

Work Package 4



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Agenda WP4 Session 1

- Objectives and deliverables
- Country specific cost model
 - Analysis of determinants of variance of MRSA bacteraemia in English hospitals
 - Analysis plan for Scottish hospitals
- Dundee Workshop: Information needs
 - What are countries doing?
 - What should countries be doing?

Agenda WP4 Session 2

- Dundee Workshop: Incentives & counter-incentives
 - Patient perspective
 - Antimicrobial resistance
 - Patients for patient safety
 - HAI and what we should be doing about it
 - Healthcare organisation perspective
 - Systems models for adverse events
 - Theory of organisational improvement
 - Two exploratory projects on patient perspectives and organisational incentives
- Discussion: report & publication December

Work Package 4

- To identify on a country-by-country basis the information needs of different stakeholders (public health experts, policy makers, politicians, health care system managers) for their own assessment of the burden of infectious diseases caused by antimicrobial susceptible and resistant bacterial pathogens
- To generate country-specific cost models for quantifying the economic loss due to AMR
- To identify incentives and counterincentives that impinge on efforts to control the spread of AMR
- To illustrate the financial impact of AMR on care in European hospitals; besides this, to estimate the human and societal dimensions of infections caused by resistant pathogens and the repercussions for the health care systems, eg loss of confidence in hospitals.

Burden WP4 Countries

WP7

- Austria
- Belgium
- Germany
- France
- Greece
- Croatia
- Ireland
- Italy
- Latvia
- Malta
- Romania
- Slovakia
- Slovenia
- United Kingdom (England & Scotland)

WP4

- Belgium
- Germany
- Italy
- Netherlands
- Slovakia
- United Kingdom

WP4 Deliverables

- **Deliverable & Milestone 4.1** Report on country-identified country-specific needs by different stakeholders (**June 2007**), mentioned in all publications, hyperlinked with other EU projects (e.g. EARSS, ESAC, IPSE and ESGNI)
- **Deliverable & Milestone 4.2** Report and determination of factors driving and impeding the development of AMR and the costs associated with these factors. Recommendations and report, (**December 2007**); widely distributed, available as printed matter and on website
- **Deliverable 4.3** Recommendations to stakeholders and final report (**December 2008**), as a feedback to participants, EU and regional governing bodies and regulators, scientific community

Information Needs

1. Consequences (Outcomes)
 - a) Impact on patients and families
 - b) Impact on hospital
 - c) Impact on health services/ system
2. Determinants (Structure & Processes)
 - a) Hospital structure
 - b) Workload
 - c) Staffing levels
 - d) Staff training
 - e) Infection control processes
 - f) Antimicrobial management processes
3. Incentives & Counter-incentives
 - a) To measure and report HAI and AMR
 - b) Influencing structure
 - c) Influencing processes

Country Specific Cost Model

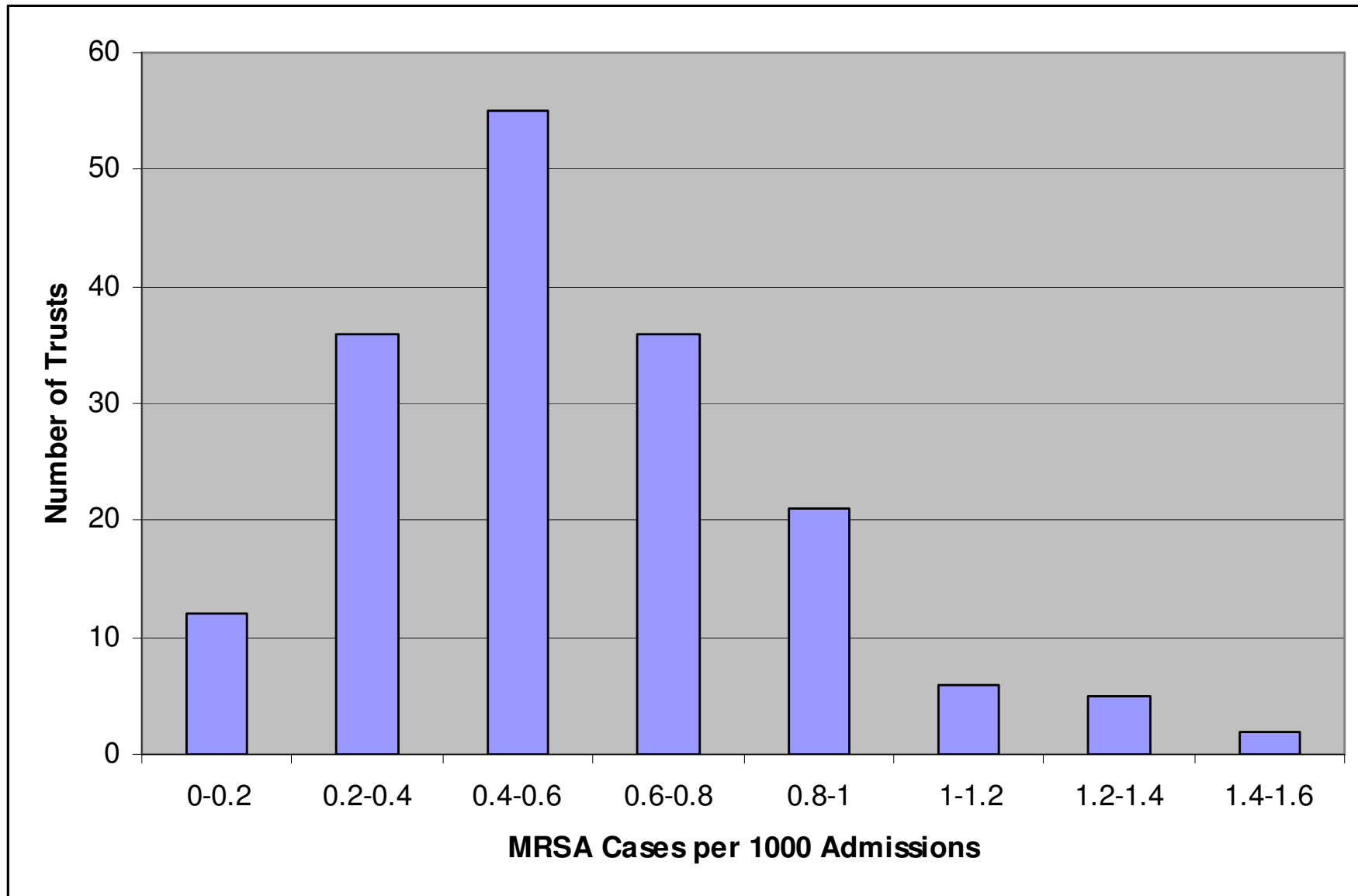
- AMR production function
- Inputs
 - Structure
 - Process
- Outputs
 - Cost to the patient and healthcare system
 - Quantitative:
 - NNH Number Needed to Harm. How many AMR infections to produce one more:
 - Death
 - Readmission
 - Discharge to long term care
 - Qualitative
 - Social dimensions of healthcare associated infection
 - Impact on patients, carers
 - Loss of confidence in the hospital and healthcare system

Hospital Determinants of MRSA

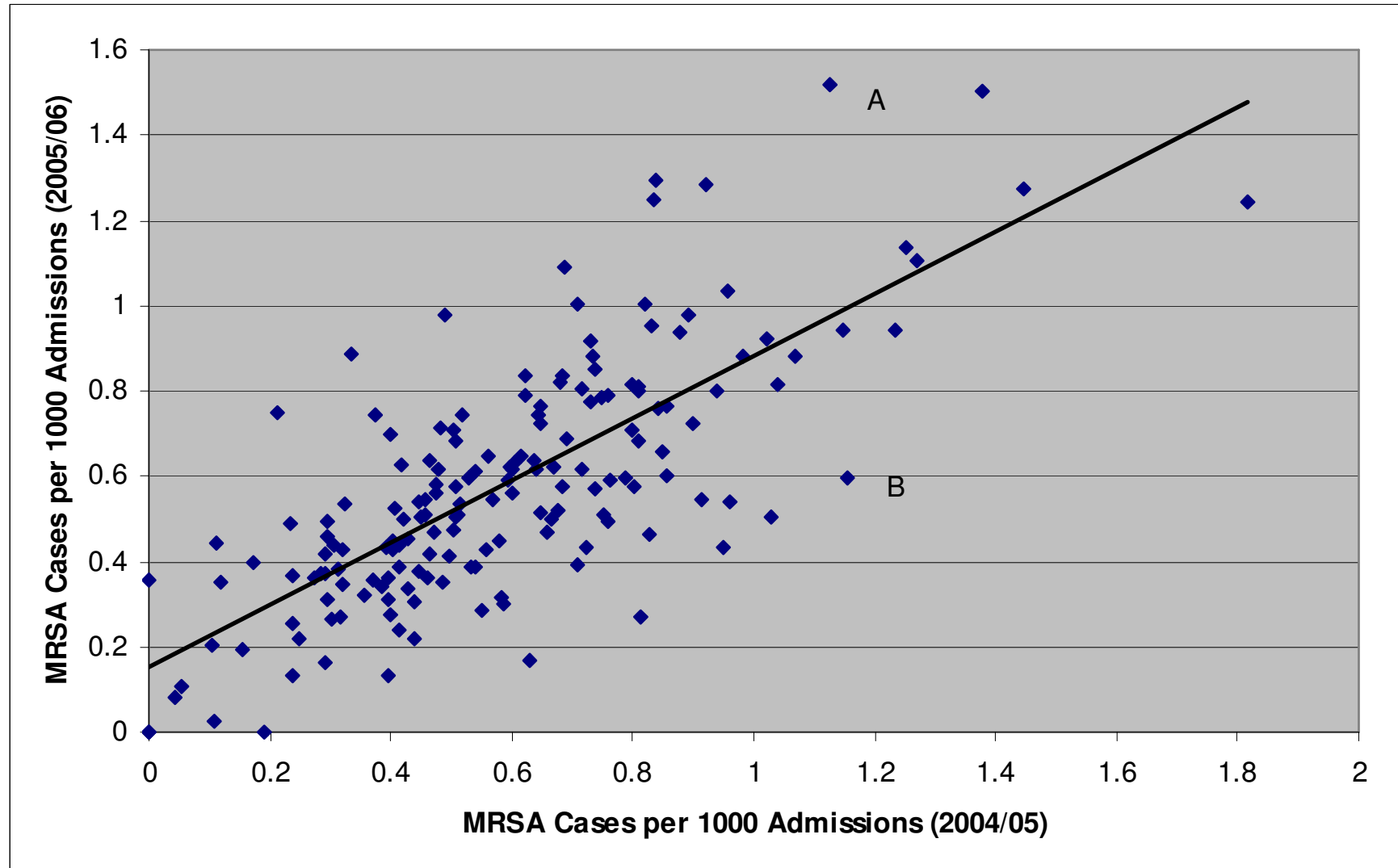
- Cleanliness (PEAT score)
- Single room availability
- Average LOS
- Average age of patients
- Emergency admissions
- Bed occupancy rate
 - Occupancy 85-90%
 - Occupancy >90%
- Cleaning service type
 - Contract out vs in-house
- Backlog expenditure per m² (proxy for building quality)
- Specialties
- Agency nursing staff (%)
- Bank nursing staff (%)
- Floor space per bed
- Number of beds
- Expenditure on cleaning
- Nurses per 1000 bed days
- Consultants per 1000 bed days
- Regional location

Barry McCormick, Corporate Analytical Team, Department of Health

Variation in MRSA Bacteraemias, England



Variations Between Hospitals in MRSA Persist Over Time



Modifiable Variables

Variable	Impact	Stat Sig	Operational Sig	
			Change	MRSA
Cleanliness	-ve	<0.01	10% ↑	3% ↓
Bed occ >90%	+ve	<0.01	Go >90%	17% ↑
Temporary nurse	+ve	<0.01	10% > mean	1% ↑
Cleaning cost	-ve	<0.1	10% ↑	1% ↓

Fixed Variables

Variable	Impact	Stat Sig	Operational Sig	
			Change	MRSA
Tertiary care	+ve	<0.01	vs general	35% ↑
Single specialty	-ve	<0.1	vs others	17% ↓
Emergency admissions	+ve	<0.05	10%> mean	2% ↑
Building quality	No significant relationship in this model but was significant in other models			

Changes Over Time

Variable	Impact	Stat Sig	Operational Sig	
			Change	MRSA
2002/03	-ve	<0.05	<i>Versus</i> 2001/02	13.1% ↓
2003/4	-ve	<0.01	<i>Versus</i> 2001/02	18.1% ↓
2004/5	-ve	<0.01	<i>Versus</i> 2001/02	22.2% ↓

Scottish Study

- Bacteraemias 2001-7
 - 100-140 per month
 - Date
 - Hospital
 - Patient identifier, age, link to diagnosis
 - Scoping multilevel modelling
 - Hospital department
 - Device associated (up to 50% missing data)

Scottish Study 2

	Public	ISD
Single room availability	√	
Median length of stay		√
Age of patients		√
Emergency admissions %	√	
Number of inpatient beds	√	
Bed occupancy	√	
Admissions by specialty	√	
Staffing levels	√	
Agency & temporary staffing	√	
Expenditure on cleaning	√	
Cleanliness score	2006 on	

Scottish Study 3

- Official approval by National HAI Task Force in November 2007
- Data collection January 2008
- Analysis March-May 2008
- Availability of data in other countries of the BURDEN project?



4 HELICS

1 Training

5 Complementary tools for study and control of AMR in ICUs

6 Improving surveillance and controlling AMR in the ICUs

2 Standards and Indicators

Extended EU Partnership
WHO, ESCMID, Public Health Institutes and EU-supported networks assessing outcomes & resolving differences in preventive practices in HAI and Antimicrobial Resistance (AMR)

7 Nursing home surveillance

3 Early warning and rapid exchange

IPSE

Improving Patient Safety In Europe

Working Party Two: Standards and Performance Indicators

1) National Standards and Performance
Indicators

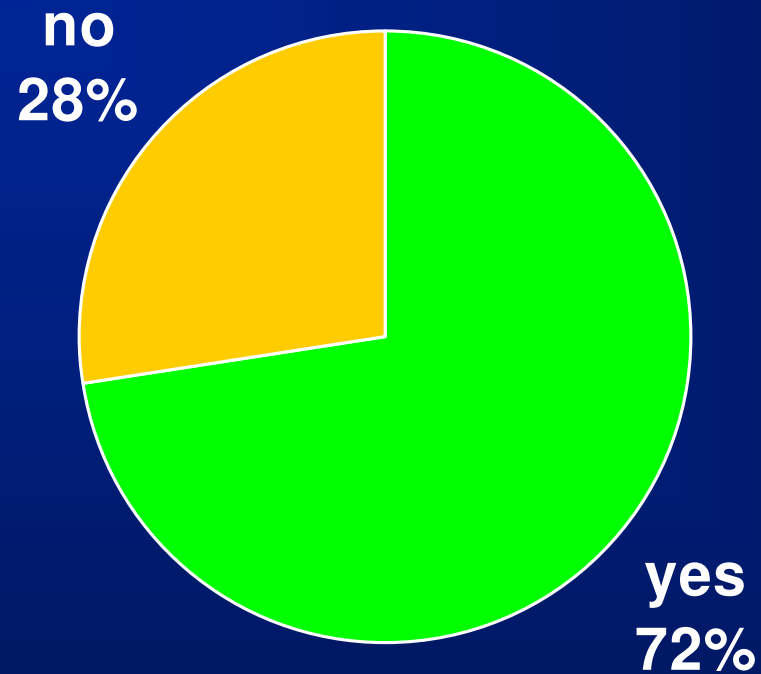
**1a) Questionnaire Survey 1b) Consensus
Survey**

2) Local Standards and Performance Indicators

2a) Views on local tools explored in 1b)

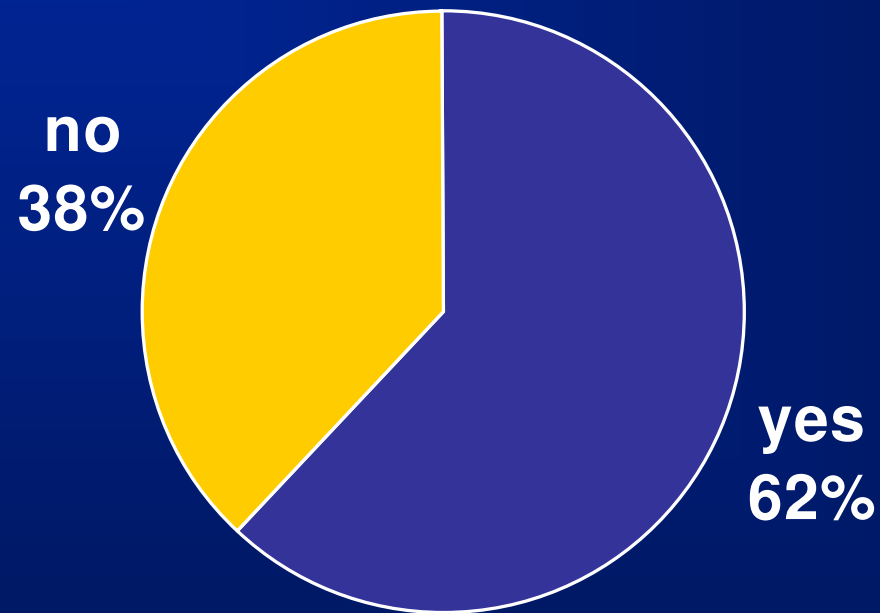
2b) Local Performance Indicator Tool

National programmes for Healthcare Associated Infection (HAI) (n=29)



Starting year:
1976-2003
Median: 1998

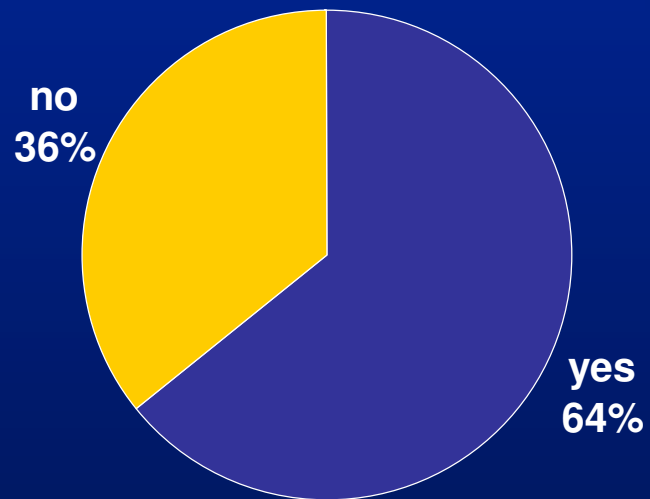
National programmes
for Antimicrobial Resistance (AMR)
(n=29)



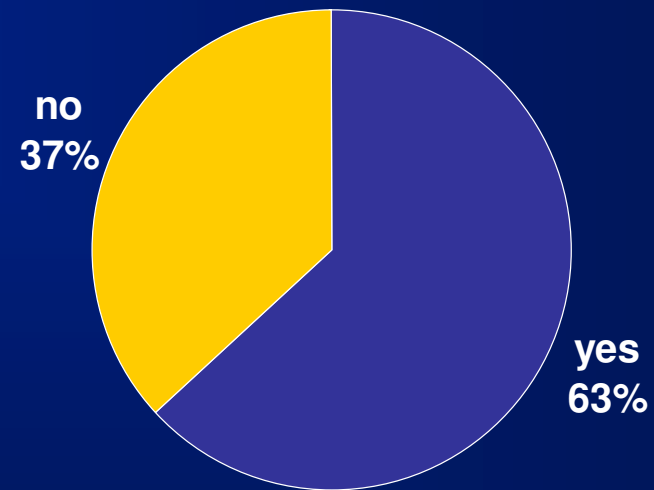
Starting year:
1970-2003
Median: 1999

Reduction of HAI and AMR in national health objectives

HAI (n=28)

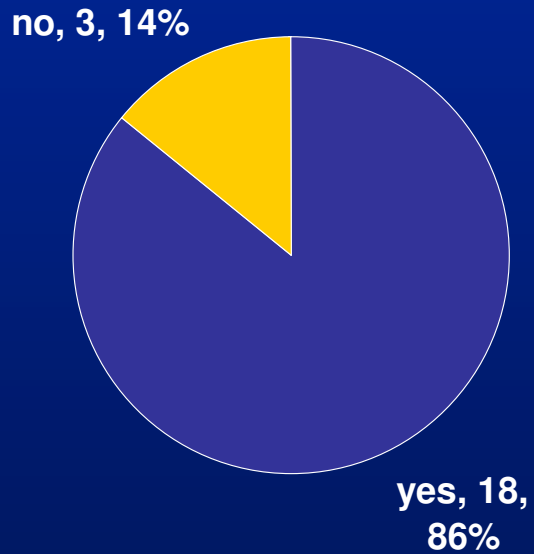


AMR (n=27)



Infection Control Committee

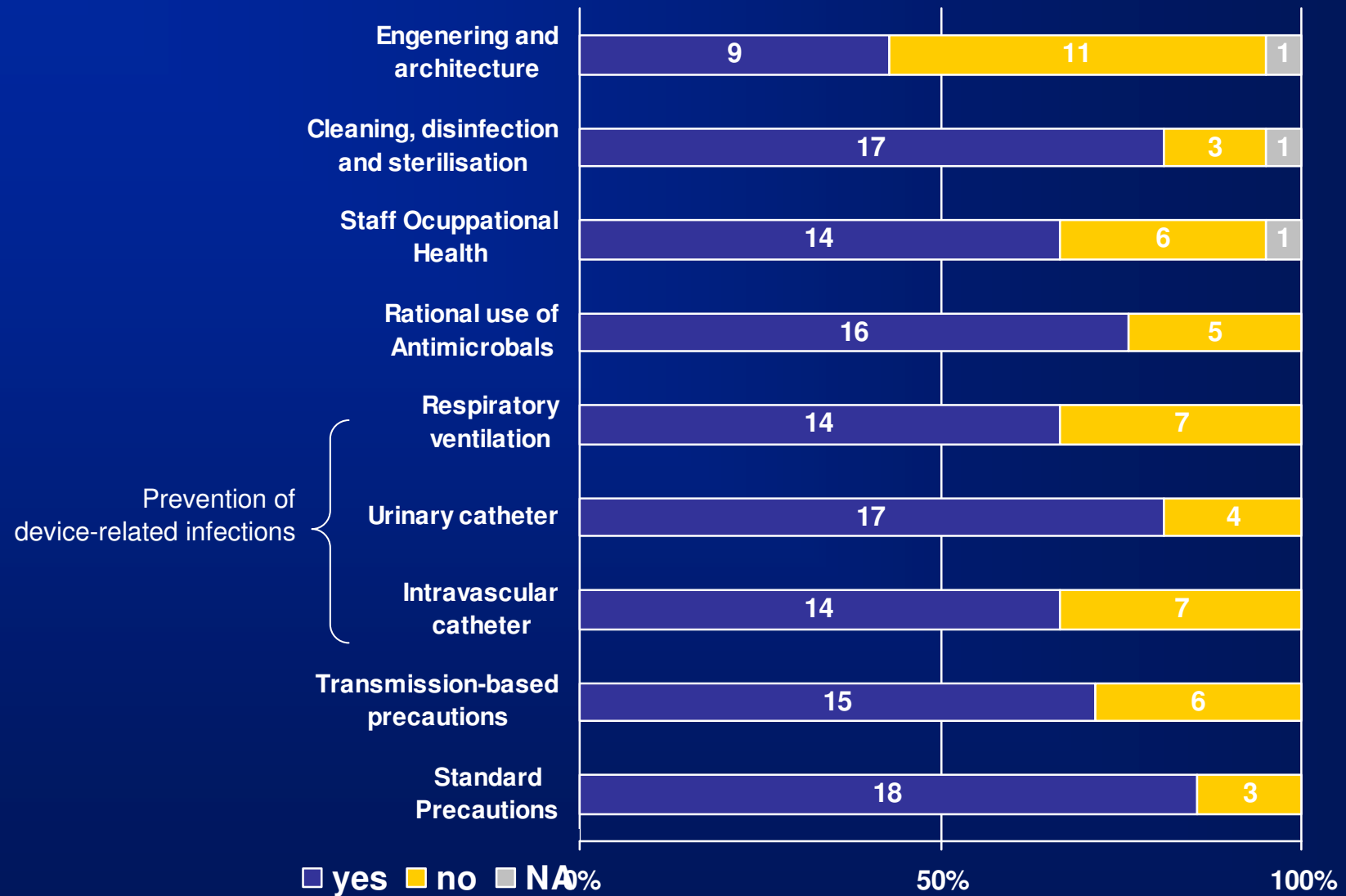
Incharge of programme (n=21)



Main responsibilities (n=18)



Subjects provided by the programme (n=21)



Surveillance Systems

- For HAI: 78 %
 - 59 % Compulsory
 - 41 % Recommended
- For AMR: 95 %
 - 55 % Compulsory
 - 45 % Recommended

Staff Education and Training

- 43% (9/21) for HAI
- 71% (15/21) for AMR
- 10 % (2/21) consider any estimate of associated costs

National and Local Standards and Performance Indicators (SPIs)

- Showed much variation across the EU in Structures, Standards and Indicators
- Need for Consensus views of Infection Control (IC) and Interested Healthcare Professionals
- Based this on DG SANCO discussion document and several consensus meetings eg ECCMID, IPSE, ARPAC, ARMED, IFIC
- Two approaches used
 - National Questionnaire for SPIs
 - Development of a Local SPI Tool

Questionnaire for SPIs

1) **Organisation** of the control of healthcare-associated infections (HCAI) and antibiotic resistance (AMR)

“National and local health organisations implement strategies for controlling HCAI and AMR in all healthcare settings”

33 Statements

2) **Prevention and control policies**

“Continuous quality improvement of healthcare care lead to the reduction of HCAI and AMR”

23 Statements

3) **Surveillance policies**

“Surveillance of HCAI and AMR is implemented in each healthcare organisation to support prevention and control activities”

61 Statements

Questionnaire for SPIs

4) Education and Training

“The principles of HCAI prevention and control and antibiotic stewardship are integrated in the professional activities of every healthcare worker”

18 Statements

5) Resources for the control of HCAI and AMR

“Hospitals and other healthcare facilities have appropriate resources to operate HCAI control and antibiotic stewardship programmes”

9 Statements

Local SPI Tool

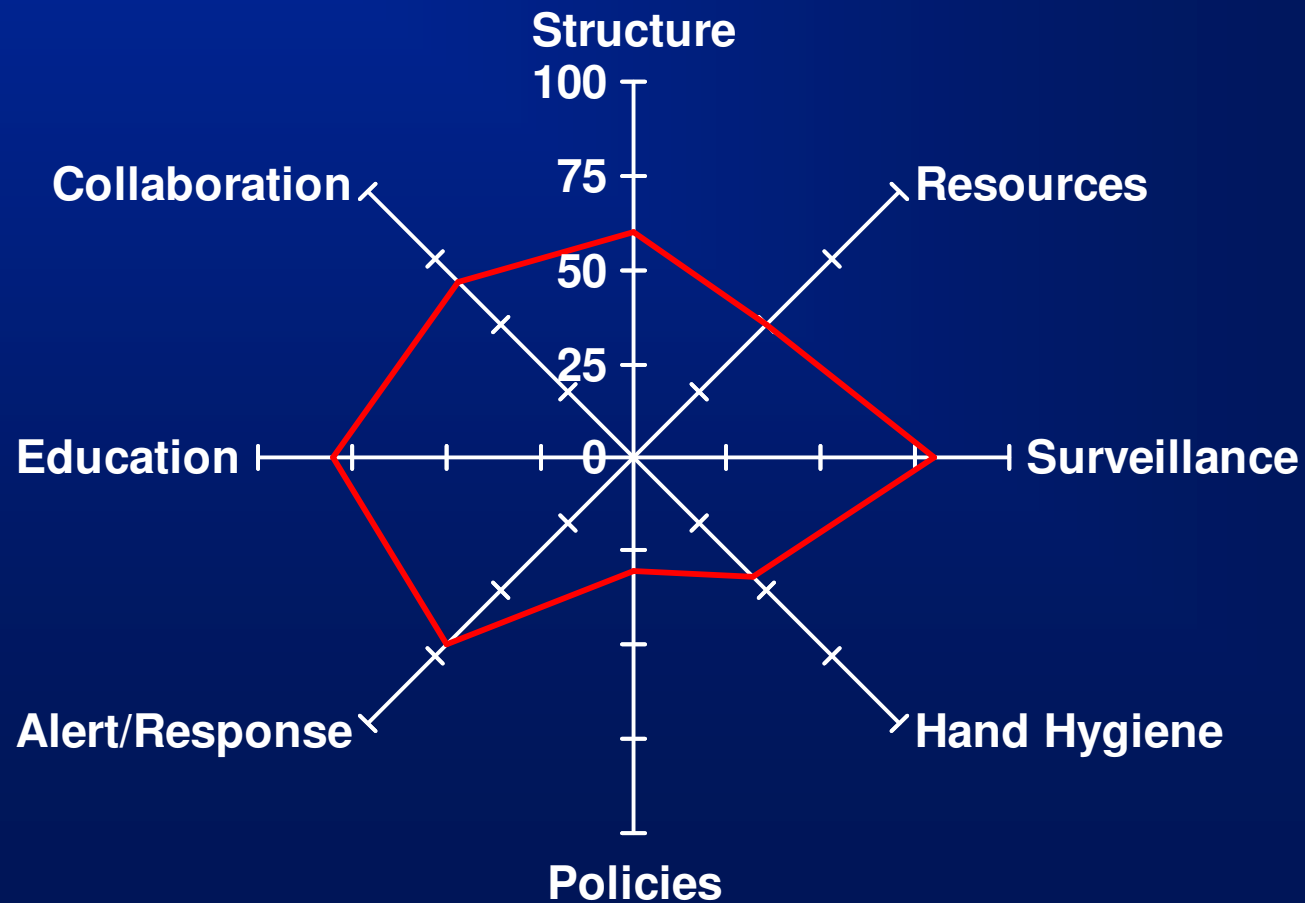
Checklist to assess local infection control measures

- Completed by hospital management level in charge of implementing IC measures
- Simple and not time consuming data collection
- Useful for any country
- Exchange of results at all levels
- Guidance for development
- Detection of improvement potential
- Progress visible over time

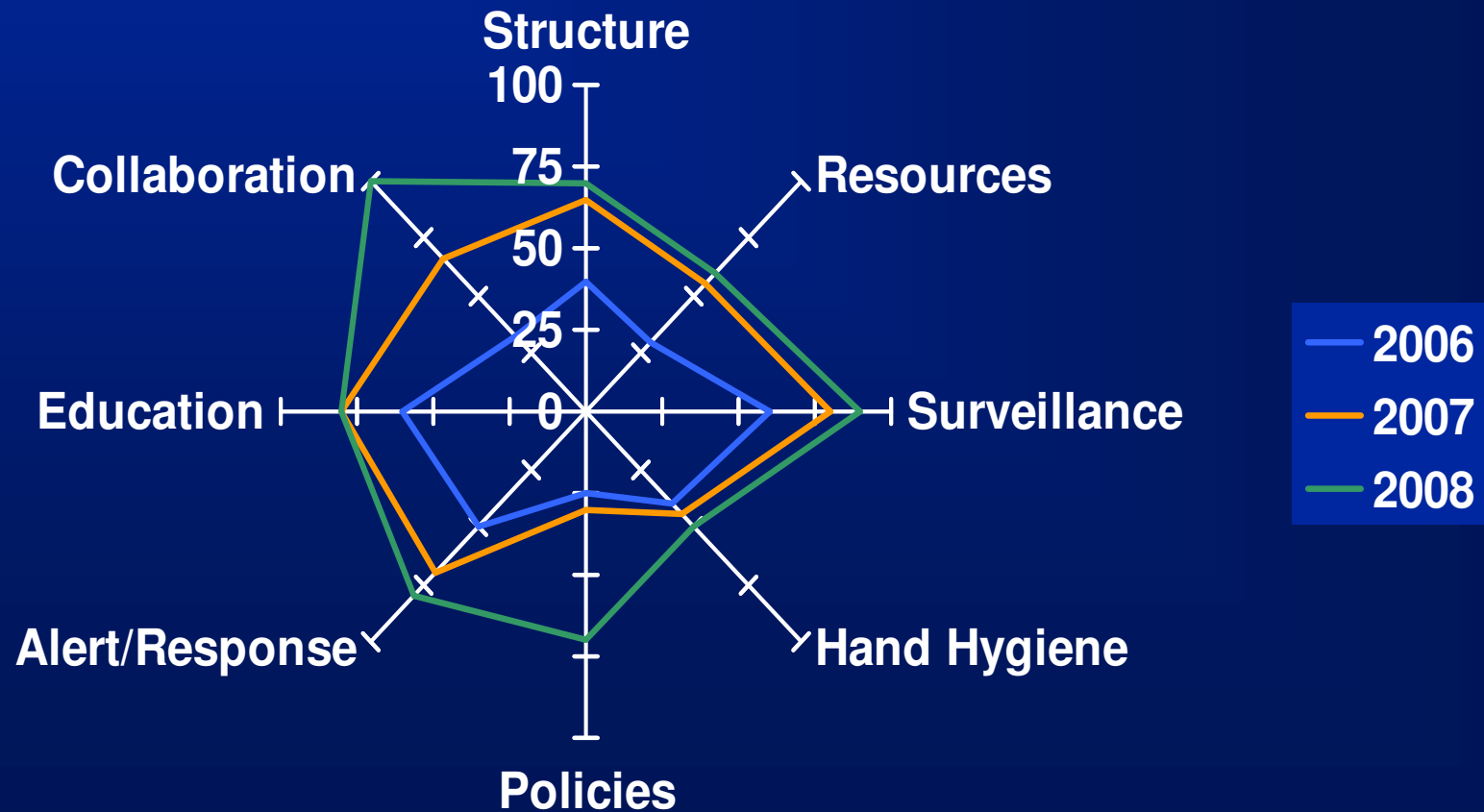
**Indicators for hospital status on infection control (IC), health-care associated infections (HCAI) and antimicrobial resistance (AMR)
for hospital management level**

Structure	yes	
Do you have an IC committee in your hospital?	<input type="radio"/>	
Does it consist of a multidisciplinary team?	<input type="radio"/>	
Is the hospitals management level part of it?	<input type="radio"/>	
Do you have an IC programme in your hospital?	<input type="radio"/>	
Are the objectives of the IC programme reviewed annually?	<input type="radio"/>	
Does the programme provide an annually progress report?	<input type="radio"/>	
Is this report received by the senior management of the hospital?	<input type="radio"/>	
Do you have antibiotic control measures in your hospital?	<input type="radio"/>	
Do you have an antibiotic formulary?	<input type="radio"/>	
Do you have a multidisciplinary drugs and therapeutics committee?	<input type="radio"/>	/10
Resources	yes	
Do you have trained Infection control staff in your hospital?	<input type="radio"/>	
Do you have trained IC nurses and doctors in your hospital?	<input type="radio"/>	
Do you have at least 1 IC nurse per 250 acute-care beds?	<input type="radio"/>	
Do you have link-nurses working on the wards who liaise with the IC team?	<input type="radio"/>	
Do you have isolation facilities in your hospital (Single patient's rooms)?	<input type="radio"/>	
Do you reinforce your staff, if contact isolation is needed in a patient?	<input type="radio"/>	
Do you have standardised methods for antibiotic susceptibility testing in your hospital.	<input type="radio"/>	
Do you analyse annually the data of this testing?	<input type="radio"/>	
Do you have rapid microbiological methods for screening available in your hospital?	<input type="radio"/>	/9

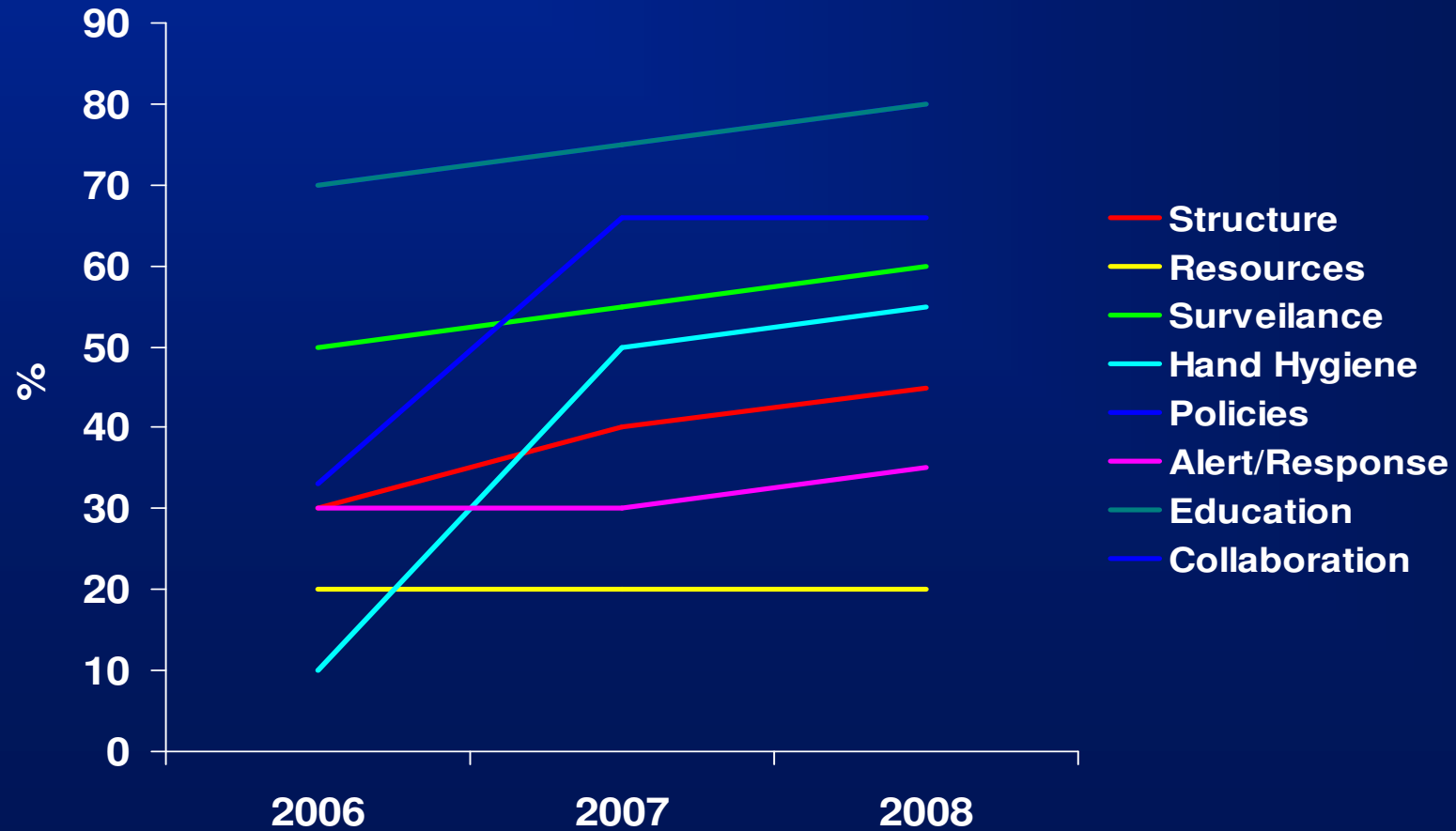
Results: Spider's Web Chart



Progress: Spider's Web Chart



Progress: Line Chart





World Alliance for Patient Safety

1st Global Patient Safety Challenge

"Clean Care is Safer Care"

- Addressing Healthcare Associated Infections worldwide
- Promoting Hand Hygiene as an integrated Infection Control element – *the doorway to safer infection control*





Objectives of the Challenge

Stakeholder work

Awareness

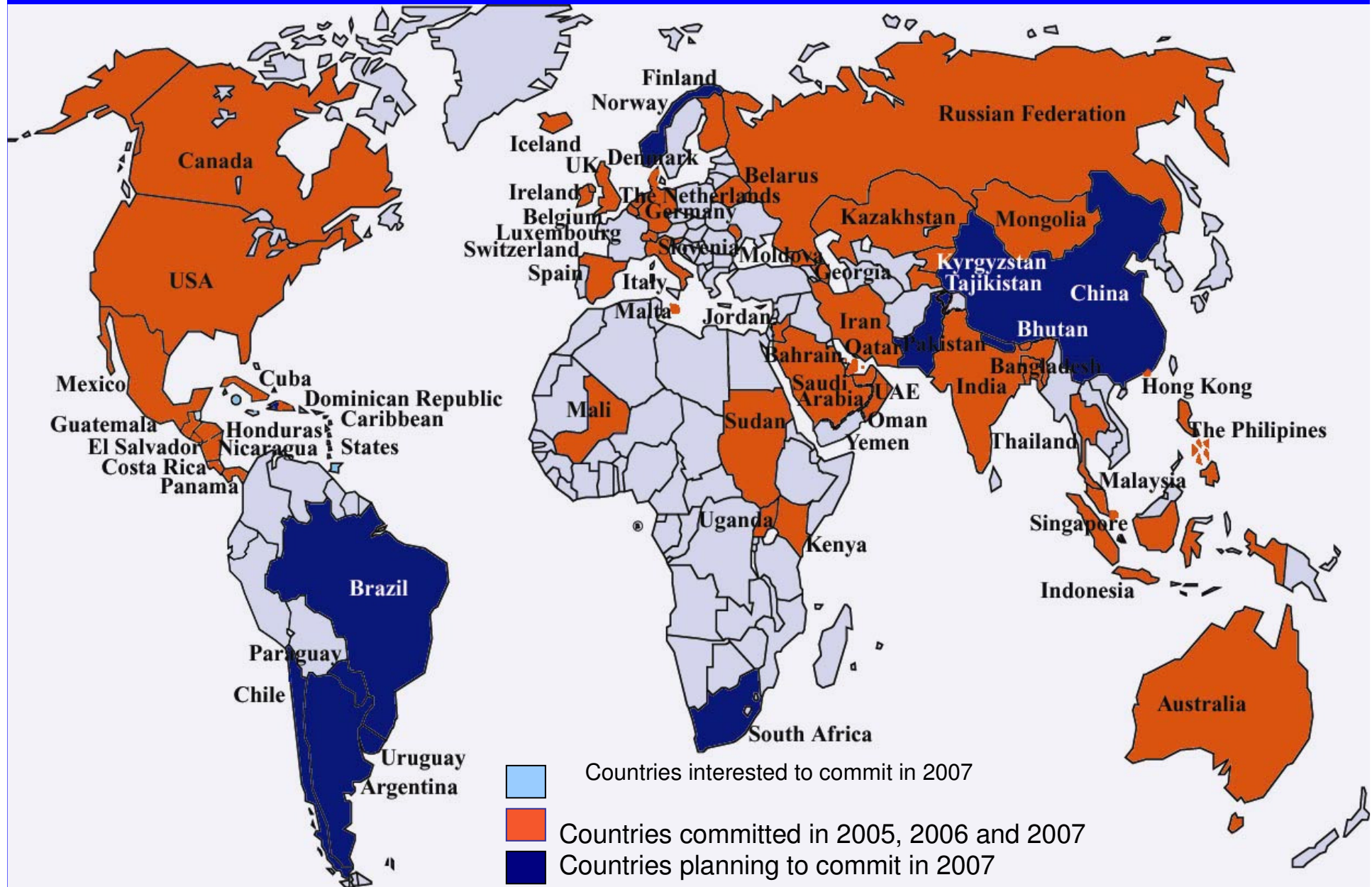
Country pledges

Mobilising nations

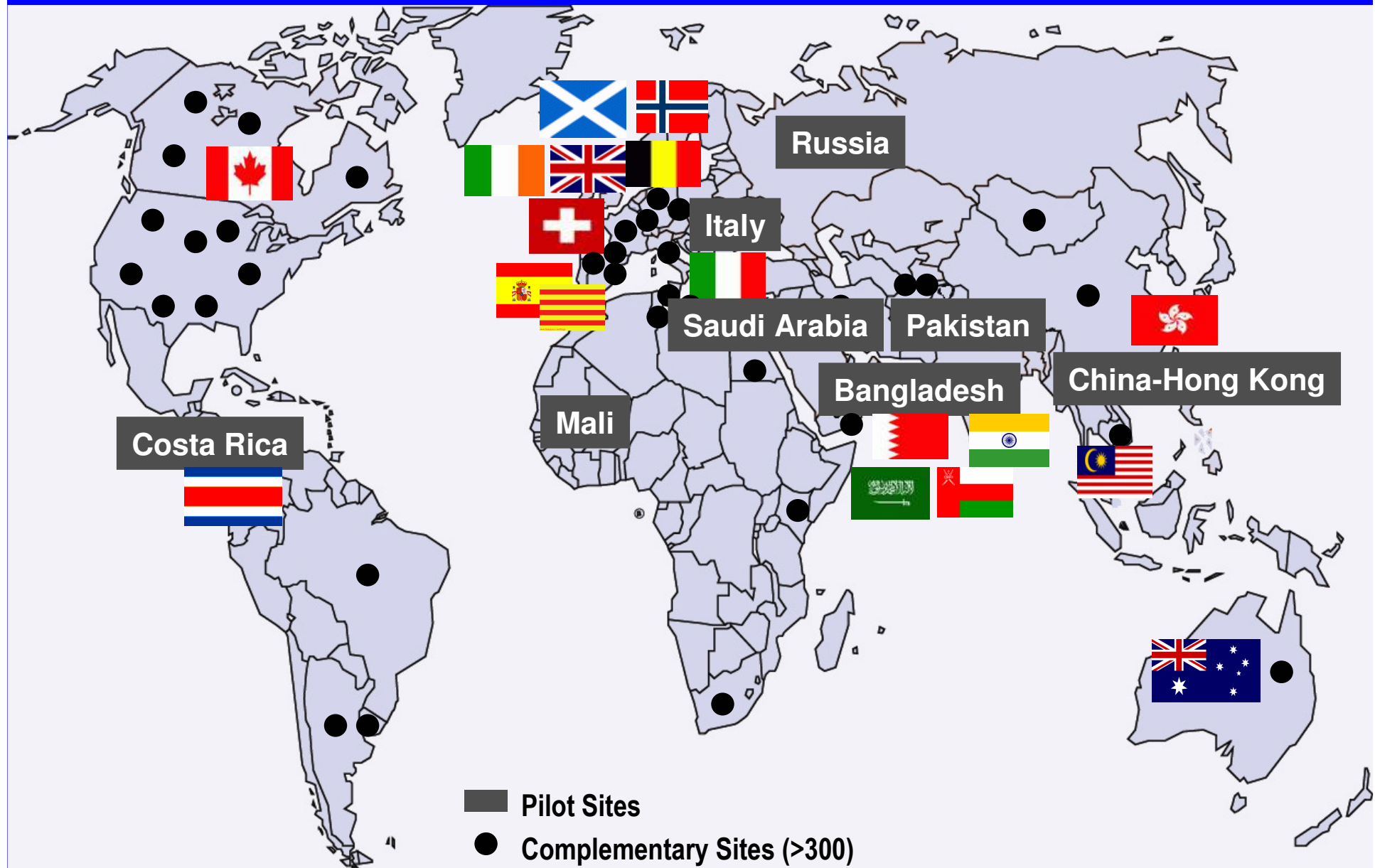
Implementation
strategies

Technical guidelines
and tools

Countries committed to addressing HAI



Testing sites and national/subnational campaigns on hand hygiene



Current Status, September 2007



National campaigns

- A global movement is in progress
- Valid data is helping to drive the process to sustainability
- All nations running national campaigns are collecting “pre” and “post” data
- Most nations aware of the importance of integrating **clean hands** with broader infection control and safety agendas



Field testing the implementation strategy of the Guidelines

- To provide local data on the resources required to carry out the recommendations
- To generate information on feasibility, validity, reliability and cost-effectiveness of the interventions
- To adapt and refine proposed implementation strategies

- The Five core components of the WHO Multimodal Hand Hygiene Improvement Strategy

1. System change

Alcohol-based handrub at point of care

Access to safe, continuous water supply, soap and towels

+

2. Training and Education

+

3. Observation and feedback

+

4. Reminders in the hospital

+

5. Hospital safety climate



Summary

- Publication of the WHO Guidelines on Hand Hygiene in Health Care (Advanced Draft)
- An implementation strategy and suite of implementation tools
 - being tested in 8 countries
 - and > 300 complementary test sites in all WHO Regions
- 55 countries/autonomous regions have made ministerial commitments to tackle HAI
- 19 national/sub-national hand hygiene campaigns in progress
- Work in progress to add to the body of knowledge on patient involvement
- Guideline finalization is now underway
- Final Guidelines due November 2008

Summary Information Needs

- ISPE
 - Raising the profile of AMR and HAI
 - Collecting data from EU countries:
 - Priority status
 - Structure
 - Process, standards and measures
- WHO Clean Care is Safer Care
 - Raising the profile of HAI
 - Governments signing up to take action
- No further work required from BURDEN in this area, report on what is already being