Progress in Europe in Human Antimicrobial Resistance Reduction Strategies

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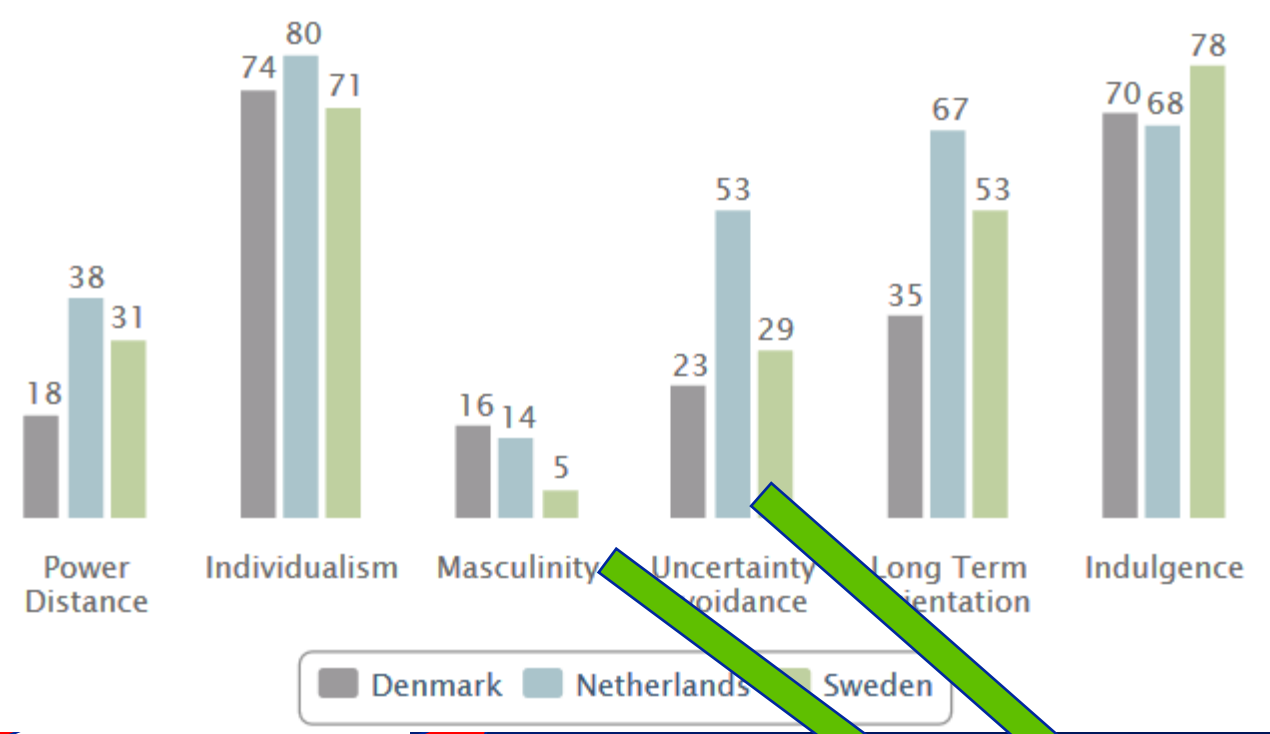
Challenges

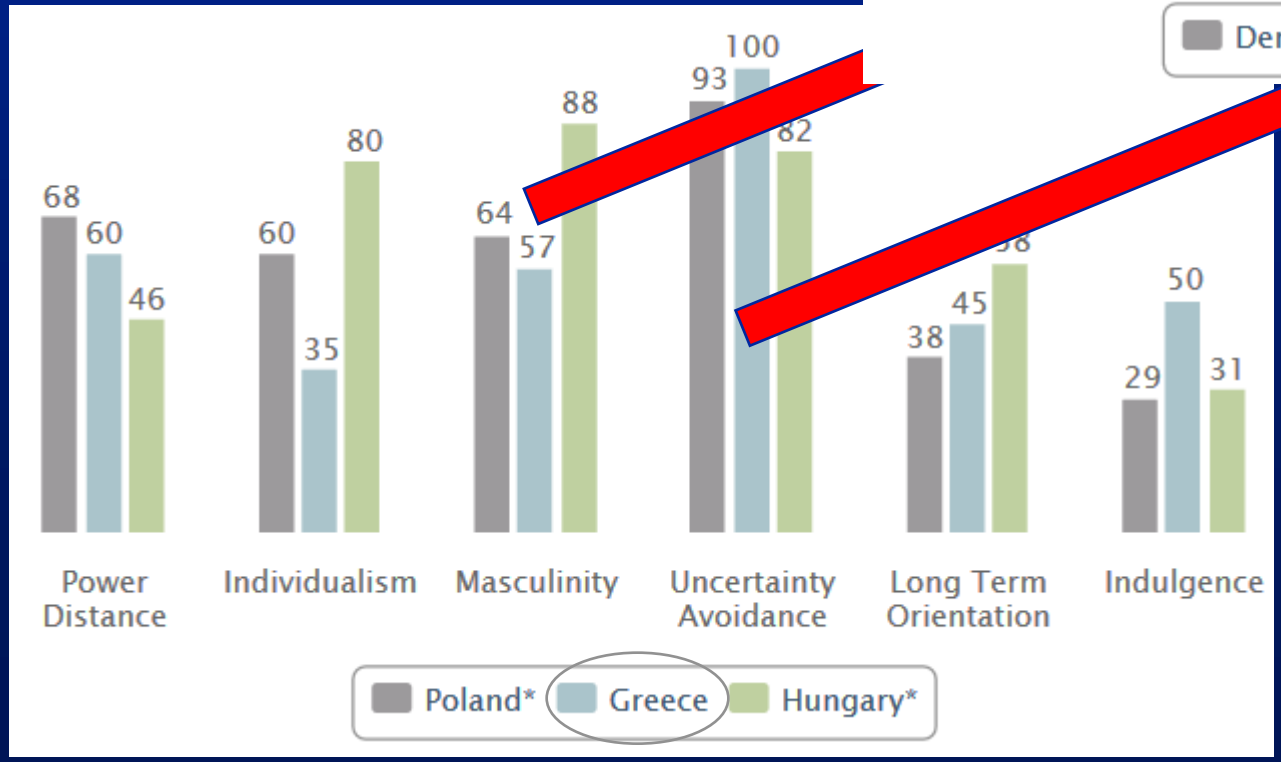
- **28 Member States**
- **24 official languages**
- **> 500 million inhabitants**
  (per country: 416,333 – 81.7 million)
- **€25,100 GDP/capita**
  (per country : 10,400 – 69,3

- **Many Different Cultures**
- **Opportunities for Mutual Learning**

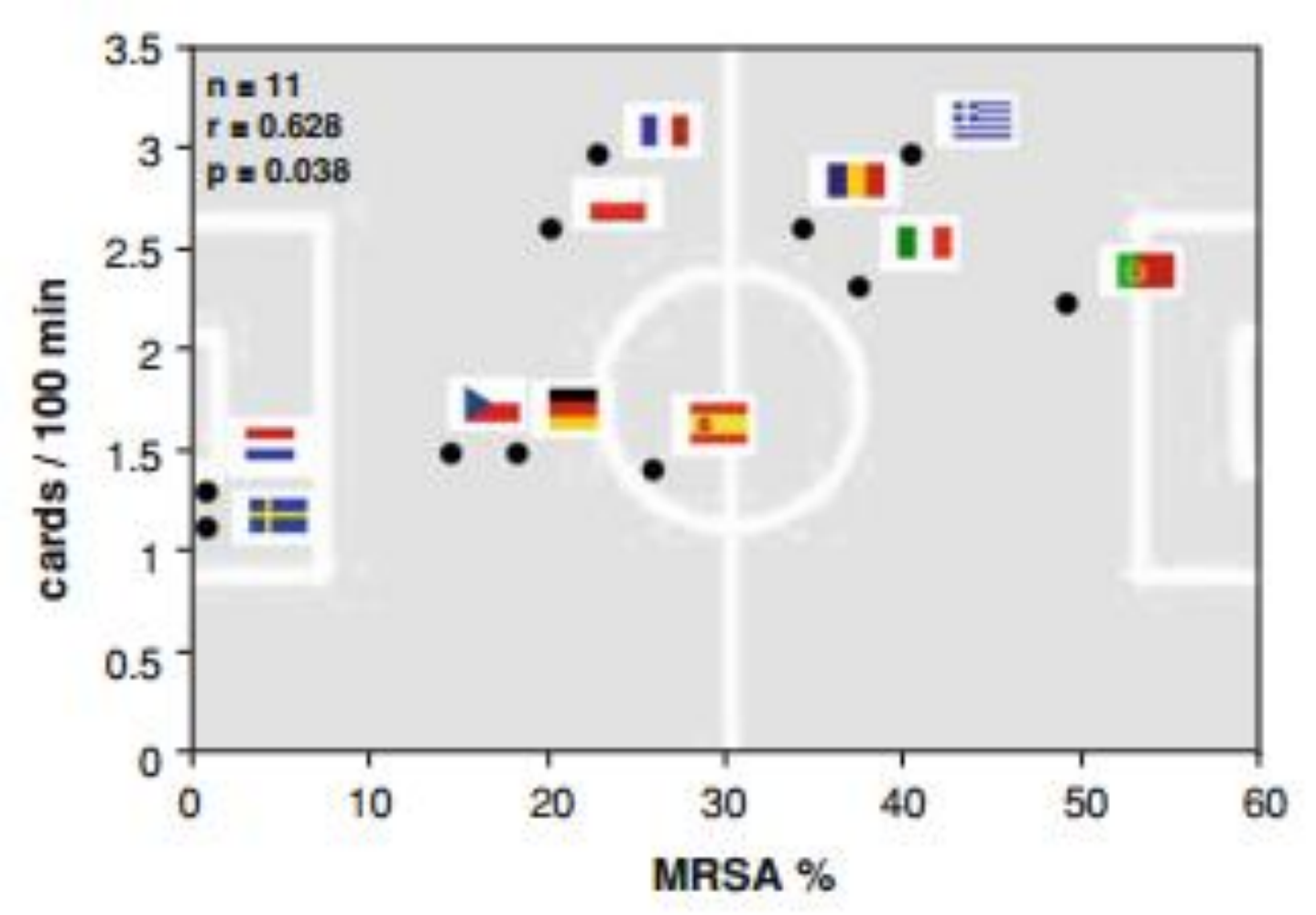
Many are WHO "Less resourced" countries

Inappropriate Ambulatory Antibiotic Use (EUROBAROMETER) & Cultural Dimension Hofstede Scores





Borg M, J Antimicrob Chemother 2012; 67: 763–767 doi:10.1093/jac/dkr541



European Football Championship 2008:
Fair play indicator also correlated significantly with the total antimicrobial use in the ambulatory sector (correlation coefficient 0.833; p = 0.003).

Meyer et al, Infection 2013; 41:215–218
DOI 10.1007/s15010-012-0313-y

Consensus standards and performance indicators (SPIs) for healthcare associated infection in Europe

Cook[illegible] et al, *J Hosp Infect* 2011: 79; 260-264

- Consensus possible: many less resourced
- Solutions may be similar BUT
- Route to achieving them may differ e.g. cultural differences, resources?

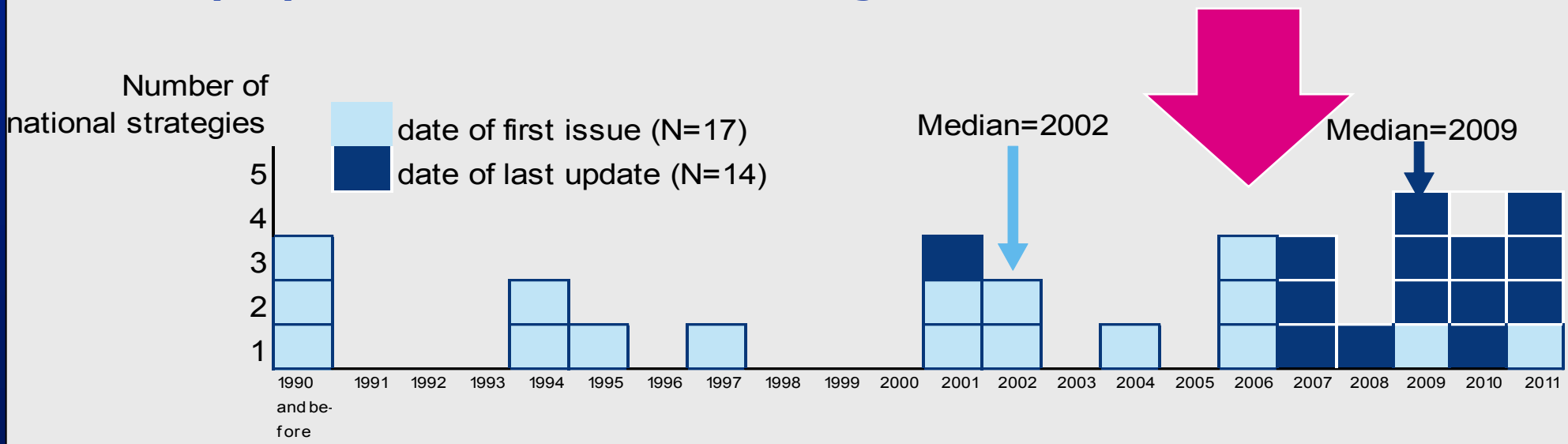
Topic		Modify	Neutral	Disagree
Organisati[illegible]	[illegible]	[illegible]	4%	1%
Control	[illegible]	[illegible]	[illegible]%	2%
Surveillance	79%	[illegible]	[illegible]	2%
Education	79%	14%	[illegible]	[illegible]
Resources	79%	15%	2%	[illegible]
Overall Averages	**80%**	**11%**	**2%**	

COUNCIL RECOMMENDATION 2002/77/EC on the prudent human antimicrobial agent use

- Article 2e: implement hygiene and infection control standards in institutions (hospitals, child care facilities, nursing homes etc.) and in the community and assessing their impact
- Article 3b: enhance training on hygiene and infection control standards
- invites Commission to cooperate with WHO

DG SANCO : implementation report – impact European Council Recommendations (2009)

- **13 MS and 5 regions report that the Recommendation has triggered initiatives on HAI, in particular:**
  - **the implementation of an inter-sectoral mechanism or equivalent system**
  - **preparation/revision of strategies**



- **information campaigns addressing healthcare workers**

8 components of WHO Regional Strategy

- Combined strategy on HAI and AMR and link to patient safety
- Strengthen surveillance of HAI and combine AMR
- Improve use of standardized surveillance methods and indicators, and process & progress indicators
- Standardize guidelines and tools for infection control and prevention in health care settings, including AM drug use.
- Move from individual projects to national programmes
- Foster partnership with professional groups
- Review research agenda, training needs and gaps
- **Political commitment, advocacy**, resources

Pittet et al. Considerations for a WHO European strategy…. *The Lancet Infectious Diseases* 2005; **5:** 242-250.

ECDC (& UK!) AMR Strategy

Antimicrobial Stewardship

Infection Prevention & Control

New Diagnostics, Antibiotics and Treatments

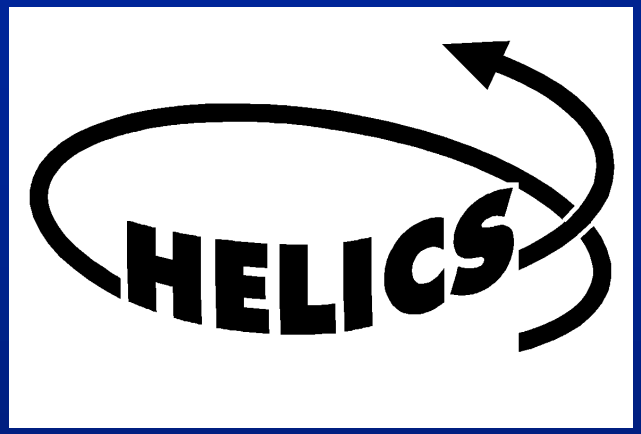
AMR & AB Usage Surveillance

Training/ Education: Professio-nals & Public

Prioritisation of R&D & Interventions: Organisational & Behavioural

International Collaboration

Relevant DG SANCO EU Networks



HELICS

Hospitals in Europe Link for Infection Control through Surveillance

unofficial 1993

Embedded in Improving Patient Safety in Europe (IPSE) 2005

EARSS:

European Antimicrobial Resistance Surveillance Scheme 2000

ESAC: European Surveillance of Antimicrobial Consumption

2002

ECDC

HELICS 2008

Development and assessment of national performance indicators for infection prevention and control and antimicrobial stewardship in European long-term care facilities

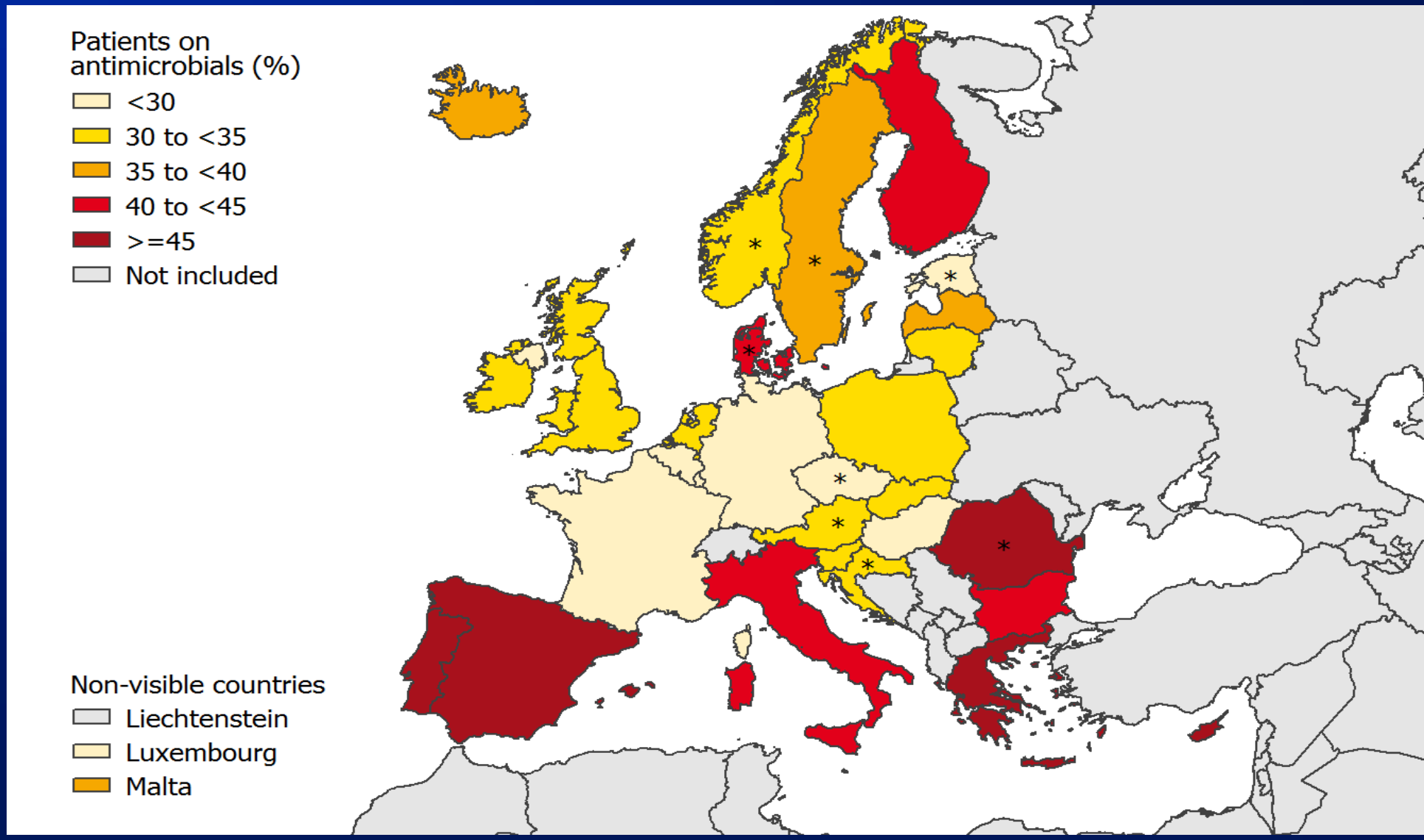
Cookson et al, J Hosp Infect 2013; 85: 45-53.

Table I

Mean, minimum and maximum scores for the national performance indicators (NPIs) 'national programme' and 'guidelines' for long-term care facilities (LTCFs) in 32 participating countries, 2010

NPI	Included in: ICPI	Included in: ASPI	Component indicator	Mean score	Min. score	Max. score
National programme	X		A national committee has agreed, and reviews, an HAI programme annually (ideally online) specific for, or including, LTCFs	2.5	1	5
	X		Evidence that HAI programme is reviewed annually	1.7	1	5
		X	A national committee has agreed, and reviews, an AS programme annually (ideally online) specific for, or including, LTCFs	2.4	1	5
		X	Evidence that AS programme is reviewed annually	1.9	1	5
	X		National HAI committee(s) meet(s) at least twice a year with minutes available (e.g. online)	2.2	1	5
		X	National AS committee(s) meet(s) at least twice a year with minutes available (e.g. online)	1.9	1	5
	Mean score for NPI (mean % of total possible score for NPI)			**2.1 (42%)**	**1.0 (20%)**	**5.0 (100%)**

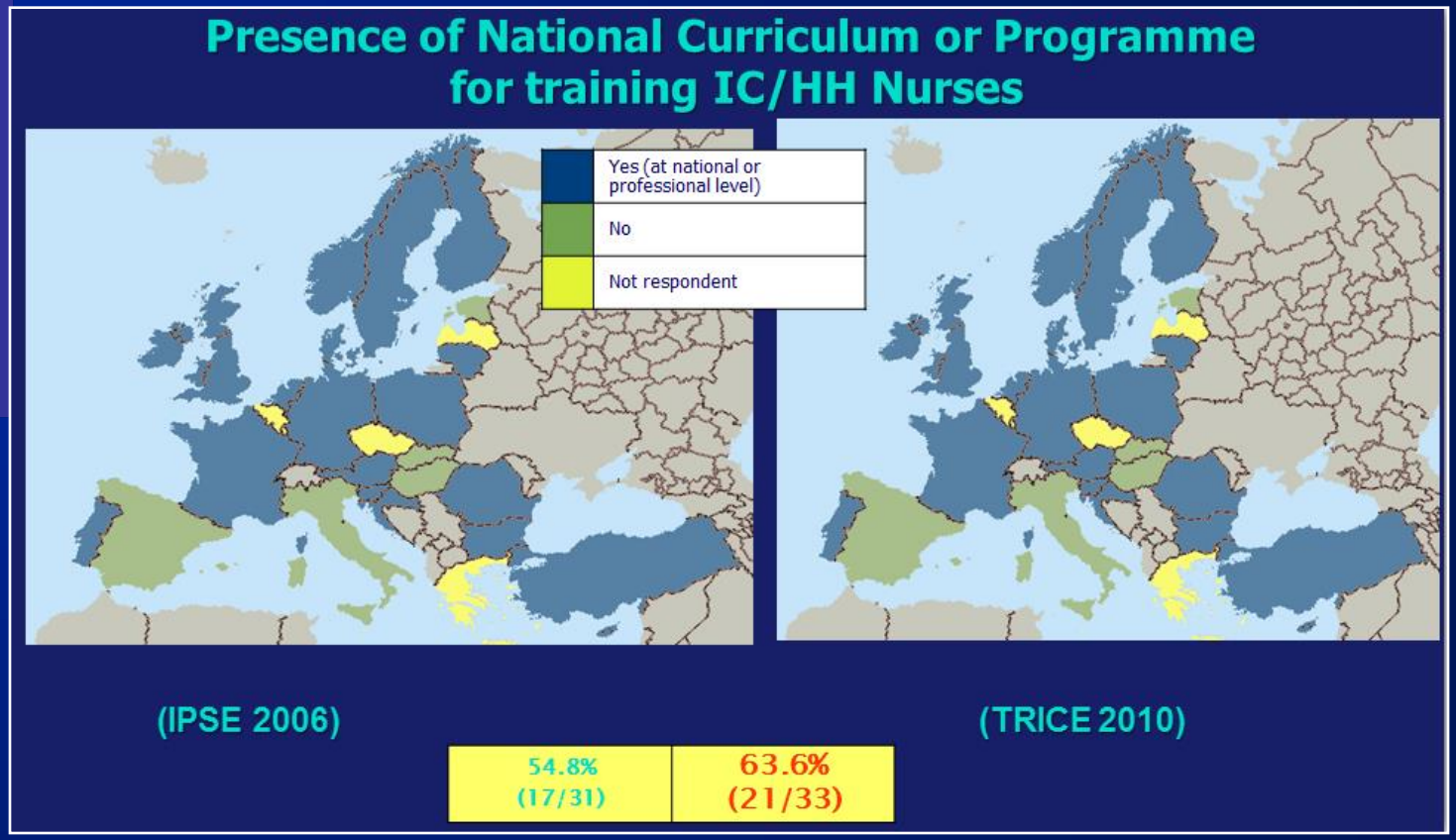
Prevalence of antimicrobial use in acute care hospitals, ECDC PPS 2011-2012



*Poor PPS data representativeness

TRaining Infection Control Europe

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



Eurosurveillance

2014-15: TRICE-Implementation Strategy includes:

- **IC Course assessments**
- **IC/HH WIKI : ESCMID SGs to be involved**
- **Revisiting TRICE IC Resources**

Trans Atlantic Task Force: Delphi derived SPIs

Indicators for hospital antimicrobial stewardship programmes

Seventeen "core" indicators essential to fully characterise all aspects of ASP programmes

Sixteen "supplemental" indicators

Domains

- Infrastructure
- Policy and practice
- Monitoring and feedback

ESAC/ARHAI Networks -11-13/2/15 Stockholm, ECDC

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?

ECDC: European Annual Cost Estimates of Five Top MDR Pathogens

Extra in-hospital costs	Extra outpatient costs	Productivity losses due to absence from work	Productivity losses due to patients who died from their infection	TOTAL
€ 927.8 million	€ 10 million	€ 150.4 million	€ 445.9 million	**€ 1.5 billion**

Source – *The bacterial challenge: time to react*, Joint Technical Report from ECDC and EMA, Stockholm, September 2009. Available online at: http://ecdc.europa.eu/en/publications/Publications/Forms/ECDC_DispForm.aspx?ID=444

Excluded Costs

- intensive care
- expensive last line antibiotics and other drugs
- infection control precautions

HORIZON 2020

- HEALTH.2013.2.3.1-1: Drugs and vaccines for infections that have developed or are at the risk of developing significant anti-microbial resistance.

- HEALTH.2013.2.3.1-2: Stratified approaches to antibacterial and/or antifungal treatment

Innovative Medicines Initiative:

Joining Forces in the Healthcare Sector

Pr
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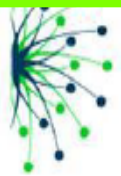
A "Perfect Storm"

Companies withdrawing from antimicrobial market as:

- **New drug development expensive**
- **Resistance, not just side effects, a huge challenge**
- **Patient numbers often relatively small & regimens short**
- **Patents short-lived**



efpia

IMI New Drugs for Bad Bugs (ND4BB) initiative

COMbatting BACterial resistance in Europe (COMBACTE) €194.6m

"CLIN-Net": large clinical trials

"LAB-Net": microbial surveillance for trial site selection

– Studies : Novel antibiotic vs skin and respiratory infections
New human immunoglobulin monoclonal antibody against S. aureus alpha toxin

Molecular basis of the bacterial cell wall permeability (TRANSLOCATION) €29.3m

– Explore how to stop the Gram negative bacteria ejecting antimicrobials