European Centre for Disease Prevention and Control

# Epidemiological data on carbapenem-resistant *Acinetobacter* species and carbapenem-resistant *Pseudomonas aeruginosa* in the EU/EEA

Pete Kinross, Principal Expert in Antimicrobial Resistance and Healthcare-Associated Infections, ECDC
EURGen-RefLabCap virtual webinar for introduction of workstream 2 pathogens; 28 March 2023

# ECDC data sources for carbapenem consumption and carbapenem resistance information on *Acinetobacter* spp. and *Pseudomonas aeruginosa*

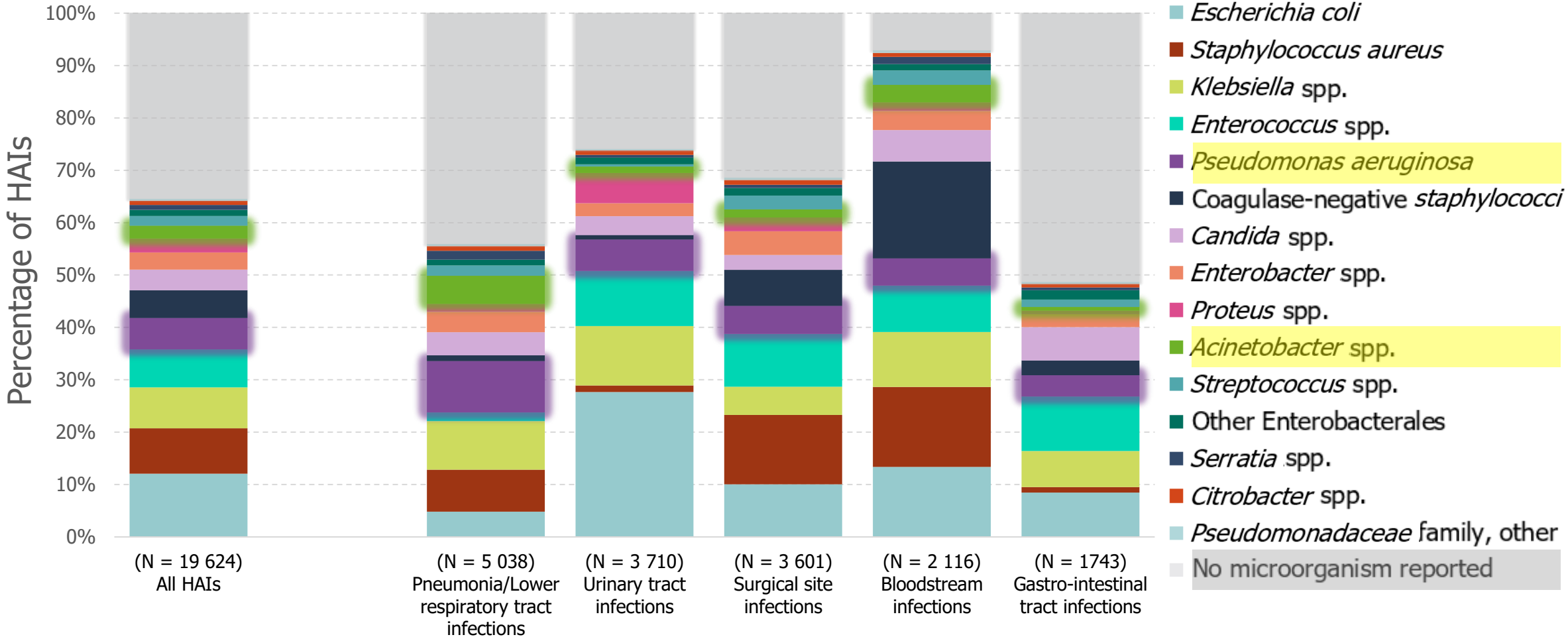
- Point prevalence surveys (PPSs) of healthcare-associated infections (HAIs) and antimicrobial use in European acute care hospitals
- EARS-Net (incidence surveillance of AST results from local laboratories)
- Incidence surveillance of HAIs in intensive care units
- Incidence surveillance of surgical site infections
- ECDC Rapid Risk Assessments
- ESAC-Net (monitoring of antimicrobial consumption)
- PPSs of HAIs and antimicrobial use in European long-term care facilities

# ECDC Point prevalence surveys of healthcare-associated infections and antimicrobial use in European acute care hospitals

# Microorganisms isolated in HAIs, by type of HAI

ECDC PPS of HAIs and antimicrobial use in European acute care hospitals, 2016–2017

*N = 1 209 acute care hospitals in 28 countries; N >19 000 HAIs in >325 000 patients.*

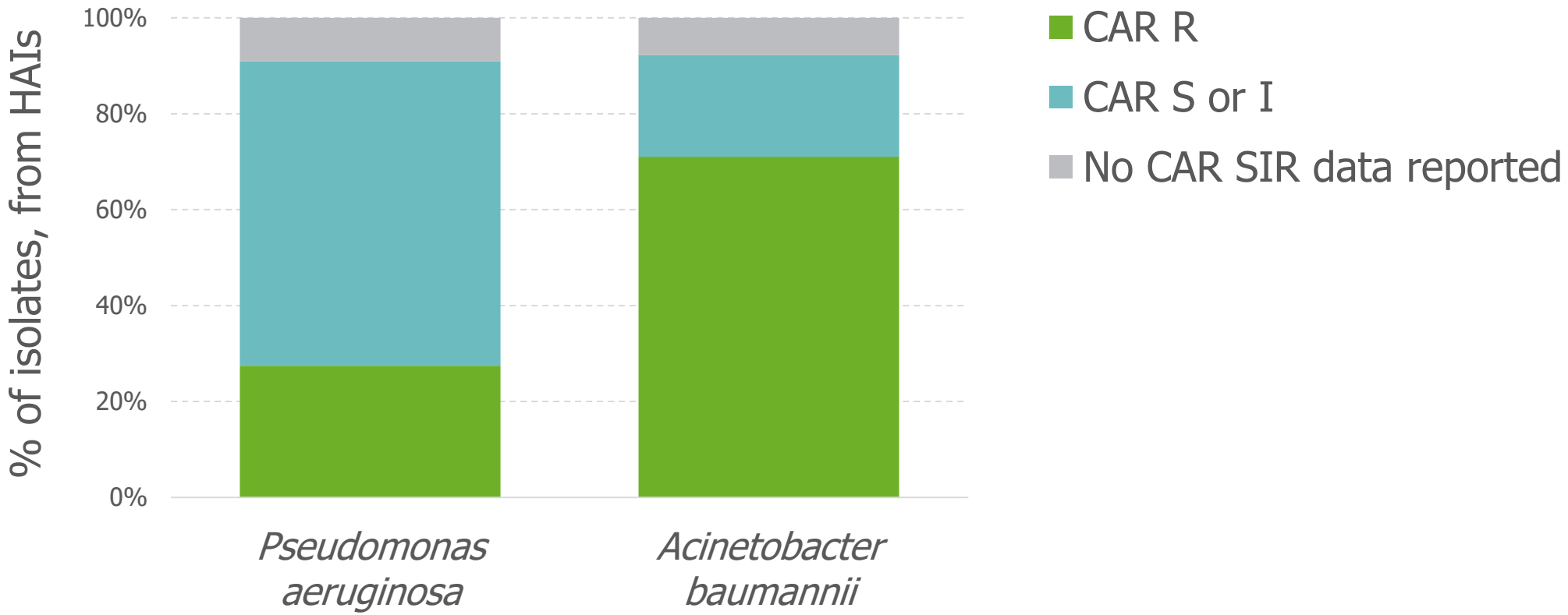



Source: ECDC Point Prevalence Surveys of Healthcare-Associated Infections and Antimicrobial Use in European Acute Care Hospitals, 2016–2017 (in press)
Adapted from: Suetens C, Eurosurveillance, 2019 (Supplementary table I.3.)

# CAR resistance among *A. baumannii* & *P. aeruginosa* in HAIs

ECDC PPS of HAIs and antimicrobial use in European acute care hospitals, 2016–2017

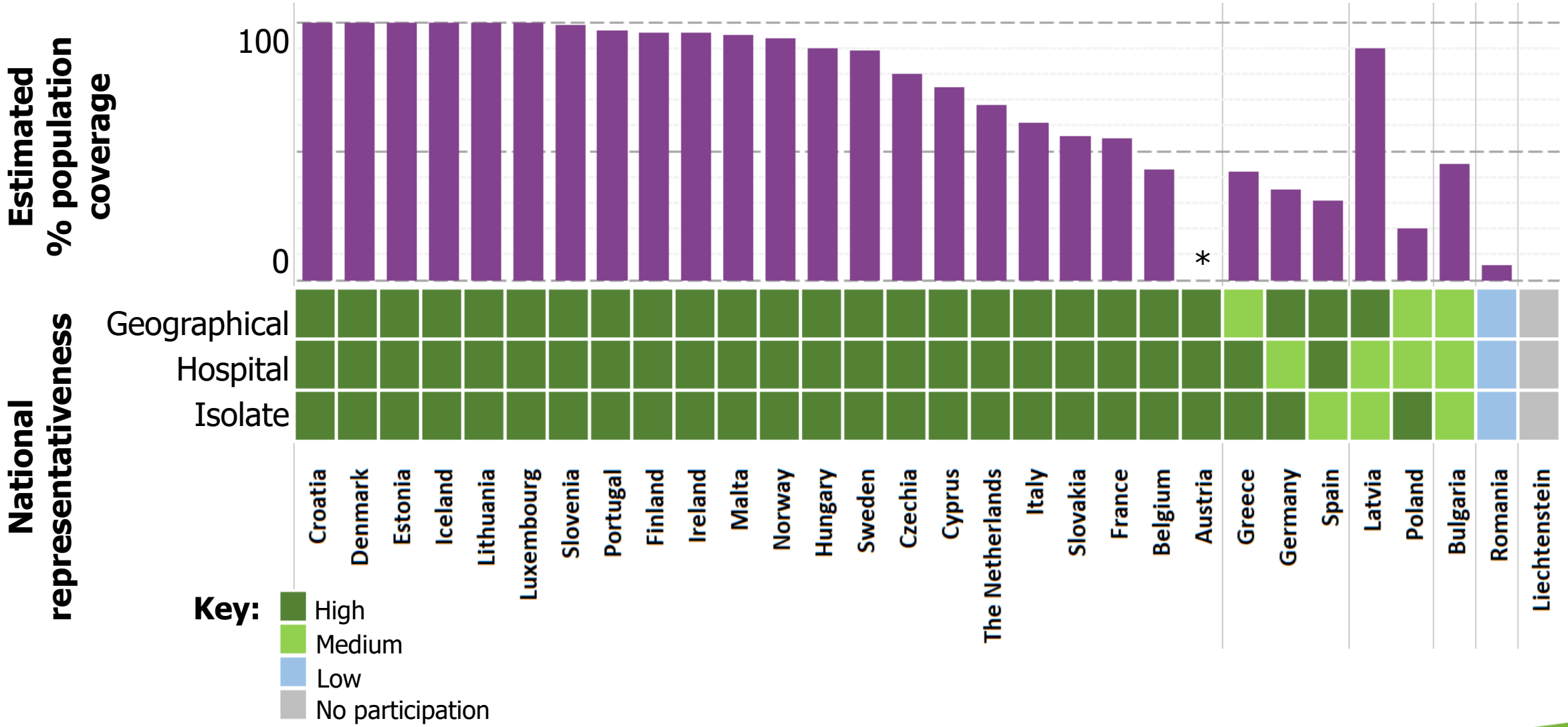
*N = 1 209 acute care hospitals in 28 countries; N >19 000 HAIs in >325 000 patients.*




Adapted from: Suetens C, Eurosurveillance, 2019 (Supplementary table I.4.)
Definitions: ECDC PPS protocol v5.3, available from https://www.ecdc.europa.eu/sites/default/files/media/en/publications/Publications/PPS-HAI-antimicrobial-use-EU-acute-care-hospitals-V5-3.pdf
CAR – carbapenem, specified as being imipenem, meropenem and doripenem. S – susceptible; I – intermediate; R – resistant.
Reporting group susceptibility requires that at least one antimicrobial belonging to the group is tested. If several antibiotics within a group were tested, the least susceptible result for the group is reported, e.g. meropenem R + imipenem I = CAR R.

# EARS-Net
## Data quality

# EARS-Net data, 2021: National estimates of data representativeness and population coverage




Source: EARS-Net AER 2021, https://www.ecdc.europa.eu/sites/default/files/documents/AER-EARS-Net-2021_2022-final.pdf; * no data

# EARS-Net EQA 2022, subset of results

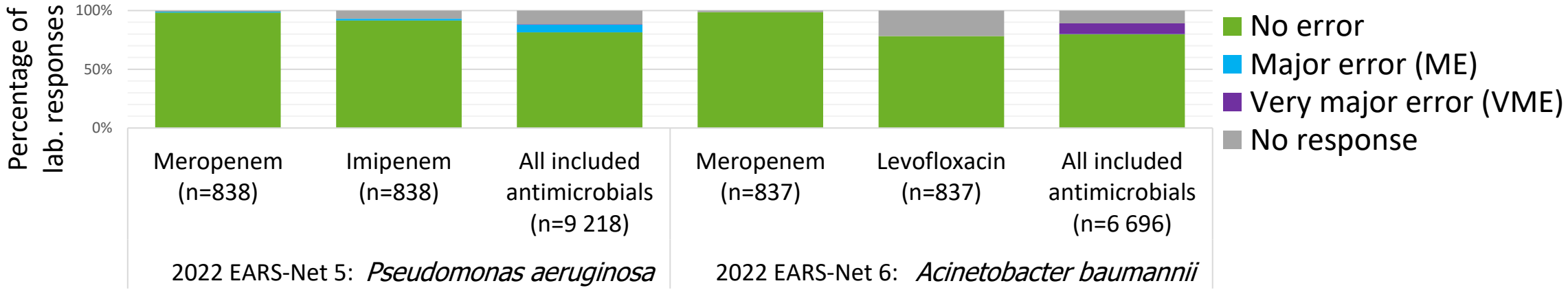
1. Strain

2. Participation

3. Result

| EQA strain | Antimicrobial | EUCAST clinical breakpoints* | | Expected | | Mechanism** | ST |
|---|---|---|---|---|---|---|---|
| | | S | R | Result* | Interpretation | | |
| Strain 5: *P. aeruginosa* | Imipenem | 0 | > 4 | 1 | **I** | ND | 1633 |
| | Meropenem | ≤ 2 | > 8 | 0.5 | **S** | ND | |
| Strain 6: *A. baumannii* | Imipenem | ≤ 2 | > 4 | 16 | **R** | $bla_{OXA-23}$ | *1780 / 764* |
| | Meropenem | ≤ 2 | > 8 | 32 | **R** | $bla_{OXA-23}$ | |

N = 948 laboratories in all 30 EU/EEA countries

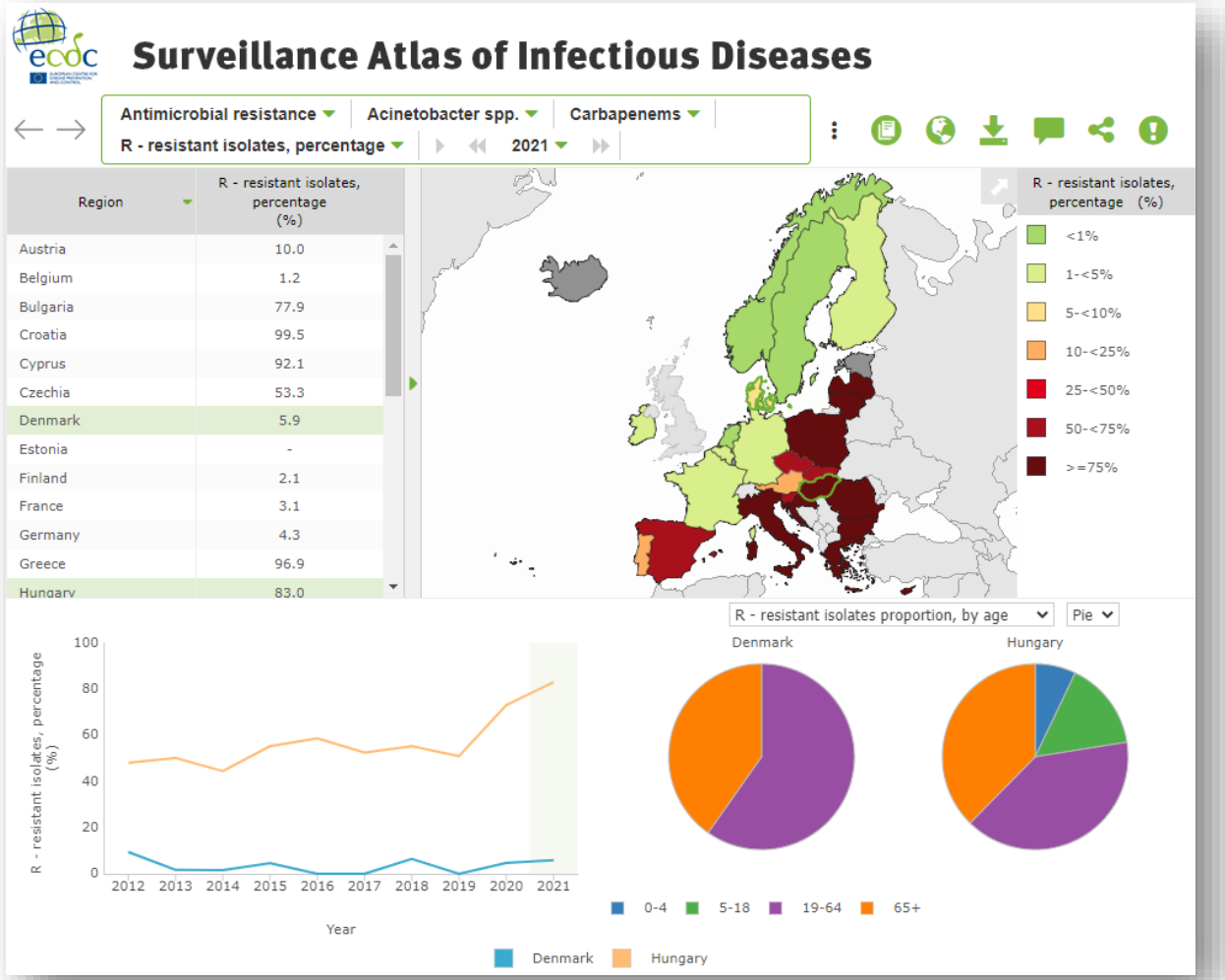


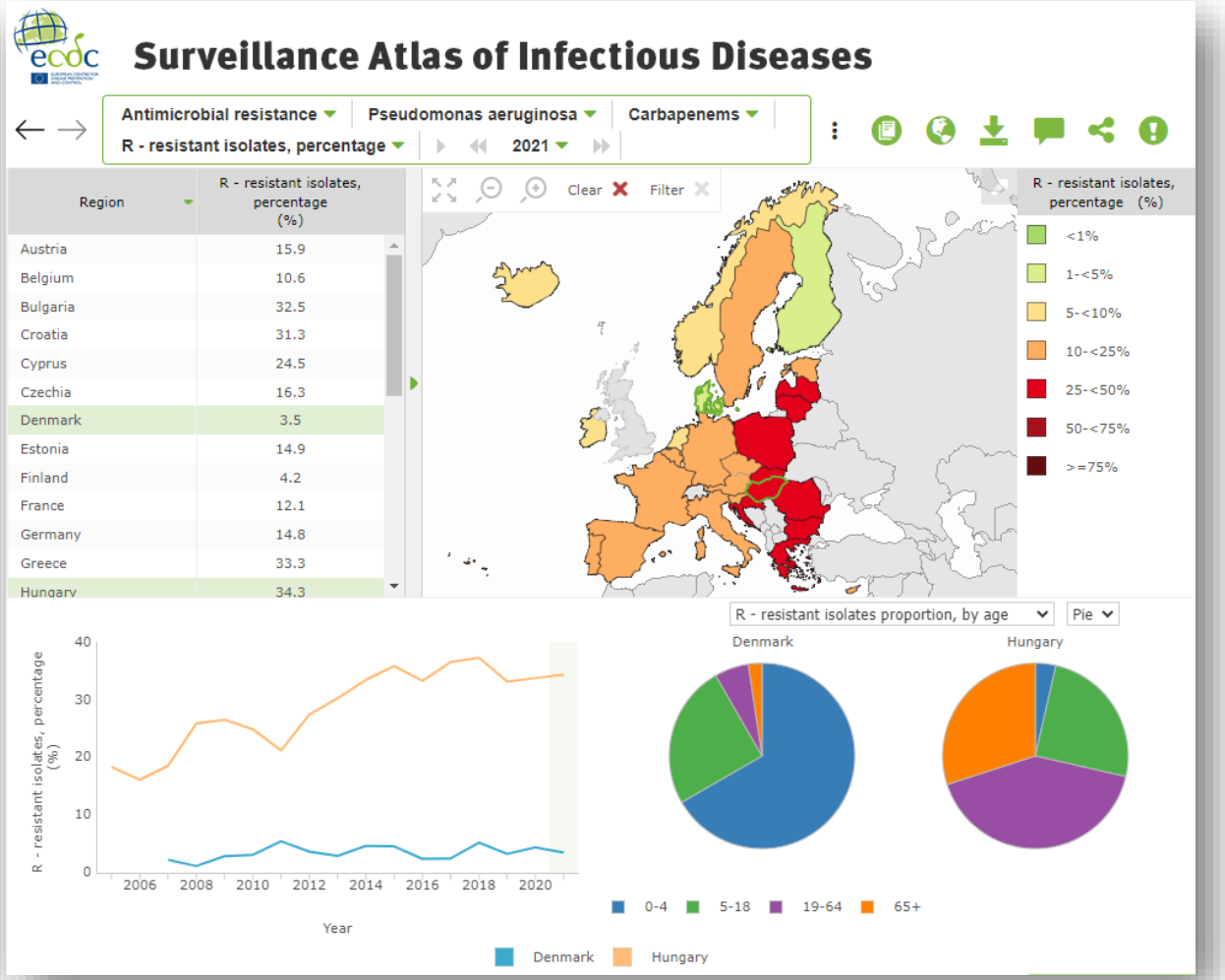

Source: ECDC EARS-Net EQA 2022, report (in press); EARS-Net EQA contractor: DTU (DK); * mg/L

**Antimicrobial resistance genes and chromosomal point mutations (ResFinder 4.1 or CARD RGI). ND: Not detected.

# EARS-Net
## Data

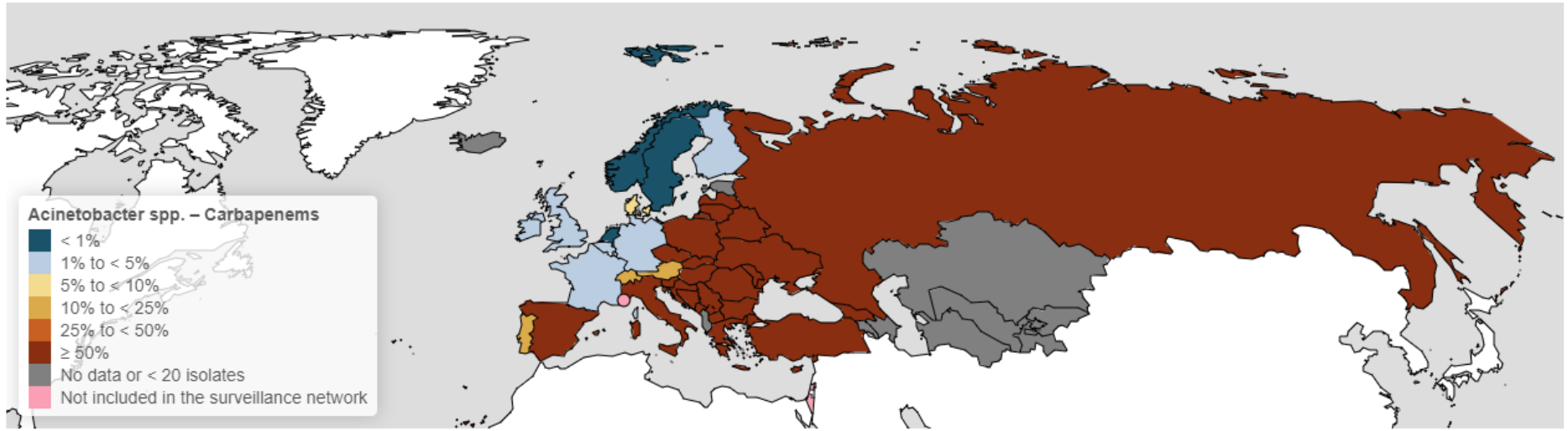
# % resistance to carbapenems among isolates of *Acinetobacter* spp. & *P. aeruginosa*, EU/EEA, 2021

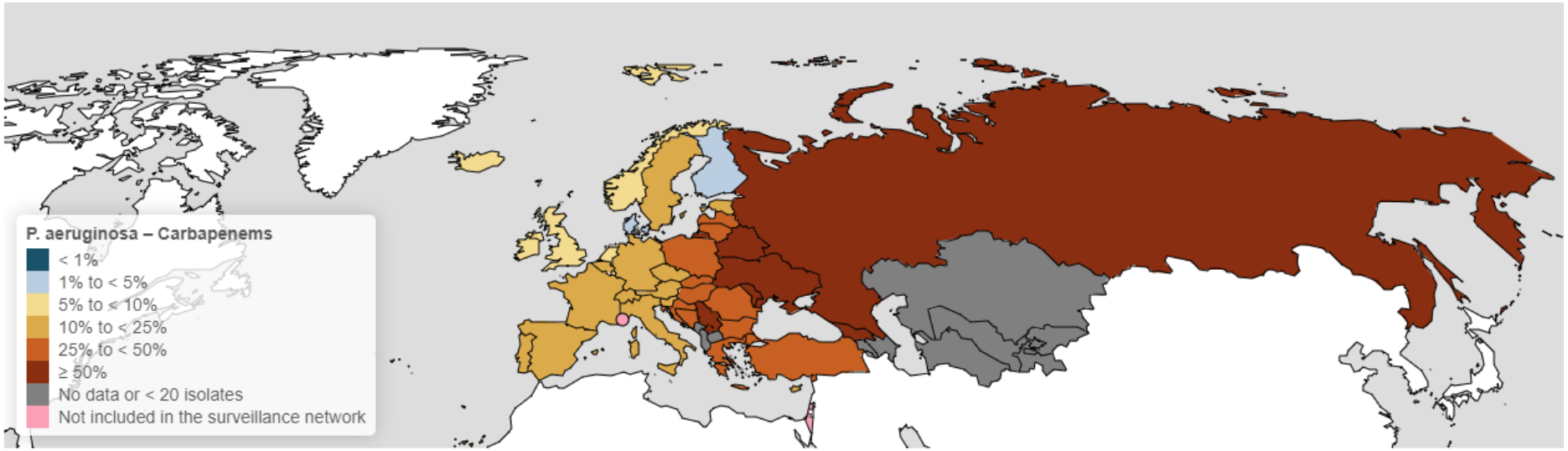



Source: https://atlas.ecdc.europa.eu/public/index.aspx (ECDC EARS-Net, 2021 data)

# Percentage of invasive isolates (blood and cerebrospinal fluid) resistant to carbapenems (imipenem/meropenem) in the WHO European Region by country/area.




**EU/EEA data source:** EARS-Net (ECDC)

Source: https://worldhealthorg.shinyapps.io/WHO-AMR-Dashboard/.

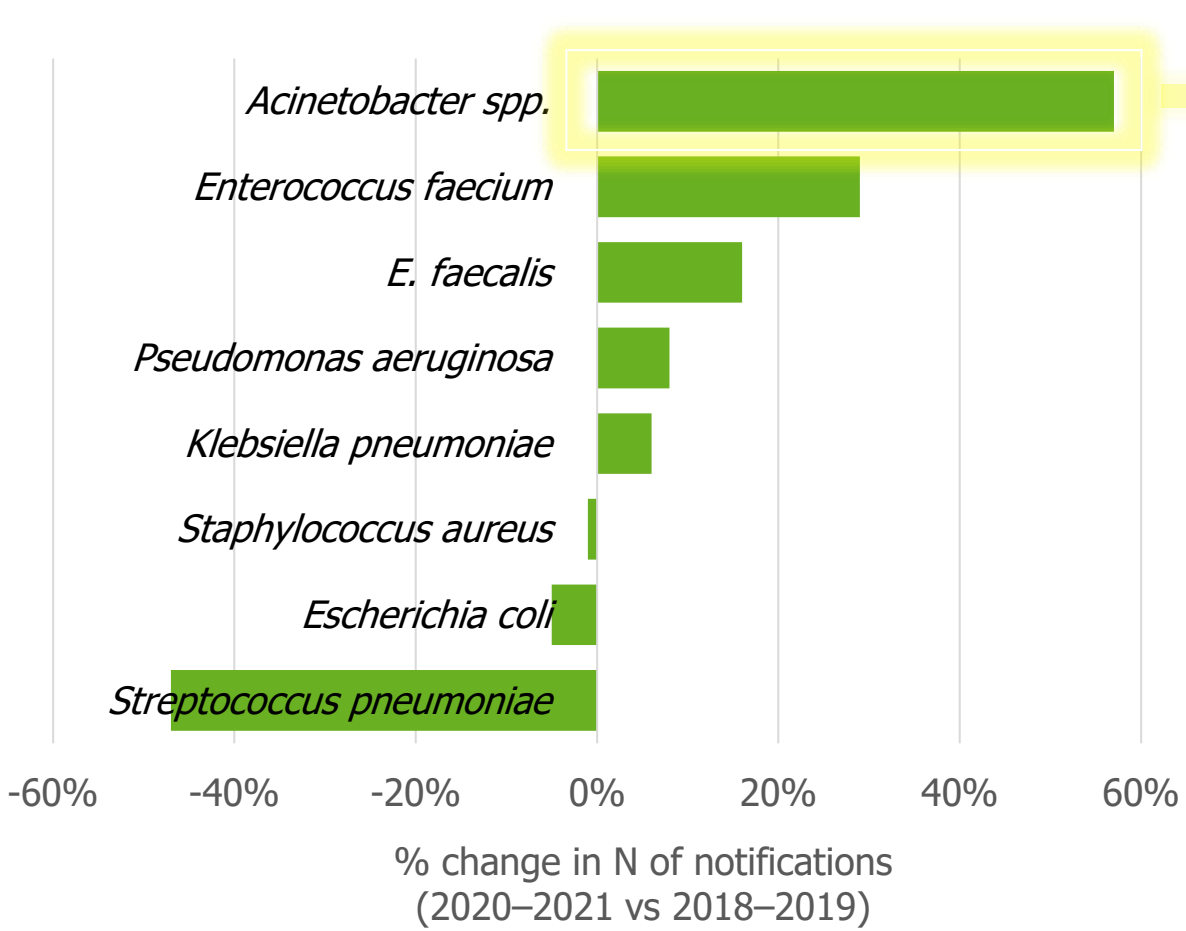
All references to Kosovo should be understood to be in the context of the United Nations Security Council resolution 1244 (1999). Dashed lines denote disputed boundaries and areas. Data for Serbia and Kosovo were combined for this map. Data for the United Kingdom were collected within the EARS-Net network up until 2019, and within CAESAR after this. In 2020 and 2021, data for the United Kingdom do not include Wales.

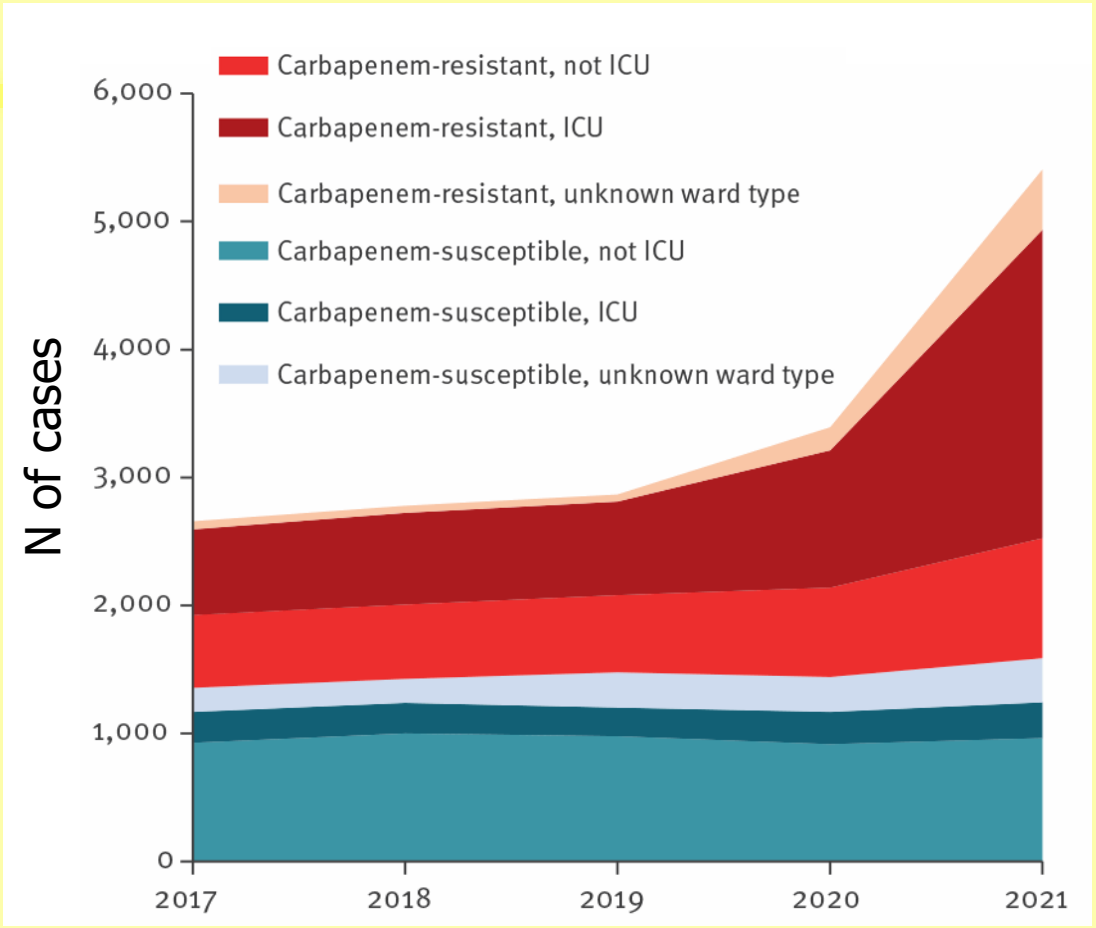
# **EARS-Net**
# Data trends, pre- vs. post-2020

# Large increase in BSIs with carbapenem-resistant *Acinetobacter* species during the first 2 years of the COVID-19 pandemic, EU/EEA, 2020 and 2021

**Eurosurveillance** Volume 27, Issue 46, 17/Nov/2022

***Laboratories that continuously reported Acinetobacter* spp. *data to EARS-Net in 2017–2021***




Data: ECDC EARS-Net.

# Large increase in BSIs with carbapenem-resistant *Acinetobacter* species during the first 2 years of the COVID-19 pandemic, EU/EEA, 2020 and 2021

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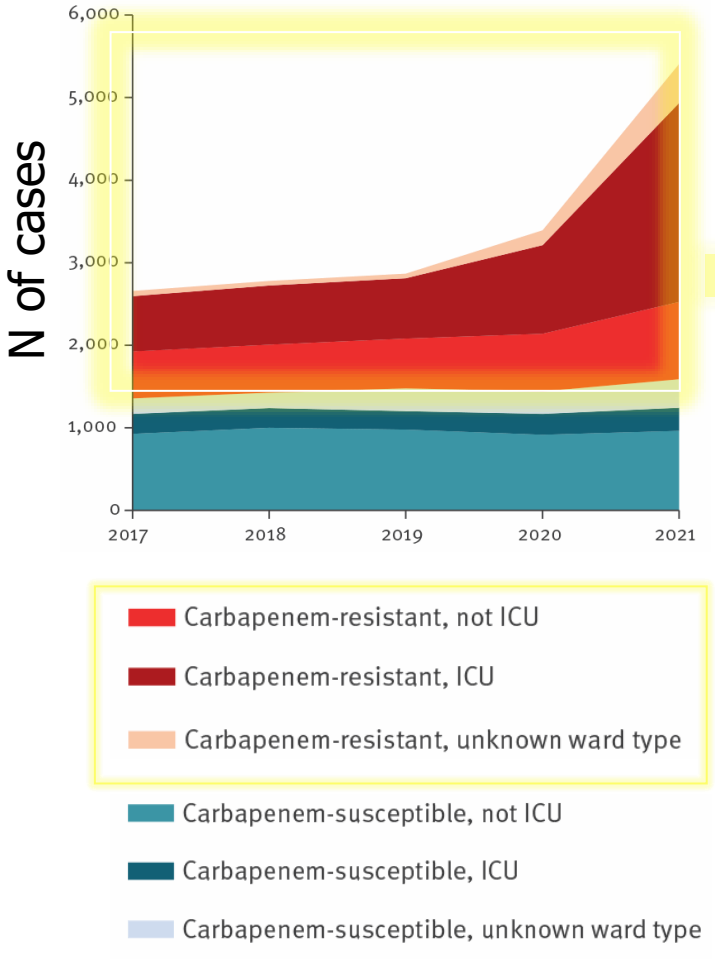
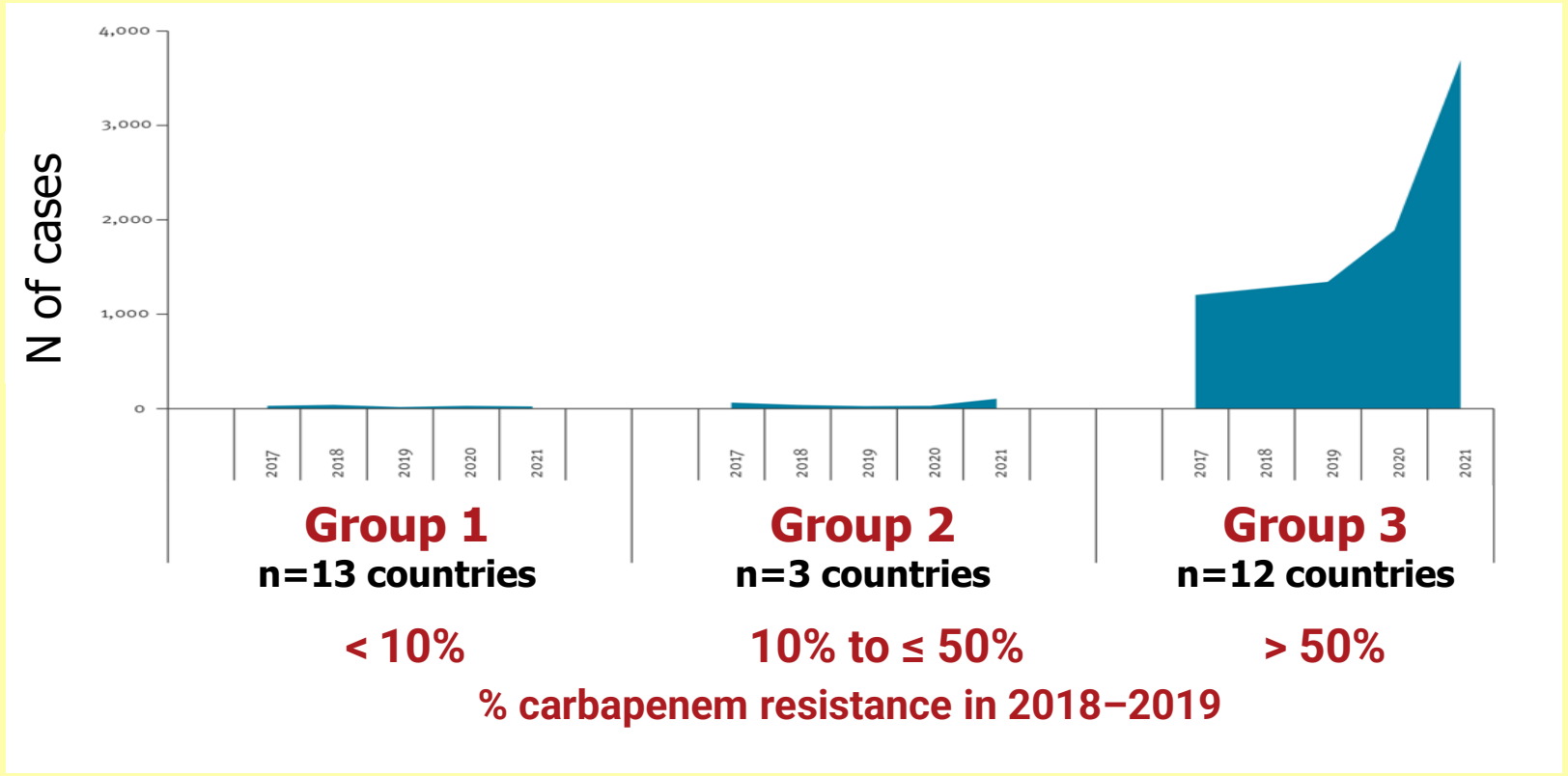
**Laboratories that continuously reported *Acinetobacter* spp. data to EARS-Net in 2017–2021**




Data: ECDC EARS-Net. **Group 1:** Austria, Belgium, Denmark, Estonia, Finland, Germany, Iceland, Ireland, Luxembourg, Malta, the Netherlands, Norway and Sweden; **Group 2:** Czechia, Portugal, and Slovenia; **Group 3:** Bulgaria, Croatia, Cyprus, Greece, Hungary, Italy, Latvia, Lithuania, Poland, Romania, Slovakia and Spain.

# Large increase in BSIs with carbapenem-resistant *Acinetobacter* species during the first 2 years of the COVID-19 pandemic, EU/EEA, 2020 and 2021

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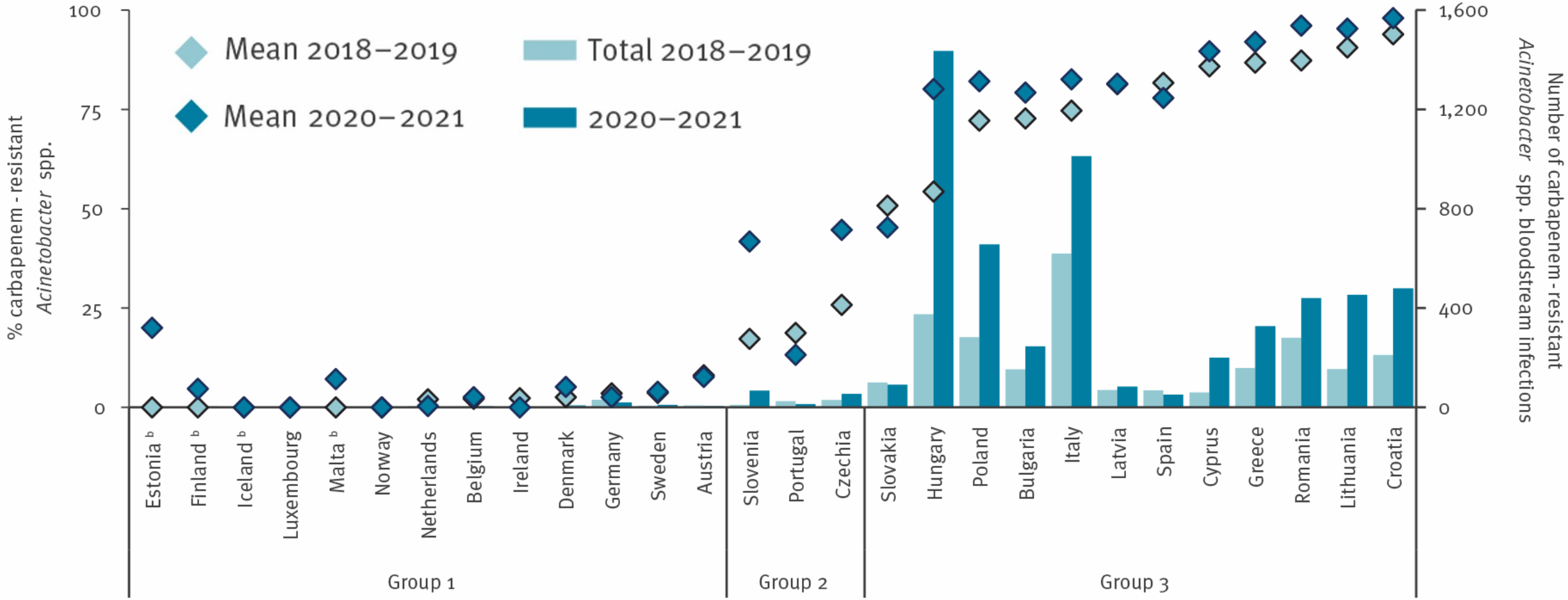
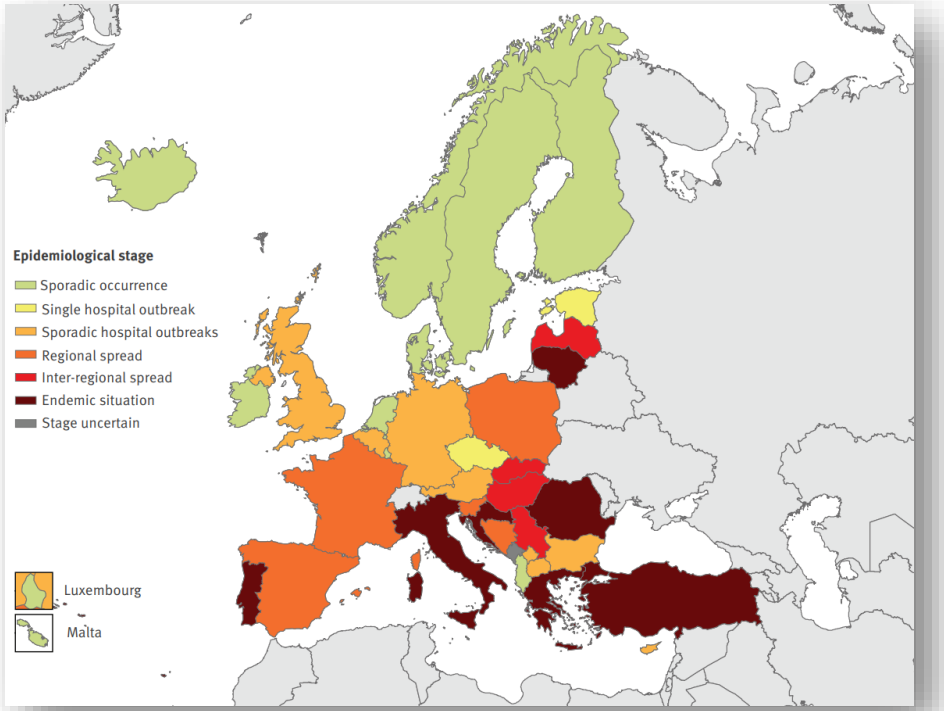



Data: ECDC EARS-Net
Group 1: < 10% carbapenem resistance in 2018–2019;
Group 2: 10% to < 50% carbapenem resistance in 2018–2019;
Group 3: ≥ 50% carbapenem resistance in 2018–2019).

Epidemiological situation of carbapenem-resistant *A. baumannii*, assessment by national experts in European countries (n = 37), **December 2019**

**Eurosurveillance** Volume 25, Issue 45, 12/Nov/2020




Large increase in BSIs with carbapenem-resistant *Acinetobacter* species during the first 2 years of the COVID-19 pandemic, EU/EEA, 2020 and 2021

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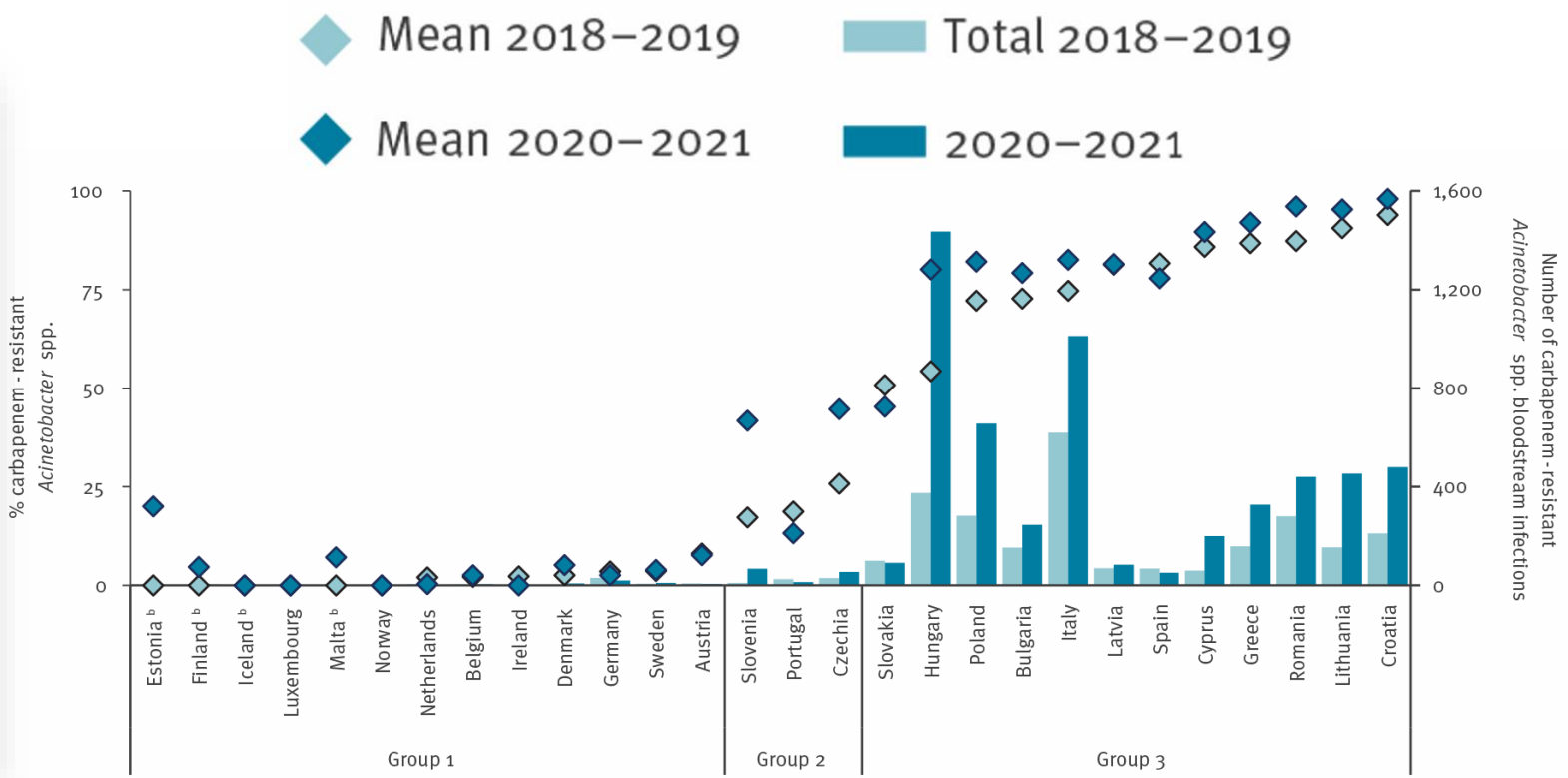


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# Large increase in BSIs with carbapenem-resistant *Acinetobacter* species during the first 2 years of the COVID-19 pandemic, EU/EEA, 2020 and 2021

**Eurosurveillance** Volume 27, Issue 46, 17/Nov/2022

## Recommendations:

- ↑ IPC and/or preparedness for CRAb in hospitals in Europe, particularly if ↑ CAR-R.

RAPID COMMUNICATION

Large increase in bloodstream infections with carbapenem-resistant *Acinetobacter* species during the first 2 years of the COVID-19 pandemic, EU/EEA, 2020 and 2021

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2. Regional Agency for Health and Social Care of Emilia-Romagna, Bologna, Italy
3. Members of the EARS-Net Study Group are listed under Collaborators and at the end of the article

* These authors contributed equally to the article and share first authorship.

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Collaborators: The collaborators are listed at the end of the article.

Citation style for this article:
Kinross Pete, Gagliotti Carlo, Merk Hanna, Plachouras Diamantis, Monnet Dominique L, Högberg Liselotte Diaz, EARS-Net Study Group. Large increase in bloodstream infections with carbapenem-resistant *Acinetobacter* species during the first 2 years of the COVID-19 pandemic, EU/EEA, 2020 and 2021. Euro Surveill. 2022;27(46):pii=2200845. https://doi.org/10.2807/1560-7917.ES.2022.27.46.2200845

Article submitted on 27 Oct 2022 / accepted on 16 Nov 2022 / published on 17 Nov 2022

**Recent data from the European Antimicrobial Resistance Surveillance Network (EARS-Net) show a large increase of +57% in *Acinetobacter* species bloodstream infections in the European Union and European Economic Area in the first years of the COVID-19 pandemic (2020–2021) compared with 2018–2019. Most were resistant to carbapenems, from intensive care units, and in countries with a 50% carbapenem resistance in *Acinetobacter* spp. in 2018–2019. This highlights the requirement for reinforced *Acinetobacter* preparedness and infection prevention and control in Europe.**

Bloodstream infections (BSIs) with *Acinetobacter* species commonly have poor outcomes, especially in intensive care unit (ICU) patients [1]. *Acinetobacter* spp. is intrinsically resistant to many antimicrobials, and additional acquired resistance further complicates the treatment of serious infections in already vulnerable patient groups. Recent data from the European Antimicrobial Resistance Surveillance Network (EARS-Net) show a large and statistically significant increase in reports of *Acinetobacter* spp. BSIs in the European Union (EU) and European Economic Area (EEA) during the period from 2017 to 2021 [2]. Most of this increase occurred in 2020 and 2021, the first years of the coronavirus disease (COVID-19) pandemic. Here we further explore this trend in a subset of data from laboratories that continuously reported data during that period.

### Data description

Our data originate from qualitative routine antimicrobial susceptibility testing (AST) results of blood isolates collected by local clinical laboratories in national networks in EU/EEA countries. These results are reported annually by national centres to the European Centre for Disease Prevention and Control (ECDC), according to the EARS-Net reporting protocol [3]. In its analyses, EARS-Net only includes the first isolate per patient each year and for each bacterial species.

All EU countries, Iceland and Norway reported data to EARS-Net every year during the period 2017 to 2021 [3,4]. For this analysis, we restricted the dataset to BSIs with *Acinetobacter* spp. and to only those laboratories that reported carbapenem (imipenem and/or meropenem) antimicrobial susceptibility testing results for *Acinetobacter* spp. for every year in 2017 to 2021 (255 of 826 laboratories reporting, on average, per year). We made this restriction to limit bias from year-to-year changes in the number, hospital affiliation and type of reporting laboratories, and because not all countries can discriminate between laboratories that did not report and those that had no cases. The United Kingdom ceased reporting data to ECDC in 2020 when it withdrew from the EU and was hence not included. In addition, France was excluded because, following a major reorganisation of national surveillance in 2020, only a few laboratories were continuously identifiable. The Table presents data for the 28 included countries, with and without restriction to continuously reporting laboratories.

As the resistance percentages for *Acinetobacter* spp. varied substantially between EU/EEA countries [4], we grouped the countries according to their mean national annual carbapenem resistance percentage in

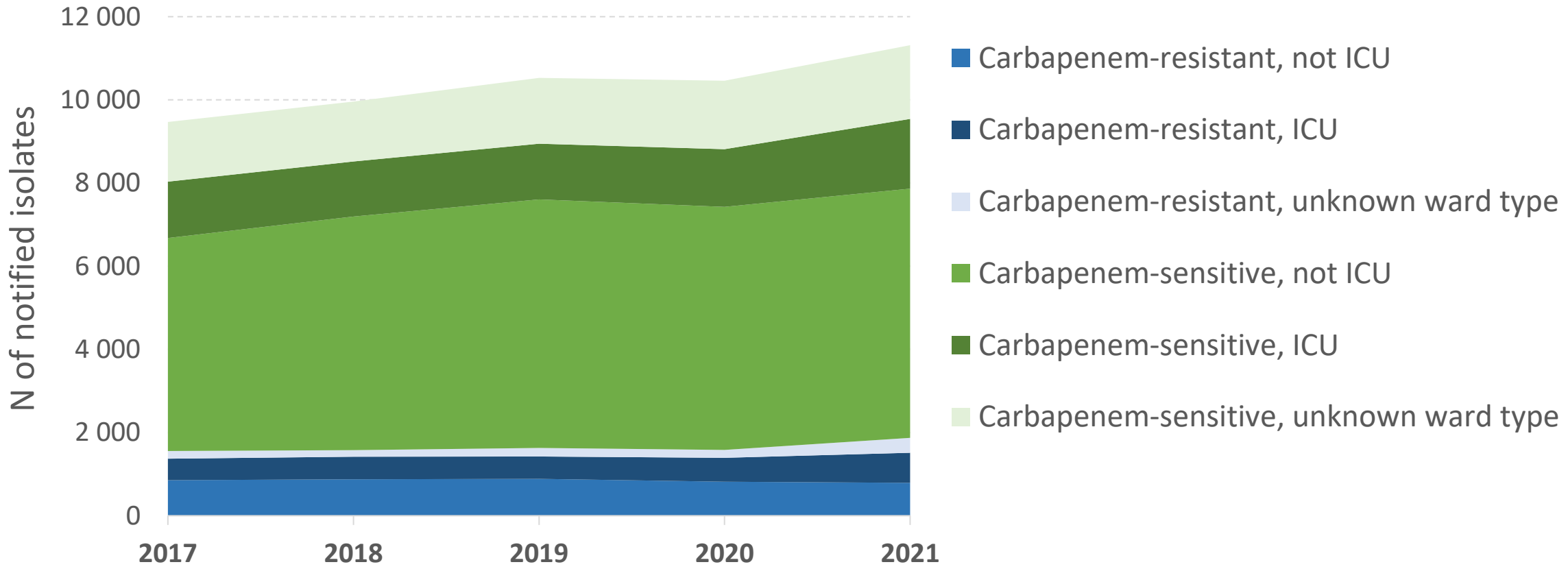


## Hypotheses for ↑ CRAb BSIs in 2020–2021:

- ↑ N of severely ill patients, e.g. severe pulmonary infection.
- ↑ Occupancy rates; ↑ N of ICU beds.
- ↑ Staff overworked; ↑ less experienced staff.
- ↑ Inappropriate application of contact precautions:
  - ↑ suboptimal hand hygiene.
  - ↑ contamination & insufficient cleaning of hospital environment.
  - ↓ attention to antimicrobial stewardship; ↑ carbapenem use.

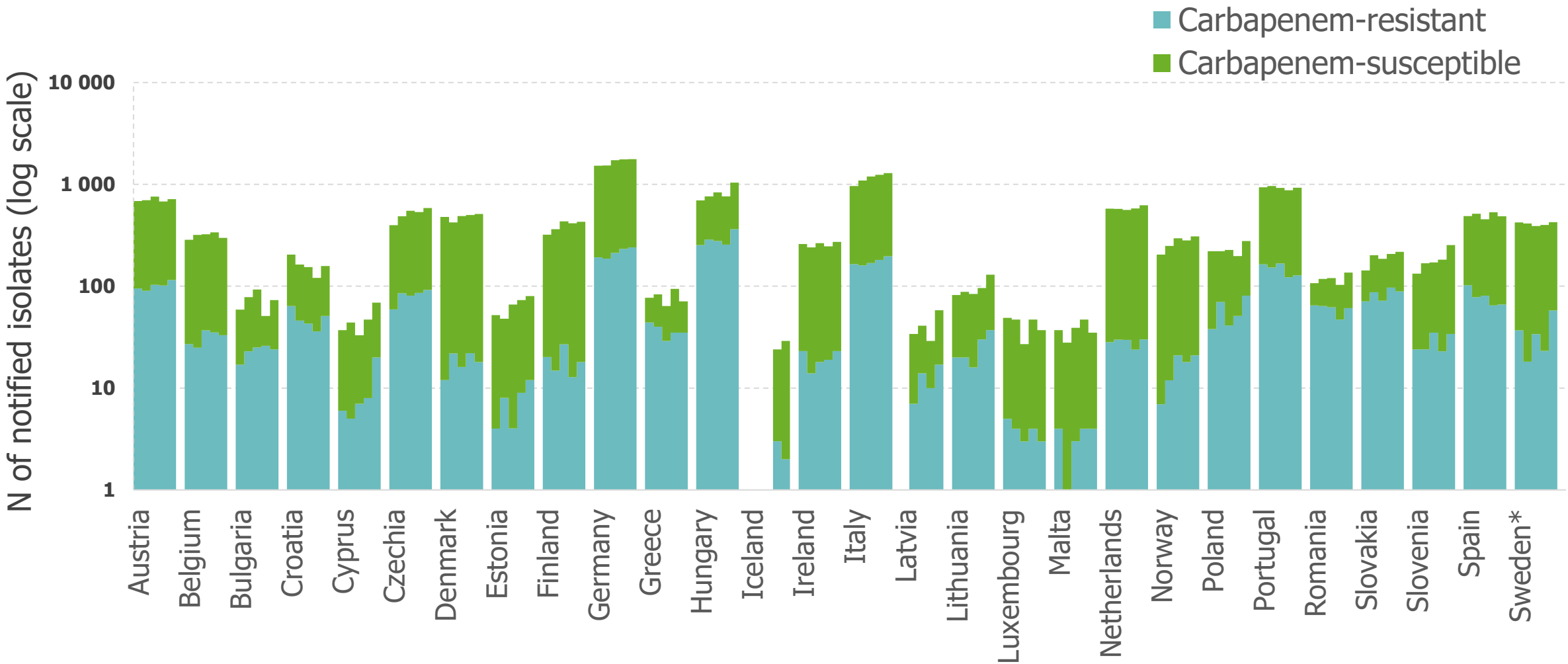
# Carbapenem-resistant *Pseudomonas aeruginosa* (CRPa) in the EU/EEA

# N of isolates from *Pseudomonas aeruginosa* BSIs notified to EARS-Net by consistently-reporting laboratories, by carbapenem AST result, and ward type, 2017-2021




Source: EARS-Net/TESSy; ICU: Intensive care unit.

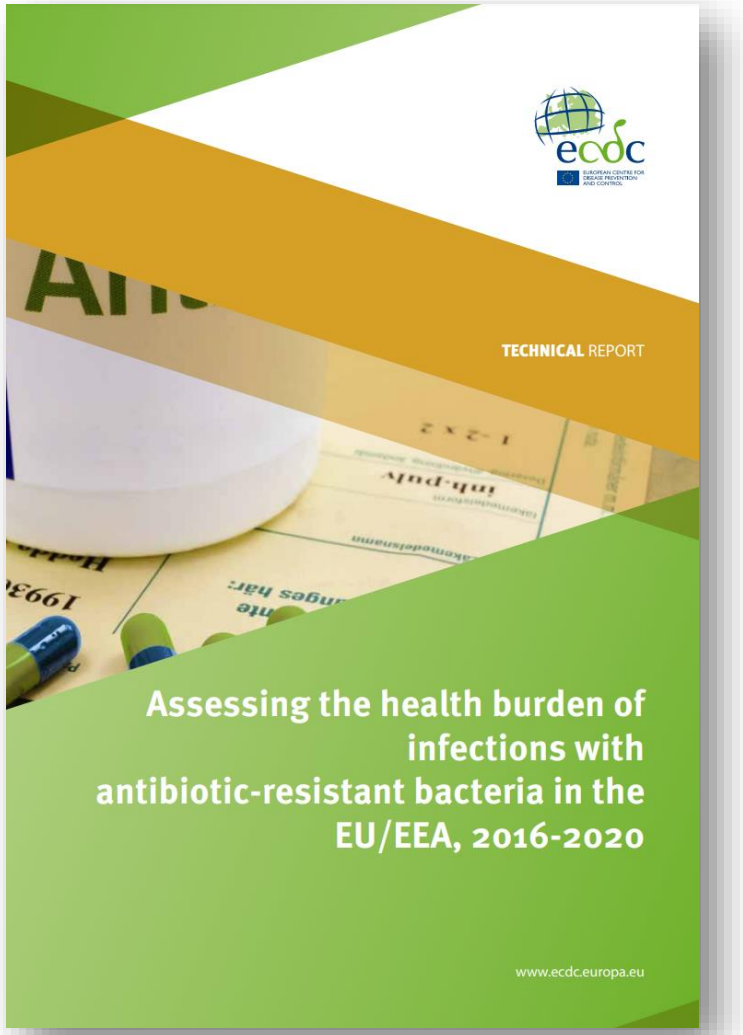
# N of isolates from *Pseudomonas aeruginosa* BSIs notified to EARS-Net by consistently-reporting laboratories, by carbapenem AST result, and EU/EEA country, 2017-2021




Source: EARS-Net/TESSy; *For Sweden, data could not be checked for possible duplicate cases reported from the same patient

# Burden of AMR

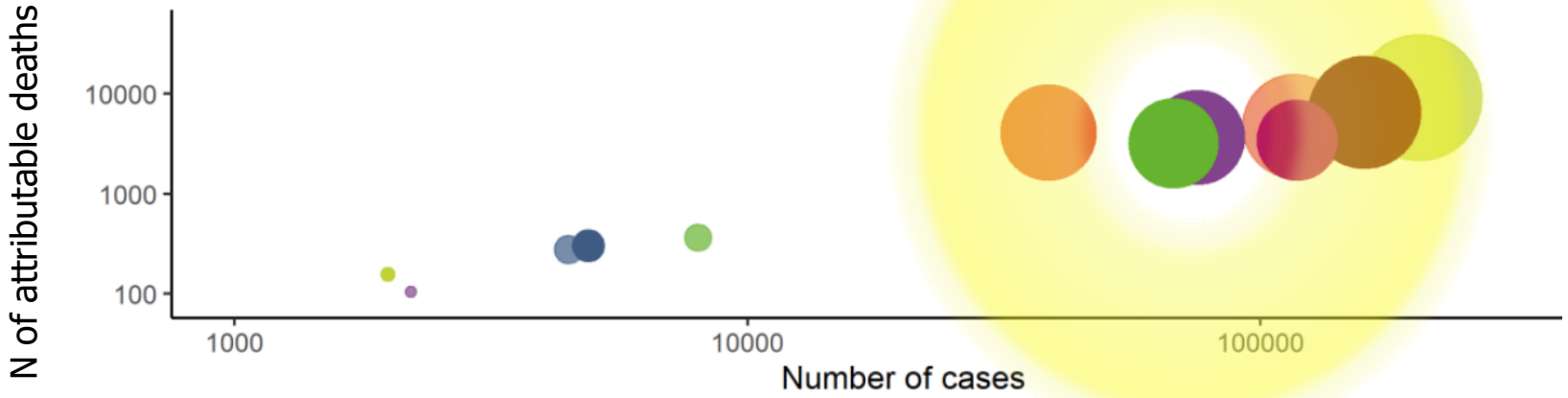
# EARS-Net + Hospital PPS data ➔




Published 17 November 2022.

Available from: https://www.ecdc.europa.eu/en/publications-data/health-burden-infections-antibiotic-resistant-bacteria-2016-2020

# Estimated burden of infections with antibiotic-resistant bacteria EU/EEA, 2020

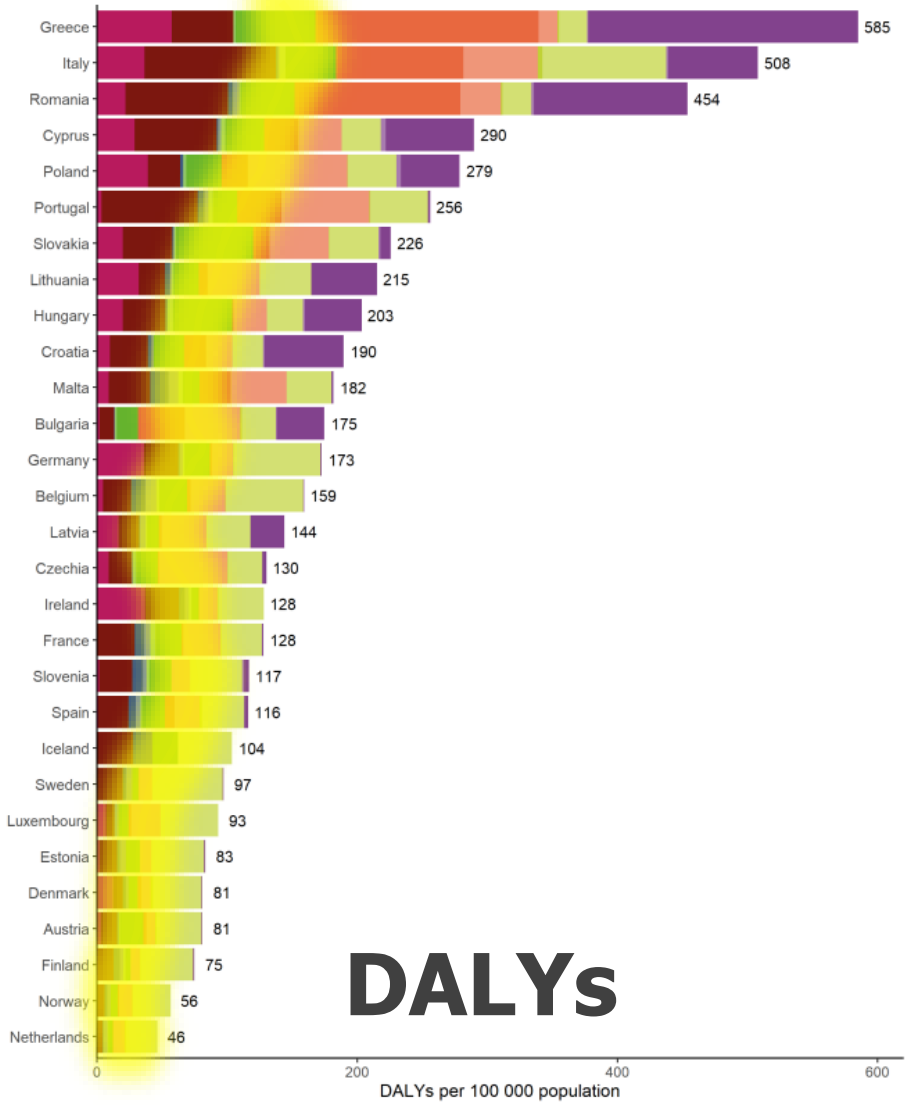




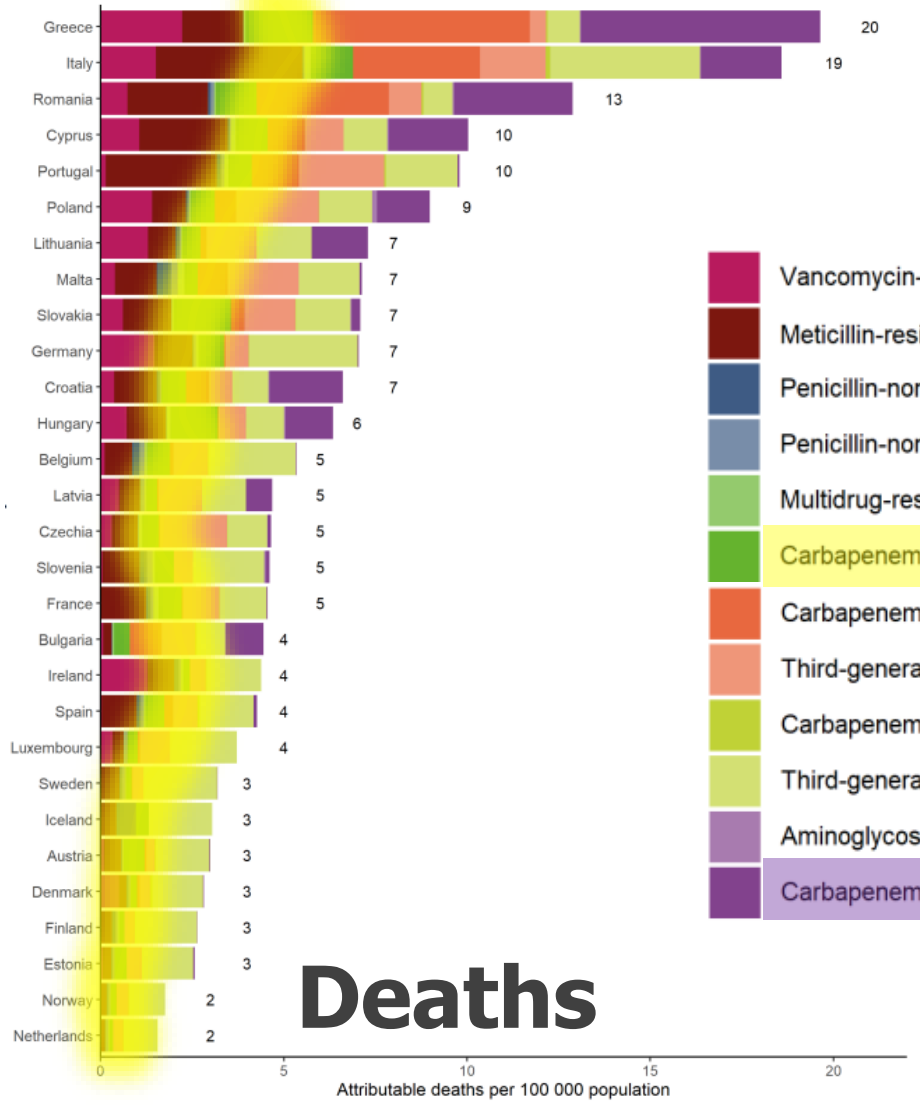
- Carbapenem-resistant *Acinetobacter* spp.
- Aminoglycoside- and fluoroquinolone-resistant *Acinetobacter* spp.
- Third-generation cephalosporin-resistant *E. coli*
- Carbapenem-resistant *E. coli*
- Third-generation cephalosporin-resistant *K. pneumoniae*
- Carbapenem-resistant *K. pneumoniae*
- Carbapenem-resistant *P. aeruginosa*
- Multidrug-resistant *P. aeruginosa*
- Penicillin-non-wild-type *S. pneumoniae*
- Penicillin-non-wild-type and macrolide-resistant *S. pneumoniae*
- Meticillin-resistant *S. aureus*
- Vancomycin-resistant *E. faecalis / E. faecium*

Source: **Assessing the health burden of infections with antibiotic-resistant bacteria in the EU/EEA, 2016-2020 (ECDC, 17 Nov 2022); DALYs – disability-adjusted life years;**

# Estimated burden of infections with antibiotic-resistant bacteria by country*, EU/EEA, 2020




DALYs




Deaths

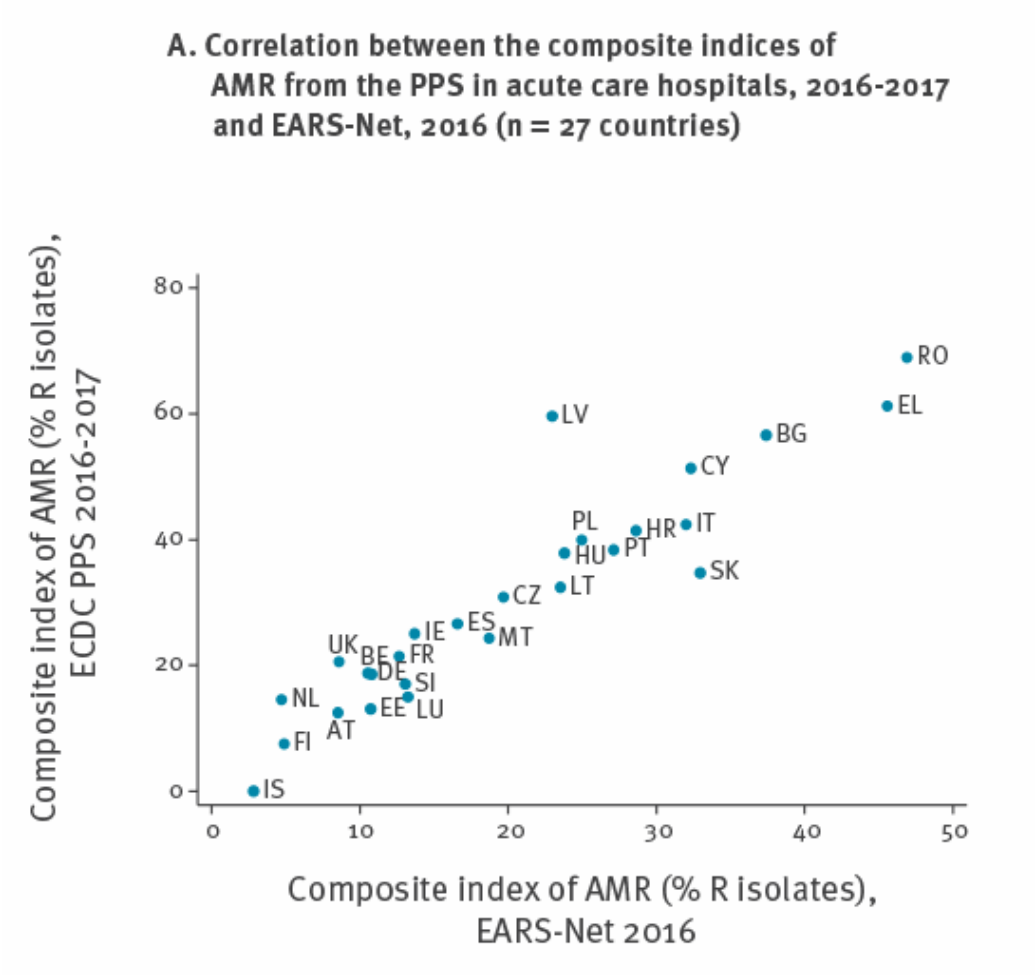
- Vancomycin-resistant *E. faecalis / E. faecium*
- Meticillin-resistant *S. aureus*
- Penicillin-non-wild-type and macrolide-resistant *S. pneumoniae*
- Penicillin-non-wild-type *S. pneumoniae*
- Multidrug-resistant *P. aeruginosa*
- Carbapenem-resistant *P. aeruginosa*
- Carbapenem-resistant *K. pneumoniae*
- Third-generation cephalosporin-resistant *K. pneumoniae*
- Carbapenem-resistant *E. coli*
- Third-generation cephalosporin-resistant *E. coli*
- Aminoglycoside- and fluoroquinolone-resistant *Acinetobacter* spp.
- Carbapenem-resistant *Acinetobacter* spp.

Source: **Assessing the health burden of infections with antibiotic-resistant bacteria in the EU/EEA, 2016-2020 (ECDC, 17 Nov 2022); DALYs – disability-adjusted life years;**
*For Sweden, data could not be checked for possible duplicate cases reported from the same patient

# ECDC Point prevalence surveys of healthcare-associated infections and antimicrobial use in European acute care hospitals

# Correlations of composite index of AMR, EU/EEA countries and Serbia, 2016–2017

Suetens C., Eurosurveillance, 2018




***<u>Composite index of AMR</u>: % isolates in HAIs resistant to 1st level AMR markers**:

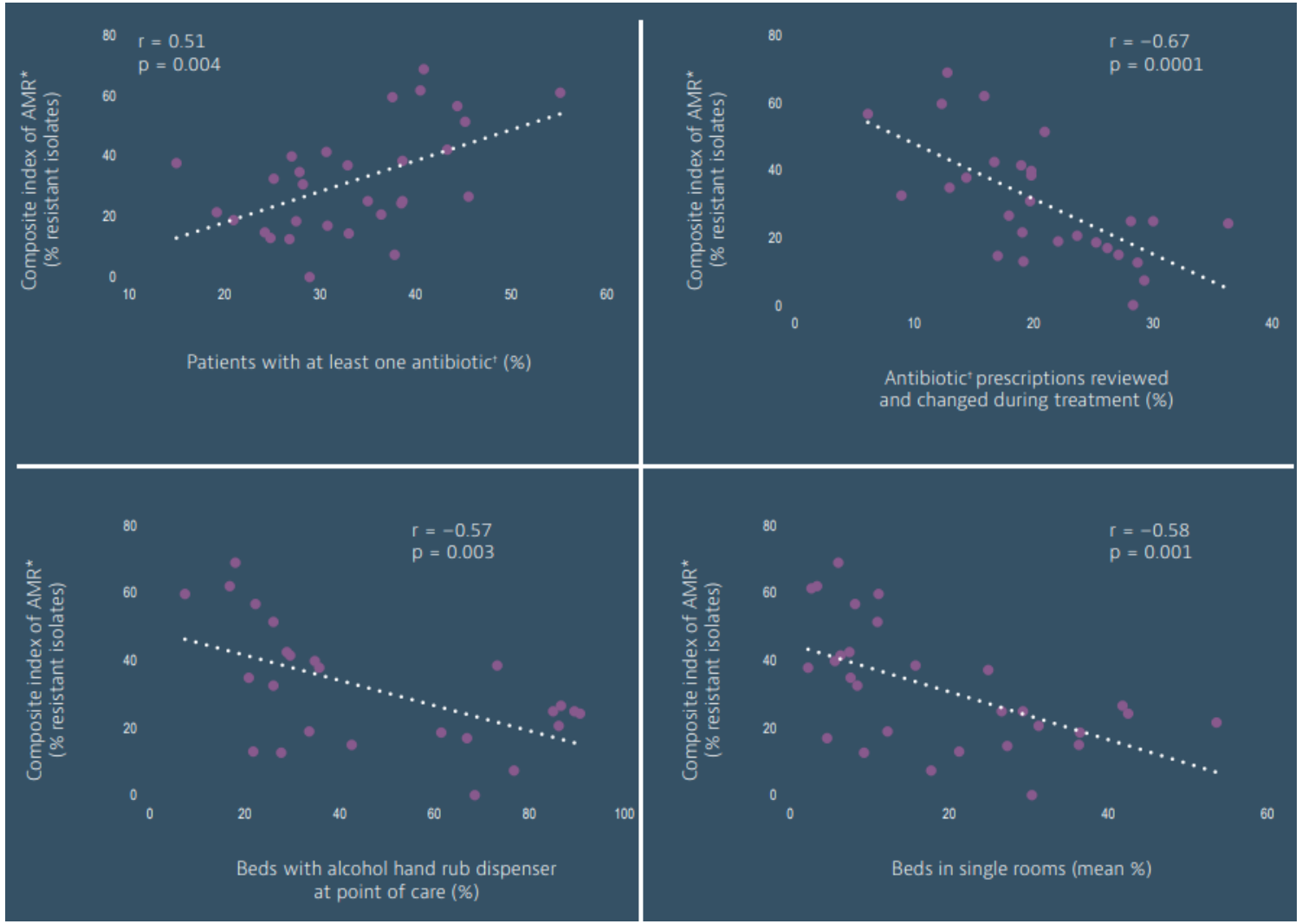
- MET-R *S. aureus* (MRSA);
- VAN-R *E. faecium* & *E. faecalis;*
- 3rd gen. ceph.-R Enterobacteriaceae;
- CAR-R *P. aeruginosa* & *A. baumannii*.


Source: Suetens C, *et al*. Prevalence of healthcare-associated infections, estimated incidence and composite antimicrobial resistance index in acute care hospitals and long-term care facilities: results from two European point prevalence surveys, 2016 to 2017. Euro Surveill. 2018;23(46):pii=1800516. https://doi.org/10.2807/1560-7917.ES.2018.23.46.1800516

MET – meticillin; VAN – vancomycin; R – resistant

# Associations between a composite index of AMR* and various determinants of AMR in European acute care hospitals

*Each dot represents a country in ECDC PPS, 2016–2017*




***Composite index of AMR:**
**% isolates in HAIs resistant to 1st level AMR markers**:

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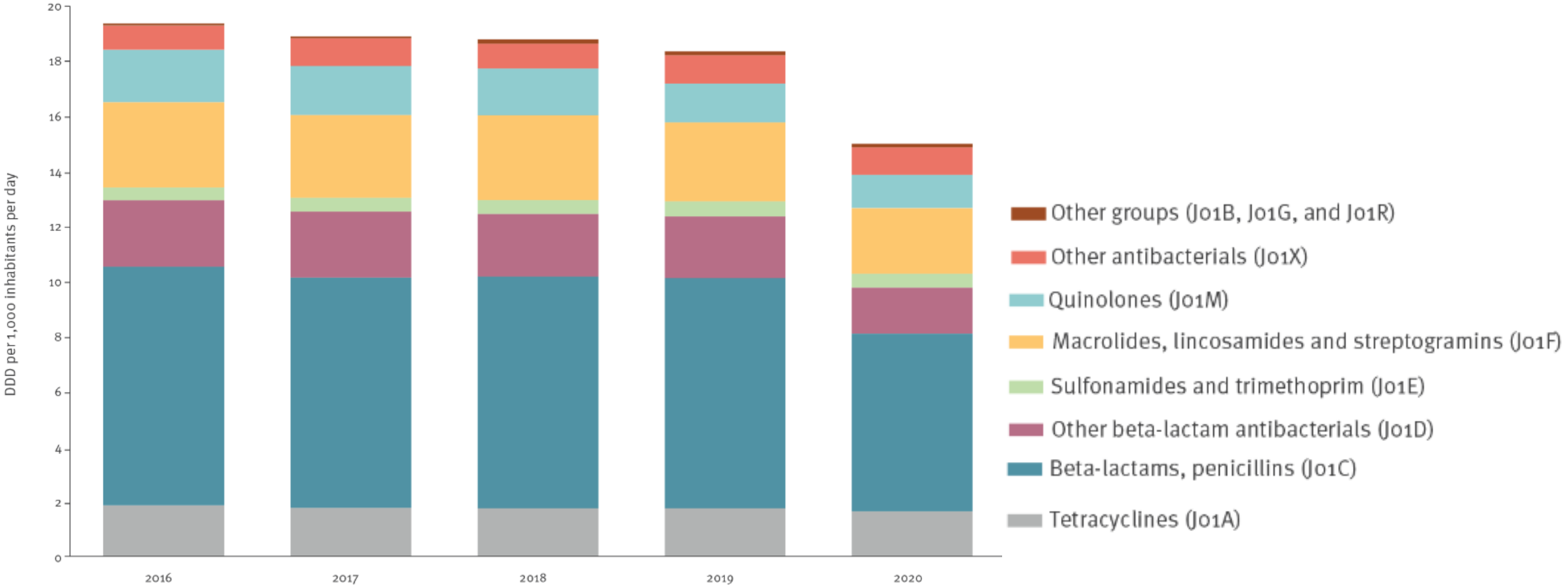
- VAN-R *E. faecium* & *E. faecalis;*
- 3rd gen. ceph.-R Enterobacteriaceae;
- CAR-R *P. aeruginosa* & *A. baumannii*.


† Antibacterials for systemic use (ATC J01). r, Spearman's correlation coefficient; p, p-value. Source: ECDC & OECD 'Antimicrobial Resistance Tackling the Burden in the European Union'. Available from: https://www.oecd.org/health/health-systems/AMR-Tackling-the-Burden-in-the-EU-OECD-ECDC-Briefing-Note-2019.pdf.

# Trends in antimicrobial consumption

# Decrease in community antibiotic consumption during the COVID-19 pandemic, EU/EEA, 2020

Liselotte Diaz Högberg[1], Vera Vlahović-Palčevski[2], Cátia Pereira[1], Klaus Weist[1], Dominique L Monnet[1], ESAC-Net study group[3]




Available from: https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2021.26.46.2101020

# Consumption* of antibacterials for systemic use (ATC group J01) in the hospital sector, EU/EEA, 2012-2021

| Country | 2019 | 2020 | 2021 | Time series 2012–2021 | Trend |
|---|---|---|---|---|---|
| Austria | 1.82 | 1.67 | 1.63 | | N/A |
| Belgium | 1.59 | 1.40 | 1.40 |  | ↓ |
| Bulgaria | 1.63 | 1.98 | 2.07 |  | ↑ |
| Croatia | 1.85 | 1.61 | 1.93 |  | - |
| Cyprus | | | | | N/A |
| Czechia | | | 2.21 | | N/A |
| Denmark | 1.86 | 1.75 | 1.80 |  | - |
| Estonia | 1.54 | 1.65 | 1.41 |  | ↓ |
| Finland *(a)* | 2.10 | 1.94 | 1.84 |  | ↓ |
| France | 1.74 | 1.64 | 1.69 |  | - |
| Germany | | | | | N/A |
| Greece | 1.68 | 1.74 | 1.77 |  | - |
| Hungary | 1.16 | 1.21 | 1.12 |  | - |
| Iceland | 1.33 | 1.11 | 1.02 | | N/A |
| Ireland | 1.77 | 1.47 | 1.49 |  | - |
| Italy | 1.89 | 1.92 | 1.54 |  | - |
| Latvia | 1.88 | 1.92 | 1.48 |  | ↓ |
| Lithuania | 2.25 | 2.21 | 1.97 |  | - |
| Luxembourg | 1.38 | 1.27‡ | 1.28‡ | | N/A |
| Malta | 1.99 | 2.17 | 1.68 |  | - |
| Netherlands | 0.80 | 0.76 | 0.70 |  | ↓ |
| Norway | 1.30 | 1.16 | 1.14 |  | ↓ |
| Poland | 1.42 | 1.36 | 1.37 |  | - |
| Portugal | 1.40 | 1.45 | 1.54 |  | - |
| Romania | 1.73 | 1.43 | 1.38 | | N/A |
| Slovakia | 1.38 | 1.27 | 1.43 |  | ↓ |
| Slovenia | 1.50 | 1.32 | 1.42 |  | - |
| Spain | 1.63 | 1.56 | 1.49 | | N/A |
| Sweden | 1.47 | 1.42 | 1.40 |  | - |
| **EU/EEA*** | **1.57** | **1.46** | **1.41** |  | ↓ |

* – Defined daily doses (DDDs) per 1 000 inhabitants per day

– Hospital sector data not reported.

N/A – Trend analyses were not performed and CAGR not calculated, e.g. due to missing data, changes in the type of data, or change in data process.

EU/EEA – population-weighted mean, using data reported from all participating countries.

(a) – Finland data include consumption in remote primary healthcare centres and nursing homes

‡ – Luxembourg changed data process in 2020, which could have an impact on comparability with previous years.

Source: ESAC-Net AER 2021, ECDC, 2022.
https://www.ecdc.europa.eu/sites/default/files/documents/ESAC-Net_AER_2021_final-rev.pdf

# Increasing use of 'broad-spectrum' and 'last-resort' antibiotics in humans in the EU/EEA

| Indicator | Short-term change 2019 *vs.* 2021 | Long-term trend 2012–2021 | EU /EEA 2021 | Country range 2021 |
|---|---|---|---|---|
| **Community indicator** * | +16% | +37% | 3.7 | 0.1 – 20.7 |
| **Hospital sector indicator** † | +13% | +15% | 40.3 | 19.5 – 70.9 |
| **Hospital sector carbapenem consumption** (DDD per 1,000 inhabitants per day) | **+23%** | **+34%** | **0.06** | **0.01 – 0.17** |
| **Hospital sector 'Reserve' antibiotics** ‡ (% of hospital sector consumption) | +25% | +170% | 3.7 | 0.5 – 15.5 |

* 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.

† Proportion (%) of total hospital consumption (DDD per 1 000 inhabitants per day) of antibacterials for systemic use that was glycopeptides, third- and fourth-generation cephalosporins, monobactams, carbapenems, fluoroquinolones, polymyxins, piperacillin and enzyme inhibitor, linezolid, tedizolid and daptomycin.

‡ WHO AWaRe classification, i.e. antibiotics that should be reserved for treatment of confirmed or suspected multidrug-resistant infections.

Source: ESAC-Net AER 2021, ECDC, 2022. https://www.ecdc.europa.eu/sites/default/files/documents/ESAC-Net_AER_2021_final-rev.pdf

# Consumption † of carbapenems (J01DH) in the hospital sector by country, reported to ECDC ESAC-Net for 2012–2021

| Country name | Time series 2012-2021 | Trend | Compound annual growth rate (CAGR) |
|---|---|---|---|
| Austria | | N/A | N/A |
| **Belgium** | | ↓ | -2.6% |
| **Bulgaria** | | ↑ | 32.7% |
| **Croatia** | | ↑ | 9.8% |
| Czech Republic | | N/A | N/A |
| **Denmark** | | - | 2.0% |
| **Estonia** | | ↑ | 10.5% |
| **Finland *** | | ↓ | -2.7% |
| **France** | | - | 6.2% |
| **Greece** | | ↑ | 6.5% |
| **Hungary** | | ↑ | 10.6% |
| Iceland | | N/A | N/A |
| **Ireland** | | - | 1.7% |
| **Italy** | | - | 0.6% |
| **Latvia** | | ↑ | 11.4% |
| **Lithuania** | | ↑ | 11.1% |
| Luxembourg | | N/A | N/A |
| **Malta** | | ↑ | 9.0% |
| **Netherlands** | | - | 0.3% |
| **Norway** | | ↓ | -2.9% |
| **Poland** | | ↑ | 11.6% |
| **Portugal** | | ↓ | -2.2% |
| Romania | | N/A | N/A |
| **Slovakia** | | ↑ | 12.7% |
| **Slovenia** | | - | -0.6% |
| Spain | | N/A | N/A |
| **Sweden** | | - | 0.5% |
| **EU/EEA **** | | - | **3.3%** |

† Defined daily doses (DDDs) per 1000 inhabitants per day, adapted from ESAC-Net AER 2022 downloadable Table D11.

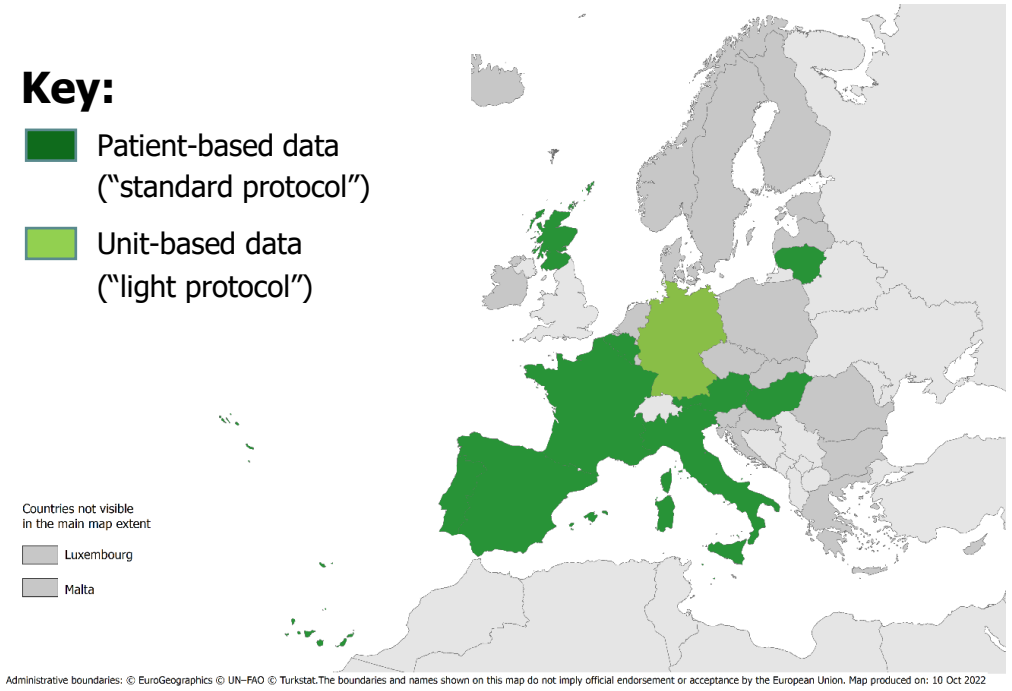
Available from: https://www.ecdc.europa.eu/en/publications-data/downloadable-tables-antimicrobial-consumption-annual-epidemiological-report-2021

* – Finland data include consumption in remote primary healthcare centres and nursing homes;
** – population-weighted mean consumption based on reported or imputed data from the 21 EU/EEA countries that reported hospital sector data for all 10 years.
N/A – Not applicable. Trend analyses not performed and CAGR not calculated because of missing data, changes in the type of data, or change in data process;
Luxembourg changed data process in 2020, which could impact comparability with previous years;

# ECDC surveillance of the incidence HAIs in intensive care units

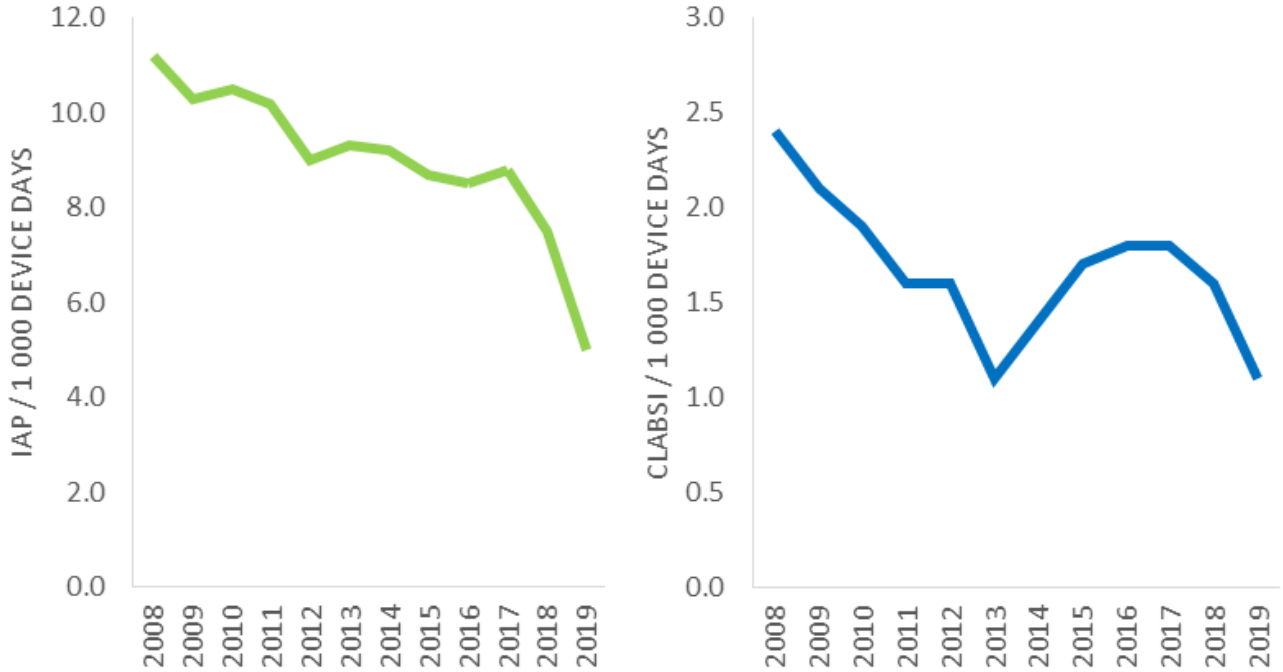
# HAIs acquired in intensive care units

## Participation in surveillance, 2019




## Incidence of HAIs, in 6 consistently reporting countries

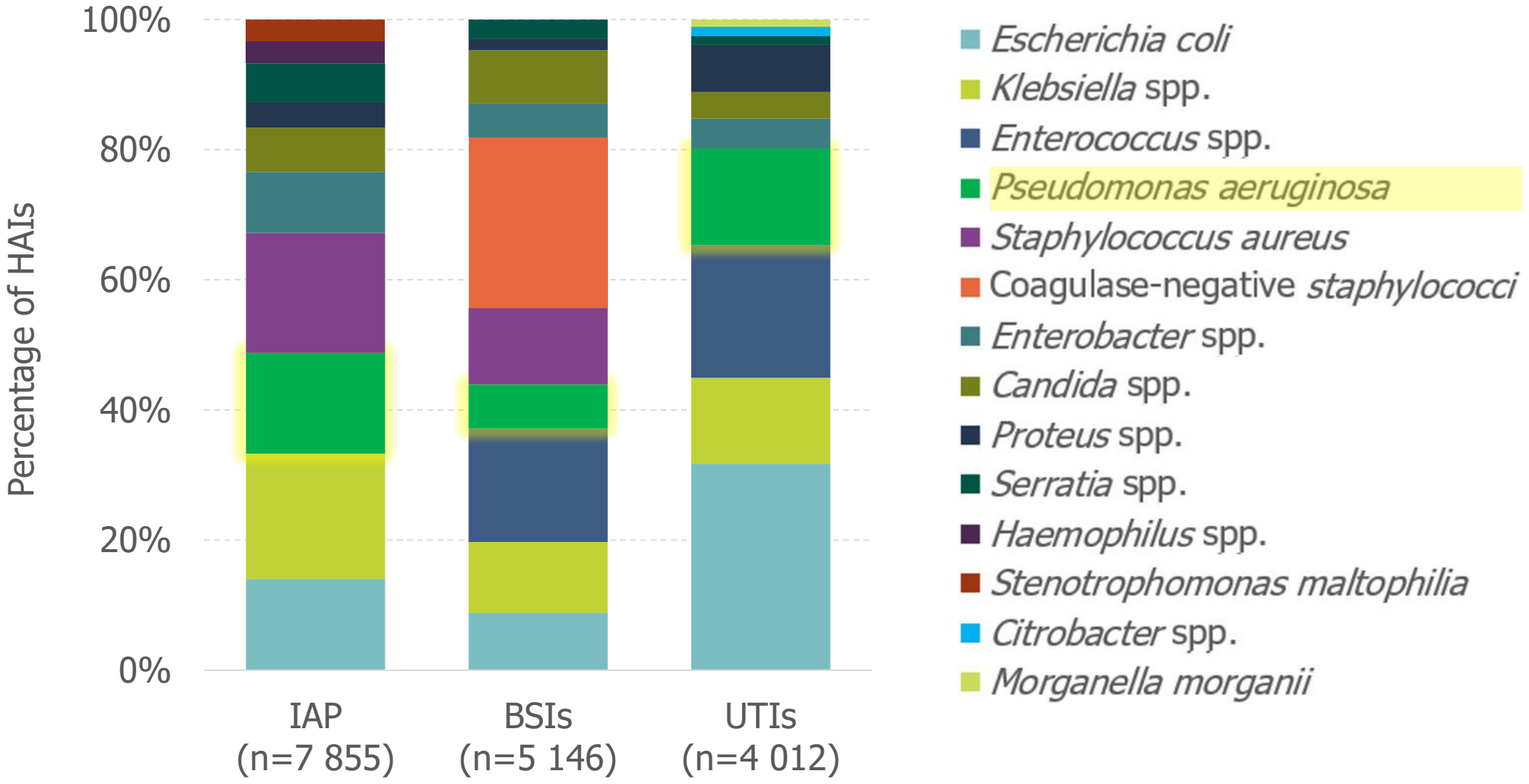
Belgium, France, Italy (SPIN-UTI), Lithuania, Portugal and Spain




IAP – intubation-associated pneumonia; CLABSI – central line-associated bloodstream infection; HAI – healthcare-associated infection

Source: Annual Epidemiological Report for HAIs in ICUs, 2019 (In press); data are provisional

# HAIs acquired in intensive care units, 2019

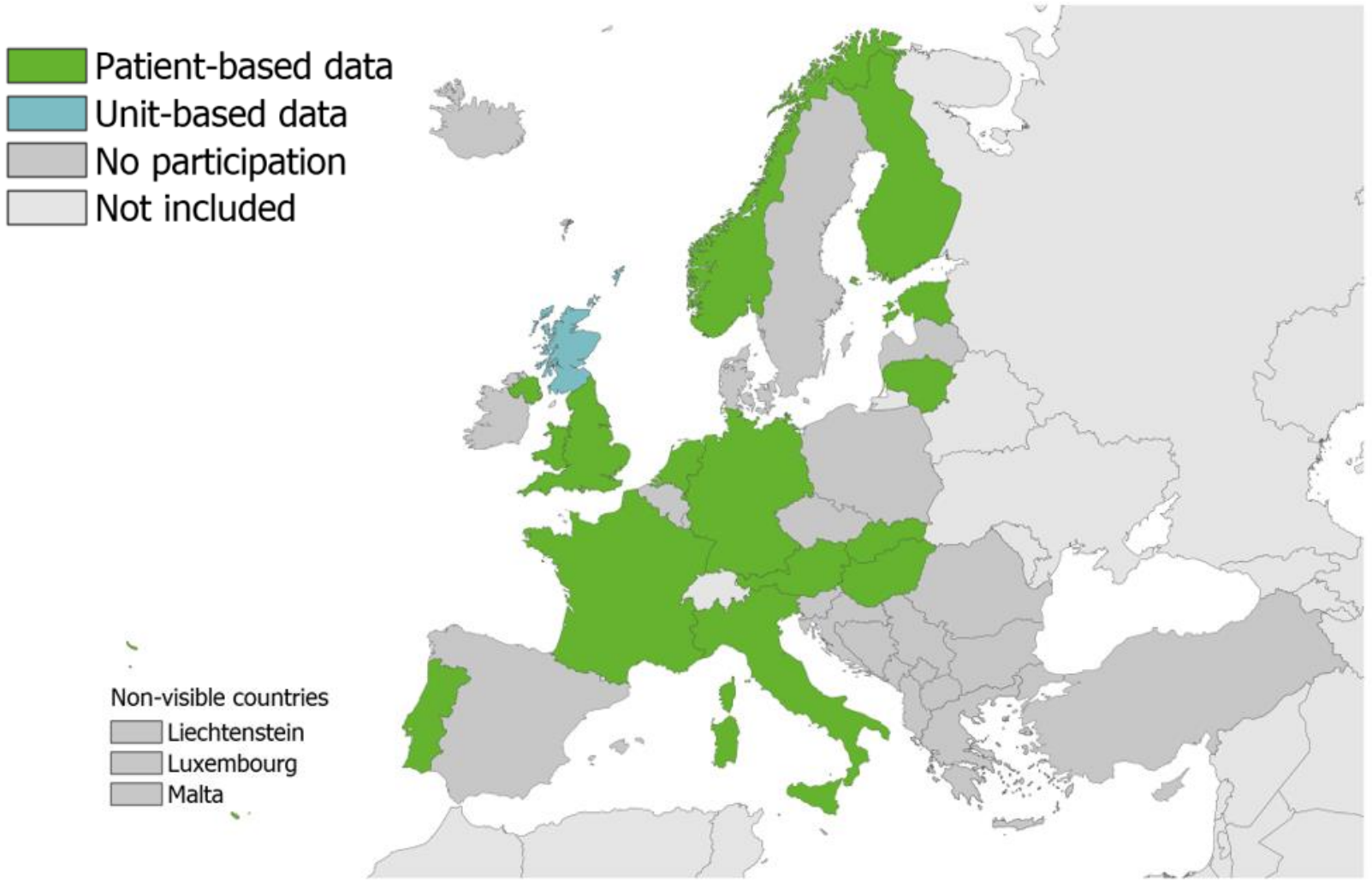



IAP – intubation-associated pneumonia; CLABSI – central line-associated bloodstream infection; HAI – healthcare-associated infection
Source: Annual Epidemiological Report for HAIs in ICUs, 2019 (In press); data are provisional

# ECDC surveillance of surgical site infection incidence

# Surgical site infections, EU/EEA, 2017

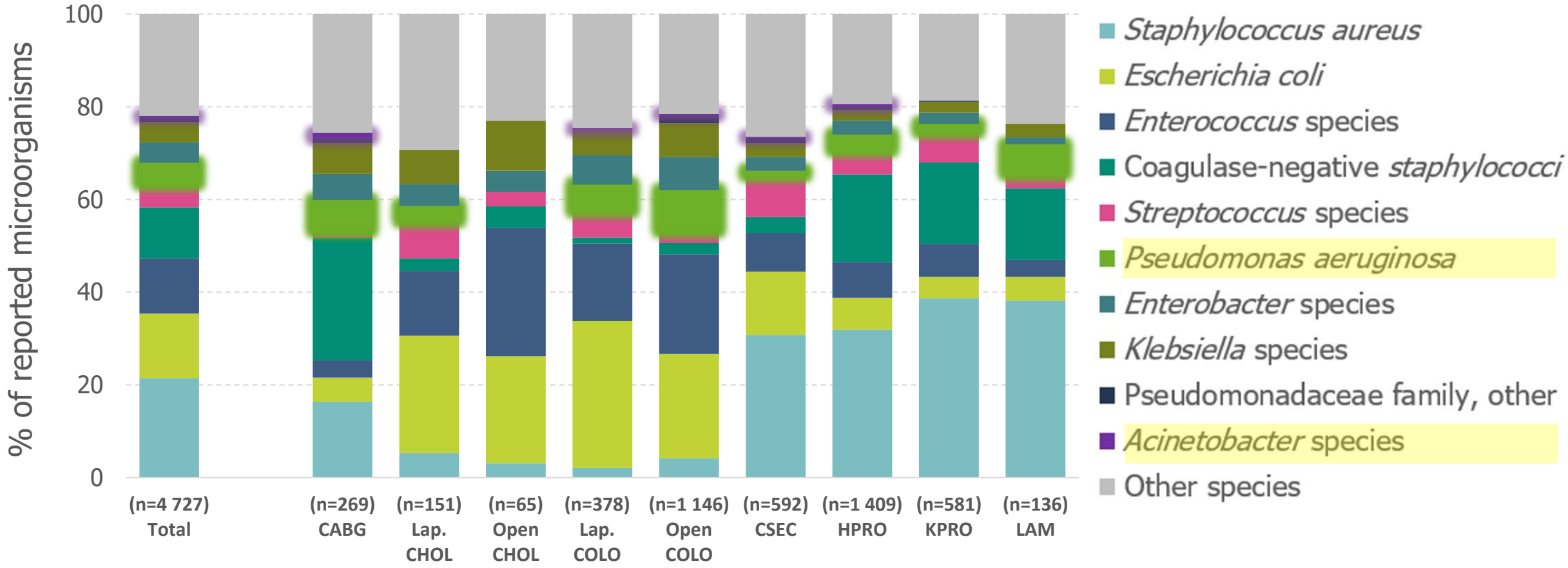
## Participation in surveillance, 2019




IAP – intubation-associated pneumonia; CLABSI – central line-associated bloodstream infection; HAI – healthcare-associated infection
Source: Annual Epidemiological Report for HAIs in ICUs, 2019 (In press); data are provisional

# Surgical site infections, 11 EU/EEA countries, 2017

## 8 most frequently reported microorganisms, Acinetobacter & Pseudomonadaceae, by type of surgical intervention



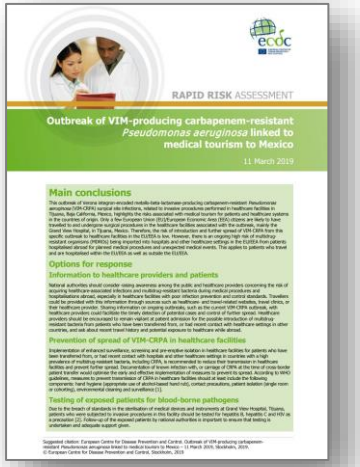

CABG: coronary artery bypass graft, CHOL: cholecystectomy, COLO: colon surgery, CSEC: caesarean section, HPRO: hip prosthesis surgery, KPRO: knee prosthesis surgery, LAM: laminectomy, Lap: laparoscopic.

* Austria, Estonia, France, Germany, Hungary, Italy, Lithuania, the Netherlands, Portugal, Slovakia and the United Kingdom

# ECDC rapid risk assessments for CRAb and CRPa

# ECDC Rapid Risk Assessments (RRAs) on CRAb/CRPa

| | | |
|---|---|---|
| **RRA publication** | December 2016 | March 2019 |
| **Info source** | **EuSCAPE** | **WHO-PAHO** |
| **Threat to EU/EEA** | **↑ CRAb notifications, EU/EEA** | **VIM-CRPa SSIs, USA**<br><br>n=20, post-medical tourism in Mexico |
| **Recommendation for the EU/EEA** | **Prevent transmission** (IPC, incl. environmental cleaning, antimicrobial stewardship)<br><br>**Improve preparedness** (lab capacities; lab-based surveillance) | **Vigilance for importation**<br><br>**Preparedness for containment** |





Source (CRAb, 2016): https://www.ecdc.europa.eu/en/publications-data/rapid-risk-assessment-outbreak-vim-producing-carbapenem-resistant-pseudomonas
Source (CRPa, 2019): https://www.ecdc.europa.eu/en/publications-data/rapid-risk-assessment-carbapenem-resistant-acinetobacter-baumannii-healthcare

# ECDC Epidemic Intelligence monitoring

## Communicable Disease Threat Report: VIM-GES-CRPa


**Source:** Contaminated multi-use vials of preservative-free **artificial tears**

**Strain:** ***P. aeruginosa*** ST1203, blaVIM-80 and blaGES-9, Verona integron-mediated metallo-β-lactamase (**VIM**), and Guiana extended-spectrum-β-lactamase (**GES**)

**AMR profile:** Extensively resistant to most broad-spectrum antibiotics, n=5 cefiderocol-susceptible

**Epidemiology:** N=68 cases, in 16 US states (n=37 in four healthcare facilities). N=3 deaths; N=8 vision loss (n=4 surgical removal of 1x eyeball).

**Follow-up:** Products recalled, US public information; not sold in EU/EEA

**ECDC action:** Monitor through its epidemic intelligence activities.

Source: https://www.ecdc.europa.eu/en/publications-data/communicable-disease-threats-report-19-25-march-week-12

# Summary conclusions

# Summary

- *Acinetobacter* spp. & *P. aeruginosa* relatively common in respiratory HAIs and BSIs (ECDC PPS)
- CRAb and CRPa have similar geographical distribution (EARS-Net)
- CRAb increased during 2020–2021, particularly in ICUs and high % AMR countries;
  CRPa has less/different increases in 2017–2021 (EARS-Net)
- In ICUs pre-2020: decreasing trends in IAP and CLABSI in 6 countries (HAI-ICU);
- *Acinetobacter* spp. infrequently reported in ICU and SSI surveillance.
- Increasing hospital sector consumption of broad-spectrum & last resort antimicrobials (ESAC-Net)
- ECDC monitors ongoing threats through epidemic intelligence, producing rapid risk assessments.
- Using common nomenclature across ECDC surveillance permits integrated analyses (Hosp PPS)

# Thank you for your attention

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| | |
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