



**V International Conference on Patient Safety,
Healthcare Associated Infection and Antimicrobial Resistance**

Madrid, Spain, June 2010

**Prevention of health-care-associated
infections (HAI) and antimicrobial
resistance (AMR) in Europe**

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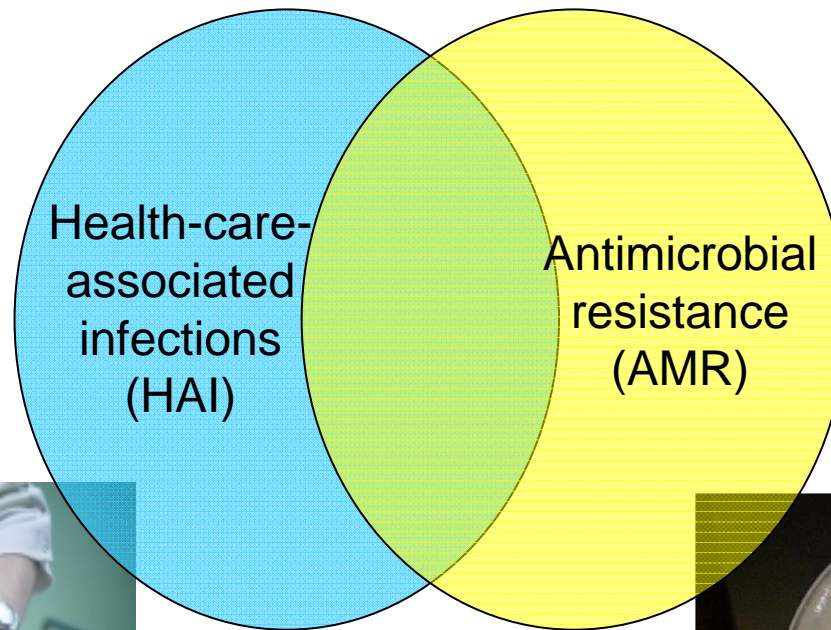
Presentation overview

- Global situation
- Situation in Europe
- Challenges
- WHO's response

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Overlapping areas that must be addressed together



Usually associated with a **weak health care system**

**AMR: antimicrobial use is the key driver of
resistance**

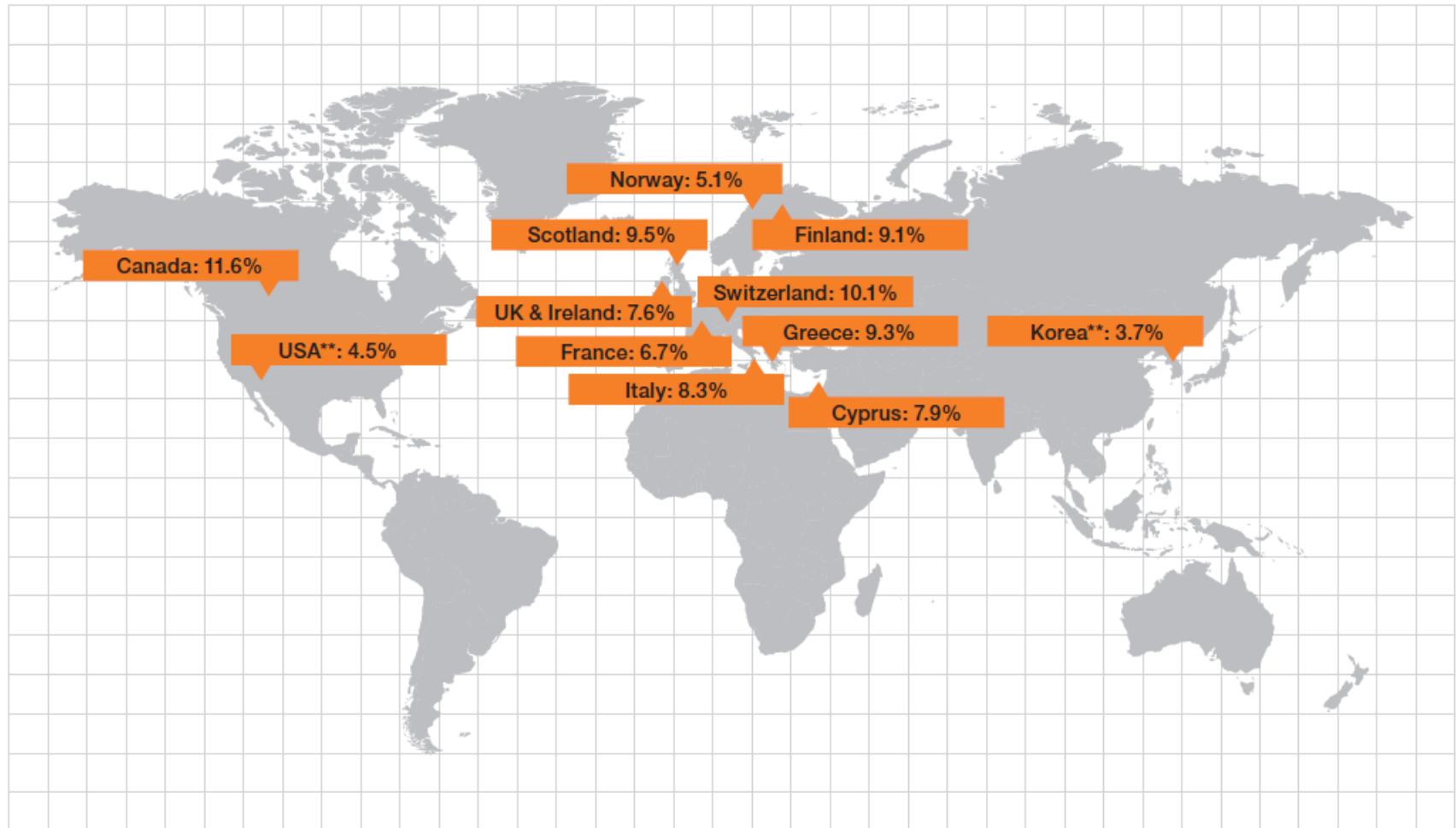
Paradoxically this selective pressure comes from a combination of **overuse** in many parts of the world, particularly for minor infections, **misuse** due to lack of access to appropriate treatment and **underuse** due to lack of financial support to complete treatment courses.

HAI: poor infection control is the key driver of health-care-associated infections.

Infection control is acknowledged universally as **a solid and essential basis towards patient safety** and supports the reduction of health-care-associated infections and their consequences.

Prevalence of HAI worldwide

Figure 1 Prevalence of HCAI in developed countries*



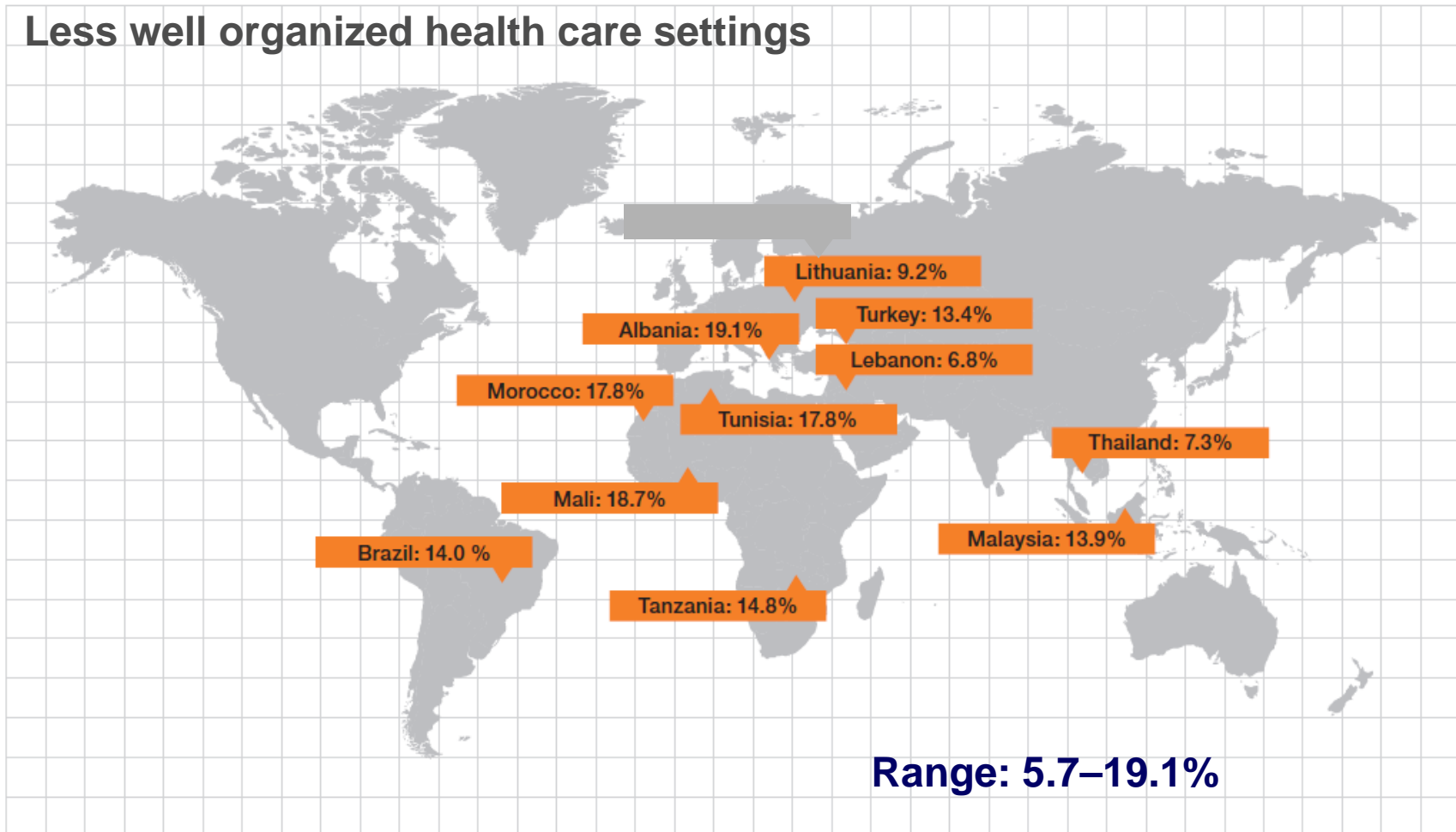
* Systematic review conducted by WHO, 1995-2008

**Incidence

The burden of health-care-associated infection worldwide: a summary. *First Global Patient Safety Challenge* (<http://www.who.int/gpsc/>).

Prevalence of HAI worldwide

Less well organized health care settings



The burden of health-care-associated infection worldwide: a summary. *First Global Patient Safety Challenge*

(<http://www.who.int/gpsc/>).

almost twice as high as in developed countries

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HAI burden in Europe: European Union (EU) data

Significant health and **economic impact**

Prevalence: 3.5–14.8% (average: 7.1%)

- **4 131 000** affected patients
- **4 544 100** episodes of HAI every year
- **16 million** extra days of hospital stay
- **37 000** attributable deaths (and contribution to an additional 110 000)
- **Annual economic impact:** about **€7 billion**
(direct costs only)

Country	No. of cases/year	No. of deaths/year	Costs/year
United Kingdom	100 000	5 000	1billion

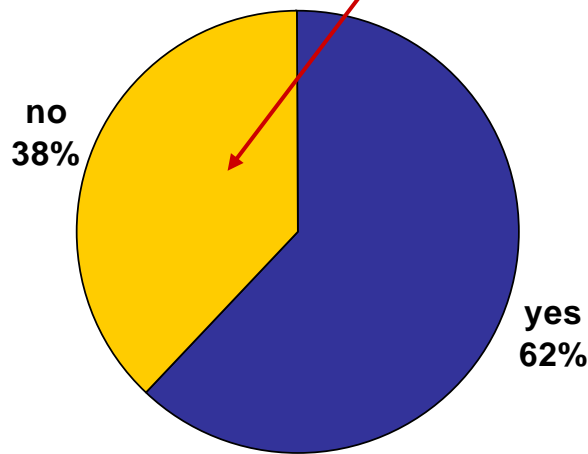
Annual epidemiological report on communicable disease in Europe, 2008, ECDC

Improving Patient Safety in Europe (IPSE)

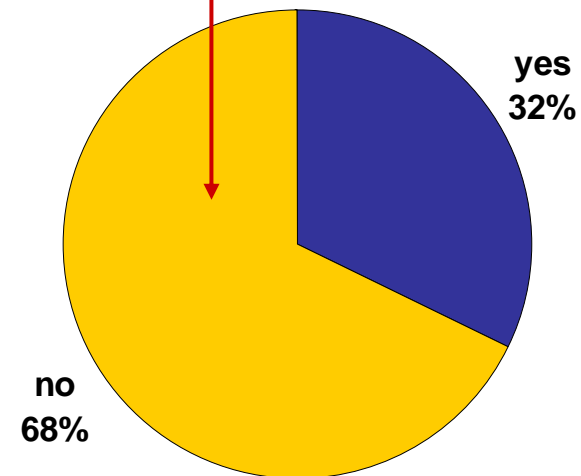
2006–2008

Review of existing guidelines, standards and indicators of infection control and antimicrobial resistance programmes in European countries: **1/3, no programme; 2/3, no legislation**

National programmes for AMR



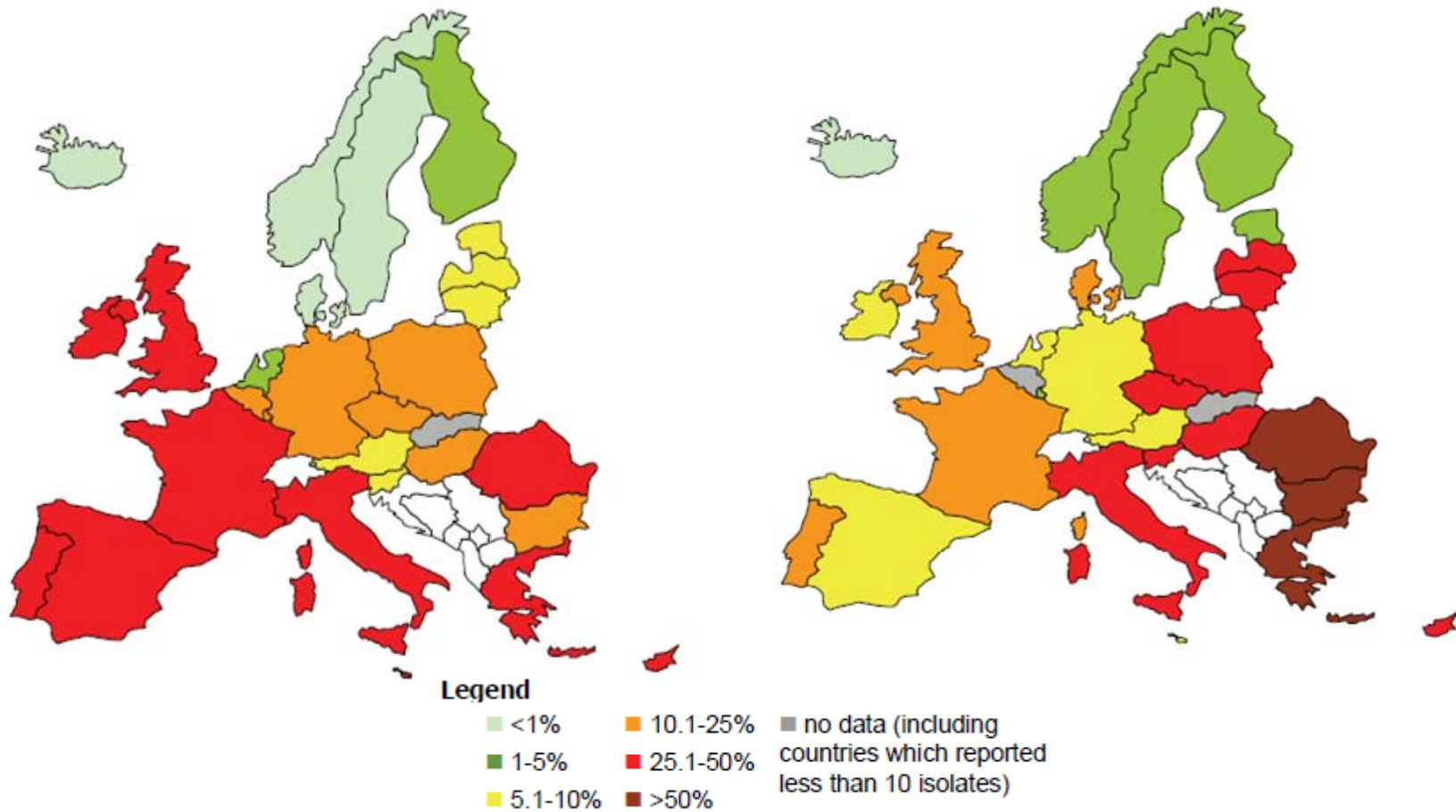
National laws on prevention and control of AMR



Proportion of AMR isolated from blood samples

Gram positive
Staphylococcus aureus (MRSA)

Gram negative
Klebsiella pneumoniae



Multidrug-resistant tuberculosis (MDR-TB) high-burden countries

The first 15 most affected countries are in the WHO European Region



MDR-TB prevalence among

	New (%)	Re-treated (%)
Azerbaijan	22.3	55.8
Republic of Moldova	19.4	50.8
Tajikistan	16.5	61.6
Ukraine	16.0	44.3
Russian Fed.	15.8	42.4
Estonia	15.4	42.7
Kazakhstan	14.2	56.4
Uzbekistan	14.2	49.8
Kyrgyzstan	12.5	42.1
Belarus	12.5	42.1
Bulgaria	12.5	42.1
Latvia	12.1	31.9
Armenia	9.4	43.2
Lithuania	9.0	47.5
Georgia	6.8	27.4

WHO European Region represents 19% of the MDR-TB global burden

MDR-TB prevalence among

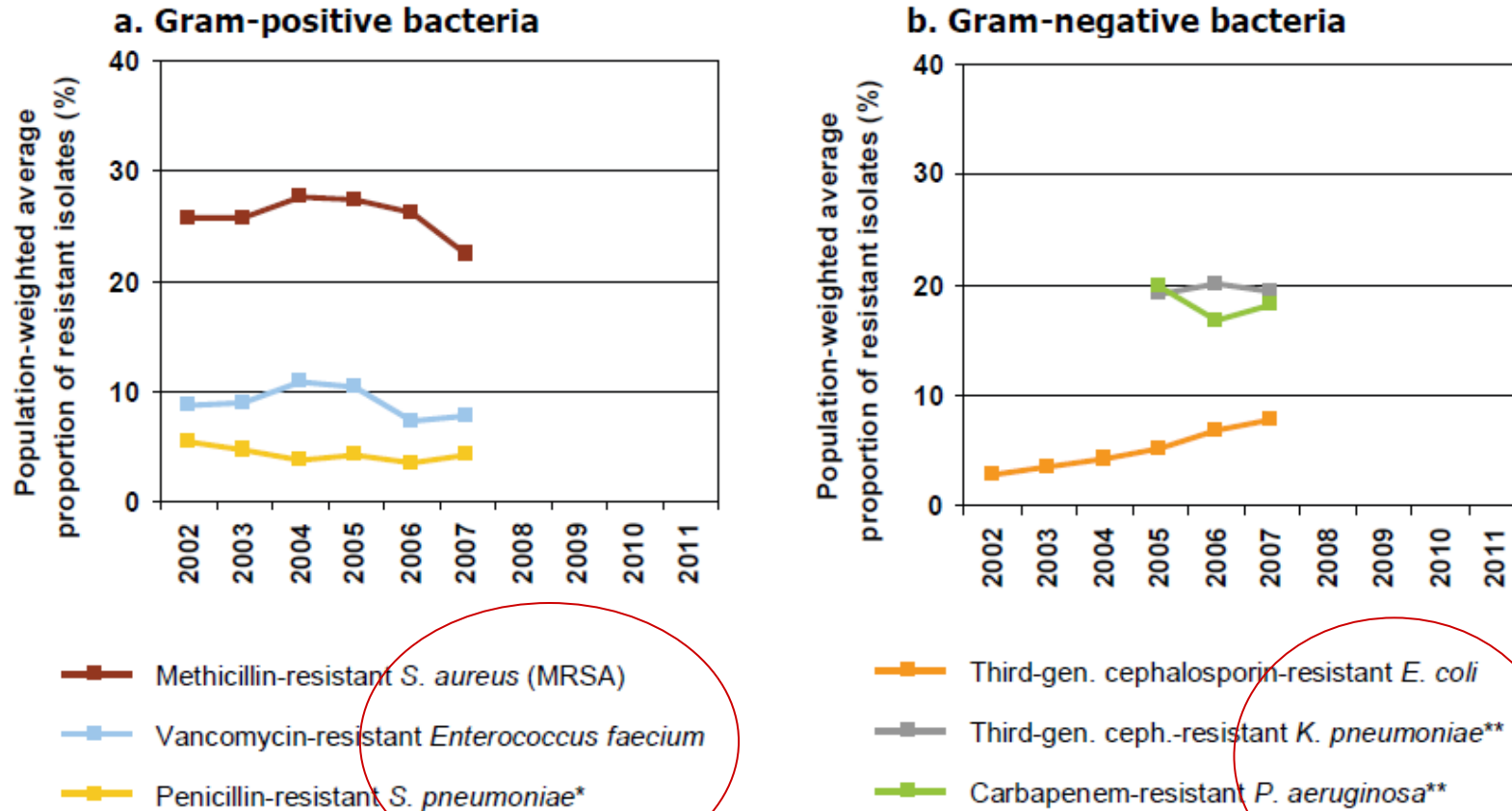
	New (%)	Re-treated (%)
China	5.7	25.6
Myanmar	4.2	10
Philippine	4	20.9
Pakistan	2.9	35.4
Viet Nam	2.7	19.3
India	2.3	17.2
Bangladesh	2.2	14.7
Indonesia	2	14.7
Congo, Dem. R.	1.8	7.7
Nigeria	1.8	7.7
South Africa	1.8	6.7
Ethiopia	1.6	11.8

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The bacterial challenge

Resistant isolates: **many species involved**



ECDC/EMA Joint Technical Report. *The bacterial challenge: time to react. A call to narrow the gap between multidrug-resistant bacteria in the EU and the development of new antibacterial agents.* ECDC and EMA, 2009

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Based on **partnership**
and a **cross-cutting approach**

Building on the WHO **Global Strategy for Containment of Antimicrobial Resistance** (2001)

To further implement World Health Assembly resolution WHA51.17 on emerging and other communicable diseases: antimicrobial resistance (1998)

Partnership



European Antimicrobial
Resistance Surveillance System



European Surveillance of
Antimicrobial Consumption



Improving Patient Safety in Europe



*Antibiotic Resistance
Surveillance & Control
in the Mediterranean Region*



*European Union Invasive
Bacterial Infections Surveillance
Network*



ARPEC: Antibiotic Resistance and Prescribing in European Children

Partnership

WHO collaborating centres (CCs) in the European Region

WHO CC for Reference and Research on Hospital Infections

- Laboratory of Healthcare Associated Infection, Health Protection Agency, London, **United Kingdom**

WHO CC on Patient Safety

- Infection Control Programme, Department of Internal Medicine, University of Geneva Hospitals, Geneva, **Switzerland**

WHO CC for Antimicrobial Resistance in Foodborne Pathogens

- Danish Institute for Food and Veterinary Research, Department of Microbiology, Copenhagen, **Denmark**

WHO CC for Research and Training in Surveillance of Communicable Diseases and Antimicrobial Resistance

- National Centre for Infectious and Parasitic Diseases, Sofia, **Bulgaria**

WHO CC for Drug Statistics Methodology

- Norwegian Institute of Public Health, Oslo, **Norway**

Cross-cutting approach

WHO resources in antimicrobial resistance

- Health system strengthening
- Infection control
- Improving the use of antibiotics
- Patient safety
- Food safety and zoonoses
- Stop TB
- HIV/AIDS
- Malaria

Development of national action plans

A four-prong strategy

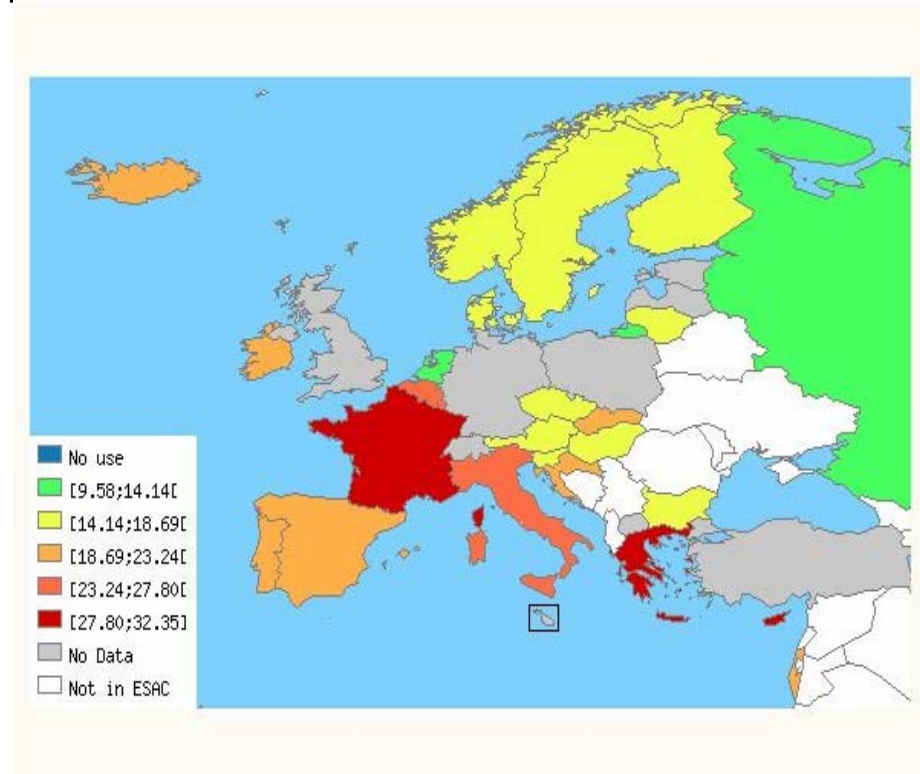
- **Surveillance** to document the problem
- **Prevention** to slow the emergence of HAI and AMR
- **Containment** to reduce the spread
- **Research** to develop new tools

→ Surveillance

European Surveillance of Antimicrobial Consumption (ESAC)

- Continuous collection of comprehensive antimicrobial consumption data, from ambulatory and hospital care
- ESAC III (2007– 2010)
 - 27 EU Member States
 - 3 EEA/EFTA countries
 - 3 candidate countries (Croatia, the former Yugoslav Republic of Macedonia, Turkey)

ESAC (<http://app.esac.ua.ac.be/public>) is a project funded by ECDC.



→ Surveillance

European Antimicrobial Resistance Surveillance System (EARSS)

- Network of national centres in 31 countries
 - 800 public health laboratories serving over 1300 hospitals
- Surveillance of antimicrobial susceptibility of:
 - *Streptococcus pneumoniae*
 - *Staphylococcus aureus*
 - *Enterococcus faecalis*
 - *Enterococcus faecium*
 - *Escherichia coli*
 - *Klebsiella pneumoniae*
 - *Pseudomonas aeruginosa*
- ECDC: transition to European Surveillance System (TESSy)



→ Prevention ... through awareness

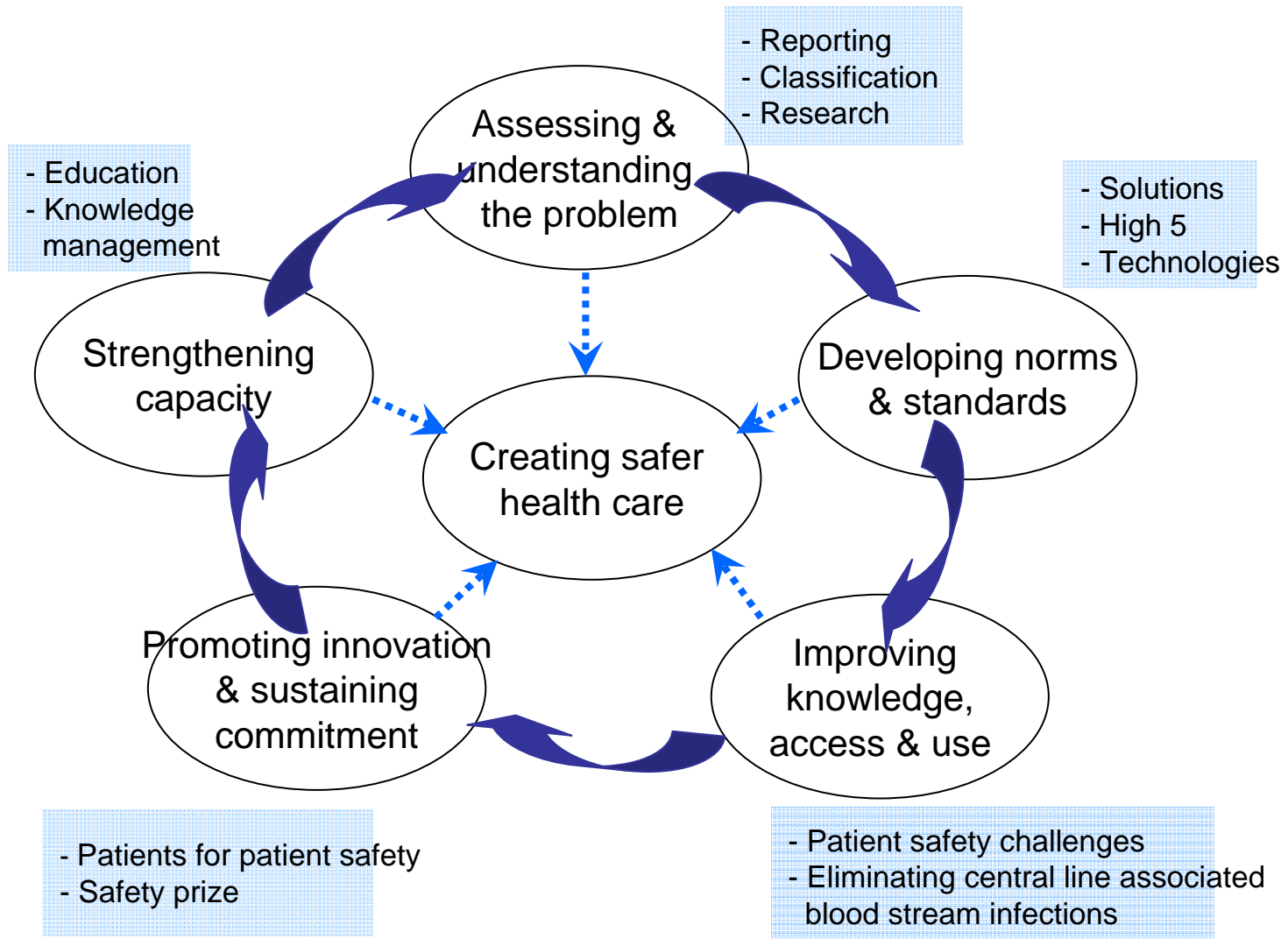
European Antibiotic Awareness Day

- **EAAD 2008**
 - Keeping antibiotics effective is everyone's responsibility
 - Focus: community
- **EAAD 2009**
 - Communicating with patients is key
 - Focus: primary care prescribers
- **EAAD 2010**
 - Focus: hospital prescribers



→ Prevention ... through **infection control**

WHO patient safety programme (launched in 2004)



→ Prevention ... through **hand hygiene** an old but effective measure

- **29** WHO European Member States pledged to “Clean Care”
- **4377** health care facilities in 40 WHO European countries signed on to “Save lives” by 5 May 2010
- **16** national/subnational dedicated campaigns in Europe
- Hand hygiene guidelines adapted and translated in several European languages





→ Prevention

A focus on
drug-resistant
TB in the WHO
European Region

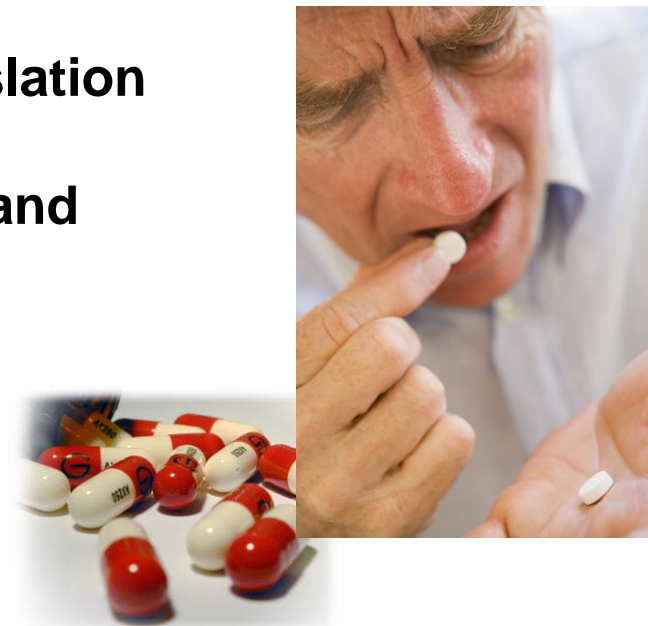
Multidrug and extensively drug-resistant TB (M/XDR-TB)

2010 GLOBAL REPORT ON
SURVEILLANCE AND RESPONSE



→ Containment

- Improving access to appropriate antimicrobials
- Rationalizing the prescribing and use of antibiotics
 - Antibiotic guidelines and prescribing policies in hospitals and general practice
- Enforcing regulations and legislation
- Strengthening health systems and their surveillance capabilities



→ Containment ... a country example

STRAMA (Swedish strategic programme against antibiotic resistance): working model for containment

Overall aim

- To preserve the effectiveness of antibiotics in humans and animals

Strategy

- Two levels:
 - local multidisciplinary groups
 - national executive working group
- Collaboration with national and regional news media
- Proposal of Swedish plan of action against antibiotic resistance

Results

- **Decrease in antibiotic use** from the mid 1990s until 2004

→ Research

More research is needed on non-pharmaceutical interventions to prevent and control AMR, such as:

- *determining the **mechanisms** by which resistant strains emerge and how to limit their spread;*
- *expanded surveillance for drug resistance to **evaluate the impact of changes in antimicrobial drug use;***
- *studies of **methods to reduce community-acquired AMR** (particularly MRSA) infections;*
- *investigations of re-infections to **identify risk associated with past antibiotic use;***
- *understanding of **how antimicrobial resistance patterns predict treatment outcomes.***



Key points for AMR and HAI control in the European Region

Awareness

Introduce AMR and HAI in the agenda of WHO governing bodies

World Health Day 2011

Surveillance

Strategic partnership with ECDC

Expansion of the ESAC and EARSS networks

Containment

Development of national policies and national action plans

Solidarity with and support to Member States in eastern Europe, with a focus on drug-resistant TB

Research

Collaboration with all relevant institutes in the Region

Thank you

**World
Health Day
2011**

