ECDC initiatives on surveillance, prevention and control of antimicrobial resistance

Dominique L. Monnet, on behalf of ECDC Antimicrobial Resistance and Healthcare-Associated Infections (ARHAI) Programme

Madrid, 10 November 2015

Antimicrobial resistance (AMR): what does it mean?

Several, inter-related compartments of healthcare, i.e. patients in primary care, hospitals, nursing homes and long-term care facilities, food animals, food, environment)

Many types of infection, i.e. respiratory tract, urinary tract, skin and soft tissue, bloodstream, surgical site, related to medical devices, etc.)

Many bacteria/microorganisms

Many antimicrobials

Many different genes and mechanisms of resistance

Spread of clones…

… and of resistance genes between bacteria…

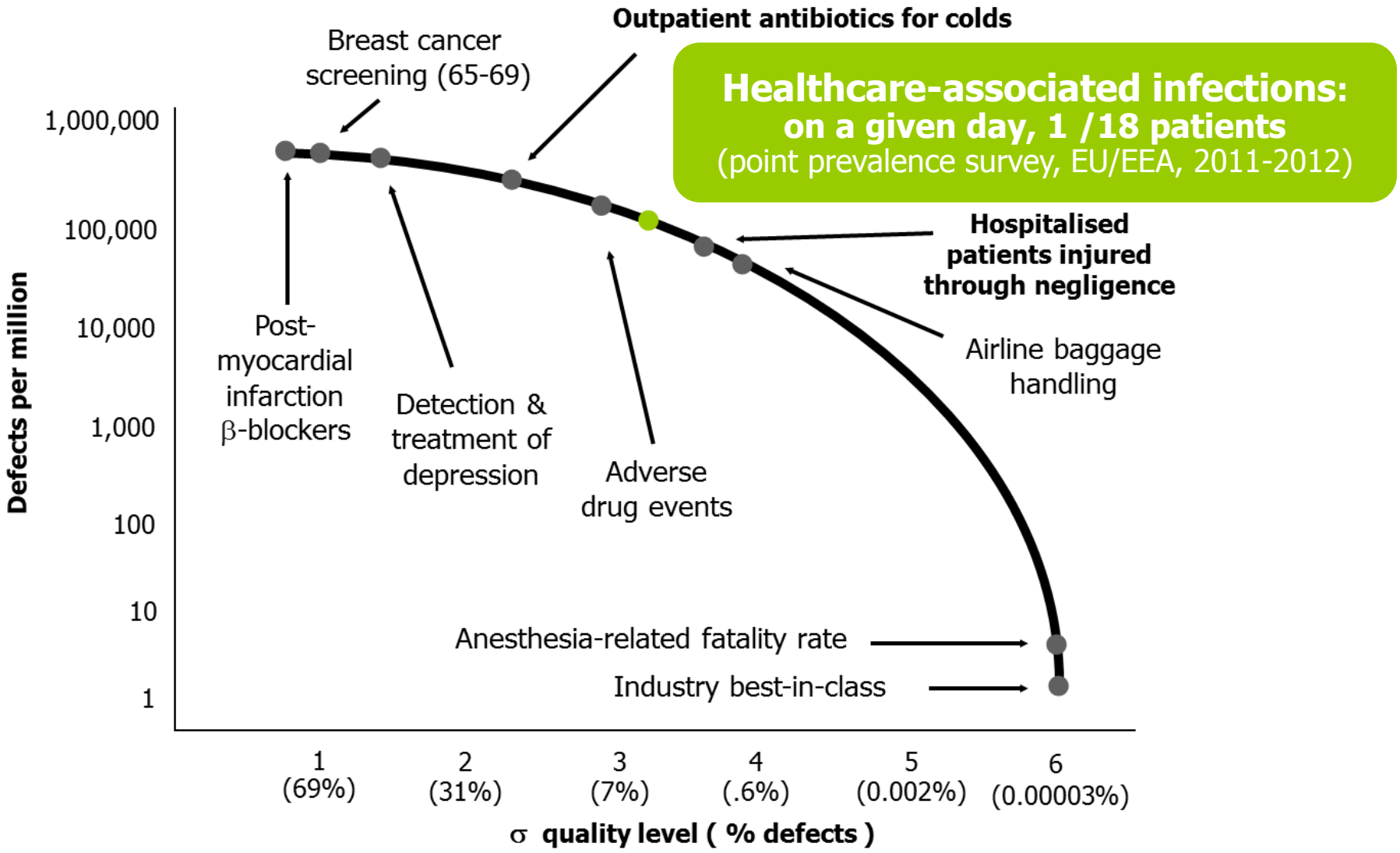
Patients with infections due to antimicrobial-resistant bacteria





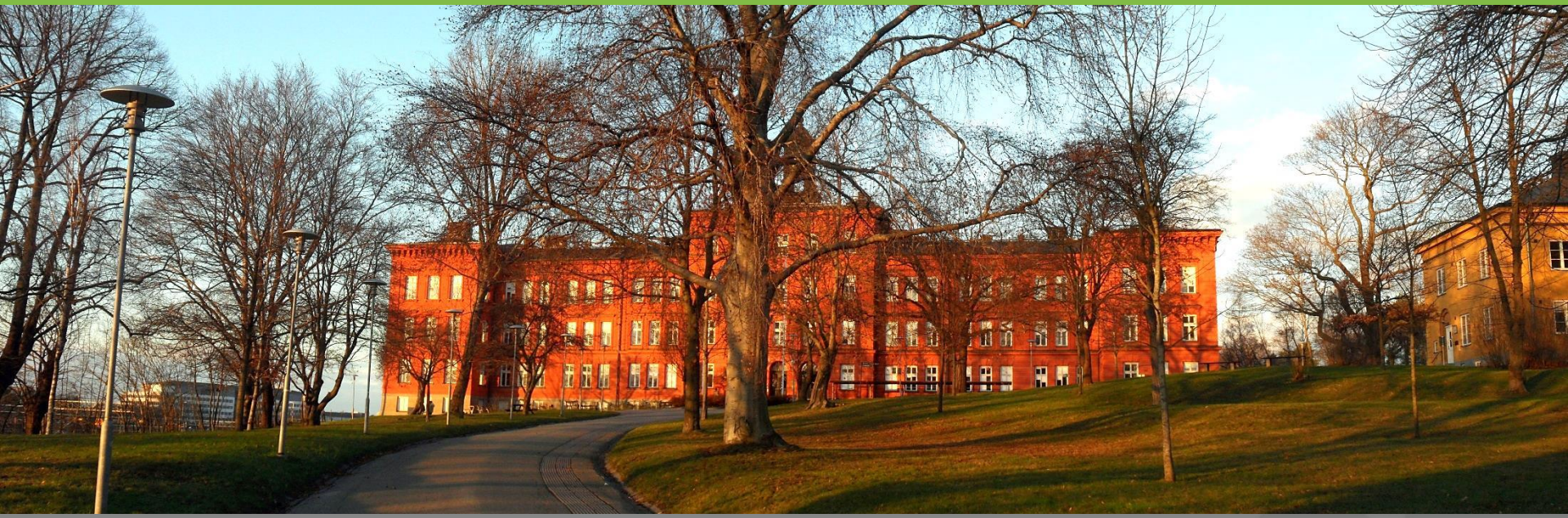

Source: **ECDC https://storify.com/EAAD_EU/patient-stories**, "Antibiotic – Kill or Cure?" (http://www.electricsky.com/catalogue_detail.aspx?program=17), ABC – Four Corners "Rise of the Superbugs" (http://www.abc.net.au/4corners/stories/2012/10/29/3618608.htm), IDSA (http://www.idsociety.org/Addie_Rerecich/).

ECDC PPS in European acute care hospitals, 2011-2012: comparing with other risks



Adapted from: Perl T, 2007. Source for healthcare-associated infections: HAI-Net, ECDC, 2013.
http://www.ecdc.europa.eu/en/publications/Publications/healthcare-associated-infections-antimicrobial-use-PPS.pdf

ECDC – European Centre for Disease Prevention and Control



- An agency of the European Union, located in Stockholm, Sweden
- Founded in 2005; nearly 300 employees in 2015
- Mandate to 'identify, assess and communicate current and emerging threats to human health from communicable diseases'
- European Union (EU) (28) and European Economic Area (EEA) (3) = 31 countries with a total of more than 500 million people

Antimicrobial Resistance and Healthcare-associated Infections Programme

The programme on Antimicrobial Resistance and Healthcare-Associated Infections (ARHAI) covers two major public health issues:

- Antimicrobial Resistance (AMR), i.e. the ability of microorganisms to become resistant to one or several antimicrobial agents used for therapy or prophylaxis;
- Healthcare-Associated Infections (HAI), i.e. all infections associated with patient care, in particular hospitals and long-term care facilities.

The ARHAI programme focuses on 4 areas of public health: surveillance, response and scientific advice, training and communication to address the threat of antimicrobial resistance and healthcare-associated infections.

Read more about the programme

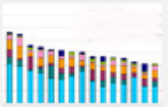
IN FOCUS

ECDC, EFSA and EMA publish the first integrated analysis of antimicrobial consumption and resistance data from humans and animals

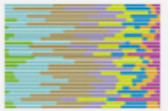
For the first time, the consumption of antimicrobial agents and occurrence of antimicrobial resistance in bacteria from humans and food-producing animals in Europe were analysed in an integrated manner by three EU agencies: the European Centre for Disease Prevention and Control (ECDC), the European Food Safety Authority (EFSA) and the European Medicines Agency (EMA).

INTERACTIVE DATABASES

Antimicrobial resistance interactive database (EARS-Net)



Antimicrobial consumption interactive database (ESAC-Net)



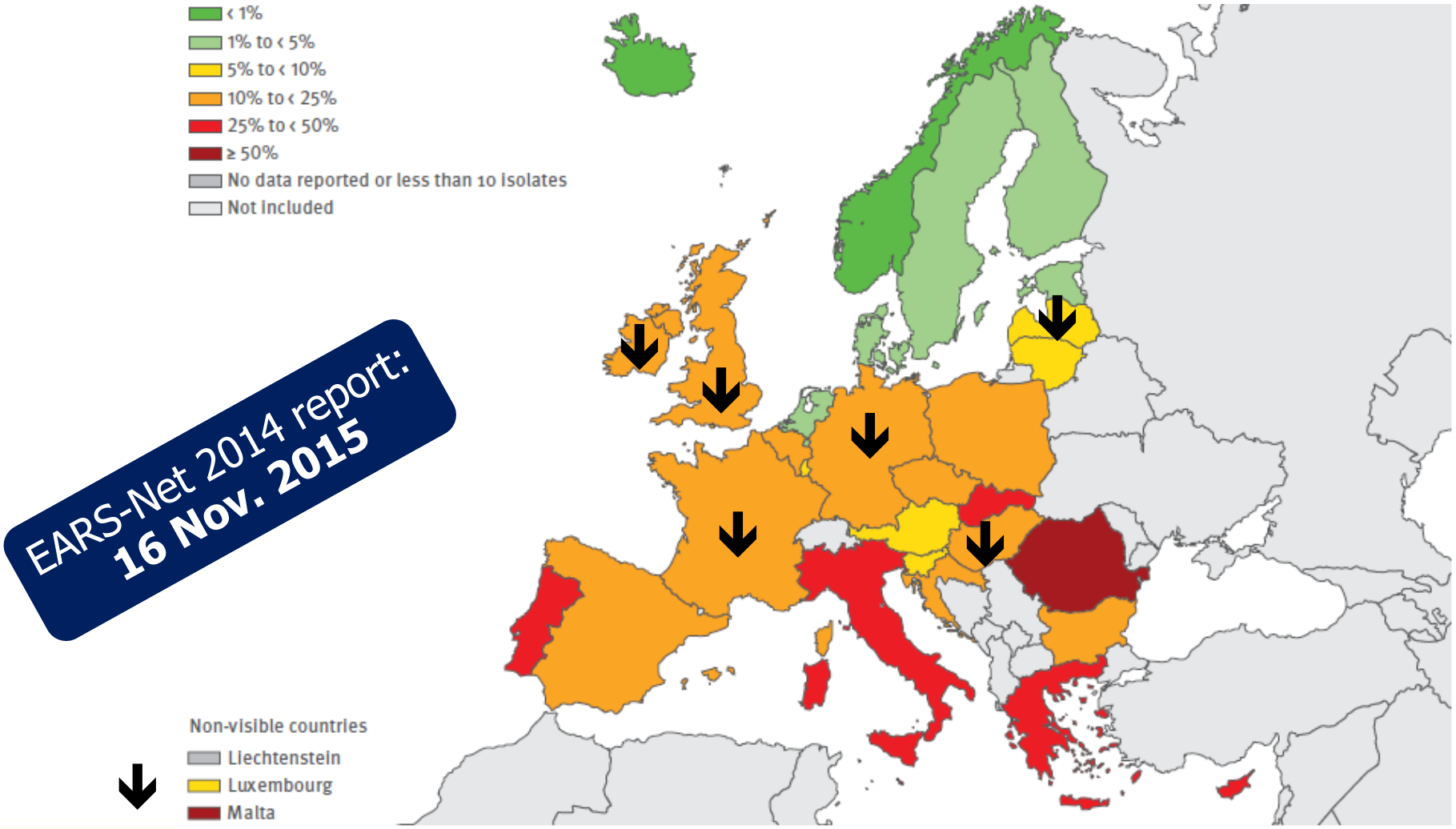
Point prevalence survey interactive database (HAI-Net PPS)

GUIDANCE

Directory of online resources: Prevention and control of antimicrobial resistance and healthcare-associated infections

Source: ECDC, 2015 (http://ecdc.europa.eu/en/activities/diseaseprogrammes/ARHAI/Pages/index.aspx).

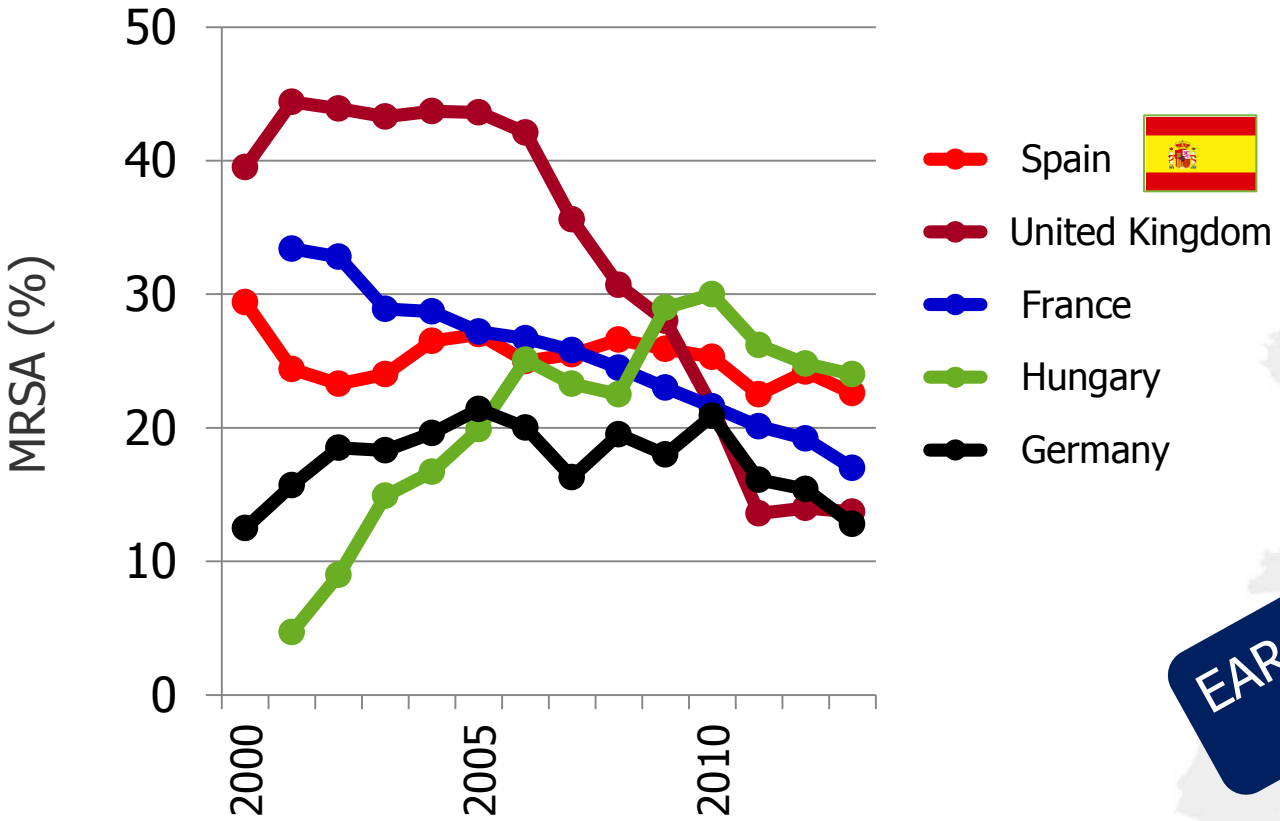
Staphylococcus aureus: percentage of invasive isolates resistant to meticillin (MRSA); EU/EEA, 2013



Source: EARS-Net, 2014

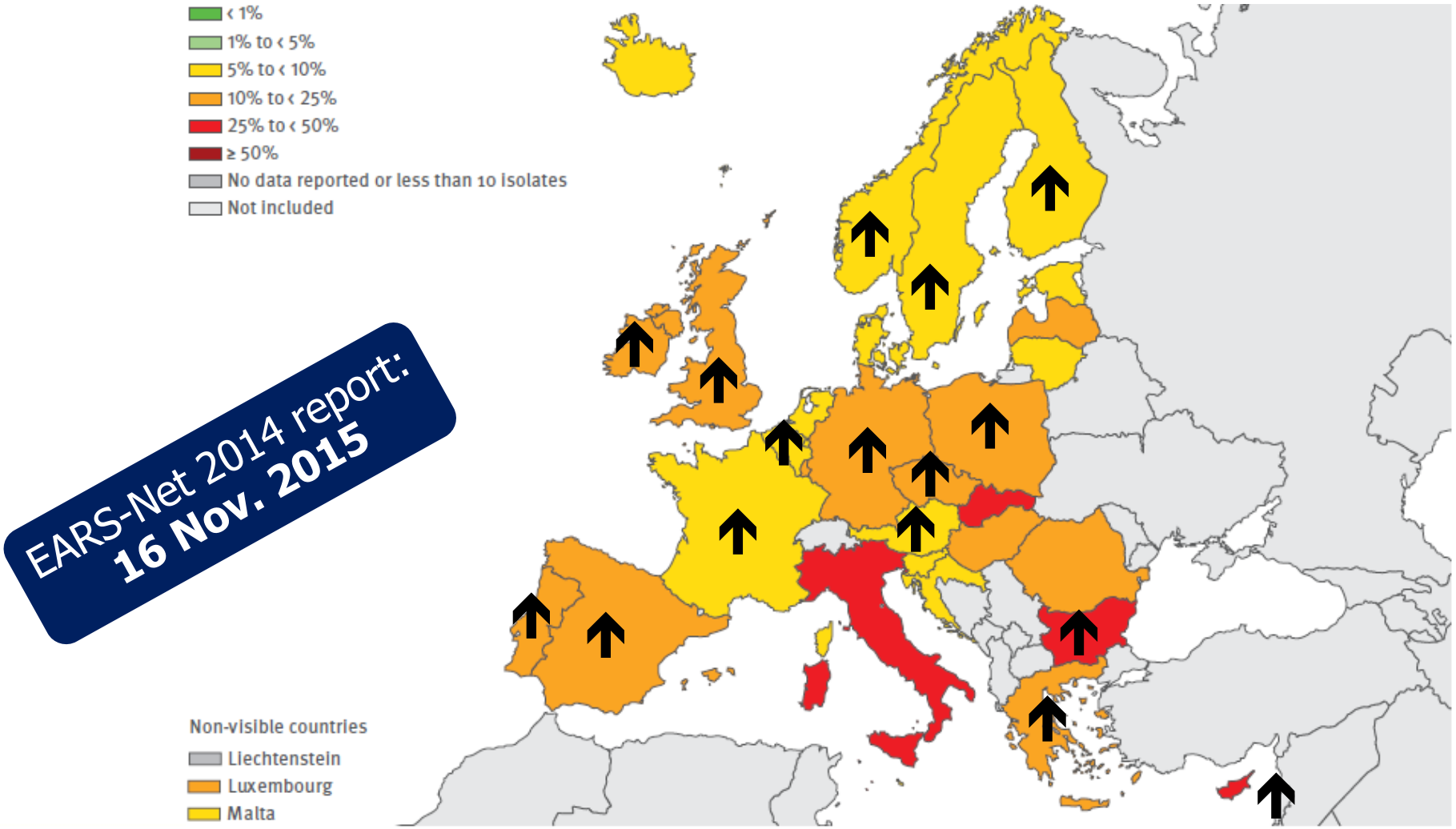
The symbols ↑ and ↓ indicate a significant increasing or decreasing trend for the period 2010-2013, respectively. These trends were calculated on laboratories that consistently reported during this period.

Staphylococcus aureus: percentage of invasive isolates resistant to meticillin (MRSA), selected EU/EEA countries, 2000-2013



Source: EARS-Net, 2014

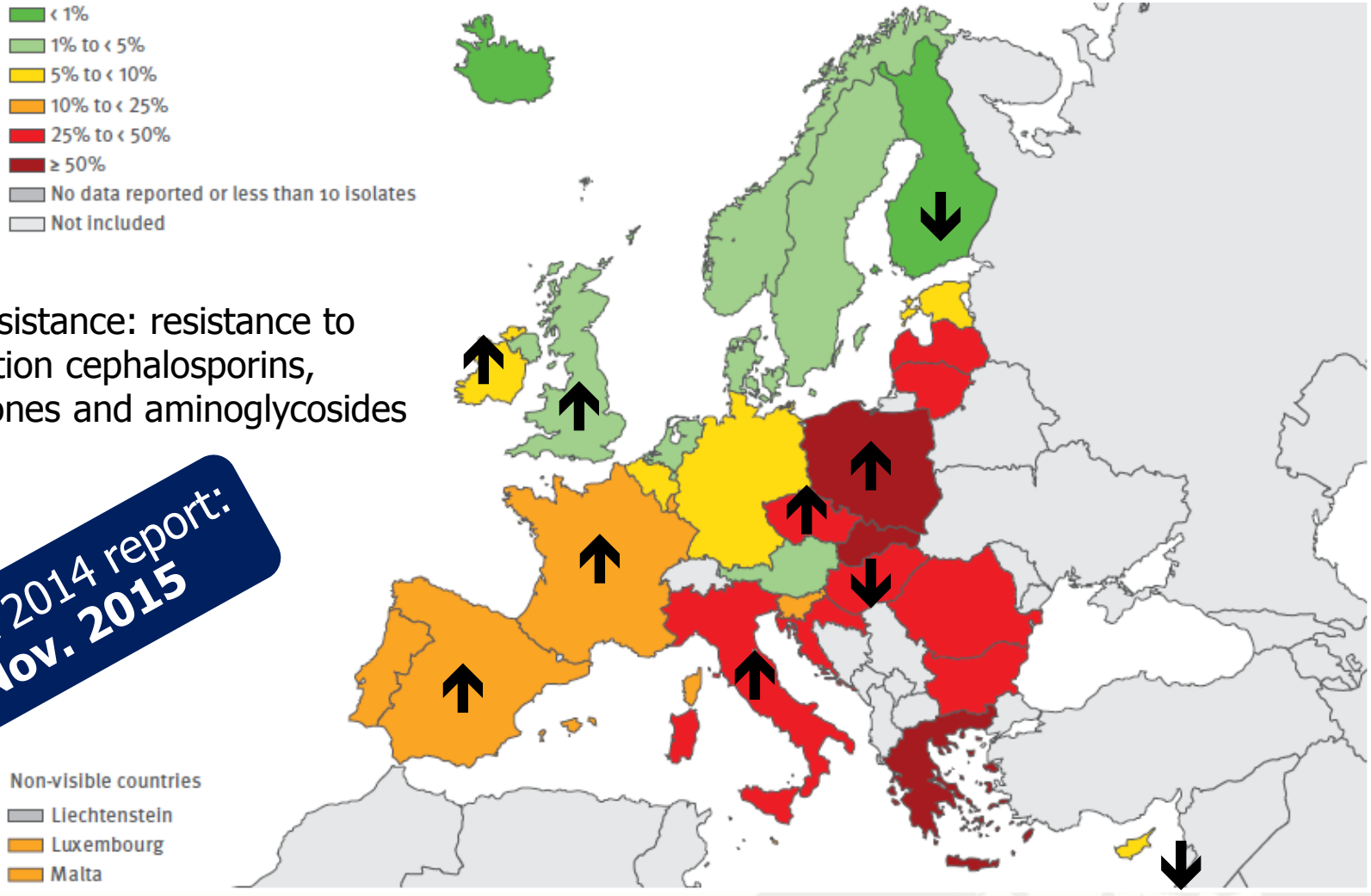
Escherichia coli: percentage of invasive isolates resistant to third-generation cephalosporins; EU/EEA, 2013



Source: EARS-Net, 2014

The symbols ↑ and ↓ indicate a significant increasing or decreasing trend for the period 2010-2013, respectively. These trends were calculated on laboratories that consistently reported during this period.

Klebsiella pneumoniae: percentage of invasive isolates with combined resistance*; EU/EEA, 2013



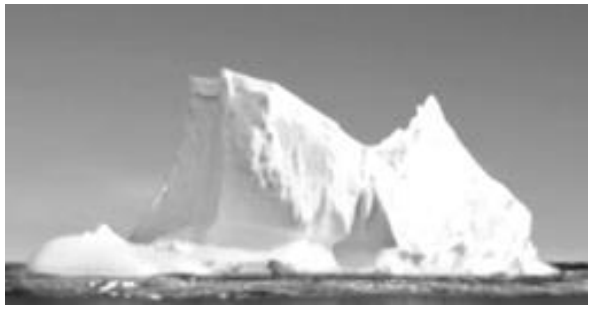
*Combined resistance: resistance to third-generation cephalosporins, fluoroquinolones and aminoglycosides

EARS-Net 2014 report: **16 Nov. 2015**

Source: EARS-Net, 2014

The symbols ↑ and ↓ indicate a significant increasing or decreasing trend for the period 2010-2013, respectively. These trends were calculated on laboratories that consistently reported during this period.

Klebsiella pneumoniae: percentage of invasive isolates resistant to carbapenems; EU/EEA, 2013

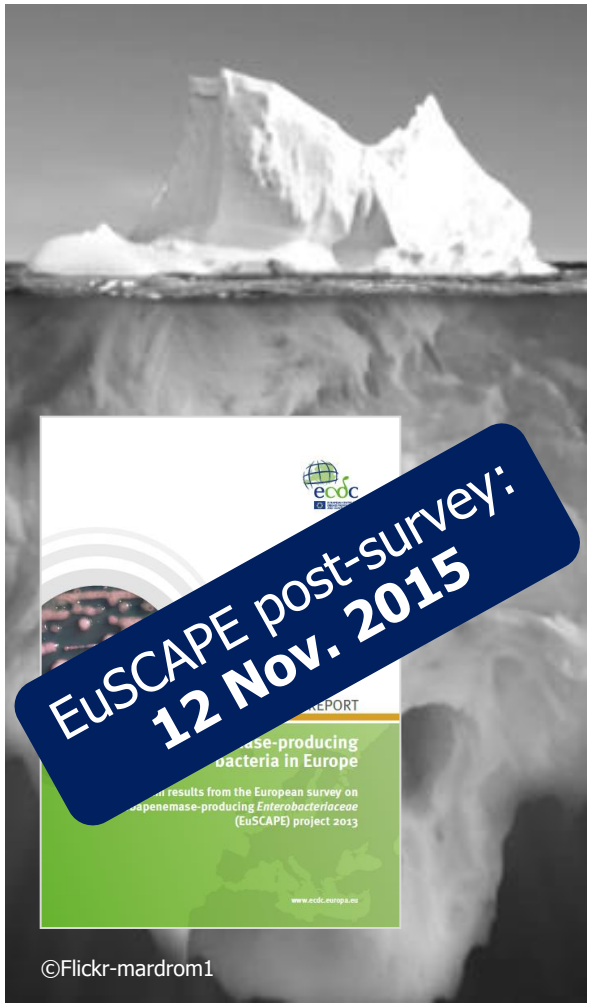


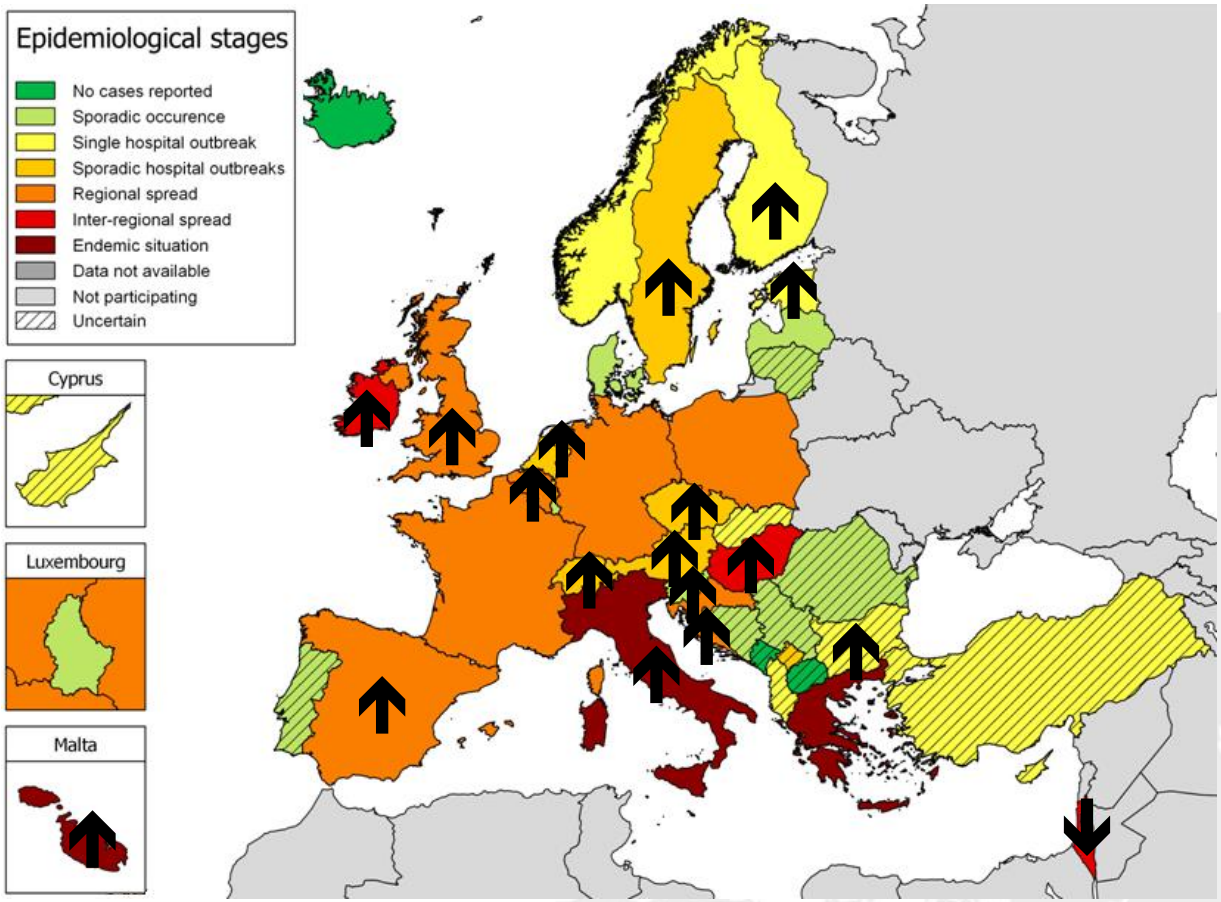
EARS-Net 2014 report: **16 Nov. 2015**

Source: EARS-Net, 2014

The symbols ↑ and ↓ indicate a significant increasing or decreasing trend for the period 2010-2013, respectively. These trends were calculated on laboratories that consistently reported during this period.

Country self-assessment of stages for spread of carbapenemase-producing *Enterobacteriaceae* (all isolates), 2010 and 2013





Source: Grundmann et al. Eurosurveill 2010, and EuSCAPE project, Glasner et al., Eurosurveill 2013.

The symbols ↑ and ↓ indicate a positive or negative change in stage between 2010 and 2013. This change could only be indicated for countries that reported for both years.

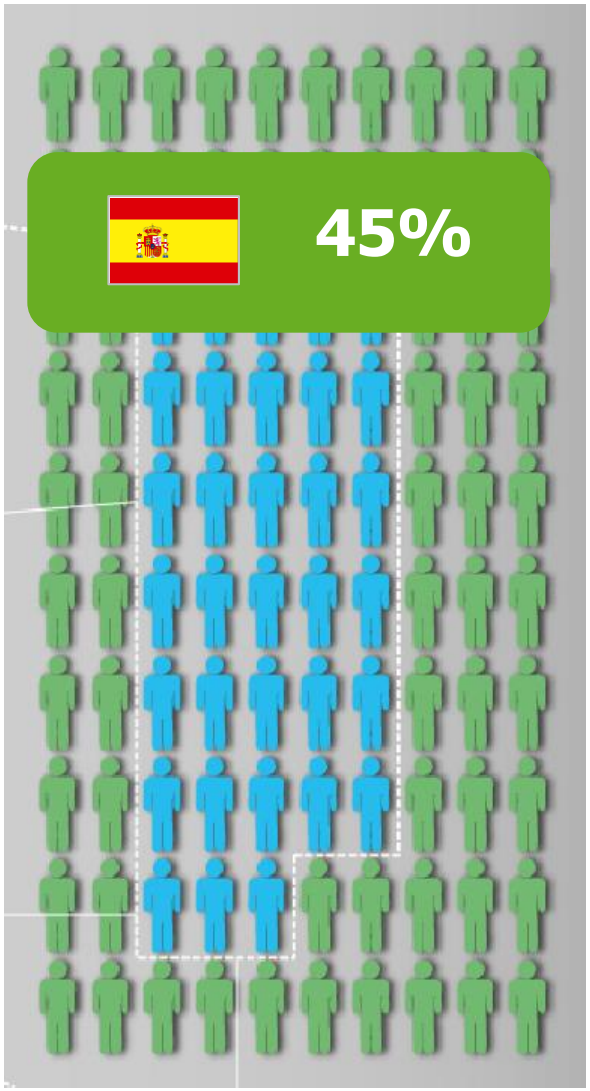
ECDC risk assessment on the spread of carbapenemase-producing *Enterobacteriaceae*: risk factors for patient infection or colonisation

- **Prior use of antimicrobials**
  - Any antimicrobial
  - **Carbapenems** (associated with a high risk estimate)
  - Other antimicrobials (fluoroquinolones, cephalosporins, anti-pseudomonal penicillins, metronidazole)
- **Cross-border transfer of patients**

  Strong evidence that it is associated with risk for transmission when:
  - Patients are transferred from countries with high rates of CPE to healthcare facilities in other countries
  - Patients had received medical care abroad in areas with high rates of CPE
- **Transfer of patients within units of same hospital**
- Immunosuppression, severity of illness, invasive procedures

Source: ECDC, 2011. http://ecdc.europa.eu/en/publications/Publications/110913_Risk_assessment_resistant_CPE.pdf

Antimicrobial use in EU/EEA hospitals



Prevalence of antimicrobial use in acute care hospitals (ECDC PPS)

On any given day in EU/EEA hospitals 33% patients [range: 21-55%]

Antibiotic consumption in the hospital sector

(DDD per 1,000 inhabitants per day, ESAC-Net)

Antimicrobial group (ATC code)	Trends in antimicrobial consumption, 2009–2013	Average annual change 2009–2013	Statistical significance
Total, antibiotics (J01)		-0.02	n. s.
Carbapenems (J01DH)		0.003	significant
Polymyxins (J01XB)		0.002	significant

Source: ECDC point prevalence survey (PPS) 2011-2012 & ESAC-Net 2013; ECDC, 2014.

Klebsiella pneumoniae: % of invasive isolates with resistance to all antibiotic groups under surveillance*, EU/EEA, 2013

*Third-generation cephalosporins, fluoroquinolones, aminoglycosides, carbapenems **and colistin**).

Only among isolates that were tested for susceptibility to all these antibiotic groups were included.

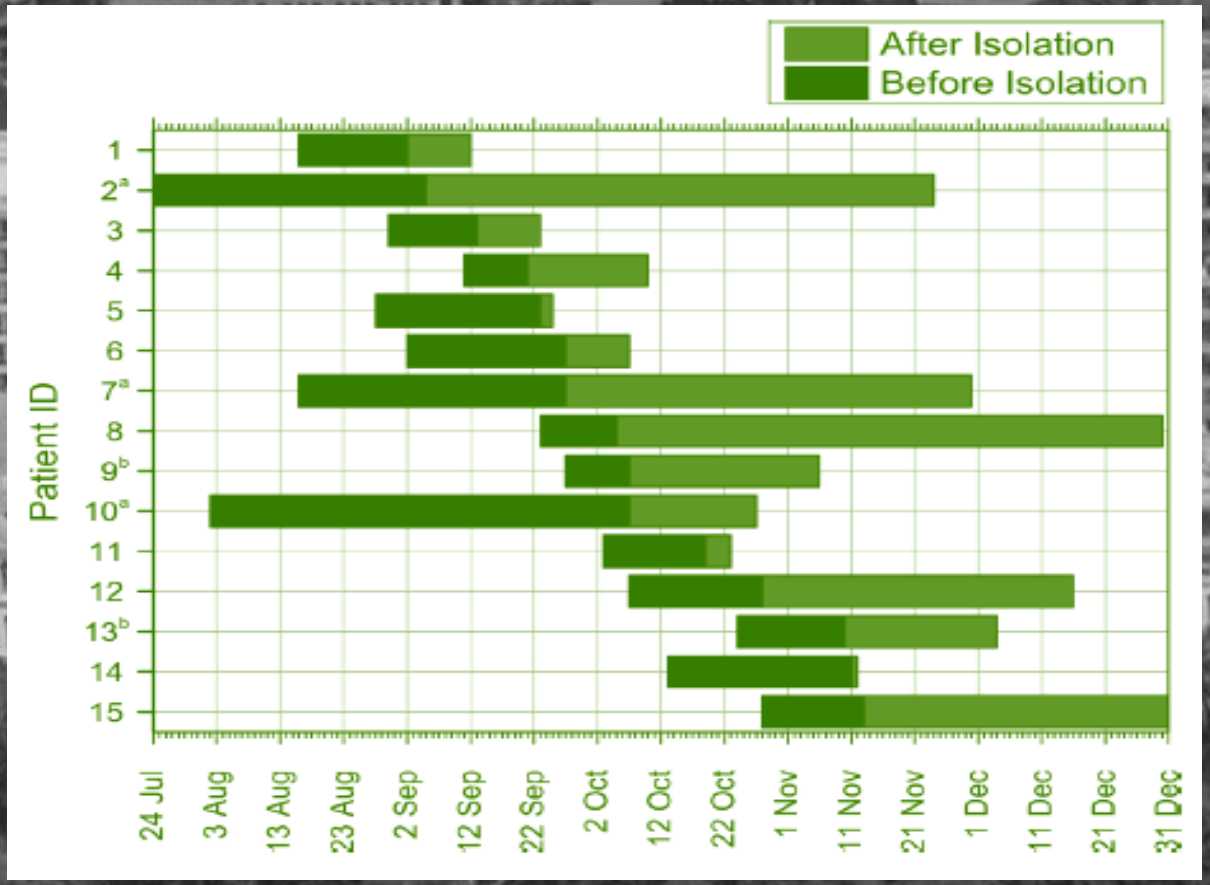
EARS-Net 2014 report: **16 Nov. 2015**

- < 1%
- 1 to < 5%
- 5 to < 10%
- 10 to < 25%
- No data reported

(i.e., less than 10 reported isolates were tested for susceptibility to all these antibiotic groups)

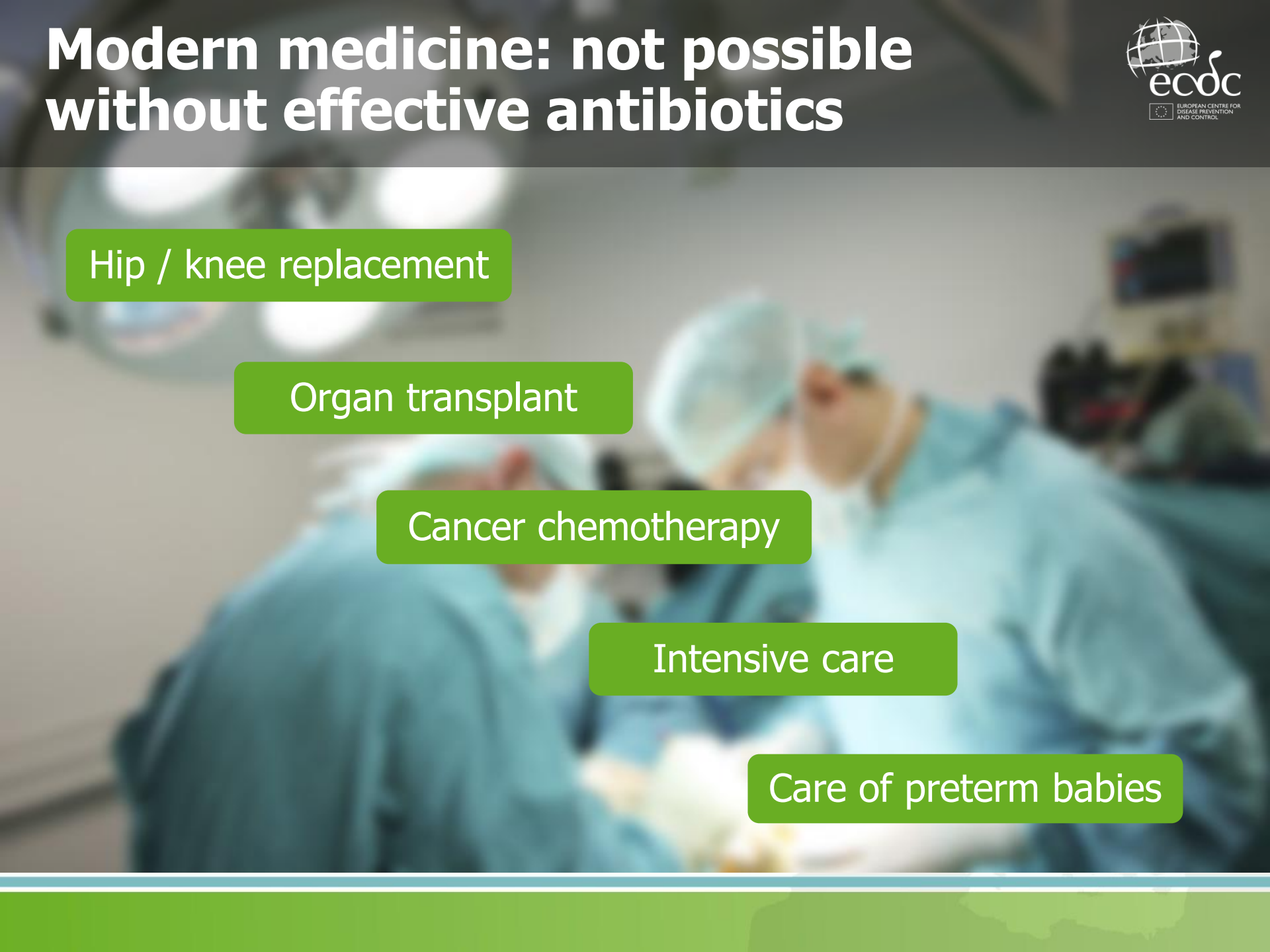
Source: EARS-Net, 2014

Outbreak of pandrug-resistant VIM-1 *Providencia stuartii*, Sept.-Nov. 2011



Source: Douka E, et al. Int J Antimicrob Agents 2015;48:533-6.

Modern medicine: not possible without effective antibiotics



Main actions to prevent and control antimicrobial resistance (AMR)

New antimicrobial agents
(with a novel mechanism of action, research, development)

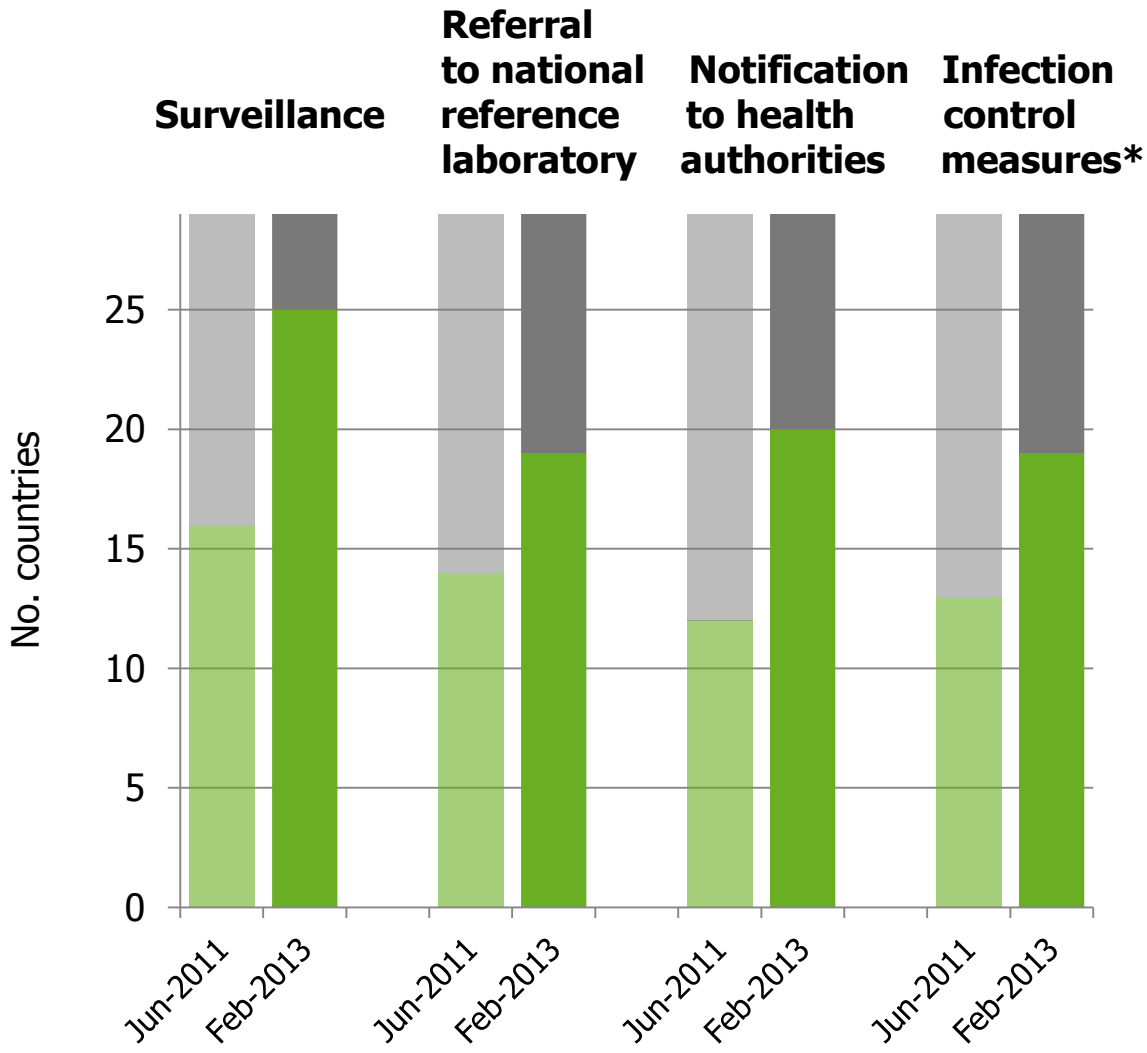
Infection prevention and control
(hand hygiene, screening, isolation)

Prudent use of antimicrobial agents
(only when needed, correct dose, correct dose intervals, correct duration)

Hospitals

Photo: Luis García

Availability of national guidance documents on CPE, 2011 & 2013



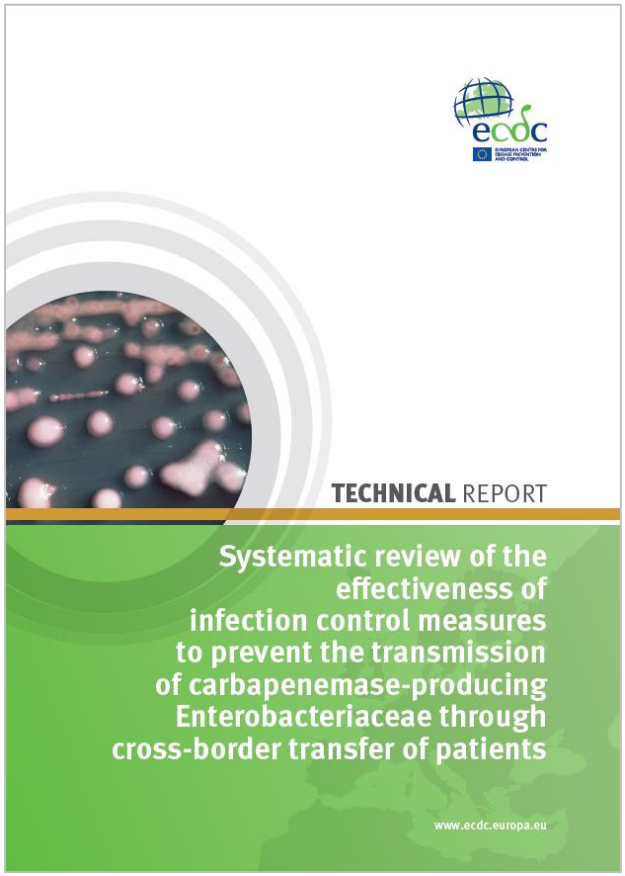
No guidance

Guidance

* 1 additional country reported having such guidance in preparation in 2013.

Source: ECDC, 2011 & EuSCAPE project, Glasner et al., Eurosuveillance, 2013.

Infection control measures to prevent the spread of carbapenemase-producing *Enterobacteriaceae* (CPE) through cross-border transfer of patients



Scientific evidence for the effectiveness of:

- Hand hygiene, patient isolation, patient cohorting, nursing (or staff) cohorting (similar to dedicated nursing), environmental cleaning, staff education, case notification/flagging, contact tracing and antibiotic restriction
- Early implementation of active surveillance by rectal screening for CPE carriage upon admission to hospital, or specific wards/units, or during outbreaks
- Pre-emptive isolation on admission, dedicated nursing or other types of dedicated care by staff members, contact precautions (gloves and gowns)

Source: ECDC, 2014. http://www.ecdc.europa.eu/en/healthtopics/Healthcare-associated_infections/guidance-infection-prevention-control/Pages/guidance-prevention-control-infections-caused-by-multidrug-resistant-bacteria-and-healthcare-associated-infections.aspx

CRE: Guidance on infection prevention and control

Directory of guidance on prevention and control of Carbapenem-resistant *Enterobacteriaceae*, published by ECDC, EU/EEA Member States, international and national agencies and professional societies

AGENCIES

EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL (ECDC)

- Systematic review of the effectiveness of infection control measures to prevent the transmission of carbapenemase-producing Enterobacteriaceae through cross-border transfer of patients (2014)
- Risk assessment on the spread of carbapenemase-producing Enterobacteriaceae (CPE) through patient transfer between healthcare facilities, with special emphasis on cross-border transfer (2011)

US CENTERS FOR DISEASE CONTROL AND PREVENTION (CDC)

- CDC 2012 CRE Toolkit - Guidance for Control of Carbapenem-resistant Enterobacteriaceae (CRE)

US AGENCY FOR HEALTHCARE RESEARCH AND QUALITY (AHRQ)

- Carbapenem-resistant Enterobacteriaceae (CRE) Control and Prevention Toolkit

PROFESSIONAL SOCIETIES

EUROPEAN SOCIETY OF CLINICAL MICROBIOLOGY AND INFECTIOUS DISEASES (ESCMID)

Suggestions for infection and control of carbapenemase-producing Enterobacteriaceae are part of the guidelines on multidrug-resistant Gram-negative bacteria (ESCMID, 2013)

- ESCMID guidelines for the management of the infection control measures to reduce transmission of multidrug-resistant Gram-negative bacteria in hospitalized patients

MEMBER STATES

AUSTRIA

Control of carbapenemase-producing Enterobacteriaceae in Austria (Ministry of Health, 2011)

- CPE – Carbapenemase produzierende Enterobakterien in Österreich - Carbapenemasen Kontrollieren

CZECH REPUBLIC

Control of imported cases of colonisation and/or infection by carbapenemase- producing Enterobacteriaceae (Ministry of Health, 2012)

- Kontrola výskytu importovaných případů kolonizace a/nebo infekce enterobakteriemi produkujícími karbapenemázu (CPE – Carbapenemase Producing Enterobacteriaceae)

FINLAND

Guidance for the handling of infections by multiresistant bacteria. This document includes guidance for infection prevention and control of carbapenem resistant Enterobacteriaceae (Terveyden ja hyvinvoinnin laitos – THL, 2014)

- Ohje moniresistenttien mikrobien tartunnantorjunnasta.

FRANCE

Prevention of cross-transmission of emerging highly resistant bacteria. This document includes guidance targeting carbapenemase-producing Enterobacteriaceae (Haut Conseil de la Santé Publique, 2013)

- Prévention de la transmission croisée des 'Bactéries Hautement Résistantes aux antibiotiques émergentes' (BHRe)

GERMANY

Infection control measures for infections or colonisation by multidrug-resistant Gram-negative bacteria. This document applies to carbapenem-resistant Enterobacteriaceae (Robert Koch Institute, Commission for Hospital Hygiene and Infection Prevention, 2012)

- Hygienemaßnahmen bei Infektionen oder Besiedlung mit multiresistenten gramnegativen Stäbchen

GREECE

Action plan for the management of infections by multidrug-resistant Gram-negative pathogens in healthcare settings 'Prokroustis' Guidance on infection prevention and control of carbapenem- resistant Enterobacteriaceae is a part of the national action plan. (Hellenic Centre for Disease Control and Prevention, 2010)

- Σχέδιο δράσης για την αντιμετώπιση λοιμώξεων από πολυανθεκτικά Gram-αρνητικά παθογόνα σε χώρους παροχής υπηρεσιών υγείας 'Προκρούστης'

HUNGARY

Guidance of National Center for Epidemiology on identification and prevention of spread of carbapenemase-producing Enterobacteriaceae in healthcare facilities (National Center for Epidemiology, 2011)

- Az Országos Epidemiológiai Központ ajánlása a karbapenemáz-termelő enterobacteriaceae törzsek azonosítására és terjedésük megelőzésére az egészségügyi intézményekben

IRELAND

Guidance for detection and infection prevention and control of carbapenem-resistant Enterobacteriaceae is part of the guidelines on multidrug-resistant organisms (Royal College of Physicians / HSE Quality and Safety, 2012)

- Guidelines for the Prevention and Control of Multi-drug resistant organisms (MDRO) excluding MRSA in the healthcare setting

ITALY

Surveillance and control of infections caused by carbapenemase producing bacteria (CPE) (Ministry of Health, 2013)

- Sorveglianza, e controllo delle infezioni da batteri produttori di carbapenemasi (CPE)

NETHERLANDS

Guidelines for multidrug-resistant microorganisms (MDRO). This document includes guidance for infection prevention and control of carbapenem resistant Enterobacteriaceae. (Working Party on Infection Prevention, National Institute for Public Health and the Environment, 2011; updated 2013)

- WIP-richtlijn BRMO (Bijzonder Resistente Micro-Organismen)

NORWAY

Prevention and control of transmission of multidrug-resistant Gram-negative and ESBL-producing bacteria in healthcare facilities. This document applies to carbapenemase-producing Enterobacteriaceae. (Norwegian Institute of Public Health, 2009)

- Forebygging og kontroll av spredning av multiresistente gramnegative stavbakterier og ESBL-holdige bakterier i helseinstitusjoner

POLAND

Recommendations for the control of sporadic cases and outbreaks caused by Gram negative bacteria of the family Enterobacteriaceae. . This document focuses on carbapenemase-producing Enterobacteriaceae. (Ministry of Health, 2012)

- Zalecenia dotyczące postępowania w przypadku zachorowań sporadycznych i ognisk epidemicznych wywołanych przez Gram ujemne pałeczki z rodziny Enterobacteraceae

SLOVAK REPUBLIC

Guidance for the diagnosis, prevention and control of infections by bacteria with clinically and epidemiologically important resistance mechanisms. This document includes guidance targeting MRSA (Ministry of Health, 2014)

- OU MZ SR pre diagnostiku a protiepidemické opatrenia pri výskyte bakteriálnych pôvodcov infekčných ochorení s klinicky a epidemiologicky významnými mechanizmami rezistencie

SLOVENIA

Recommendations for the control of ESBL-positive bacteria and carbapenemase-positive bacteria (Ministry of Health - National Commission for the prevention and control of healthcare associated infections, 2010)

- Priporočila za preprečevanje širjenja ESBL pozitivnih bakterij in karbapenemaza pozitivnih bakterij

SPAIN

Prevention and control against infection with carbapenemase-producing Enterobacteriaceae (Autonomous Community of Madrid, 2013)

- Plan de Prevencion y control frente a la infeccion por enterobacterias productoras de carbapenemasas (EPC) en la Comunidad de Madrid

SWEDEN

ESBL-producing enterobacteria - – Knowledge base with draft notices to limit the spread of Enterobacteriaceae with ESBL. This document applies to carbapenemase-producing Enterobacteriaceae (Public Health Agency of Sweden, 2013)

- ESBL-producerande tarmbakterier – Kunskapsunderlag med förslag till handläggning för att begränsa spridningen av Enterobacteriaceae med ESBL

UNITED KINGDOM

Expert advice on the management of colonisation or infection due to carbapenemase-producing Enterobacteriaceae in England, to prevent or reduce their spread into (and within) health and residential care settings (Public Health England, 2013)

- Acute trust toolkit for the early detection, management and control of carbapenemase-producing Enterobacteriaceae

Set of recommendations based on scientific evidence (where available) and consensus of expert opinion to prevent cross-transmission of carbapenemase-producing Enterobacteriaceae within acute healthcare settings in Scotland. Supporting materials include, e.g. a prevention and management toolkit for inpatient areas (Health Protection Scotland, 2013)

- Interim guidance: Non-prescribing control measures to prevent cross transmission of Carbapenemase-Producing Enterobacteriaceae in acute settings

Source: ECDC, 2015. http://www.ecdc.europa.eu/en/healthtopics/Healthcare-associated_infections/guidance-infection-prevention-control/Pages/guidance-prevention-control-infections-caused-by-multidrug-resistant-bacteria-and-healthcare-associated-infections.aspx

HAI-Net Annual Reports
Point prevalence survey
PPS interactive database
Directory: Guidance on prevention and control
MRSA: Guidance on infection prevention and control
CDI: Guidance on infection prevention and control
CRE: Guidance on infection prevention and control
Guidance on organisation of infection prevention and control
Guidance on hand hygiene in healthcare
Guidance on healthcare-associated and ventilator-associated pneumonia
Antimicrobial resistance strategies and action plans
WHO "SAVE LIVES: Clean Your Hands": 2015

Directory of online resources for prevention and control of antimicrobial resistance (AMR) and healthcare-associated infections (HAI)

The directory lists strategies, action plans and guidance documents on the prevention and control of antimicrobial resistance and healthcare-associated infections, which are available online.

These documents were published by ECDC, EU/EEA Member States, international and national agencies and professional societies to support healthcare professionals, hospital administrators and public health professionals.

In addition, the directory now also lists ongoing research projects and their corresponding websites.

ECDC welcomes suggestions and further information on existing guidance. Comments can be provided to: arhai@ecdc.europa.eu.

Strategies, action plans and projects on AMR and HAI	Prevention and control of multidrug-resistant organisms and *Clostridium difficile*	Prevention and control of healthcare-associated infections
Antimicrobial resistance strategies and action plans	Carbapenem-resistant Enterobacteriaceae (CRE)	Organisation of infection prevention and control
	Meticillin-resistant Staphylococcus aureus (MRSA)	Hand hygiene in healthcare
	Clostridium difficile (CDI)	Healthcare-associated and ventilator-associated pneumonia

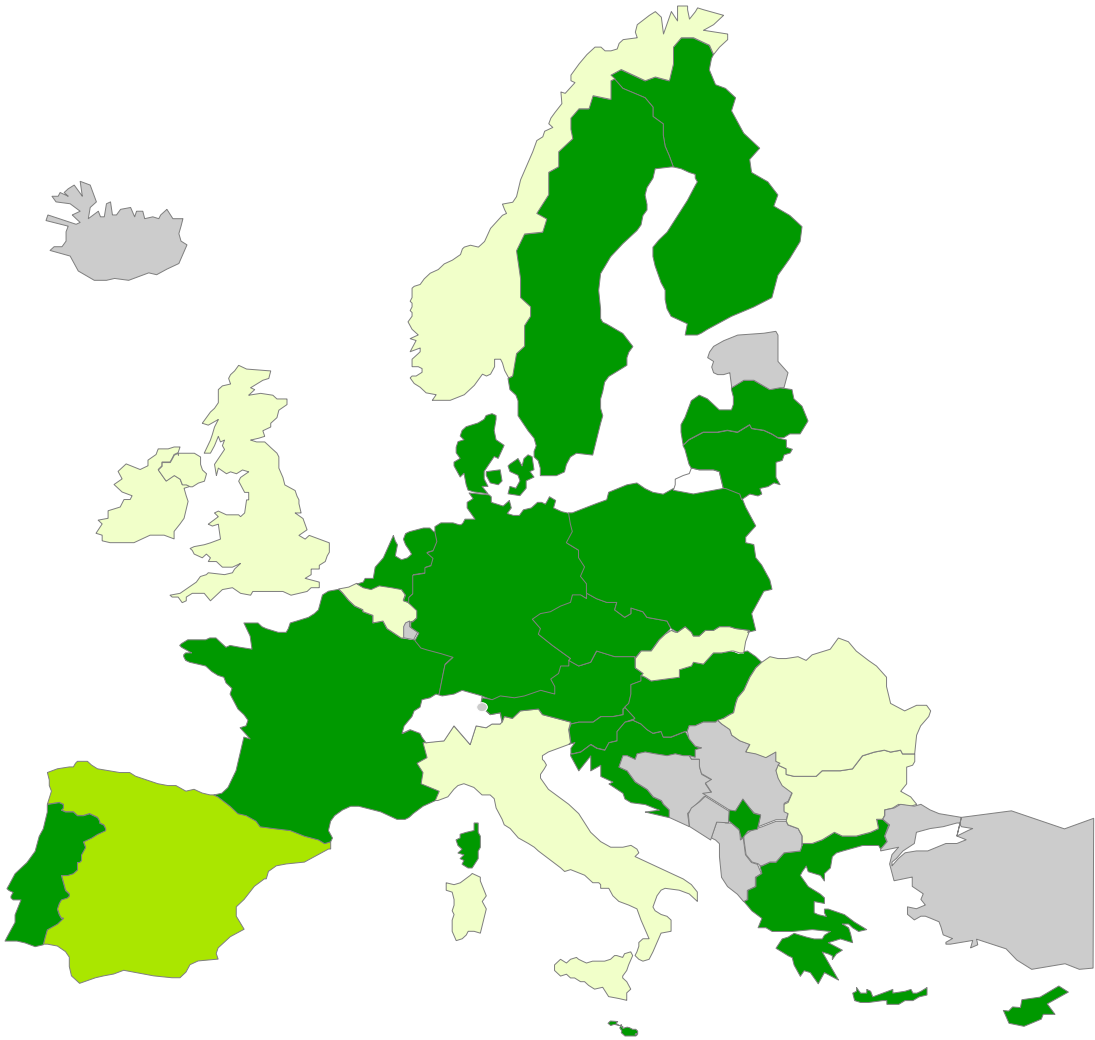
Source: ECDC, 2015. http://www.ecdc.europa.eu/en/healthtopics/Healthcare-associated_infections/guidance-infection-prevention-control/Pages/guidance-prevention-control-infections-caused-by-multidrug-resistant-bacteria-and-healthcare-associated-infections.aspx

Country visits to discuss antimicrobial resistance (AMR) issues, 2006-2015

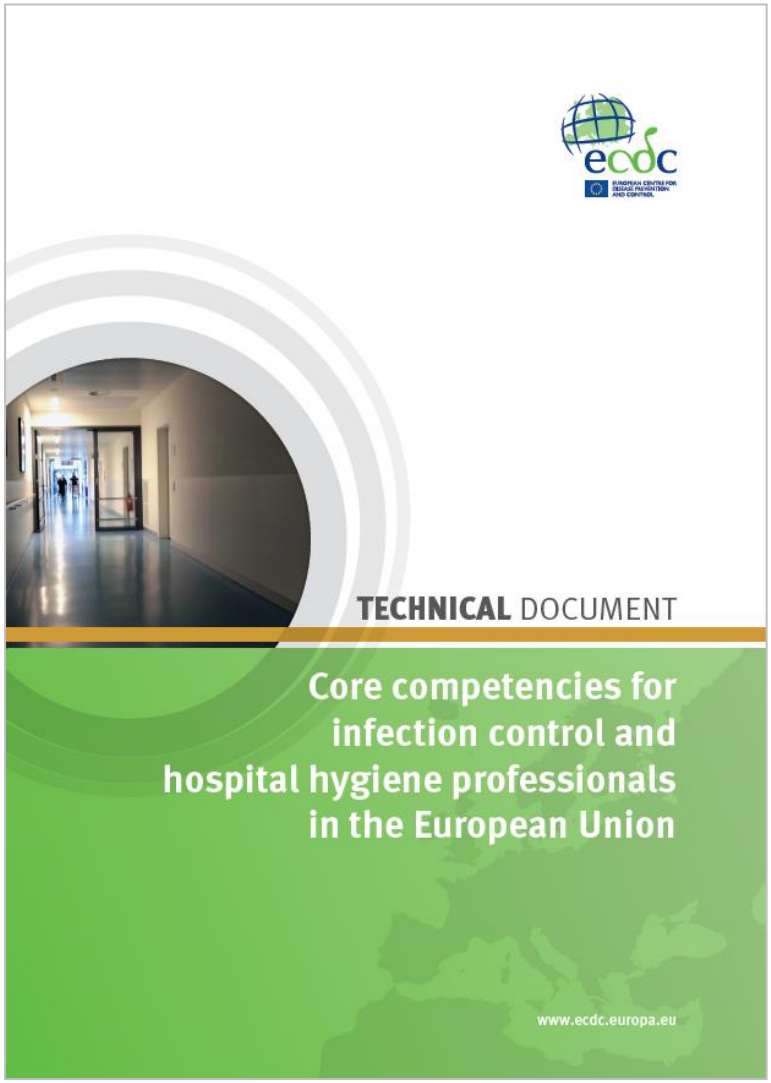
Done
Planned
Discussed

Country visits
to discuss AMR issues
(as of November 2015)

- Based on Council Recommendation of 15 November 2001 on the prudent use of antimicrobial agents in human medicine (2002/77/EC)
- Reports (observations, conclusions, suggestions, examples of best practice)
- 19 initial visits (see map)
- 5 follow-up visits (Czech Rep., Greece x 2 and Hungary x 2)
- **3 additional visits budgeted for 2016**



Core competencies for infection control and hospital hygiene professionals



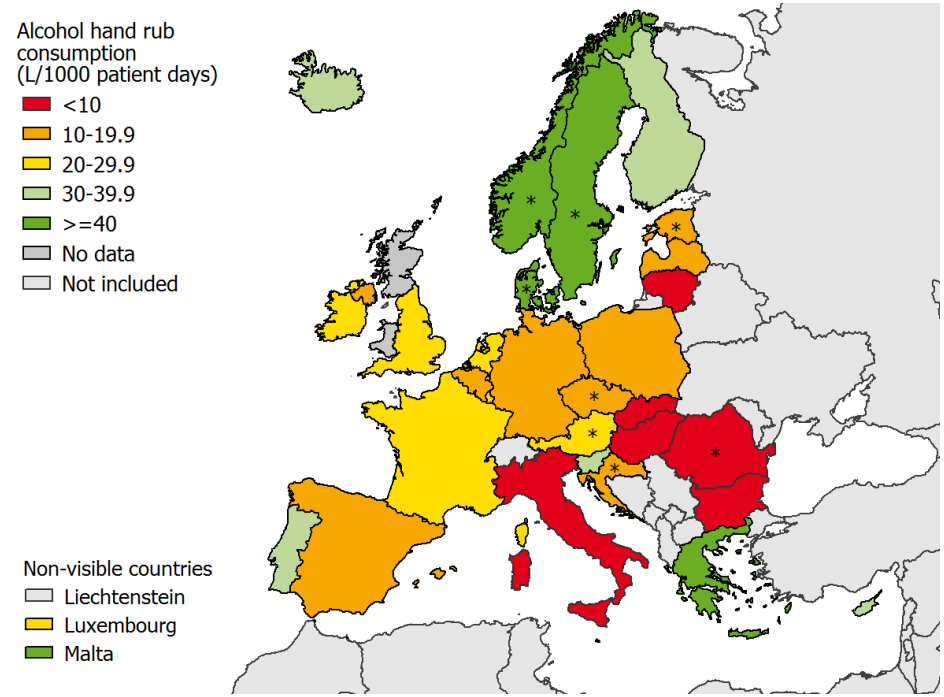
- **2 levels**
  - Introductory (junior specialist)
  - Expert (senior specialist)
- **4 areas**
  - Programme management
  - Quality improvement
  - Surveillance of healthcare-associated infections and investigation of outbreaks
  - Infection control activities
- **16 domains**

Source: ECDC, 2013. http://www.ecdc.europa.eu/en/publications/Publications/infection-control-core-competencies.pdf

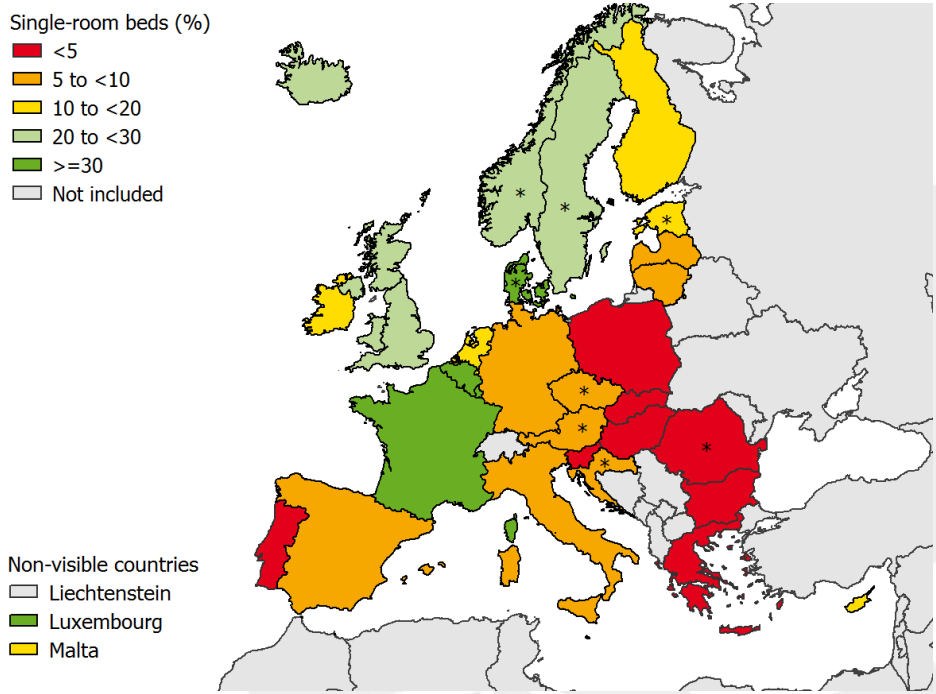
ECDC PPS in European acute care hospitals, 2011-2012: structure and process indicators

- Alcohol hand rub consumption
- Beds in single rooms
- Infection prevention and control staff (nurses, doctors)

Alcohol hand rub consumption



Percentage of beds in single rooms



Source: ECDC PPS, 2011-2012. Available from: http://www.ecdc.europa.eu/en/publications/Publications/healthcare-associated-infections-antimicrobial-use-PPS.pdf

Hospital-wide indicators of infection prevention and control

Hospital organisation, management, and structure for prevention of health-care-associated infection: a systematic review and expert consensus

*Walter Zingg, Alison Holmes, Markus Dettenkofer, Tim Goetting, Federica Secci, Lauren Clack, Benedetta Allegranzi, Anna-Pelagia Magiorakos, Didier Pittet, for the systematic review and evidence-based guidance on organization of hospital infection control programmes (SIGHT) study group**

Despite control efforts, the burden of health-care-associated infections in Europe is high and leads to around 37 000 deaths each year. We did a systematic review to identify crucial elements for the organisation of effective infection-prevention programmes in hospitals and key components for implementation of monitoring. 92 studies published from 1996 to 2012 were assessed and ten key components identified: organisation of infection control at the hospital level; bed occupancy, staffing, workload, and employment of pool or agency nurses; availability of and ease of access to materials and equipment and optimum ergonomics; appropriate use of guidelines; education and training; auditing; surveillance and feedback; multimodal and multidisciplinary prevention programmes that include behavioural change; engagement of champions; and positive organisational culture. These components comprise manageable and widely applicable ways to reduce health-care-associated infections and improve patients' safety.

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*Further contributors are listed in the Acknowledgments section

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- Systematic review & expert opinion
  => 10 key components and proposed indicators

Source: Zingg W, et al. Lancet Infectious Diseases, Published online Nov 11 2014.

Indicators for hospital antimicrobial stewardship programmes

- **3 domains**:
  - infrastructure
  - policy and practice
  - monitoring and feedback
- **17 "core" indicators** essential to fully characterise all aspects of antimicrobial stewardship programmes
- **16 "supplemental" indicators**

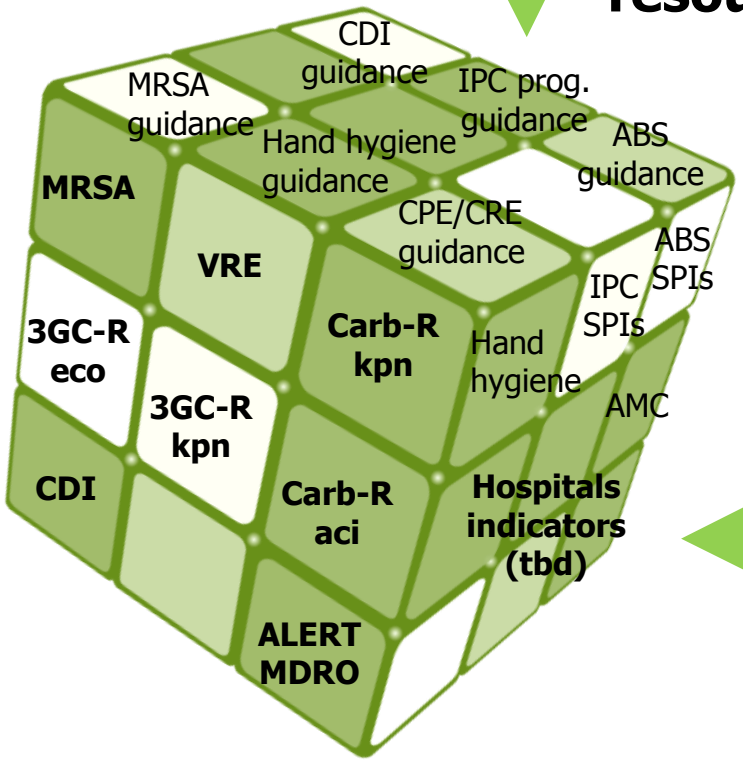
CORE Indicators for hospital antimicrobial stewardship programs		
Infrastructure	1.	Does your facility have a formal **antimicrobial stewardship programme** accountable for ensuring appropriate antimicrobial use?
	2.	Does your facility have a **formal organizational structure** responsible for antimicrobial stewardship (e.g., a multidisciplinary committee focused on appropriate antimicrobial use, pharmacy committee, patient safety committee or other relevant structure)?
	3.	Is an antimicrobial stewardship **team** available at your facility (e.g., greater than one staff member supporting clinical decisions to ensure appropriate antimicrobial use)?
	4.	Is there a physician identified as a **leader** for antimicrobial stewardship activities at your facility?
	5.	Is there a **pharmacist** responsible for ensuring appropriate antimicrobial use at your facility?
	6.	Does your facility provide any **salary support** for dedicated time for antimicrobial stewardship activities (e.g., percentage of full-time equivalent (FTE) for ensuring appropriate antimicrobial use)?
	7.	Does your facility have the **IT capability** to support the needs of the antimicrobial stewardship activities?
Policy and Practice	8.	Does your facility have **facility-specific treatment recommendations** based on local antimicrobial susceptibility to assist with antimicrobial selection for common clinical conditions?
	9.	Does your facility have a written policy that requires prescribers to **document an indication** in the medical record or during order entry for all antimicrobial prescriptions?
	10.	Is it routine practice for specified antimicrobial agents to be approved by a physician or pharmacist in your facility (e.g., **pre-authorization**)?
	11.	Is there a formal procedure for a physician, pharmacist, or other staff member to review the appropriateness of an antimicrobial at or after 48 hours from the initial order (**post-prescription review**)?
Monitoring and Feedback	12.	Has your facility produced a **cumulative antimicrobial susceptibility report** in the past year?
	13.	Does your facility **monitor if the indication** is captured in the medical record for all antimicrobial prescriptions?
	14.	Does your facility audit or **review surgical antimicrobial prophylaxis** choice and duration?
	15.	Are results of antimicrobial audits or reviews **communicated directly** with prescribers?
	16.	Does your facility **monitor antimicrobial use** by grams [Defined Daily Dose (DDD)] or counts [Days of Therapy (DOT)] of antimicrobial(s) by patients per days?
	17.	Has an **annual report** focused on antimicrobial stewardship (summary antimicrobial use and/or practices improvement initiatives) been produced for your facility in the past year?

Source: CDC & ECDC, 2015. http://www.cdc.gov/drugresistance/pdf/summary_of_tatfar_recommendation_1.pdf

2nd ECDC point prevalence survey (PPS), 2016-2017 – an integrated approach for surveillance, prevention and control of HAI and AMR in European acute care hospitals

Guidance (directory of online resources)

Outcome indicators (HAI, selected MDROs)



Structure and process indicators (incl. antimicrobial consumption)

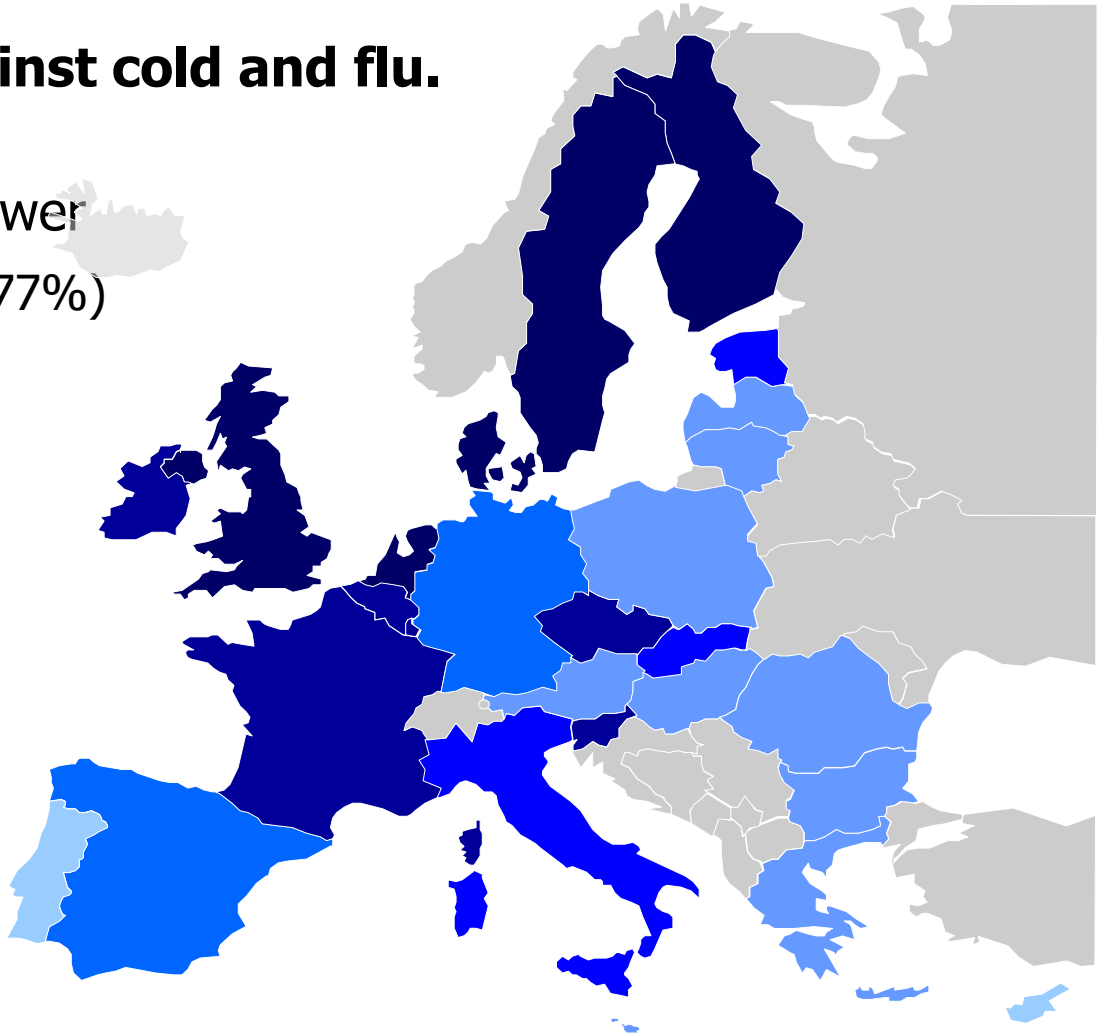
Source: ECDC, 2015.

Outpatients

Eurobarometer opinion poll, May-June 2013

Antibiotics are effective against cold and flu. True or false?

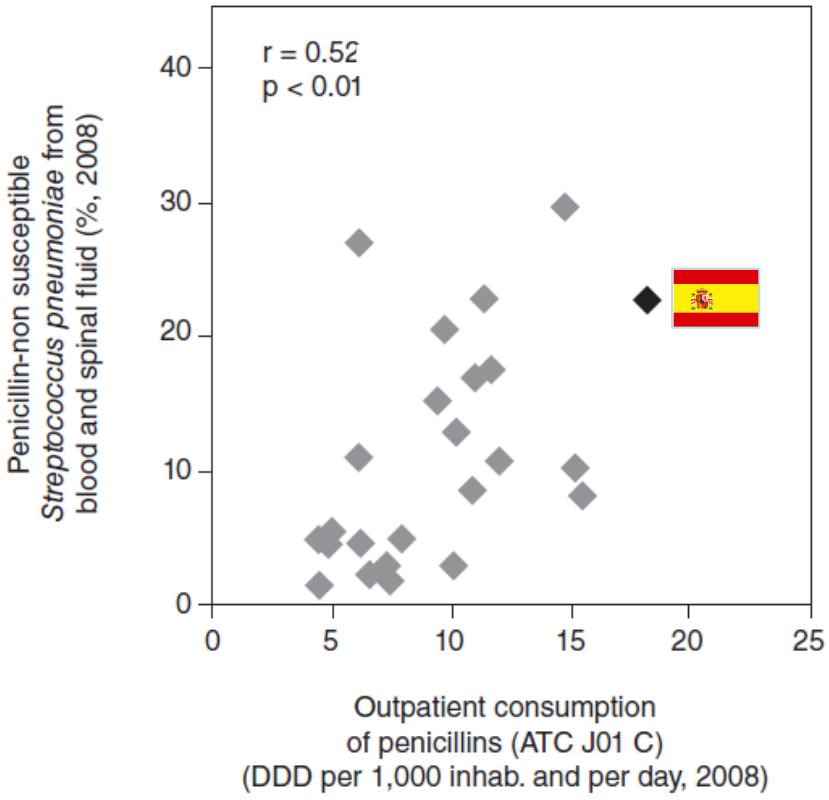
% respondents with correct answer (i.e., "false"): 52% (range: 24 – 77%)

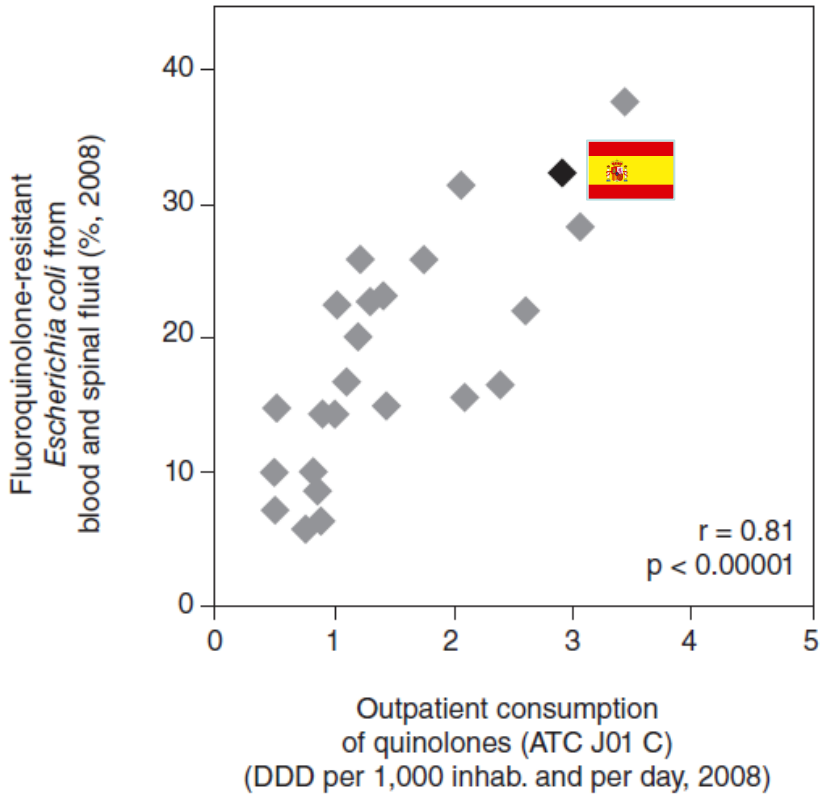


44%

Source: Special Eurobarometer 407 / 79.4 "Antimicrobial resistance", May-June 2013.

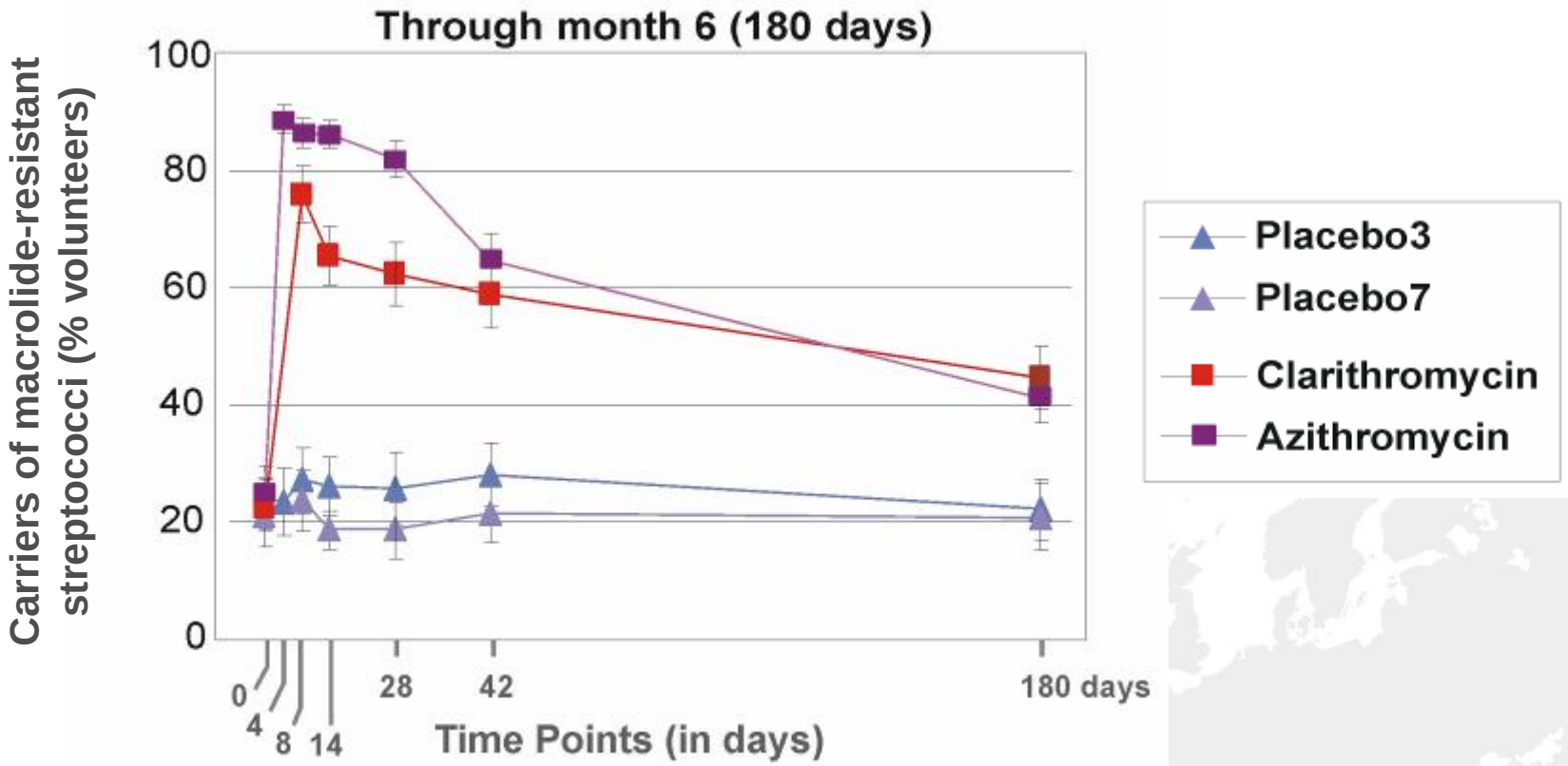
Relationship between antibiotic use and resistance in the community





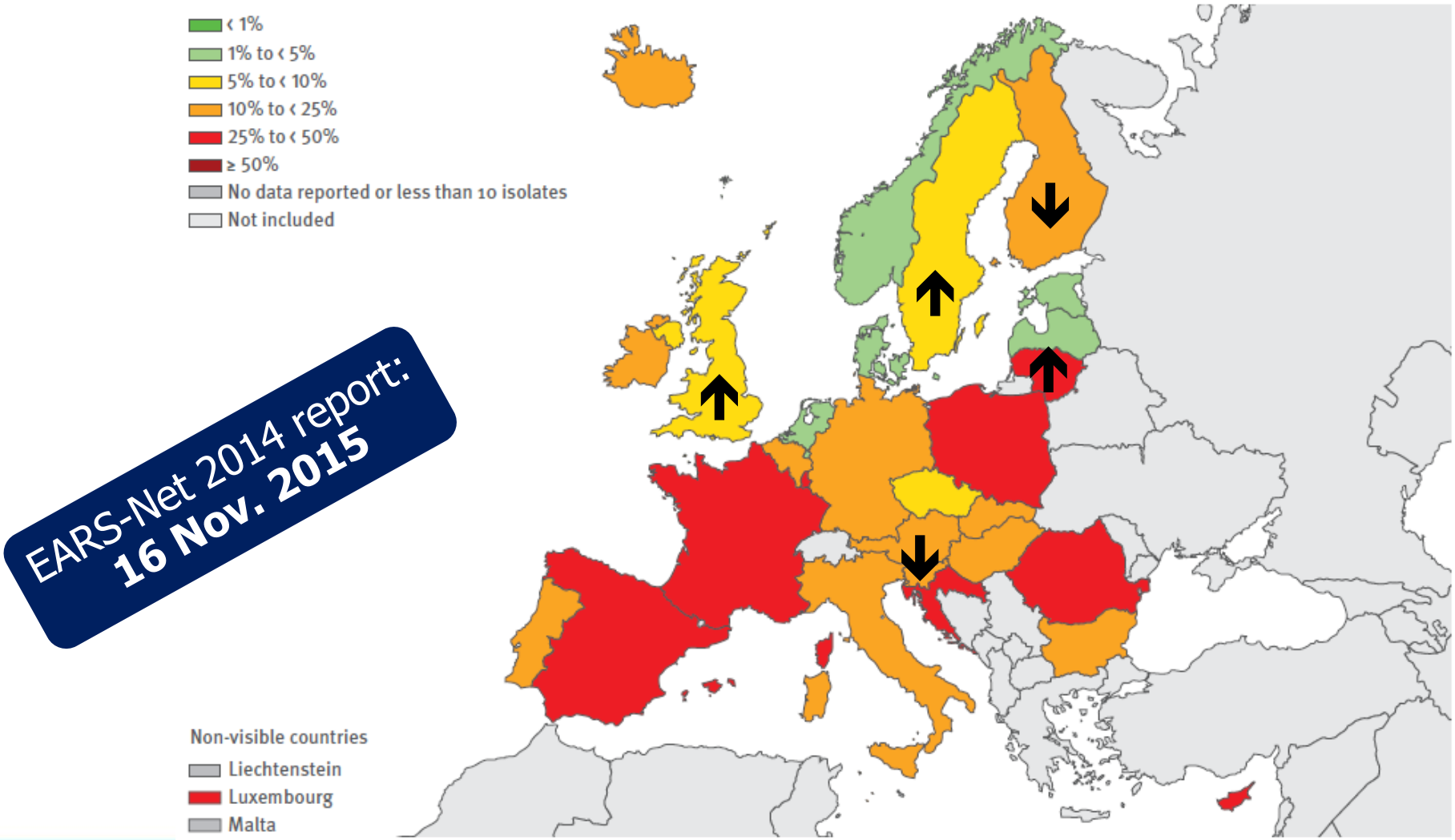
Source: Monnet DL. Enferm Infecc Microbiol Clin. 2010;28 (Suppl 4):1-3.

Carriage of resistant bacteria following exposure to antibiotics



Source: Malhotra-Kumar et al. Lancet. 2007.

Streptococcus pneumoniae: percentage of invasive isolates not susceptible to macrolides; EU/EEA, 2013



Source: EARS-Net, 2014

The symbols ↑ and ↓ indicate a significant increasing or decreasing trend for the period 2010-2013, respectively. These trends were calculated on laboratories that consistently reported during this period.

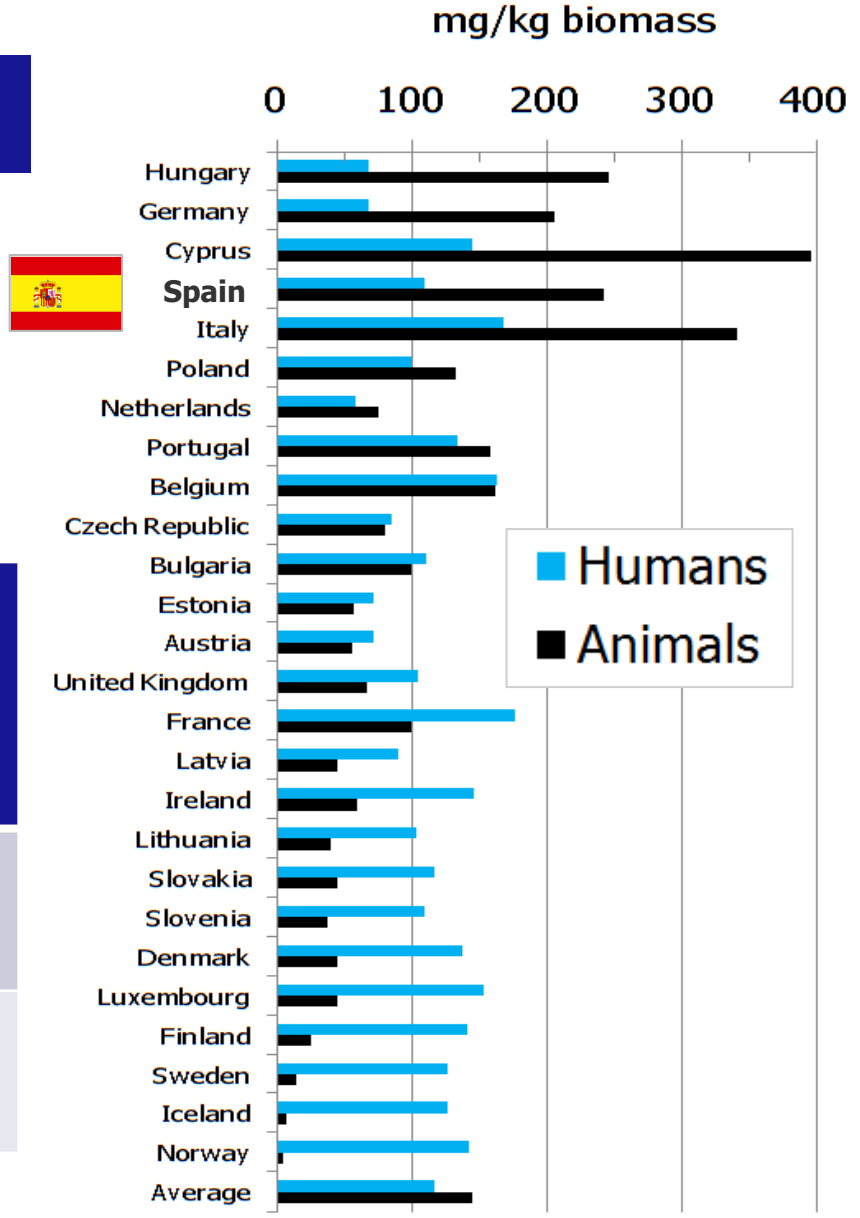
Food animals

Photo: US Dept. of Agriculture

COMPARISON OF CONSUMPTION IN HUMANS AND FOOD-PRODUCING ANIMALS

Comparison of biomass-corrected *consumption of antimicrobials* (milligrams per kilogram estimated biomass) in humans and animals by country in 26 EU/EEA countries in 2012

	Total consumption in 2012 (expressed in mg/kg of estimated biomass)
In humans	**116.4 mg/kg** (range: 56.7 – 175.8 mg/kg)
In animals	**144.0 mg/kg** (range: 3.8 – 396.5 mg/kg)



www.ecdc.europa.eu/en/publications/Publications/antimicrobial-resistance-JIACRA-report.pdf

Humans + Animals = One Health

Prudent use of antibiotics:

Everyone is responsible!

This website is part of the ECDC (European Centre for Disease Prevention and Control) network

See entire ECDC network

DÍA EUROPEO PARA EL USO PRUDENTE DE LOS ANTIBIÓTICOS

UNA INICIATIVA EUROPEA PARA LA SALUD

español (es)

ecdc

Planifique una campaña | Para los médicos | Infórmate | Participa | Campañas en Europa | Noticias | Acerca del día

- No te automediques con antibióticos
- Nueva infografía
- Relatos de pacientes
- Datos e informes
- ¿Qué es la resistencia a los antibióticos?

Tuits #EAAD

#EAAD Tweets

Últimas noticias

New EMA report shows encouraging trends in veterinary use of antibiotics 06 Nov 2015

New EAAD infographic on the spread of antibiotic resistance – Now available in all the official EU languages 05 Nov 2015

¿Qué es la resistencia a los antibióticos y el uso prudente de los antibióticos? ¿Cómo se utilizan los antibióticos de forma responsable?
Ver relatos de los pacientes, infografías y vídeos

Source: ECDC, 2015. http://ecdc.europa.eu/en/EAAD/Pages/Home.aspx

European Antibiotic Awareness Day, 2008-2015

2008	Toolkit for the general public 32 countries participated
2009	Toolkit for primary care prescribers
2010	Toolkit for hospital prescribers and and hospitals Matched Get Smart week in the U.S. and the campaign in Canada
2011	Patient stories and Euronews movie Social media guidance 37 countries participated
2012	Collaboration with WHO/Europe: 43 countries participated First EAAD Twitter chat Australia becomes a partner
2013	Start work on self-medication with antibiotics, with PGEU and CPME Training module and pilot course
2014	Revised toolkit for the general public on self-medication with antibiotics New Zealand becomes a partner European Twitter chat Global Twitter conversation
2015	Partner with the first World Antibiotic Awareness Week

EUROPEAN ANTIBIOTIC AWARENESS DAY

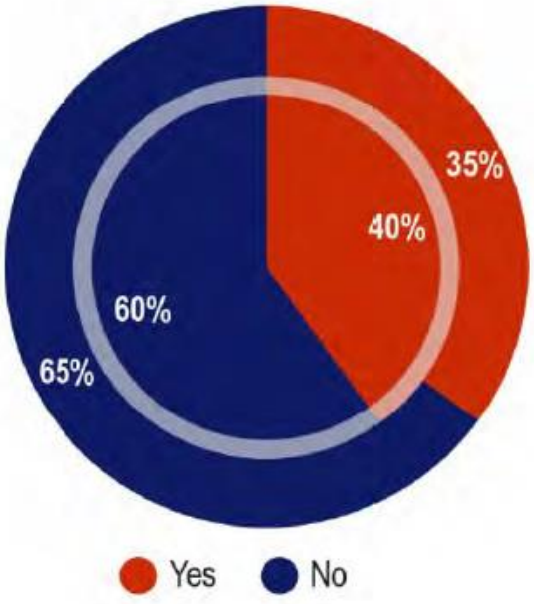
A European Health Initiative

For more information: Earnshaw S, et al. Euro Surveill 2009 Jul 30;14(30) & 2014 Oct 16;19(41).

Behaviour of European citizens, 2009-2013: oral antibiotics vs. smoking

Taking antibiotics

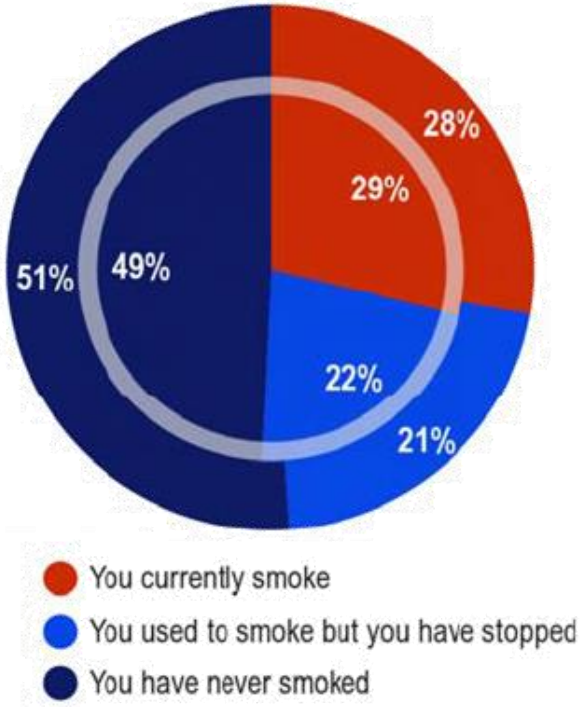
(orally, in the last 12 months)



Inner pie : 2009 (EB72.5 11-12)
Outer pie : 2013 (EB79.4 05-06)

Smoking

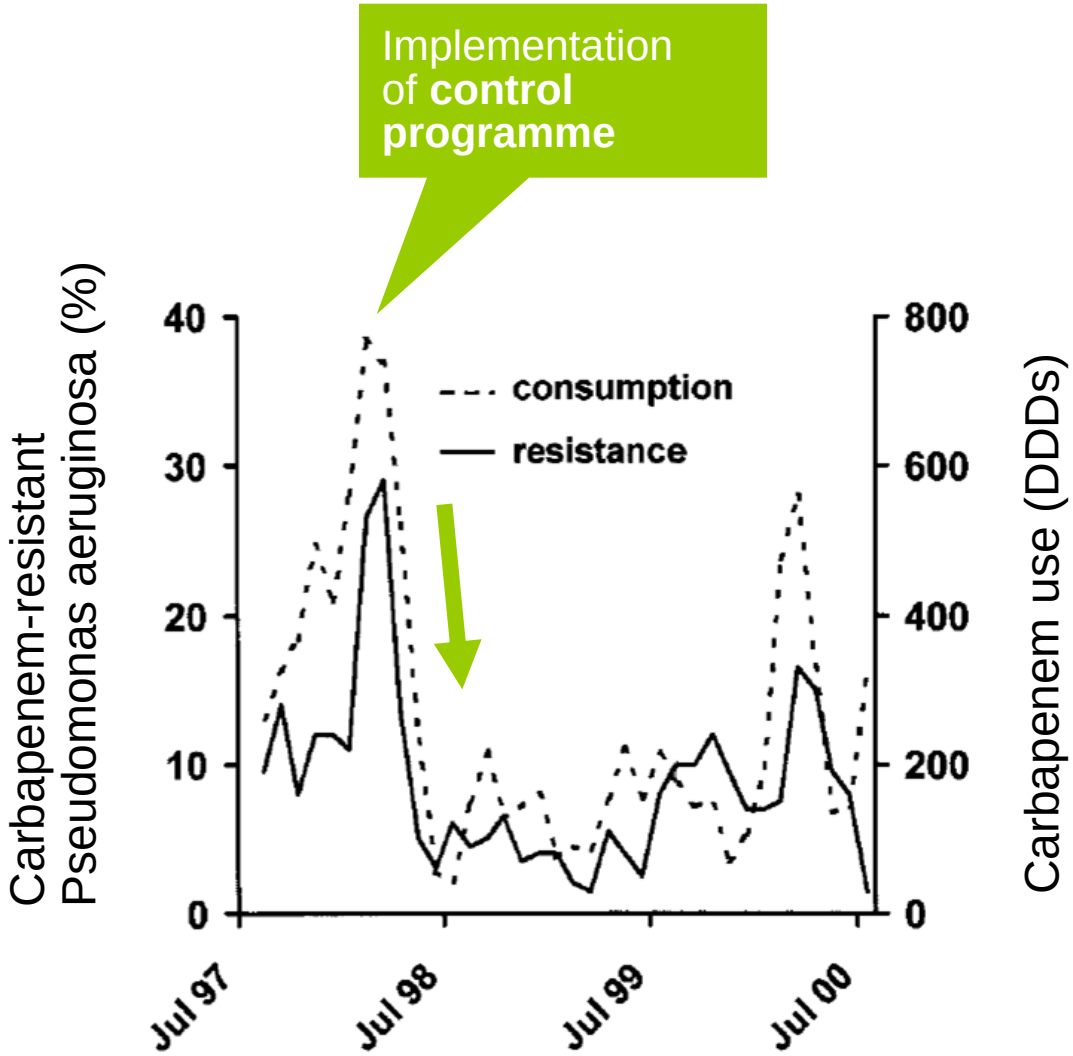
(cigarettes, cigars or a pipe)



Inner pie : EB72.3 Oct. 2009
Outer pie : EB77.1 Feb.-Mar. 2012

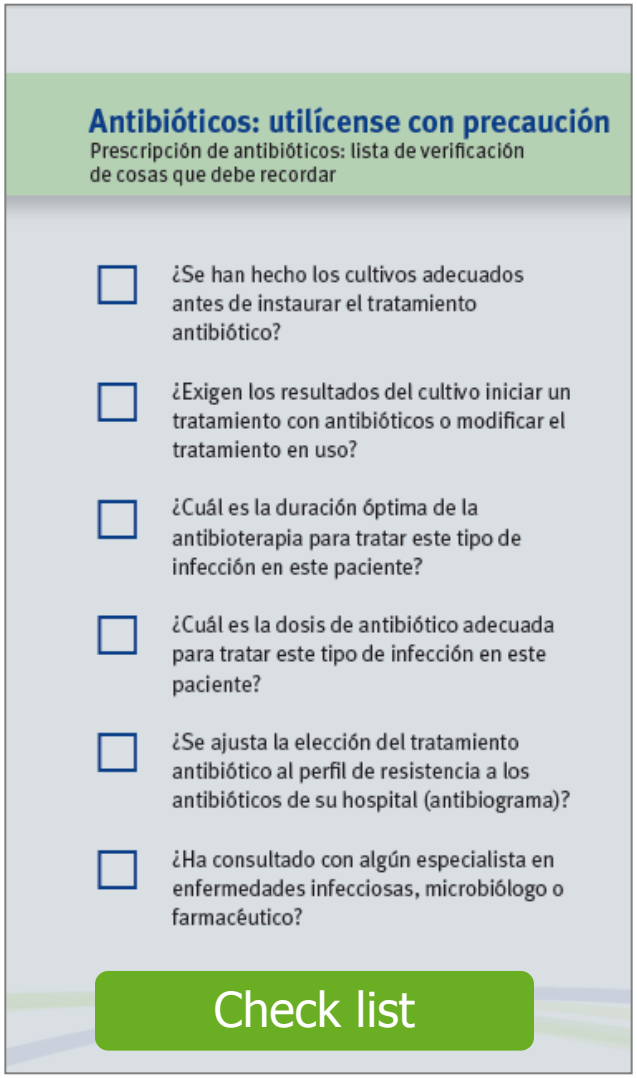
Source: Eurobarometer surveys, European Commission, 2009-2013.

Antimicrobial consumption drives antimicrobial resistance in hospitals

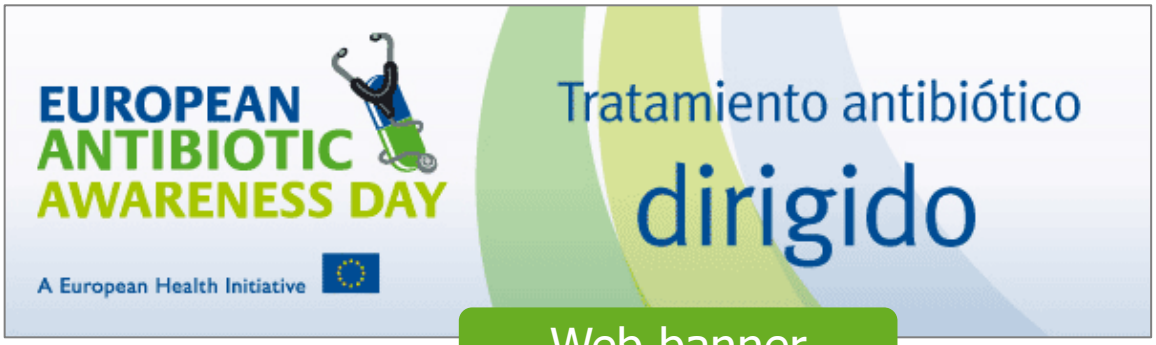


Source: Lepper PM, et al. Antimicrob Agents Chemother 2002 Sep;46(9):2920-5.

European Antibiotic Awareness Day: translated materials for hospital prescribers



Check list



Web banner

Screen saver

WORLD ANTIBIOTIC AWARENESS WEEK

16-22 NOVEMBER 2015

ANTIBIOTICS
HANDLE WITH CARE

World Health Organization

EUROPEAN ANTIBIOTIC AWARENESS DAY

A EUROPEAN HEALTH INITIATIVE

18 November 2015

ecdc
EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL

Website: http://antibiotic.ecdc.europa.eu
Facebook: EAAD.EU
Twitter chat: @EAAD_EU #EAAD
Global Twitter chat: #AntibioticResistance