

Summary of the latest data on antibiotic resistance in the European Union and European Economic Area (EARS-Net)

The results presented in this report are based on antimicrobial resistance (AMR) data from invasive isolates reported to the European Antimicrobial Resistance Surveillance Network (EARS-Net) by 30 European Union (EU) and European Economic Area (EEA) countries in 2020 (data referring to 2019), and on trend analyses of data reported by the participating countries for the period 2015 to 2019. The latest country-specific data can be retrieved from the ECDC Surveillance Atlas of Infectious Diseases at <https://atlas.ecdc.europa.eu/>

Epidemiology

The AMR situation in bacterial species reported to EARS-Net for 2019 varied widely, depending on the bacterial species, antimicrobial group and geographical region.

In 2019, more than half of the *E. coli* isolates reported to EARS-Net and more than a third of the *K. pneumoniae* isolates were resistant to at least one antimicrobial group under surveillance, and combined resistance to several antimicrobial groups was frequent. Resistance percentages were generally higher in *K. pneumoniae* than in *E. coli*. While carbapenem resistance remained rare in *E. coli*, several countries reported carbapenem resistance percentages above 10% in *K. pneumoniae*. Carbapenem resistance was also common in *P. aeruginosa* and *Acinetobacter* species, and at higher percentages than in *K. pneumoniae*. For most gram-negative bacteria under surveillance, changes in the EU/EEA mean resistance percentages between 2015 and 2019 were moderate, and resistance remained at previously reported high levels.

For *S. aureus*, the decline in the percentage of methicillin-resistant (i.e. MRSA) isolates reported in previous years continued in 2019. Nevertheless, MRSA remains an important pathogen in the EU/EEA, with levels still high in several countries, and combined resistance to another antimicrobial group was common. Decreases during the same period were also noted for penicillin non-wild type and macrolide resistance percentages in *S. pneumoniae*.

One development of particular concern was the increase in the percentage of vancomycin-resistant isolates of *E. faecium* in the EU/EEA, from 10.5% in 2015 to 18.3% in 2019 (EU/EEA population-weighted mean percentage).

For several bacterial species–antimicrobial group combinations, the reported AMR percentages varied widely between countries, and a north-to-south and west-to-east gradient was evident. In general, the lowest AMR percentages were reported by countries in the north of Europe whereas the highest AMR percentages were reported by countries in the south and east of Europe. However, for vancomycin-resistant *E. faecium*, no distinct geographical pattern could be seen.

Discussion

The considerable variability in AMR percentages across EU/EEA countries highlights opportunities for significant AMR reduction through investments to improve current control and prevention practices. Despite the political prioritisation of AMR as a threat to public health and the availability of evidence-based guidance for antimicrobial stewardship, adequate microbiological capacity and infection prevention and control, it is clear that public health action to tackle AMR remains insufficient.

The major driver behind the occurrence and spread of AMR is the use of antimicrobial agents and transmission of microorganisms with AMR; between humans, between animals, and between humans, animals and the environment. While antimicrobial use exerts an ecological pressure on microorganisms and contributes to the emergence and selection of AMR, poor infection prevention and control practices promote further spread of microorganisms with AMR. Results from the ECDC point prevalence survey of healthcare-associated infections and antimicrobial use in European acute care hospitals showed that the prevalence of patients receiving antibiotics was positively associated with AMR, and conversely, antibiotic stewardship activities and resources for hospital hygiene were negatively associated with AMR. Prudent antimicrobial use and high standards for infection prevention and control in all healthcare sectors are the cornerstones of an effective response to AMR.

AMR calls for concerted efforts at country level as well as close international cooperation. In 2017, the European Commission adopted a European One Health Action Plan against AMR to support the EU and its Member States in delivering innovative, effective and sustainable responses to AMR. In a 2017 survey, a majority of EU/EEA countries reported having initiated work towards establishing objectives and targets for the reduction of

antibiotic use in humans, often in the context of developing a national action plan for AMR. However, only a few countries had published targets in 2017, and a minority had identified specific funding sources to implement their national action plans.

Public health implications

The high levels of AMR for several important bacterial species-antimicrobial group combinations reported to EARS-Net for 2019 show that AMR remains a serious challenge in the EU/EEA. AMR is considered to be one of the biggest threats to public health today, both globally and in the EU/EEA. Recent estimates based on data from EARS-Net show that each year, more than 670 000 infections occur in the EU/EEA due to bacteria resistant to antibiotics, and that approximately 33 000 people die as a direct consequence of these infections. The related cost to the healthcare systems of EU/EEA countries is around EUR 1.1 billion.

Rising proportions of AMR will be an increasing concern unless governments respond more robustly to the threat. Further investment in public health interventions to tackle AMR are urgently needed, and would have a significant positive impact on population health and future healthcare expenditures in the EU/EEA. It has been estimated that a mixed intervention package including antibiotic stewardship programmes, enhanced hygiene, mass media campaigns, and the use of rapid diagnostic tests has the potential to prevent approximately 27 000 deaths per year in the EU/EEA. In addition to saving lives, such a public health package could pay for itself within just one year and end up saving around EUR 1.4 billion per year in the EU/EEA.

Resources and References

The Antimicrobial resistance in the EU/EEA (EARS-Net) - Annual Epidemiological Report 2019 will be available at: <https://www.ecdc.europa.eu/en/publications-data/surveillance-antimicrobial-resistance-europe-2019>

A PDF containing all country summaries will be available on the landing page for the Annual Epidemiological Report at the following link: <https://www.ecdc.europa.eu/en/publications-data/surveillance-antimicrobial-resistance-europe-2019>

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