Community sector data not reported.*
*The symbols ↑ and ↓ indicate a statistically significant increasing and decreasing trend.*
*NA = Not applicable. Trend analyses were not performed because of missing data, changes in the type of data or change in data process.*

*a) External data were used for Denmark in 2024 and Sweden in 2022, with an impact on data comparability to previous years,*
*b) Greece changed data collection process during the period, with an impact on data comparability to previous years.*
*c) EU/EEA refers to the population-weighted mean consumption, based on data from 25 current EU Member States and two EEA countries (Iceland and Norway). Imputations have been included as described in the 'Methods' section.*

# Hospital sector consumption of antibacterials for systemic use (ATC group J01)

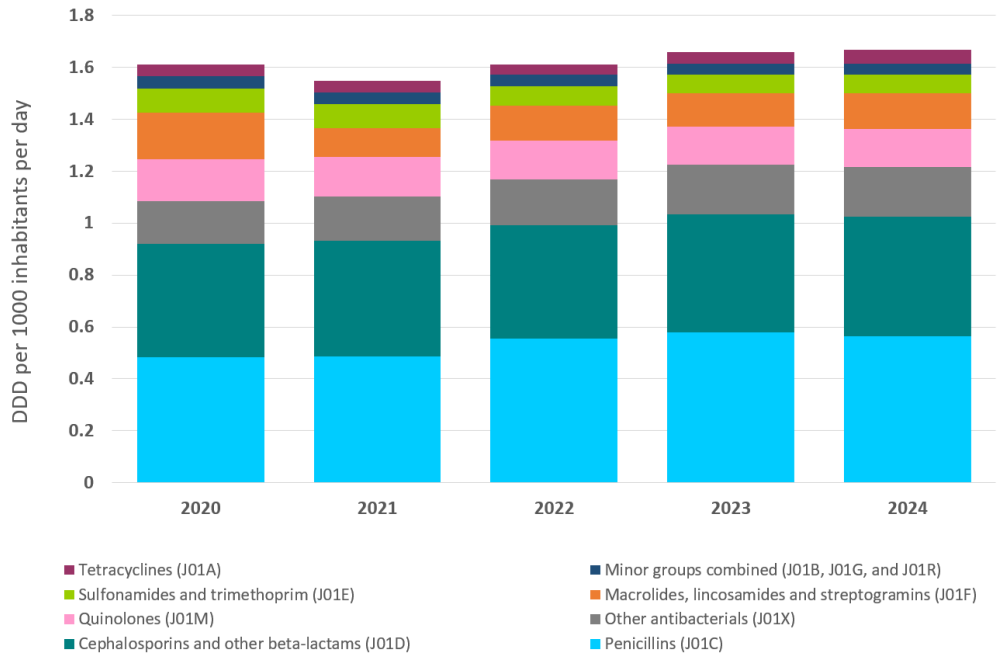
The EU/EEA population-weighted mean consumption of antibacterials for systemic use in the hospital sector was 1.67 DDD per 1 000 inhabitants per day in 2024. At country level, hospital sector consumption ranged from 0.79 DDD per 1 000 inhabitants per day in the Netherlands to 2.50 in Czechia. There was no statistically significant trend detected for the EU/EEA overall between 2020 and 2024. At country level, statistically significant increasing trends were observed during the same period for eight countries (Austria, Belgium, Croatia, France, Ireland, Luxembourg, Portugal and Slovenia) (Table 6).

The hospital sector consumption of major sub-groups of antibacterials for systemic use (ATC group J01) between 2020 and 2024 is presented in Figure 2. At EU/EEA level, the most commonly consumed subgroup in 2024 was penicillins (J01C) (34%), followed by cephalosporins and other beta-lactams (J01D) (28%); other antibacterials (J01X) (11%); quinolones (J01M) (9%); macrolides, lincosamides and streptogramins (J01F) (8%); sulfonamides and trimethoprim (J01E) (4%); tetracyclines (J01A) (3%) and 'minor groups combined' (J01B, J01G, and J01R) (3%). Between 2020 and 2024, statistically significant increasing trends were observed at EU/EEA level for tetracyclines (J01A), penicillins (J01C), cephalosporins and other beta-lactams (J01D), and other antibacterials (J01X). During the same period, significantly decreasing trends were observed at EU/EEA level for sulfonamides and trimethoprim (J01E), macrolides, lincosamides and streptogramins (J01F), quinolones (J01M) and 'minor groups combined' (J01B, J01G, and J01R). Country-level antibacterial subgroups distributions are available in ECDC's online AMC database [9].

The EU secondary indicator for hospital AMC proportions of mainly broad-spectrum antimicrobials (ATC groups J01XA, J01DD, J01DE, J01DF, J01DH, J01MA, J01XB, J01CR05, J01XX08, J01XX11, and J01XX09) out of all hospital sector consumption of antibacterials for systemic use are presented in Table 7. In 2024, the EU/EEA population-weighted mean proportion was 39.6%, ranging from 18.3% in Finland to 63.9% in Bulgaria. During 2020–2024, there was no statistically significant trend detected for the EU/EEA overall. Two individual countries (Iceland and Spain) had statistically significant increasing trends, while Belgium had a statistically significant decreasing trend for this indicator during the period.

The percentage of WHO AWaRe Reserve antimicrobials consumption is presented in Table 8. In 2024, the EU/EEA population-weighted mean proportion was 5.4%, ranging from 0.7% in Finland to 14.4% in Spain. During 2020–2024, a statistically significant increasing trend was observed for the EU/EEA overall, as well as for eight individual EU/EEA countries (Bulgaria, Croatia, Finland, France, Hungary, Norway, Poland and Spain). No country showed a statistically significant decreasing trend during the period.

**Figure 2. Hospital sector consumption of antibacterials for systemic use (ATC group J01) by subgroup (ATC level 3), EU/EEA population-weighted mean*, 2020–2024 (expressed as DDD per 1 000 inhabitants per day**




**EU/EEA refers to the population-weighted mean consumption, based on reported or imputed community sector data, as described in the 'Methods' section.*

**Table 6. Hospital sector consumption of antibacterials for systemic use (ATC group J01), EU/EEA countries, 2020–2024 (expressed as DDD per 1 000 inhabitants per day)**

| Country | 2020 | 2021 | 2022 | 2023 | 2024 | Trend 2020–2024 | |
|---|---|---|---|---|---|---|---|
| Austria | 1.67 | 1.63 | 1.69 | 1.78 | 1.89 | | ↑ |
| Belgium | 1.41 | 1.43 | 1.48 | 1.50 | 1.57 | | ↑ |
| Bulgaria | 2.09 | 2.20 | 1.57 | 1.66 | 1.99 | | |
| Croatia | 1.61 | 1.93 | 1.98 | 2.08 | 2.18 | | ↑ |
| Cyprus | | | | | 1.56 | | NA |
| Czechia[a] | | 2.86 | 3.15 | 3.17 | 2.50 | | NA |
| Denmark[b] | 1.75 | 1.80 | 1.83 | 1.91 | 1.92 | | NA |
| Estonia | 1.65 | 1.41 | 1.61 | 1.54 | 1.62 | | |
| Finland | 1.94 | 1.84 | 1.98 | 1.84 | 1.78 | | |
| France | 1.64 | 1.69 | 1.75 | 1.72 | 1.79 | | ↑ |
| Germany | | | | 1.65 | 1.73 | | NA |
| Greece | 1.74 | 1.77 | 1.73 | 1.80 | 2.08 | | |
| Hungary | 1.21 | 1.12 | 1.04 | 1.07 | 1.06 | | |
| Iceland | 1.11 | 1.02 | 1.13 | 1.15 | 1.22 | | |
| Ireland | 1.47 | 1.49 | 1.67 | 1.77 | 1.89 | | ↑ |
| Italy | 1.92 | 1.54 | 1.80 | 1.90 | 1.91 | | |
| Latvia | 1.92 | 1.48 | 1.51 | 1.57 | 1.71 | | |
| Lithuania | 2.31 | 1.95 | 2.33 | 2.41 | 2.27 | | |
| Luxembourg[a] | 1.27 | 1.28 | 1.41 | 1.50 | 1.50 | | NA |
| Malta | 2.17 | 1.68 | 2.26 | 2.03 | 2.22 | | |
| Netherlands | 0.76 | 0.70 | 0.75 | 0.77 | 0.79 | | |
| Norway | 1.16 | 1.14 | 1.24 | 1.26 | 1.26 | | |
| Poland | 1.36 | 1.40 | 1.33 | 1.39 | 1.42 | | |
| Portugal | 1.45 | 1.54 | 1.72 | 1.72 | 1.80 | | ↑ |
| Romania | 1.43 | 1.38 | 1.39 | 1.54 | 1.69 | | |
| Slovakia | 1.27 | 1.43 | 1.13 | 1.10 | 1.12 | | |
| Slovenia | 1.32 | 1.42 | 1.48 | 1.49 | 1.54 | | ↑ |
| Spain | 1.56 | 1.49 | 1.52 | 1.59 | 1.45 | | |
| Sweden | 1.42 | 1.40 | | | | | NA |
| **EU/EEA[c]** | **1.59** | **1.55** | **1.61** | **1.66** | **1.67** | | |

*= Hospital sector data not reported.*
*The symbols ↑ and ↓ indicate a statistically significant increasing and decreasing trend.*
*NA = Not applicable. Trend analyses were not performed because of missing data, changes in the type of data or change in data process.*

*a) Czechia and Luxembourg changed data collection process during the period, with an impact on data comparability to previous years.*
*b) External data were used for Denmark in 2024, with an impact on data comparability to previous years,*
*c) EU/EEA refers to the population-weighted mean consumption, based on data from 24 current EU Member States and two EEA countries (Iceland and Norway). Imputations have been included as described in the 'Methods' section. a) Czechia and Luxembourg changed their data collection process during the period, which could have an impact on comparability with previous years.*

**Table 7. Percentage (%) of glycopeptides, third- and fourth-generation cephalosporins, monobactams, carbapenems, fluoroquinolones, polymyxins, piperacillin and enzyme inhibitor, linezolid, tedizolid and daptomycin out of total hospital sector consumption (DDD per 1 000 inhabitants per day) of antibacterials for systemic use, EU/EEA countries, 2020–2024**

| Country | 2020 | 2021 | 2022 | 2023 | 2024 | Trend 2020–2024 | |
|---|---|---|---|---|---|---|---|
| Austria | 34.8 | 36.5 | 35.3 | 35.1 | 34.7 | | |
| Belgium | 31.4 | 31.2 | 30.5 | 30.4 | 28.4 | | ↓ |
| Bulgaria | 62.6 | 71.1 | 67.5 | 65.0 | 63.9 | | |
| Croatia | 36.8 | 39.5 | 38.9 | 39.3 | 40.3 | | |
| Cyprus | | | | | 59.4 | | NA |
| Czechia[a] | | 18.1 | 15.9 | 14.2 | 22.3 | | NA |
| Denmark[b] | 24.7 | 24.3 | 22.7 | 22.6 | 21.8 | | NA |
| Estonia | 24.6 | 24.8 | 23.2 | 23.7 | 24.3 | | |
| Finland | 21.4 | 19.5 | 18.6 | 19.2 | 18.3 | | |
| France | 32.4 | 33.4 | 36.3 | 32.1 | 32.4 | | |
| Germany | | | | 39.6 | 38.9 | | NA |
| Greece | 50.8 | 59.8 | 57.9 | 57.8 | 61.0 | | |
| Hungary | 40.8 | 42.4 | 39.7 | 42.1 | 41.8 | | |
| Iceland | 18.7 | 21.3 | 29.3 | 30.3 | 29.4 | | ↑ |
| Ireland | 30.3 | 31.1 | 30.3 | 30.9 | 32.5 | | |
| Italy | 42.8 | 44.4 | 46.2 | 44.6 | 43.1 | | |
| Latvia | 36.9 | 41.9 | 40.6 | 42.0 | 38.1 | | |
| Lithuania | 24.8 | 22.0 | 17.6 | 18.4 | 19.8 | | |
| Luxembourg[a] | 37.9 | 37.5 | 35.1 | 35.8 | 35.8 | | NA |
| Malta | 38.6 | 41.2 | 39.2 | 42.4 | 37.6 | | |
| Netherlands | 26.8 | 28.7 | 27.4 | 26.8 | 27.5 | | |
| Norway | 19.5 | 21.7 | 21.8 | 20.9 | 20.3 | | |
| Poland | 34.3 | 44.1 | 37.9 | 39.8 | 39.6 | | |
| Portugal | 43.3 | 44.2 | 42.6 | 43.7 | 43.4 | | |
| Romania | 55.1 | 64.8 | 61.5 | 60.1 | 58.6 | | |
| Slovakia | 35.1 | 38.6 | 33.7 | 36.7 | 35.0 | | |
| Slovenia | 31.3 | 32.2 | 31.2 | 30.0 | 29.6 | | |
| Spain | 47.9 | 50.3 | 50.2 | 51.0 | 51.2 | | ↑ |
| Sweden | 28.6 | 30.4 | | | | | NA |
| **EU/EEA[c]** | **38.2** | **41.1** | **40.5** | **39.6** | **39.6** | | |

*= Hospital sector data not reported.*
*The symbols ↑ and ↓ indicate a statistically significant increasing and decreasing trend.*
*NA = Not applicable. Trend analyses were not performed because of missing data, changes in the type of data or change in data process.*

*a) Czechia and Luxembourg changed data collection process during the period, with an impact on data comparability to previous years.*
*b) External data were used for Denmark in 2024, with an impact on data comparability to previous years,*
*c) EU/EEA refers to the population-weighted mean consumption, based on data from 24 current EU Member States and two EEA countries (Iceland and Norway). Imputations have been included as described in the 'Methods' section.*

**Table 8. Percentage (%) of WHO AWaRe Reserve group antimicrobials consumed out of total hospital sector AWaRe consumption, EU/EEA countries, 2020–2024**

| Country | 2020 | 2021 | 2022 | 2023 | 2024 | Trend 2020–2024 | |
|---|---|---|---|---|---|---|---|
| Austria | 5.2 | 6.0 | 5.6 | 5.6 | 5.5 | | |
| Belgium | 1.0 | 1.0 | 1.0 | 0.9 | 0.8 | | |
| Bulgaria | 0.6 | 0.7 | 0.8 | 1.0 | 1.1 | | ↑ |
| Croatia | 2.4 | 3.4 | 3.7 | 3.4 | 3.9 | | ↑ |
| Cyprus | | | | | 3.9 | | NA |
| Czechia[a] | | 1.3 | 1.1 | 1.3 | 2.3 | | NA |
| Denmark[b] | 0.8 | 0.7 | 0.8 | 0.7 | 0.7 | | NA |
| Estonia | 1.1 | 1.3 | 1.3 | 1.2 | 1.2 | | |
| Finland | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 | | ↑ |
| France | 3.4 | 3.6 | 4.1 | 5.3 | 5.5 | | ↑ |
| Germany | | | | 3.1 | 3.2 | | NA |
| Greece | 12.0 | 15.5 | 15.1 | 15.9 | 11.8 | | |
| Hungary | 0.7 | 1.1 | 1.0 | 1.0 | 1.1 | | ↑ |
| Iceland | 0.7 | 0.8 | 0.8 | 2.3 | 0.7 | | |
| Ireland | 3.6 | 3.4 | 3.3 | 3.7 | 3.8 | | |
| Italy | 4.2 | 5.4 | 7.1 | 6.8 | 6.0 | | |
| Latvia | 0.5 | 1.1 | 0.7 | 1.5 | 0.7 | | |
| Lithuania | 4.1 | 1.0 | 1.0 | 1.3 | 1.6 | | |
| Luxembourg[a] | 2.8 | 2.8 | 3.2 | 3.2 | 3.1 | | NA |
| Malta | 0.7 | 1.2 | 1.0 | 0.9 | 1.3 | | |
| Netherlands | 0.4 | 0.5 | 0.5 | 0.7 | 0.6 | | |
| Norway | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 | | ↑ |
| Poland | 1.3 | 1.6 | 1.9 | 2.1 | 2.3 | | ↑ |
| Portugal | 5.0 | 5.1 | 4.8 | 5.0 | 4.3 | | |
| Romania | 2.5 | 3.4 | 3.4 | 3.3 | 3.4 | | |
| Slovakia | 1.8 | 2.9 | 2.2 | 4.6 | 2.0 | | |
| Slovenia | 1.2 | 2.1 | 1.8 | 1.6 | 1.5 | | |
| Spain | 10.7 | 11.5 | 12.2 | 13.1 | 14.4 | | ↑ |
| Sweden | 0.8 | 1.0 | | | | | NA |
| **EU/EEA[c]** | **4.0** | **4.6** | **5.0** | **5.4** | **5.4** | | ↑ |

*= Hospital sector data not reported.*
*The symbols ↑ and ↓ indicate a statistically significant increasing and decreasing trend.*
*NA = Not applicable. Trend analyses were not performed because of missing data, changes in the type of data or change in data process.*

*a) Czechia and Luxembourg changed data collection process during the period, with an impact on data comparability to previous years.*
*b) External data were used for Denmark in 2024, with an impact on data comparability to previous years,*
*c) EU/EEA refers to the population-weighted mean consumption, based on data from 24 current EU Member States and two EEA countries (Iceland and Norway). Imputations have been included as described in the 'Methods' section.*

# Consumption of antimicrobials from ATC groups other than J01

For consumption of antimicrobials from ATC groups other than antibacterials for systemic use (ATC J01), there were larger differences between countries and over time in terms of data completeness, data sources and types of healthcare facilities included. Caution should therefore be exercised when interpreting these AMC rates, especially when comparing countries.

## *Total consumption (community and hospital sector) of antimycotics and antifungals for systemic use (ATC groups J02 and D01B)*

The EU/EEA population-weighted mean total consumption of antimycotics and antifungals for systemic use (ATC groups J02 and D01B) was 1.17 DDD per 1 000 inhabitants per day in 2024. At country level, total consumption ranged from 0.41 DDD per 1 000 inhabitants per day in the Netherlands to 3.58 in Iceland (Table 9).

In 2024, the DDD of parenteral amphotericin B (ATC J02AA01) was altered to take formulation-specific dosing recommendations into account. The previous DDD of 35 mg therefore now only refers to the conventional formulation, while for the lipid formulation a new DDD of 210 mg was assigned. To take this new DDD into account, formulation-specific data at product level are necessary and ESAC-Net only started to collect such data in 2023. Work is ongoing to update historical data, but remains incomplete. This could have an impact on comparability across the years in countries with a large proportion of amphotericin B (J02AA01) as part of the consumption of antimycotics for systemic use (ATC group J02). Hence, trend analyses were not performed for antimycotics and antifungals.

## *Total consumption (community and hospital sector) of antimycobacterials for treatment of tuberculosis (ATC group J04A)*

The EU/EEA population-weighted mean total consumption of antimycobacterials for treatment of tuberculosis (ATC group J04A) was 0.23 DDD per 1 000 inhabitants per day in 2024. At country level, total consumption ranged from 0.09 DDD per 1 000 inhabitants per day in Malta to 0.73 in Romania. There was no statistically significant trend detected for the EU/EEA overall, nor for individual countries between 2020 and 2024 (Table 10).

## *Total consumption (community and hospital sector) of antivirals for systemic use (ATC group J05)*

The EU/EEA population-weighted mean total consumption of antivirals for systemic use (ATC group J05) was 4.70 DDD per 1 000 inhabitants per day in 2024. At country level, total consumption ranged from 0.36 DDD per 1 000 inhabitants per day in Spain to 12.70 in Italy. Between 2020 and 2024, a statistically significant increasing trend was detected for the EU/EEA overall, as well as for ten individual countries (Belgium, Croatia, Finland, France, Greece, Ireland, Luxembourg, Norway, Slovenia and Spain) (Table 11).

**Table 9. Total consumption (community and hospital sector combined) of antimycotics and antifungals for systemic use (ATC groups J02 & D01B) EU/EEA countries, 2020–2024 (expressed as DDD per 1 000 inhabitants per day)**

| Country | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|
| Austria | 0.74 | 0.80 | 0.81 | 0.83 | 0.88 |
| Belgium | 2.77 | 3.05 | 3.17 | 3.36 | 3.41 |
| Bulgaria | 0.82 | 0.90 | 0.94 | 0.99 | 1.05 |
| Croatia | 0.43 | 0.49 | 0.55 | 0.62 | 0.62 |
| Cyprus | 3.35 | 3.76 | 3.61 | | 1.92 |
| Czechia | 0.65 | 0.76 | 0.80 | 0.81 | 0.81 |
| Denmark[a] | 1.56 | 1.61 | 1.61 | 1.62 | 1.62 |
| Estonia | 1.45 | 1.39 | 1.41 | 1.47 | 1.44 |
| Finland | 1.79 | 1.84 | 1.87 | 2.10 | 2.13 |
| France | 1.40 | 1.39 | 1.43 | 1.36 | 1.40 |
| Germany | | | | 0.87 | 0.92 |
| Greece | 1.67 | 1.71 | 1.82 | 1.63 | 1.35 |
| Hungary | 0.96 | 0.91 | 1.02 | 1.07 | 0.98 |
| Iceland | 3.09 | 3.28 | 3.20 | 3.47 | 3.58 |
| Ireland | | | | 1.45 | 1.59 |
| Italy | 0.86 | 0.86 | 0.84 | 0.85 | 0.85 |
| Latvia | 0.81 | 0.86 | 0.88 | 1.04 | 1.08 |
| Lithuania | 0.69 | 0.73 | 0.76 | 0.88 | 0.89 |
| Luxembourg | 1.28 | 1.28 | 1.29 | 1.40 | 1.46 |
| Malta | 1.18 | 0.62 | 0.68 | 0.85 | 0.94 |
| Netherlands | | | | | 0.41 |
| Norway | 1.45 | 1.52 | 1.50 | 1.65 | 1.77 |
| Poland | 0.91 | 0.96 | 1.12 | 1.18 | 1.18 |
| Portugal | 1.68 | 1.83 | 1.98 | 2.01 | 2.12 |
| Romania | 0.73 | 0.82 | 0.90 | 0.94 | 0.91 |
| Slovakia | 0.76 | 0.82 | 0.79 | 0.83 | 0.82 |
| Slovenia | 0.76 | 0.86 | 0.84 | 0.94 | 0.89 |
| Spain | 0.37 | 0.44 | 0.50 | 0.55 | 0.59 |
| Sweden | 0.8 | 0.8 | | | |
| **EU/EEA[b]** | **1.04** | **1.09** | **1.14** | **1.16** | **1.17** |

*= Total care data (community and hospital sectors combined) not reported.*

*a) External data were used for Denmark in 2024 with an impact on data comparability to previous years,*
*b) EU/EEA refers to the population-weighted mean consumption, based on data from 23 current EU Member States and two EEA countries (Iceland and Norway).*

**Table 10. Total consumption (community and hospital sector combined) of antimycobacterials for treatment of tuberculosis (ATC group J04A), EU/EEA countries, 2020–2024 (expressed as DDD per 1 000 inhabitants per day)**

| Country | 2020 | 2021 | 2022 | 2023 | 2024 | Trend 2020–2024 | |
|---|---|---|---|---|---|---|---|
| Austria | 0.15 | 0.15 | 0.14 | 0.15 | 0.15 | | |
| Belgium | 0.21 | 0.19 | 0.19 | 0.20 | 0.22 | | |
| Bulgaria | 0.17 | 0.10 | 0.41 | 0.25 | 0.23 | | |
| Croatia | 0.13 | 0.12 | 0.11 | 0.14 | 0.15 | | |
| Cyprus | | | | | 0.10 | | NA |
| Czechia | | 0.12 | 0.14 | 0.14 | 0.15 | | NA |
| Denmark[a] | 0.13 | 0.12 | 0.12 | 0.12 | 0.12 | | NA |
| Estonia | 0.26 | 0.05 | 0.29 | 0.15 | 0.13 | | |
| Finland | 0.16 | 0.13 | 0.14 | 0.14 | 0.14 | | |
| France | 0.27 | 0.24 | 0.26 | 0.26 | 0.24 | | |
| Germany | | | | 0.21 | 0.21 | | NA |
| Greece | 0.25 | 0.17 | 0.21 | 0.23 | 0.21 | | NA |
| Hungary | 0.13 | 0.10 | 0.13 | 0.14 | 0.11 | | |
| Iceland | 0.20 | 0.20 | 0.17 | 0.25 | 0.19 | | |
| Ireland | | | | | 0.12 | | NA |
| Italy | 0.11 | 0.09 | 0.10 | 0.21 | 0.20 | | |
| Latvia | 0.25 | 0.15 | 0.25 | 0.20 | 0.24 | | |
| Lithuania | 0.48 | 0.31 | 0.49 | 0.46 | 0.28 | | |
| Luxembourg | 0.27 | 0.28 | 0.31 | 0.40 | 0.34 | | |
| Malta | 0.13 | 0.07 | 0.09 | 0.12 | 0.09 | | |
| Netherlands | 0.14 | 0.15 | 0.15 | 0.15 | 0.16 | | |
| Norway | 0.13 | 0.11 | 0.12 | 0.13 | 0.12 | | |
| Poland | 0.13 | 0.17 | 0.10 | 0.11 | 0.10 | | |
| Portugal[b] | 0.17 | 0.16 | 0.15 | 0.17 | 0.68 | | NA |
| Romania | 0.71 | 0.60 | 0.75 | 0.89 | 0.73 | | |
| Slovakia | 0.17 | 0.16 | 0.16 | 0.18 | 0.17 | | |
| Slovenia | 0.10 | 0.10 | 0.11 | 0.14 | 0.12 | | |
| Spain | 0.13 | 0.13 | 0.13 | 0.15 | 0.16 | | |
| Sweden | 0.20 | 0.19 | | | | | NA |
| **EU/EEA[c]** | **0.20** | **0.18** | **0.20** | **0.23** | **0.23** | | |

*= Total care data (community and hospital sectors combined) not reported.*

*The symbols ↑ and ↓ indicate a statistically significant increasing and decreasing trend. N/A = Not applicable. Trend analyses were not performed because of missing data, changes in the type of data or change in data.*

*a) External data were used for Denmark in 2024 with an impact on data comparability to previous years,*
*b) Portugal changed data collection process during the period, with an impact on data comparability to previous years.*
*c) EU/EEA refers to the population-weighted mean consumption, based on data from 23 current EU Member States and two EEA countries (Iceland and Norway).*

**Table 11. Total consumption (community and hospital sector combined) of antivirals for systemic use (ATC groups J05) EU/EEA countries, 2020–2024 (expressed as DDD per 1 000 inhabitants per day)**

| Country | 2020 | 2021 | 2022 | 2023 | 2024 | Trend 2020–2024 | |
|---|---|---|---|---|---|---|---|
| Austria | 1.81 | 1.72 | 2.03 | 1.71 | 1.85 | | |
| Belgium | 2.19 | 2.22 | 2.36 | 2.49 | 2.81 | | ↑ |
| Bulgaria | 3.01 | 1.93 | 2.70 | 3.21 | 3.48 | | |
| Croatia | 0.86 | 0.92 | 0.99 | 1.03 | 1.11 | | ↑ |
| Cyprus | | | | | 0.72 | | NA |
| Czechia | | 2.54 | 1.47 | 1.50 | 1.30 | | NA |
| Denmark[a] | 2.90 | 2.91 | 2.95 | 3.12 | 3.13 | | NA |
| Estonia | 6.38 | 7.08 | 7.59 | 6.54 | 6.14 | | |
| Finland | 1.68 | 1.76 | 2.03 | 2.31 | 2.49 | | ↑ |
| France | 4.25 | 4.20 | 4.45 | 4.84 | 4.79 | | ↑ |
| Germany | | | | | | | NA |
| Greece | 3.30 | 2.95 | 3.29 | 4.62 | 5.20 | | ↑ |
| Hungary | 0.97 | 1.35 | 1.23 | 1.11 | 1.10 | | |
| Iceland | 2.24 | 2.38 | 2.62 | 3.00 | 3.08 | | ↑ |
| Ireland | | | | 1.24 | 1.44 | | NA |
| Italy | 2.00 | 1.46 | 11.19 | 15.08 | 12.70 | | |
| Latvia | 3.16 | 2.90 | 3.15 | 3.24 | 3.36 | | |
| Lithuania | 1.60 | 1.32 | 1.85 | 2.44 | 2.06 | | |
| Luxembourg | 2.89 | 2.91 | 3.22 | 3.56 | 3.52 | | ↑ |
| Malta | 0.61 | 0.57 | 0.77 | 0.90 | 0.72 | | |
| Netherlands | 2.45 | 2.31 | 2.32 | 2.65 | 2.82 | | NA |
| Norway | 1.93 | 1.95 | 2.05 | 2.17 | 2.30 | | ↑ |
| Poland | 3.73 | 2.99 | 3.95 | 4.20 | 3.85 | | |
| Portugal | 7.71 | 7.84 | 7.96 | 7.76 | 8.09 | | |
| Romania | 3.18 | 2.71 | 2.86 | 3.07 | 3.13 | | |
| Slovakia | 1.09 | 2.66 | 2.95 | 1.44 | 1.40 | | |
| Slovenia | 1.04 | 1.03 | 1.13 | 1.21 | 1.25 | | ↑ |
| Spain | 0.26 | 0.28 | 0.31 | 0.33 | 0.36 | | ↑ |
| Sweden | 2.03 | 2.06 | | | | | NA |
| **EU/EEA[b]** | **2.64** | **2.48** | **4.30** | **5.09** | **4.70** | | ↑ |

*= Total care data (community and hospital sectors combined) not reported.*

*The symbols ↑ and ↓ indicate a statistically significant increasing and decreasing trend. N/A = Not applicable. Trend analyses were not performed because of missing data, changes in the type of data or change in data.*

*a) External data were used for Denmark in 2024, with an impact on data comparability to previous years.*
*b) EU/EEA refers to the population-weighted mean consumption, based on data from 23 current EU Member States and two EEA countries (Iceland and Norway).*

# Conclusions

Ensuring prudent use of antimicrobials is fundamental for an effective response to the emergence and spread of AMR [1,3,4]. Surveillance of AMC plays a critical role in guiding and evaluating interventions in this area, as emphasised at both EU [3,18] and global level [4-5].

The latest AMC data from ESAC-Net, presented in this report and through the online ECDC AMC database [9], highlight remaining opportunities for significant reductions in AMC. Although the five-year trend analyses routinely conducted by ESAC-Net are currently affected by the temporary reduction in AMC during the COVID-19 pandemic years of 2020 and 2021 [16-17], the most recent data indicate that increased efforts are required to reduce antimicrobial use at all levels of healthcare in the EU/EEA.

## Risk to the successful achievement of EU AMC targets in 2030

The Council Recommendation on stepping up EU actions to combat antimicrobial resistance in a One Health approach sets EU targets of a 20% reduction in total antibiotic consumption in humans between 2019 and 2030, and for at least 65% of all antimicrobials consumed to come from the WHO AWaRe Access group by 2030 [3].

Without considerable efforts, the EU is unlikely to meet these targets by 2030. The 2024 data showed continued poor progress towards both targets, with EU-level outcomes being less favourable in 2024 than in the baseline year of 2019 and with inconsistent progress reported from individual EU Member States. The lack of advancement towards the EU target on total AMC means that the initial requirement, assuming a linear reduction trend, for an average annual reduction at EU level of 0.36 DDD per 1 000 inhabitants per day over 11 years, has now increased to 0.73 over six years. In addition, there has been no increase in the number of EU Member States achieving the second EU target of at least 65% of total AMC being from the WHO AWaRe Access group since the baseline year 2019.

## Increases and large variations in relative antimicrobial consumption across EU/EEA countries

The increases in the relative consumption of specific antimicrobial groups with broader spectra of activity and last-line antimicrobials, such as those indicated by secondary EU AMC hospital indicator and the WHO AWaRe Reserve group classification, show an ongoing shift towards increased consumption of antimicrobials that should be restricted for the treatment of confirmed or suspected infections caused by multidrug-resistant organisms. While all antimicrobial use exerts ecological pressure on bacteria and contributes to the emergence and selection of resistant bacteria, high use of broad-spectrum and last-line antimicrobials is of particular concern as it promotes proliferation of multidrug-resistant organisms, especially in settings with inadequate infection prevention and control practices.

Although the increases and country-level differences in relative consumption of these antimicrobials may partly reflect variations and increases in AMR across the EU/EEA [19-20], they also probably indicate substantial differences in opportunities to ensure prudent antimicrobial use. While ESAC-Net data cannot distinguish between appropriate and inappropriate use, this interpretation is supported by the results of the latest ECDC point prevalence survey (PPS) of healthcare-associated infections and antimicrobial use in European acute care hospitals 2022–2023. This survey revealed large inter-country variation and, in some cases, extensive use of broad-spectrum antimicrobials in EU/EEA hospitals. Recommendations from the ECDC PPS include reducing inappropriate antimicrobial use by targeting broad-spectrum antimicrobials, promoting the switch from intravenous to oral administration, increasing post-prescription review of antimicrobial treatments, and ensuring dedicated skilled personnel and time for antimicrobial stewardship consultancy [21].

In addition to general differences in national consumption of WHO AWaRe Reserve group antimicrobials, targeted analyses of ESAC-Net data have revealed considerable variations in consumption patterns within the Reserve group. Persisting high polymyxin consumption suggests limited access to the recently approved, more effective and better tolerated antimicrobials for treating patients infected with multidrug- and carbapenem-resistant organisms [20].

## Increasing AMC surveillance capacity in the EU/EEA, but issues with data comparability remain

Since EU/EEA-level coordination of AMC surveillance began over 20 years ago, national surveillance capacity has progressively improved. Within ESAC-Net, the number of countries able to report data separately for the community and the hospital sectors has increased over the last five years, and an increasing proportion of countries are able to provide additional data on AMC outside of the ATC J01 group. However, issues remain concerning cross-country comparability, especially in relation to healthcare sector attribution and inclusion of long-term care facilities. In addition, differences in pharmaceutical distribution systems could have an impact on AMC data when specific antimicrobial agents are excluded from reimbursement, distributed, imported or exported outside of the system covered by surveillance, or subject to stockpiling. These challenges are particularly noticeable for antimicrobials from ATC groups other than J01.

The Council Recommendation calls on Member States to close existing surveillance gaps and to ensure completeness of human AMC data across all healthcare levels, including community, hospital and long-term care sectors [3]. Strengthening national digital public health infrastructure and expanding the use of electronic health record systems could improve access to detailed and context-specific data, thereby facilitating the identification of inappropriate antimicrobial use and helping to prioritise areas for intervention.

## Opportunities to strengthen efforts to ensure prudent antimicrobial use in the EU/EEA

Infections caused by multidrug-resistant organisms result in a substantial human and economic burden for EU/EEA countries [2,22-23]. With the increasing incidence of such infections [19-20] and ongoing challenges related to innovation and access to newer treatment alternatives [20], it is crucial to ensure effectiveness of existing antimicrobials through prudent and responsible use.

The results presented in this report, including the poor progress towards the EU targets, the large variations in AMC across EU/EEA countries and the increasing consumption of last line antimicrobials in the WHO AWaRe Reserve category, underscore the need to reduce unnecessary and inappropriate antimicrobial use at all levels of healthcare in the EU/EEA. Although all countries will have to contribute to this goal, the burden of reduction falls disproportionately on those countries with the highest AMC. National interventions should therefore be context-specific and adapted to local conditions and challenges.

As emphasised in the Council Recommendation on stepping up EU actions to combat antimicrobial resistance in a One Health approach, national strategies should include key elements to promote prudent use of antimicrobials, including antimicrobial stewardship programmes integrated with good diagnostic practices and infection prevention and control activities. The Council Recommendation also highlights the importance of timely availability of standardised data on AMC for benchmarking, and on AMR for clinical guidance [3]. Strengthening antimicrobial stewardship programmes is one of the most cost-effective approaches to promoting appropriate antimicrobial use, reducing unnecessary AMC and limiting the harmful effects of AMR. In so doing, these programmes could also generate substantial health and economic benefits in the EU/EEA [22-23].

While the importance of optimising antimicrobial use through surveillance and stewardship activities is recognised in all national action plans on AMR in the EU, the level of implementation and funding mechanisms for these activities continue to vary [24]. This underlines the need for sustainable implementation arrangements within national action plans, supported by robust operational, monitoring and evaluation frameworks. The EU Guidelines for the prudent use of antimicrobials in human health emphasise that although the ultimate responsibility for the policies and structures necessary to ensure the prudent use of antimicrobials lies with the national, regional and local governments, effective collaboration with other stakeholders, including regulators and those responsible for delivering healthcare, professional education and community engagement is essential [18].

# Guidance documents

Suggested further guidance on activities, roles and responsibilities in relation to antimicrobial stewardship:

- EU Guidelines for the prudent use of antimicrobials in human health [18];
- European One Health Action Plan against Antimicrobial Resistance [1] and Council Recommendation on stepping up EU actions to combat antimicrobial resistance in a One Health approach [3];
- National action plans and guidelines of EU/EEA countries, as listed in the ECDC directory of online resources for the prevention and control of AMR and HAI [26];
- WHO's guide to antimicrobial stewardship interventions [27] and the WHO AWaRe (Access, Watch, Reserve) antibiotic book [14].

# References


1. European Commission (EC). A European One Health Action Plan against Antimicrobial Resistance (AMR), COM/2017/339. Communication from the European Commission to the Council and the European Parliament. Brussels: European Commission; 2017. Available from: https://health.ec.europa.eu/system/files/2020-01/amr_2017_action-plan_0.pdf
2. European Centre for Disease Prevention and Control (ECDC). Health burden of infections with antibiotic-resistant bacteria in the European Union and the European Economic Area, 2016-2020. Stockholm: ECDC, 2022. Available from: https://www.ecdc.europa.eu/sites/default/files/documents/Health-burden-infections-antibiotic-resistant-bacteria.pdf
3. Council of the European Union. Council Recommendation on stepping up EU actions to combat antimicrobial resistance in a One Health approach (2023/C 220/01). Official Journal of the European Union C 220/1. Available from: https://eurlex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32023H0622(01)
4. World Health Organization (WHO). Global Action Plan on Antimicrobial Resistance. Geneva: WHO; 2015. Available from: https://www.who.int/publications/i/item/9789241509763
5. United Nations (UN). General Assembly High-Level Meeting on antimicrobial resistance 2024. Political Declaration of the High-level Meeting on Antimicrobial Resistance. New York: UN; 2024. Available from: https://www.un.org/pga/wp-content/uploads/sites/108/2024/09/FINAL-Text-AMR-to-PGA.pdf
6. European Centre for Disease Prevention and Control (ECDC). ESAC-Net Reporting Protocol 2025. Stockholm: ECDC; 2025. Available from: https://www.ecdc.europa.eu/en/publications-data/esac-net-reporting-protocol-antimicrobial-consumption-amc
7. World Health Organization (WHO) Collaborating Centre for Drug Statistics Methodology. ATC/DDD Index 2025. Oslo: WHO; 2025. Available from: https://www.whocc.no/atc_ddd_index/
8. World Health Organization (WHO) Collaborating Centre for Drug Statistics Methodology. Guidelines for ATC classification and DDD assignment, 2025. Oslo: WHO; 2024. Available from: https://atcddd.fhi.no/filearchive/publications/2025_guidelines__final_web.pdf
9. European Centre for Disease Prevention and Control (ECDC). Antimicrobial consumption dashboard. Stockholm: ECDC; 2025. Available from: https://www.ecdc.europa.eu/en/antimicrobial-consumption/surveillance-and-disease-data/database
10. Eurostat. Dataset: Population on 1 January (TPS00001). Brussels: Eurostat; 2024. Accessed on 25 August 2025. Available from: https://ec.europa.eu/eurostat/databrowser/product/view/TPS00001
11. World Health Organization (WHO). The Global Health Observatory. Indicator Metadata Registry List. Website. Accessed 25 August 2025. Available from: https://www.who.int/data/gho/indicator-metadata-registry
12. European Centre for Disease Prevention and Control (ECDC), EFSA BIOHAZ Panel (European Food Safety Authority Panel on Biological Hazards) and CVMP (EMA Committee for Medicinal Products for Veterinary Use), 2018. ECDC, EFSA and EMA Joint Scientific Opinion on a list of outcome indicators as regards surveillance of antimicrobial resistance and antimicrobial consumption in humans and food-producing animals. EFSA Journal 2018;15(10):5017. Available from: https://www.ecdc.europa.eu/sites/default/files/documents/AMR-indicators-joint-report-Oct-2017.pdf
13. World Health Organization (WHO). Access, Watch, Reserve (AWaRe) classification of antibiotics for evaluation and monitoring of use, 2025. Geneva: WHO; 2025. Available from: https://www.who.int/publications/i/item/B09489
14. World Health Organization (WHO). The WHO AWaRe (Access, Watch, Reserve) antibiotic book. Geneva: WHO; 2022. Available from: https://www.who.int/publications/i/item/9789240062382
15. World Health Organization (WHO). Thirteenth General Programme of Work (GPW13): metadata for impact measurement indicators. Geneva: WHO; 2020. Available from: https://www.who.int/about/general-programme-of-work/thirteenth
16. Högberg LD, Vlahović-Palčevski V, Pereira C, Weist K, Monnet DL; ESAC-Net study group; ESAC-Net study group participants. Decrease in community antibiotic consumption during the COVID-19 pandemic, EU/EEA, 2020. Euro Surveill. 2021 Nov;26(46):2101020. Available from: https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2021.26.46.2101020
17. Ventura-Gabarró C, Leung VH, Vlahović-Palčevski V, Machowska A, Monnet DL, Högberg LD, et al. Rebound in community antibiotic consumption after the observed decrease during the COVID-19 pandemic, EU/EEA, 2022. Euro Surveill. 2023 Nov;28(46):2300604. Available from: https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2023.28.46.2300604
18. European Commission (EC). EU Guidelines for the prudent use of antimicrobials in human health, C/2017/4326. Commission notice. Brussels: European Commission; 2017. Available from: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52017XC0701(01)

19. European Centre for Disease Prevention and Control. Antimicrobial resistance in the EU/EEA (EARS-Net) - Annual Epidemiological Report 2024. Stockholm: ECDC; 2025. Available from: Antimicrobial resistance in the EU/EEA (EARS-Net) - Annual Epidemiological Report for 2024
20. European Centre for Disease Prevention and Control. Carbapenem-resistant Enterobacterales, third update – 3 February 2025. ECDC: Stockholm; 2025. Available from: https://www.ecdc.europa.eu/sites/default/files/documents/risk-assessment-carbapenem-resistant-enterobacterales-third-update-february-2025_0.pdf
21. European Centre for Disease Prevention and Control (ECDC). Point prevalence survey of healthcare-associated infections and antimicrobial use in European acute care hospitals. Stockholm: ECDC; 2024. Available from: https://www.ecdc.europa.eu/sites/default/files/documents/healthcare-associated-point-prevalence-survey-acute-care-hospitals-2022-2023.pdf
22. Organisation for Economic Co-operation and Development (OECD). Embracing a One Health Framework to Fight Antimicrobial Resistance, OECD Health Policy Studies. Paris: OECD Publishing; 2023. Available from: https://www.oecd.org/en/publications/embracing-a-one-health-framework-to-fight-antimicrobial-resistance_ce44c755-en.html
23. Organisation for Economic Co-operation and Development (OECD). Fighting Antimicrobial Resistance in EU and EEA countries. Paris: OECD Publishing; 2023. Available from: https://www.oecd.org/en/publications/fighting-antimicrobial-resistance-in-eu-and-eea-countries_fdb1629f-en.html
24. European Commission (EC). DG Health and Food Safety. Overview report Member States' One Health National Action Plans against Antimicrobial Resistance. Luxembourg: Publications Office of the European Union; 2022. Available from: https://health.ec.europa.eu/publications/overview-report-member-states-one-health-national-action-plans-against-antimicrobial-resistance_en
26. European Centre for Disease Prevention and Control (ECDC). Directory of online resources for the prevention and control of antimicrobial resistance (AMR) and healthcare-associated infections (HAI). Stockholm: ECDC. Available from: https://www.ecdc.europa.eu/en/publications-data/directory-online-resources-prevention-and-control-antimicrobial-resistance-amr
27. World Health Organization (WHO) Regional Office for Europe. Antimicrobial stewardship interventions: a practical guide. Copenhagen: WHO; 2021. Available from: https://www.who.int/europe/publications/i/item/9789289056267