EUROPEAN ASSOCIATION
OF HOSPITAL MANAGERS

HOSPITAL OF THE FUTURE - Prevention as an Hospital Activity

IPO Conference

Prevention of health care associated infection and antimicrobial resistance: a new management approach

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Prevention Outcomes IPO

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MEDICA

Gesellschaft Deutscher Krankenhaustag

Prevention of health care associated infection and of antimicrobial resistance: a new management approach

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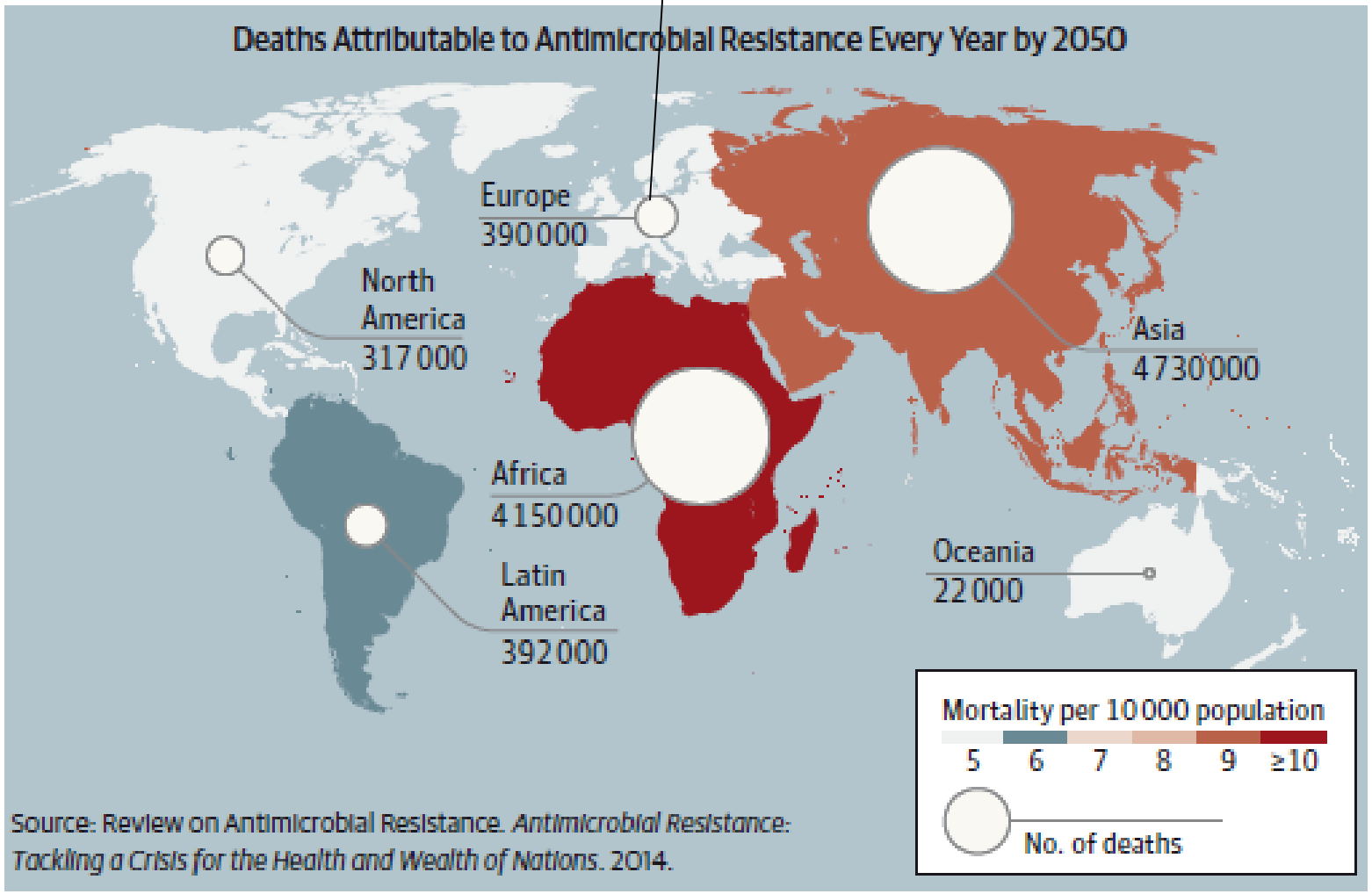
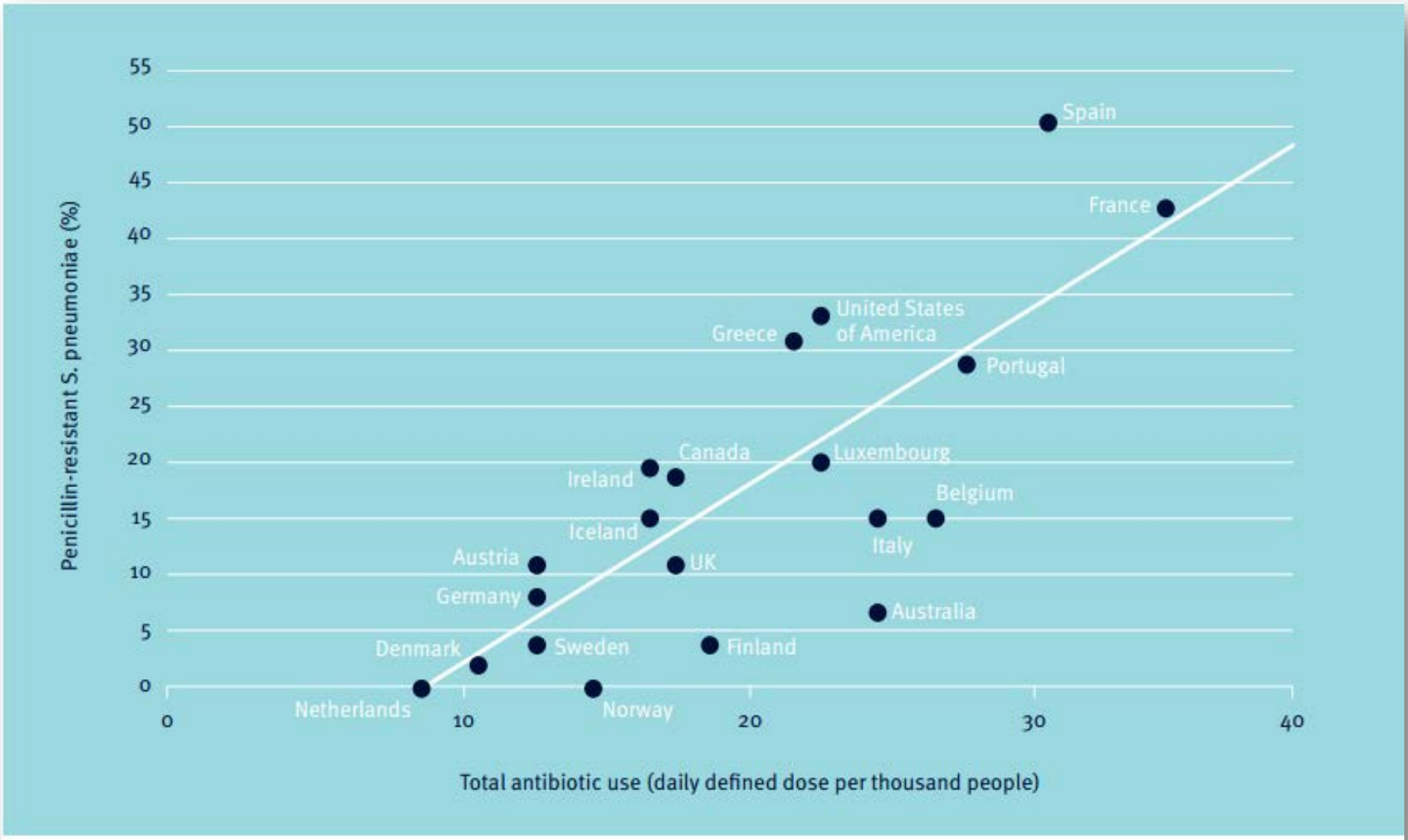
In 2014, in the EU, AMR is responsible for 25 000 deaths and > EUR 1.5 billion of healthcare costs and productivity losses annually

Deaths attributable to antimicrobial resistance every year, by 2050

By 2050, it could result in a reduction of the European GDP by 1% to 4.5%



Antimicrobial consumption and antimicrobial resistance



Correlation between antibiotic use and resistance[55]

EU and WHO “One Health” approach

*Given its severity, AMR is a political high priority within the EU and also for the WHO, that are using **the "One Health" approach**, which recognizes that the health of people, animals and the environment are inextricably linked and that antibiotics are used in human medicine, veterinary and agriculture.*

Council of the EU. Council Recommendation of 15 November 2001 (2002/77/EC). Official Journal of the European Communities. 2002 (45):13-6.

The agenda to decrease antibiotic use includes:

- preventing infections and their spread
- improving monitoring and surveillance
- avoiding unnecessary use of antibiotics: using them only when needed, for the less time possible and with the least possible spectrum
- developing research and innovation towards new effective antibiotics
- developing new ways to tackle infection without harming bacteria

Portugal 2011-2012:

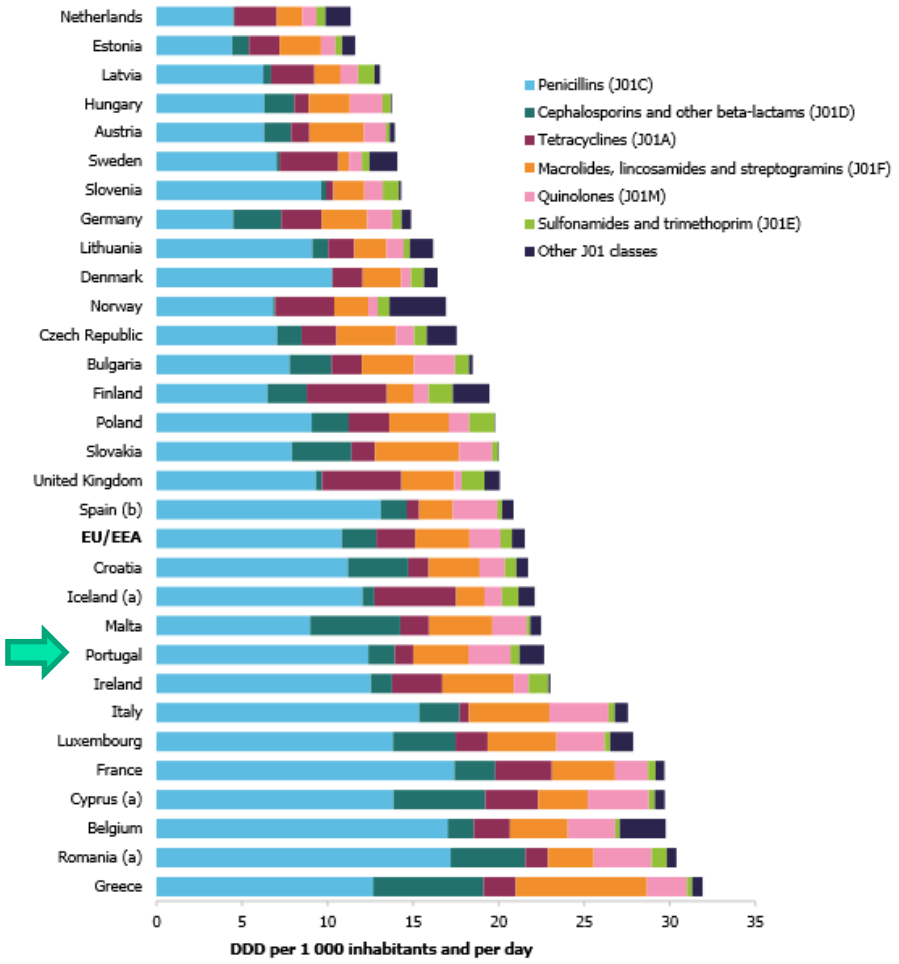
High prevalence of HAI and high hospital antibiotic consumption

	HAI prevalence		Antibiotic consumption	
	Portugal	EU	Portugal	EU
Homem	12,4%	7,2%	48,3%	39,2%
Mulher	8,8%	5,4%	42,3%	33,2%
População Global	**10,5%**	**6,1%**	**45,3%**	**35,8%**

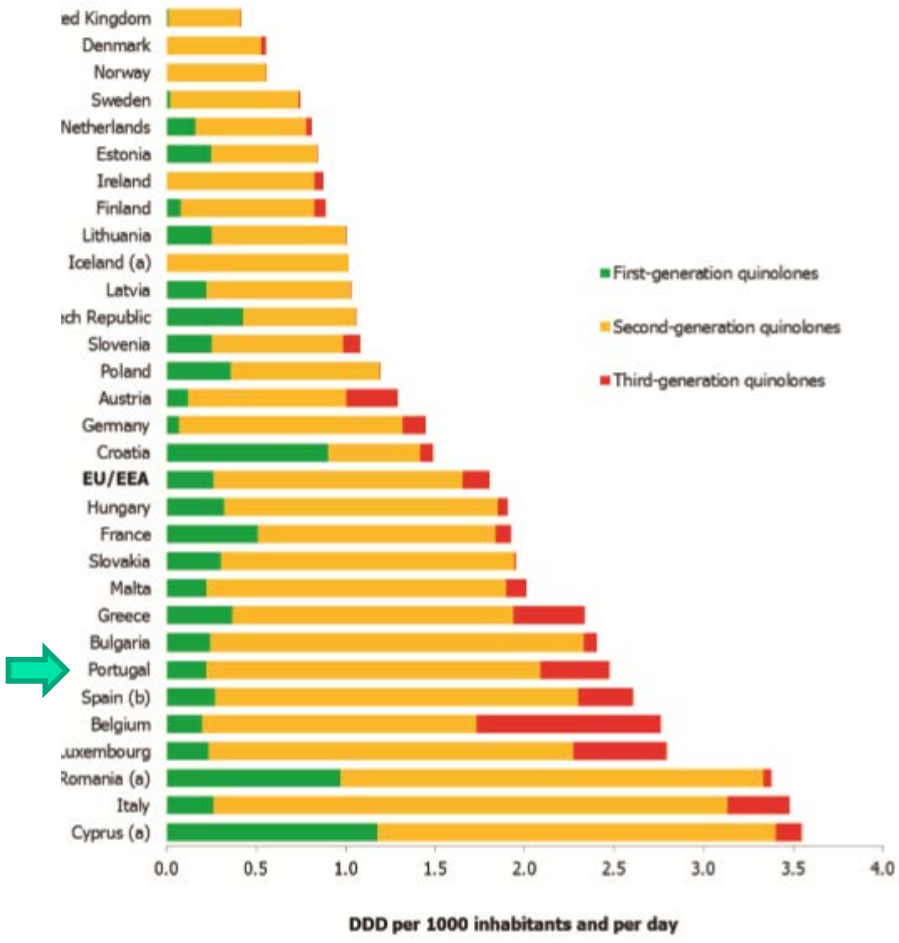
ECDC Point Prevalence Study PPCIRA/DGS, ECDC 2012

2012: High ambulatory antibiotic consumption, and very high quinolone consumption

Global consumption in DDD



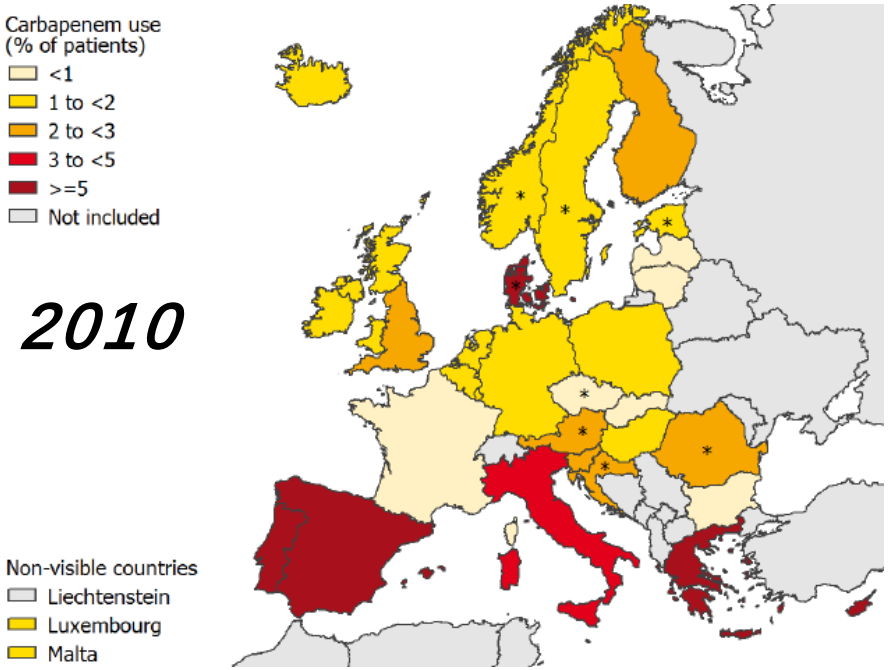
Quinolone consumption in DDD



ESAC Net 2012, ECDC

High hospital consumption of carbapenems, 2010-2012

Carbapenems



" In 2012, consumption of carbapenems varied by a factor of 14, from 0.01 (Bulgaria) to 0.14 DDD per 1 000 inhabitants and per day (Portugal)"

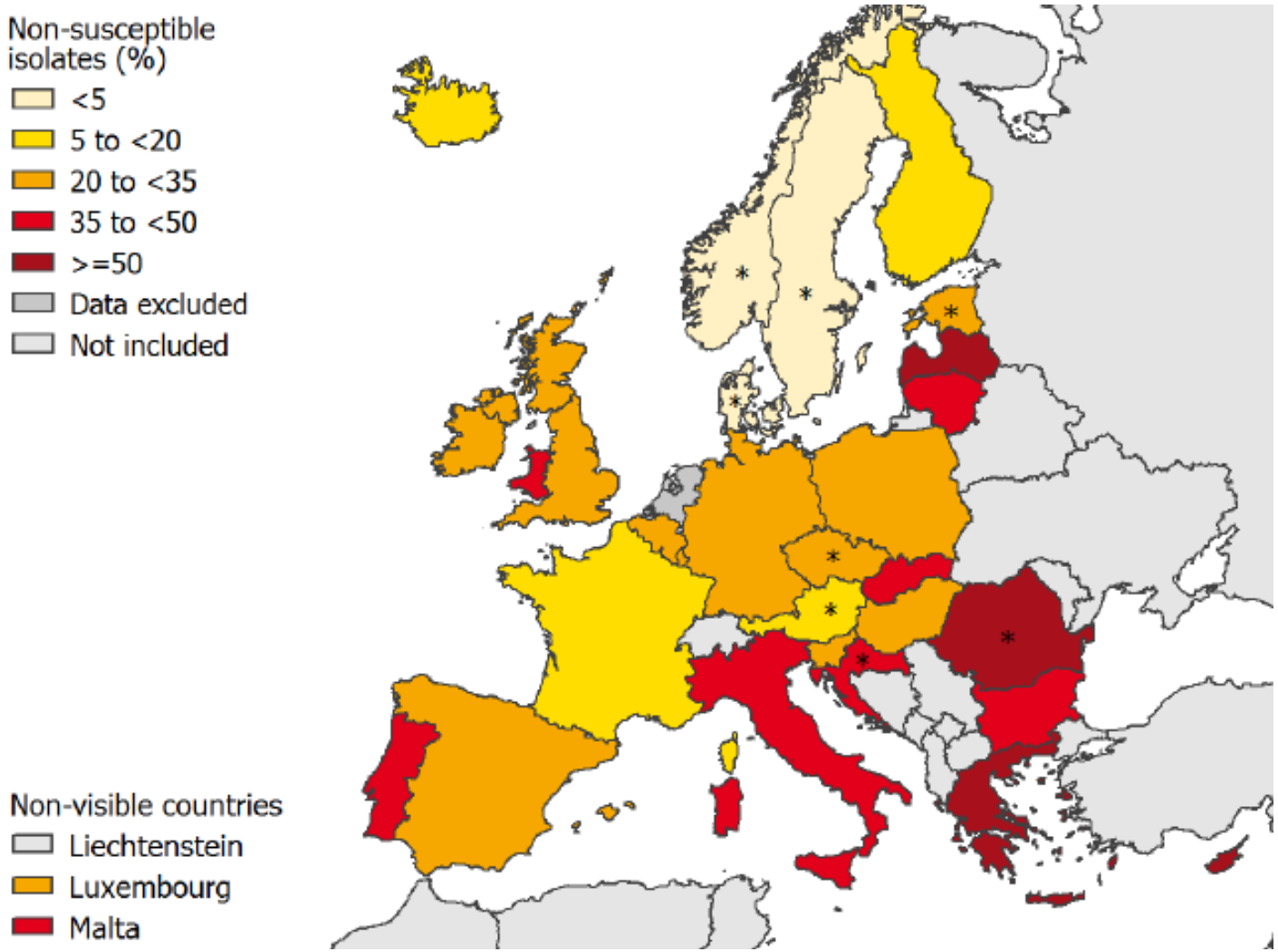
"The proportion of consumption of carbapenems out of antibacterials for systemic use ranged from 0.8% (Latvia) to 9.8% (Portugal) with an EU/EEA population-weighted mean of 2.9%."

ESAC Net 2012, ECDC

High index of antimicrobial resistance

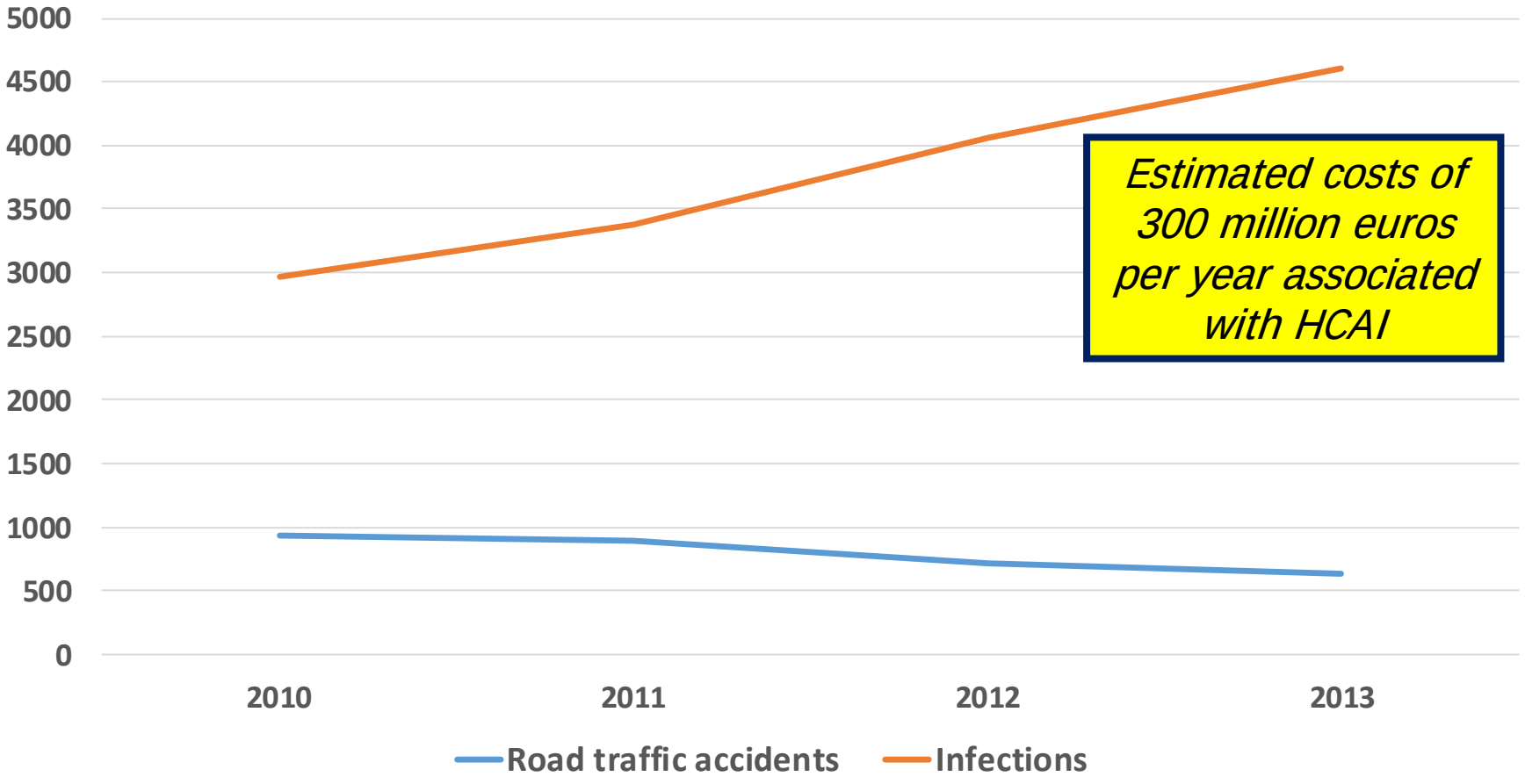
From PPS 2011-2012, ECDC

E S K A P E



First-level antimicrobial resistance markers in PPS: MRSA, VRE, Enterobacteriaceae non-susceptible to third-generation cephalosporins, Pseudomonas aeruginosa *and* Acinetobacter baumannii *non-susceptible to carbapenems. Data from the Netherlands were excluded for reasons explained above.*

Mortality associated with HCAI versus that associated with road traffic accidents



ANSR e PPCIRA/DGS

Weaknesses and threats of IC fight in Portugal: early 2013 report

- Understaffing and underpowerment of the central and peripheral IC structures
- Low level of integration and synergy of the several processes; no holistic vision; too many process leaders
- **Low strategic sustainability; Absence of focus in the most relevant issues; low involvement of the citizen**
- **Problems of data sharing among state institutions and of data feedback to the providers; low reliability of indicators**
- **Difficulties in implementing a collaborative model,** increasing capacity building and maximizing participation and transparency
- Reimbursement system not reflecting the indicators and targets and not boosting motivation

Paiva JA et al. PPCIRA launching report, feb. 2013. DGH

PPCIRA: A National Priority Program

NATIONAL PROGRAM ON INFECTION CONTROL

1999

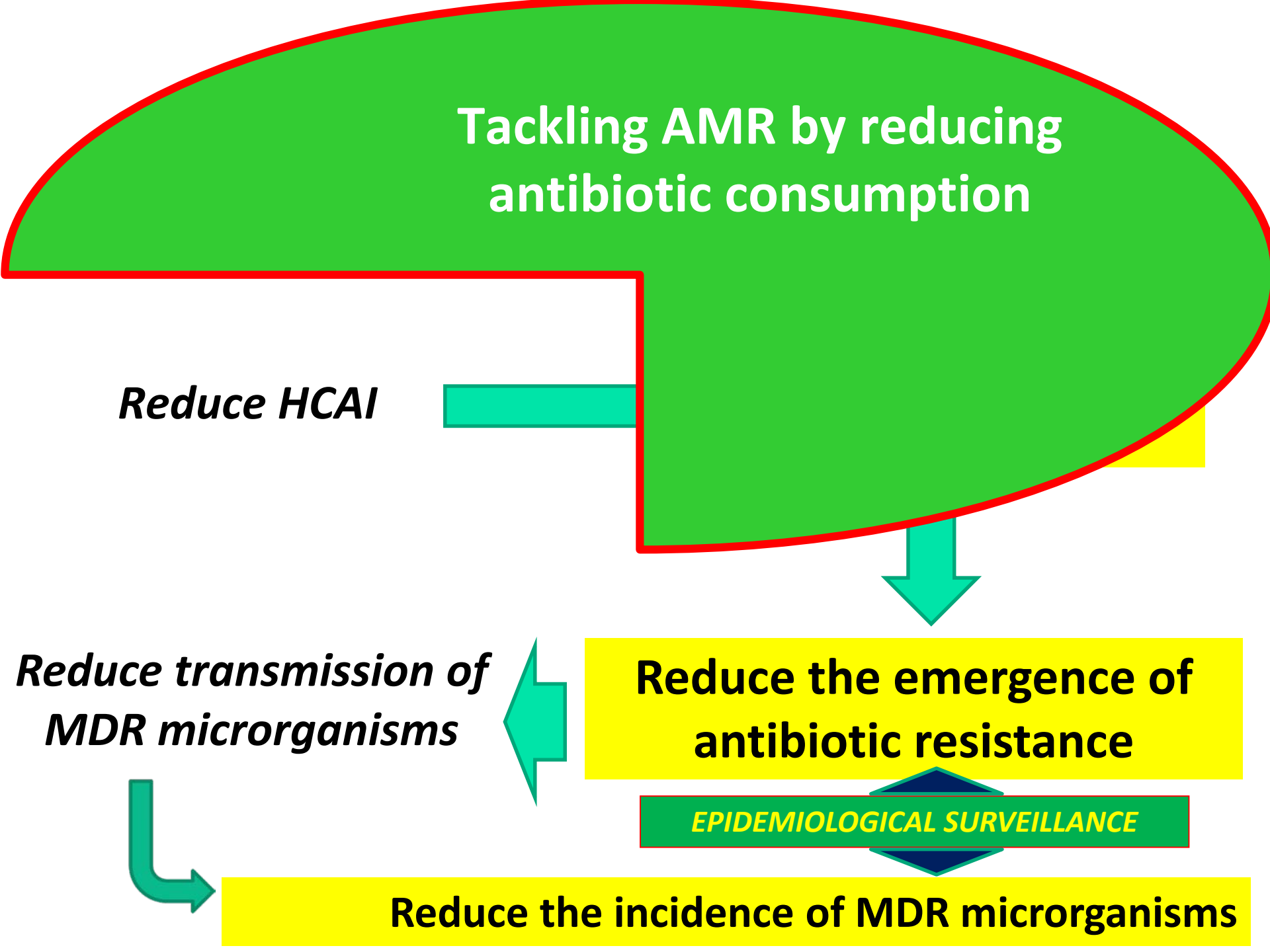
+

NATIONAL PROGRAM ON PREVENTION OF ANTIMICROBIAL RESISTANCE

2008

NATIONAL PROGRAM ON PREVENTION OF INFECTION AND OF ANTIMICROBIAL RESISTANCE (PPCIRA)

8 Fev. 2013


Tackling AMR by reducing antibiotic consumption
Reduce HCAI
Reduce transmission of MDR microrganisms
Reduce the emergence of antibiotic resistance
EPIDEMIOLOGICAL SURVEILLANCE
Reduce the incidence of MDR microrganisms

Tackling AMR by reducing antibiotic consumption, by launching:

(a) a **Joint Alliance** in the spirit of One Health to commit different stakeholders that agreed on a ten-point memorandum;

(b) an **Antibiotic Awareness Campaign** for the citizen;

(c) a national **Antimicrobial Stewardship** (AMS) programme.

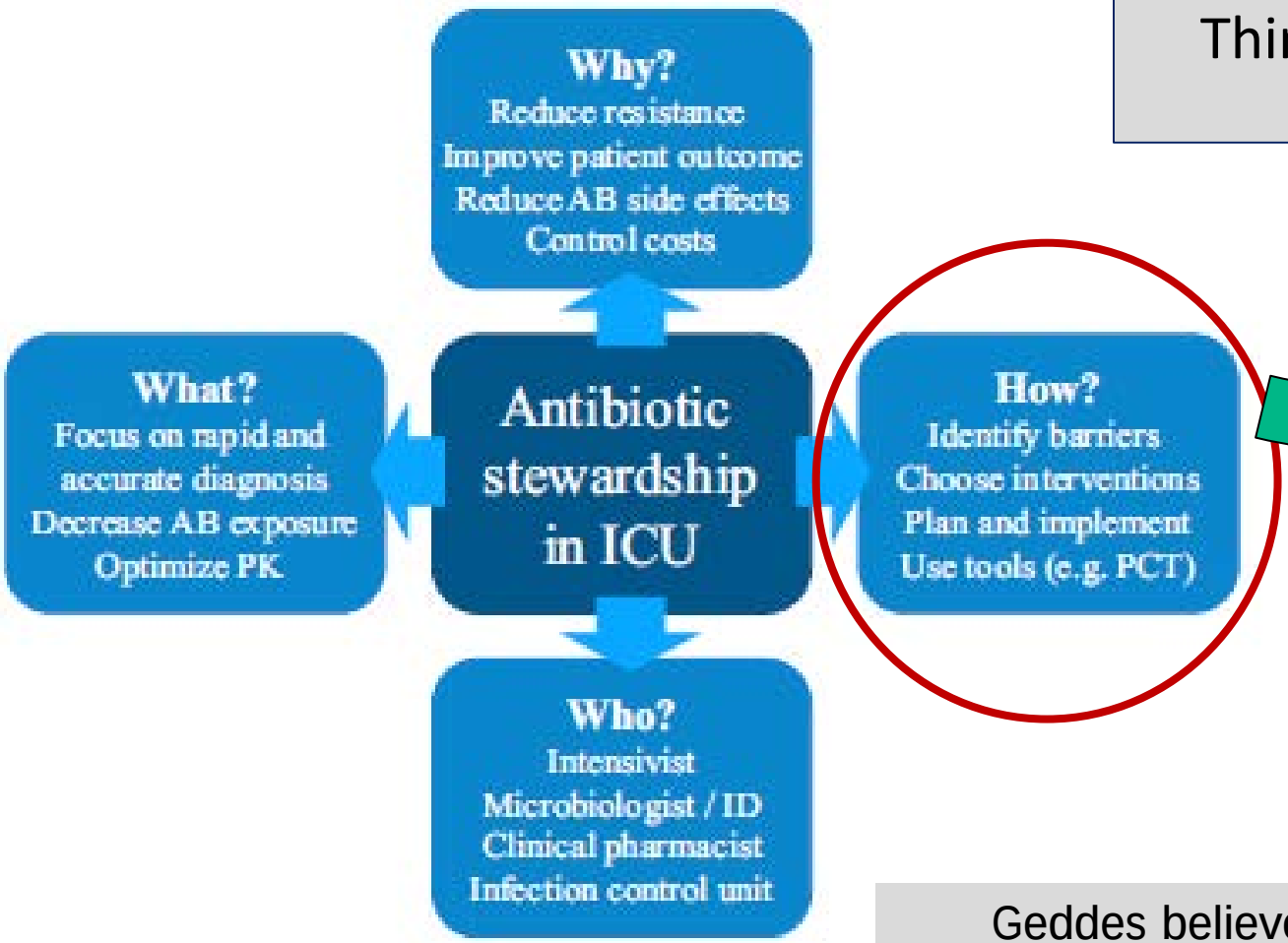
(b) The Citizen's Antibiotic Awareness Campaign

- It was a national campaign, involving primary care centers, hospitals, schools and big events arenas in 2011-2012.
- Global slogan "**More antibiotics, less health".**
- Very simple key messages, namely "do not self-medicate with antibiotics", "unused antibiotics should be returned to the pharmacy" and "do not treat colds with antibiotics".
- 5 million flyers and 10 000 posters; 200 billboards and public transport signs were placarded in the 3 main portuguese cities; a daily TV spot was presented for 30 days.
- At the end of the campaign, a total of 226 insertions/news were issued in the media, including TV, radio, press and internet.
- The campaign was repeated, at a smaller scale, two years later, in the winter 2013-14.

(c) The Antimicrobial Stewardship Programme

- A nation-wide programme, locally customized, using restrictive but mainly persuasive/enablement techniques, **led by a local expert team**
- **Focused** on surgical antibiotic prophylaxis, on one hand, and on quinolones and carbapenems therapies, on the other hand.
- **Targets were clearly defined**: 10% reduction for quinolones and 5% for carbapenems, with concomitant non-rise of global antibiotic use.
- **National guidelines** were issued for the use of antibiotics in surgical prophylaxis and on duration of antibiotic therapy (focusing on to not more than 7 days, except for a small group of infectious diseases).
- A **two day educational course** was performed by the Head of the National Programme in each of the seven health regions, discussing and teaching reasons for quinolones and carbapenems use and strategies for limiting its use to cases in which they are really necessary.
- **As a goal, all prescriptions of these two classes of antibiotics should be checked, discussed with the bedside medical team and eventually validated by the AMS team in the first 96 hours after prescription**.

AMS: How to use it?

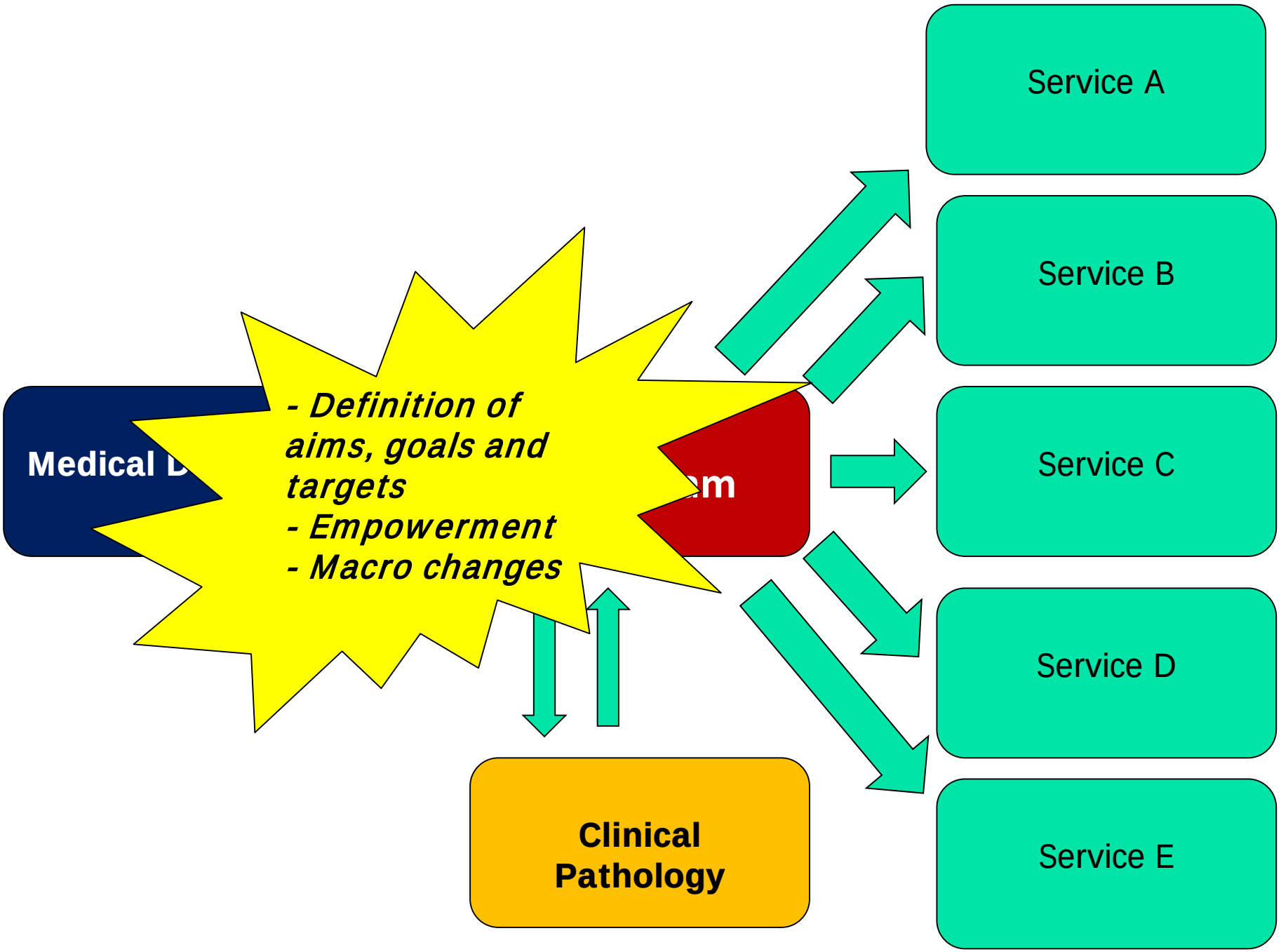


Think global, act local

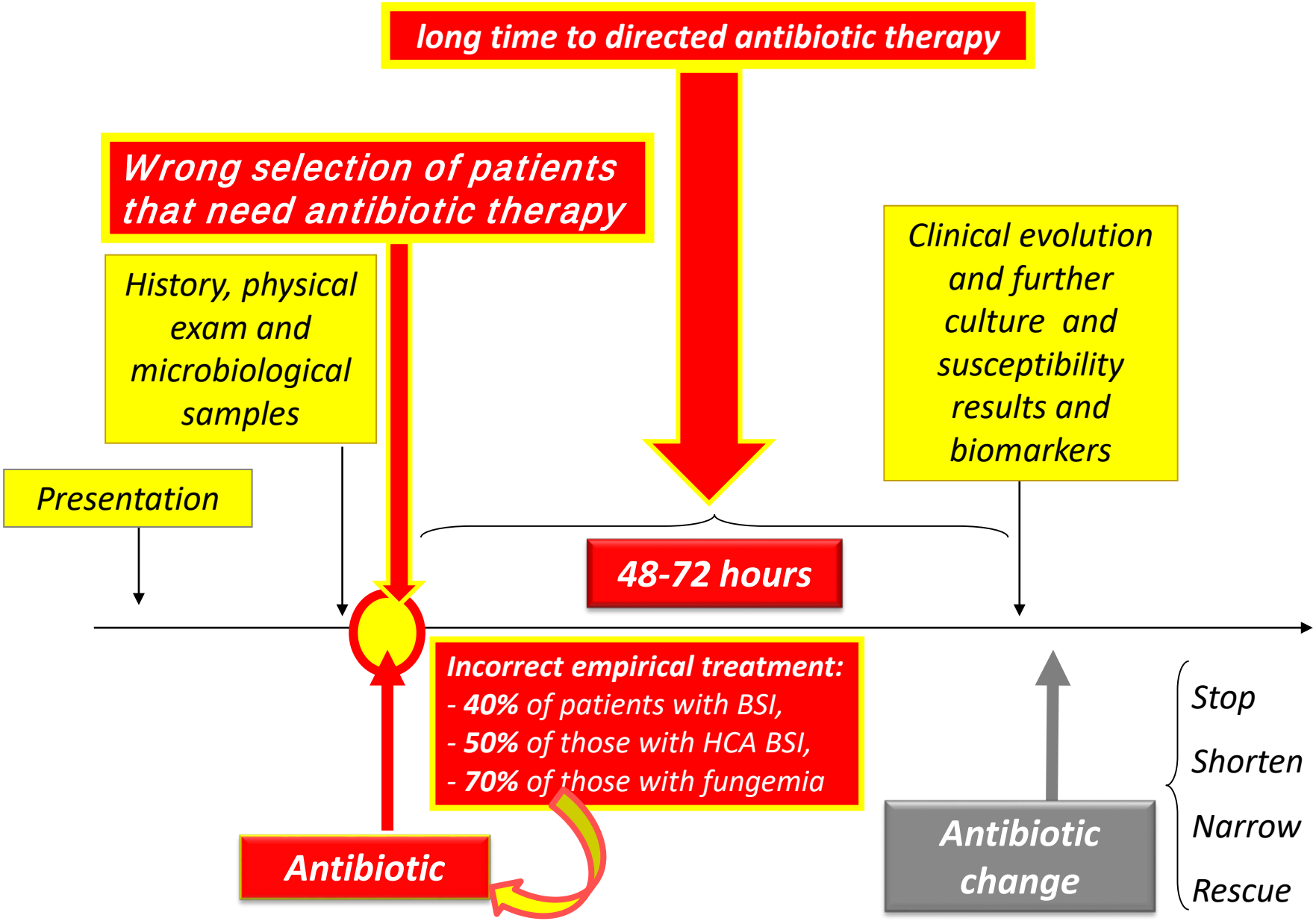
Patrick Geddes

Geddes believed in working with the environment, versus working against it

De Waele J et al, ICM 2016


Service A
Service B
Service C
Service D
Service E
- Definition of aims, goals and targets
- Empowerment
- Macro changes
Clinical Pathology

Main quality gaps in antibiotic strategy



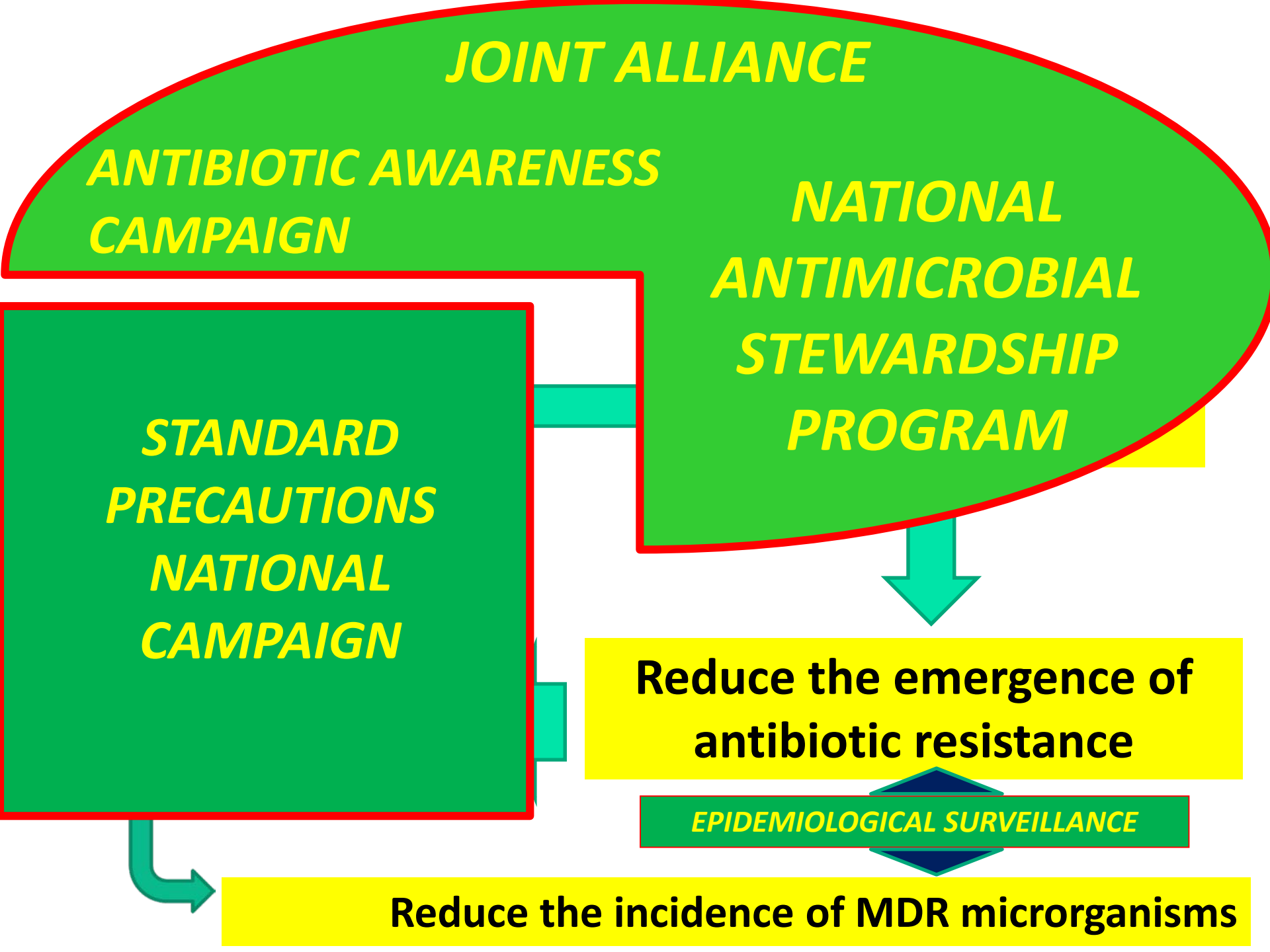
By the end of 2015:

- **78%** of Portuguese hospitals had implemented AMS team and process
- The process extended to primary care centers: **11%** of them had AMS
- The educational course on adequate antibiotic use was replicated inside each of the health regions, by steering local groups

Consumption of antibiotics in Portugal in defined daily doses (DDD) per 1000 habitants per day

Year	Global community consumption of antibiotics #	Community consumption of quinolones	Global hospital consumption of antibiotics	Hospital consumption of cabapenems	Hospital consumption of quinolones
2011	23,72	2,91	1,73	0,139	0,22
2012	23,04	2,61	1,67	0,142	0,18
2013	19,04	2,18	1,64	0,146	0,18
2014	20,32	2,12	1,55	0,139	0,17
2015	21,30	2,05	1,57	0,133	0,15
2016	?	?	?	?	?
	↓ **10 %**	↓**30 %**	↓**9 %**	↓**4 %**	↓ **32 %**

 # From 2013 on, the data refers to selling figures and not, as until then, to stocking figures


JOINT ALLIANCE
ANTIBIOTIC AWARENESS CAMPAIGN
NATIONAL ANTIMICROBIAL STEWARDSHIP PROGRAM
STANDARD PRECAUTIONS NATIONAL CAMPAIGN
Reduce the emergence of antibiotic resistance
EPIDEMIOLOGICAL SURVEILLANCE
Reduce the incidence of MDR microrganisms

Until 2014, no significative reduction in HCAI

	Staph aureus hospital acq bacteremia (per 1 000 patient days)	MRSA hospital acquired bacteremia (per 1 000 patient days)	ICU Catheter related infection (per 1 000 cateter days)	Ventilator associated pneumonia (per 1 000 intubation days)	Catheter related sepsis in neonatal ICU (per 1 000 cateter days)
2008			2,1	11,2	10,08
2009			2,2	10,6	11,34
2010			1,4	8,7	11,29
2011			1,5	8,6	13,40
2012	0,27	0,17	1,0	8,7	11,46
2013	0,27	0,16	1,3	7,4	9,13
2014	0,27	0,15	1,9	7,1	

PPCIRA/DGS (HELICS & INCS)

Our shared north: to reduce HAI by 50%

The STOP Infeção Hospitalar Project

A Gulbenkian Foundation Project

- **The Gulbenkian Foundation** invited the Institute for Healthcare Improvement (IHI) to become a program partner, due to its expertise in running large-scale collaborative improvement projects and its persistent focus on execution, measurement and results.
- In liaison with the National PPCIRA
- **Aim:** to reduce HAI by 50%, for a group of 12 selected Portugal NHS centers (19 hospitals) over a period of three years.
- Represented 25% to 30% of all inpatient episodes in Portuguese NHS hospitals
- **The work commenced in late 2015,** under the name of STOP Infeçao Hospitalar

Four workstreams and four hospital sites

The ***Stop infeção hospitalar*** is focused on four main types of HAI:

- Catheter-Associated Urinary Tract Infection (CAUTI);
- Central line-associated bloodstream infection (CLA BSI);
- Surgical Site Infection (SSI), namely Hip and Knee replacement, Colon-recto and Gallbladder;
- Ventilator-associated pneumonia (VAP).

The pilot-sites/departments include:

- General Wards (CAUTI and CLA BSI),
- Intensive care units (CLA BSI and VAP),
- Orthopedic (SSI related to hip and knee replacement)
- General Surgery (SSI related to colon-rectum and gallbladder)

Multidisciplinary front line teams are being supported to design, test and implement improved work processes designed to deliver safer and more reliable care to the patients.

Key elements of the STOP program

EM DISCUSSÃO PÚBLICA

DGS desde 1899 Direção-Geral da Saúde

NORMA

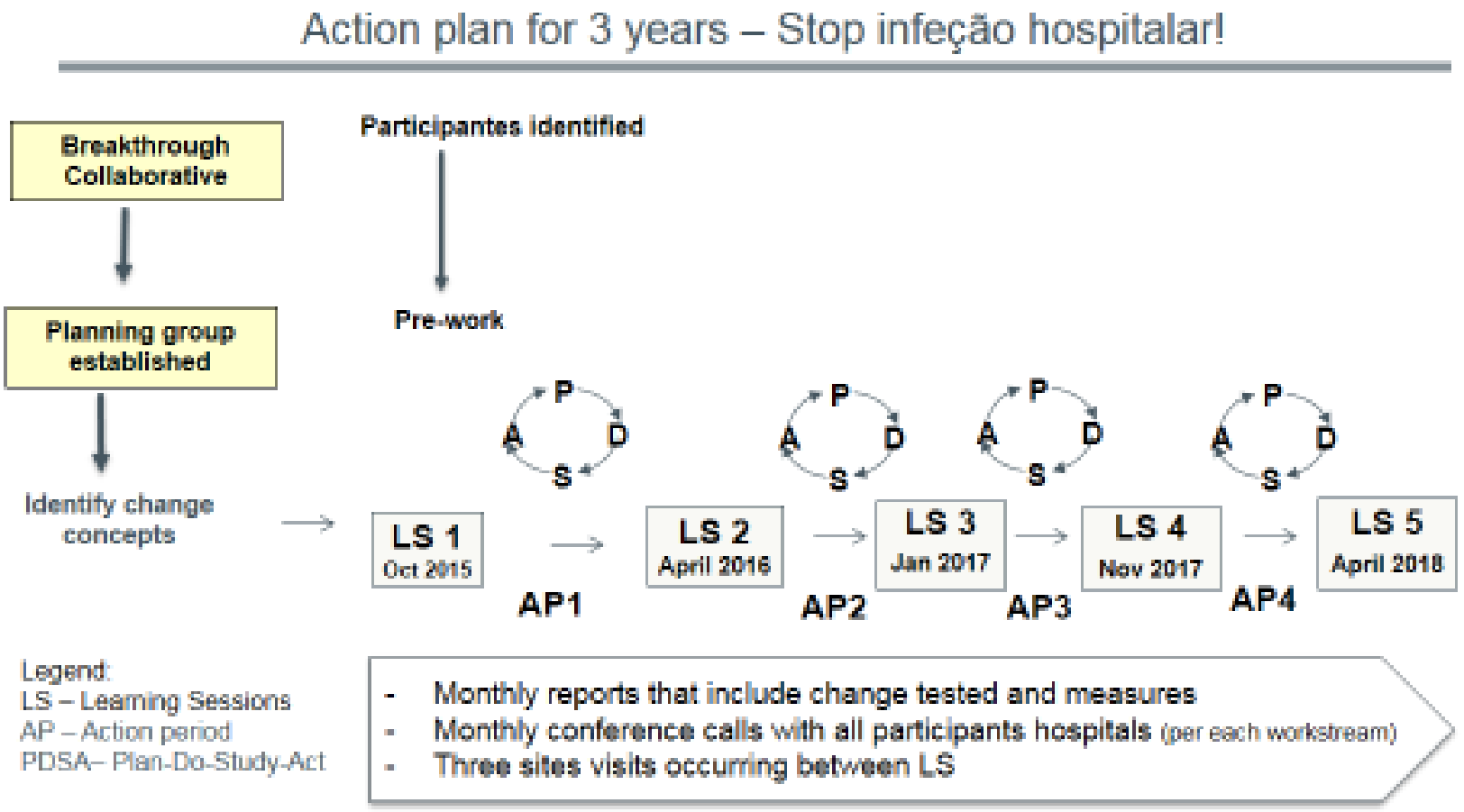
da Direção-Geral da Saúde

Francisco Henrique Moura George

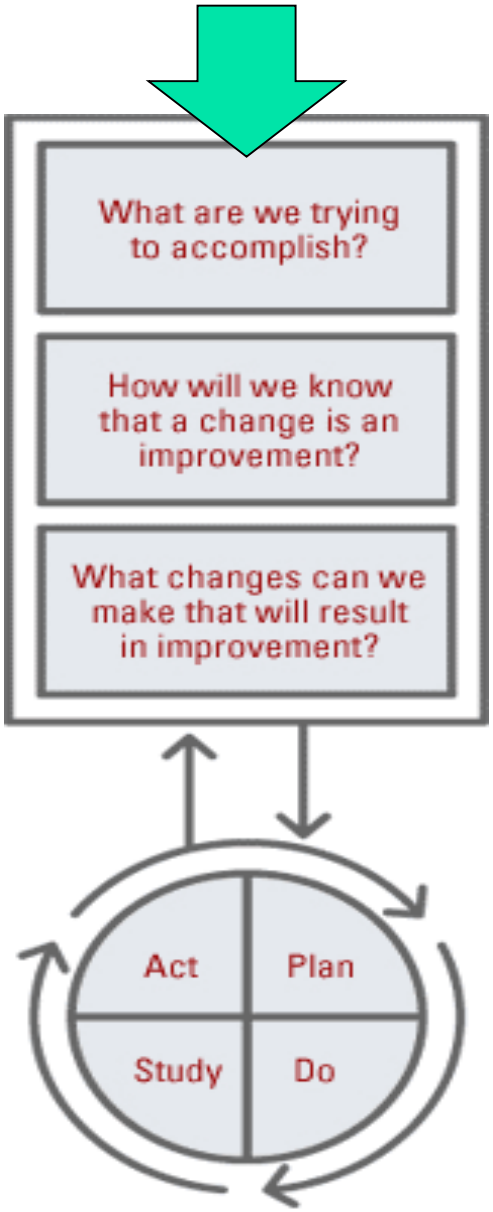
NÚMERO:	021/2015
DATA:	16/12/2015
ASSUNTO:	"Feixe de Intervenções" de Prevenção de Pneumonia Associada à Intubação
PALAVRAS-CHAVE:	Prevenção, Pneumonia, UCI, Ventilação, Intubação
PARA:	Médicos e Enfermeiros do Sistema de Saúde
CONTACTOS:	Departamento da Qualidade na Saúde (dqs@dgs.pt)

- an evidence based **change package**
  (e.g. bundles for insertion and maintenance of urinary catheter and central line catheters, VAP prevention and SSI prevention);
- a robust **measurement and data collection system** (process, outcome and balancing measures);
- a **strategy for building capacity** (creation of a sustainable infra-structure for healthcare improvement, put in place first at the 19 participating hospitals and later spread to other hospitals throughout the country);
- an evaluation **plan to measure the success of the QI initiative** and to identify areas for improvement along with a dissemination plan to publish and share practices and results achieved.
- **Leadership commitment** - a pre-requisite for participation

Schematic Representation of the Breakthrough Series Collaborative STOP Infeção Hospitalar!



The model for improvement



- A large number of teams from hospitals or clinics seeking improvement in a focused area come together under a working environment where all members learn and all members teach.
- Teams are taught improvement methodology including The Model for Improvement.
- Interventions include participation at learning sessions, educational interventions and discussion of activities and progress at coaching conversations by telephone, webex calls and face-to-face meetings.

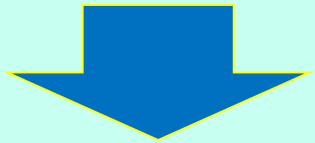
- to build a learning community and system that is capable of future ongoing sustainable improvement
- to build improvement capability and improve organization cultures over time.

Dynamic Measurement is a key activity

- Measurement and monitoring of the target of change is a key activity
- Statistical process control maps **variations over time**, combining statistical significance tests with chronological analysis of graphs of summary data
- **Annotating timing of interventions and showing target and control limits**
- **Measuring process compliance and outcome improvement**
- Constant **feedback to providers at service level**
- **The monthly collection and analysis of data allows real time learning and improvement**

Electronic Health Record embedded initiatives

Derive Evidence from Each Care Experience



Accelerate Real-World Evidence

Quality Improvement through breakthrough collaborative

A learning organization, a learning comunity

- ALL TEACH, ALL LEARN
- Transparency
- Distributed Leadership

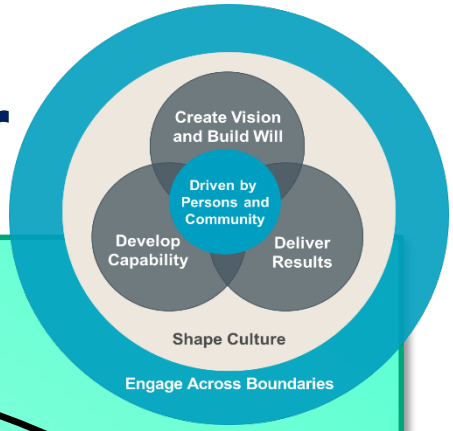
Best practices are harvested and shared through the collaborative learning system, both through the website and webex calls and face-to-face meetings

High-Impact Leadership Behaviors
What leaders do to make a difference

1. Person-centeredness	Be consistently person-centered in word and deed
2. Front Line Engagement	Be a regular authentic presence at the front line and a visible champion of improvement
3. Relentless Focus	Remain focused on the vision and strategy
4. Transparency	Require transparency about results, progress, aims, and defects
5. Boundarilessness	Encourage and practice systems thinking and collaboration across boundaries

Swensen, Pugh, McMullan, Kabcenell. High-Impact Leadership: Improve Care, Improve the Health of Populations & Reduce Costs. Institute for Healthcare Improvement; 2013. Available: www.ihi.org.

From holding to handing power



"Leadership is not wielding authority - it's empowering people."

Becky Brodin

Results

MANAGEMENT

QUALITY IMPROVEMENT

CREATING A MOVEMENT

Holding power

Sharing power

Handing power

Time

The Mental Shift at the Service level

We have a problem with HCAI and antibiotic use

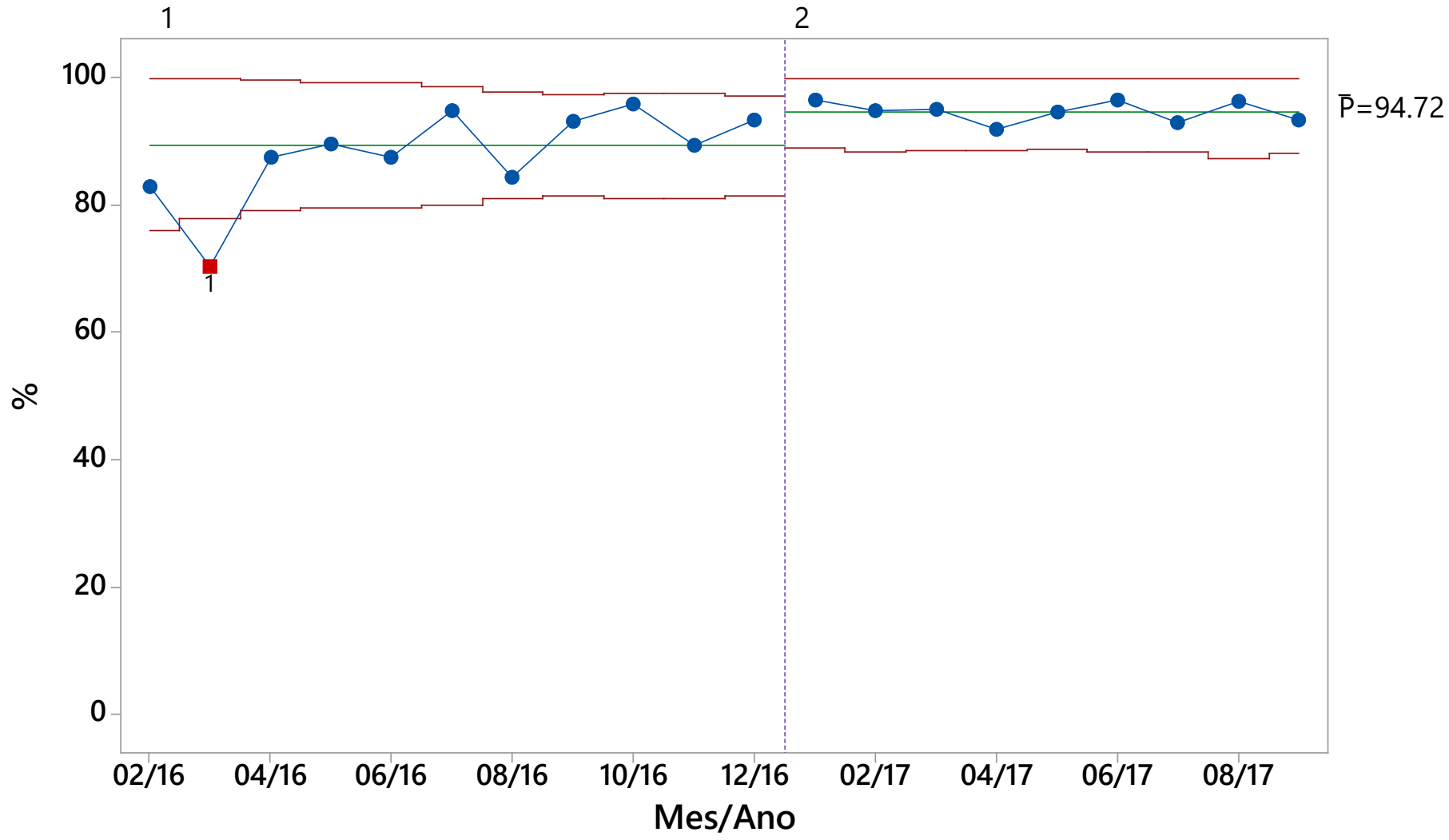
AMS and STOP teams are in the service doing it

We are trying to reduce HCAI and empirical antibiotic therapy

We are treating only those that clearly have bacterial infection and only after collecting micro exams: AMS and STOP teams are helping

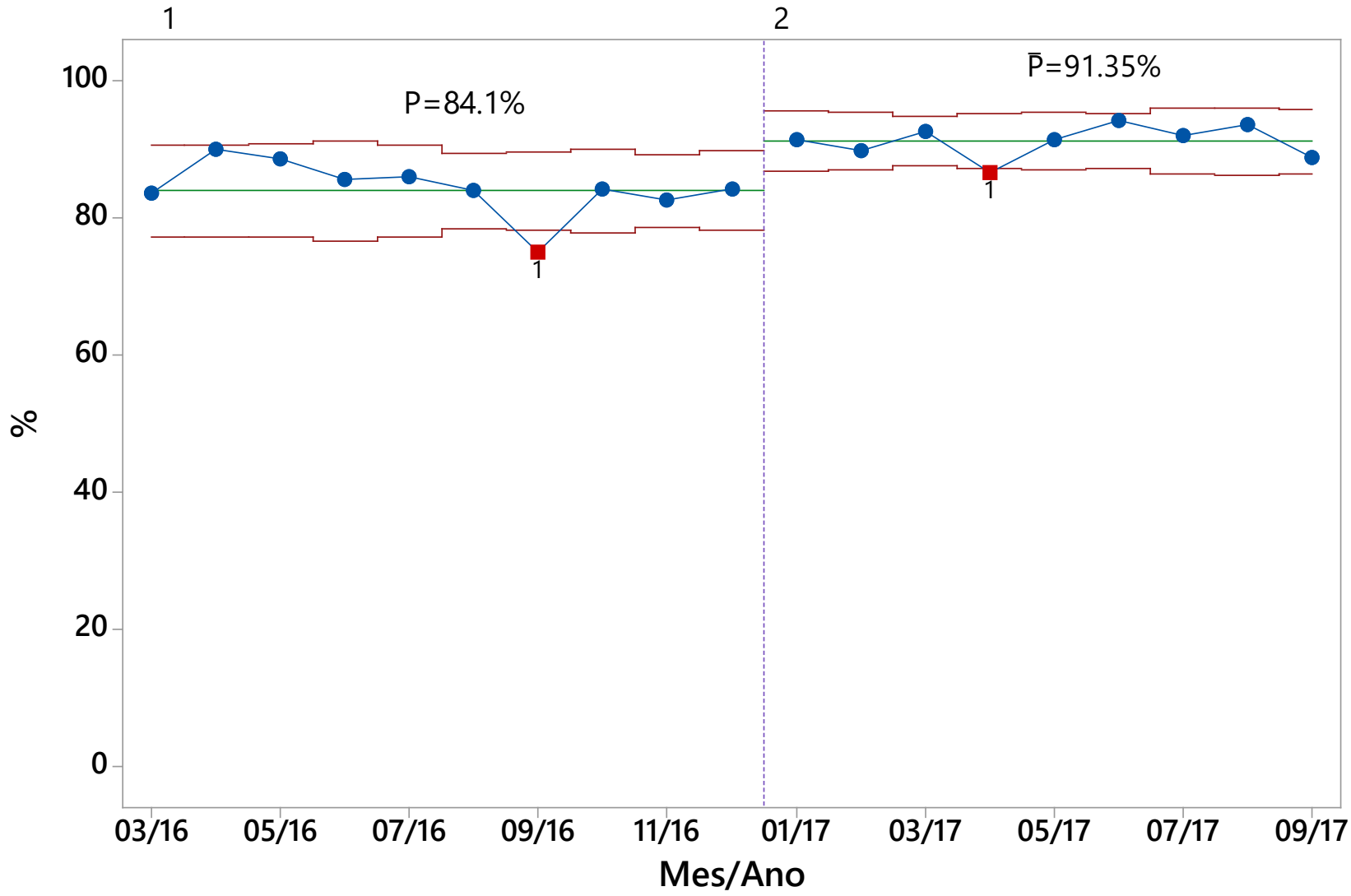
Results after STOP Infeção Hospitalar, in september 2017

Catheter Related Infection Prevention – compliance with insertion budle



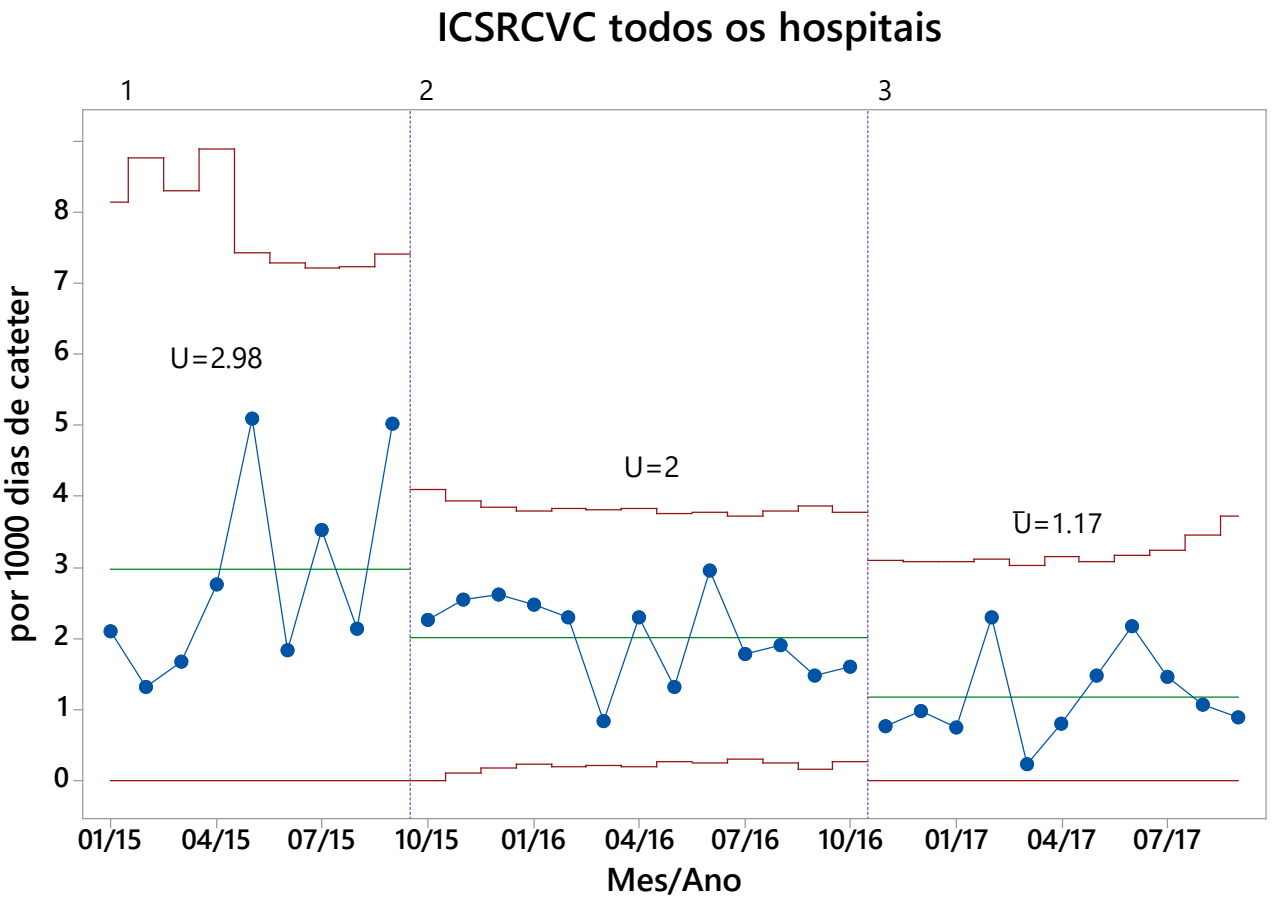
Tests performed with unequal sample sizes

Catheter Related Infection Prevention – compliance with maintenance budle

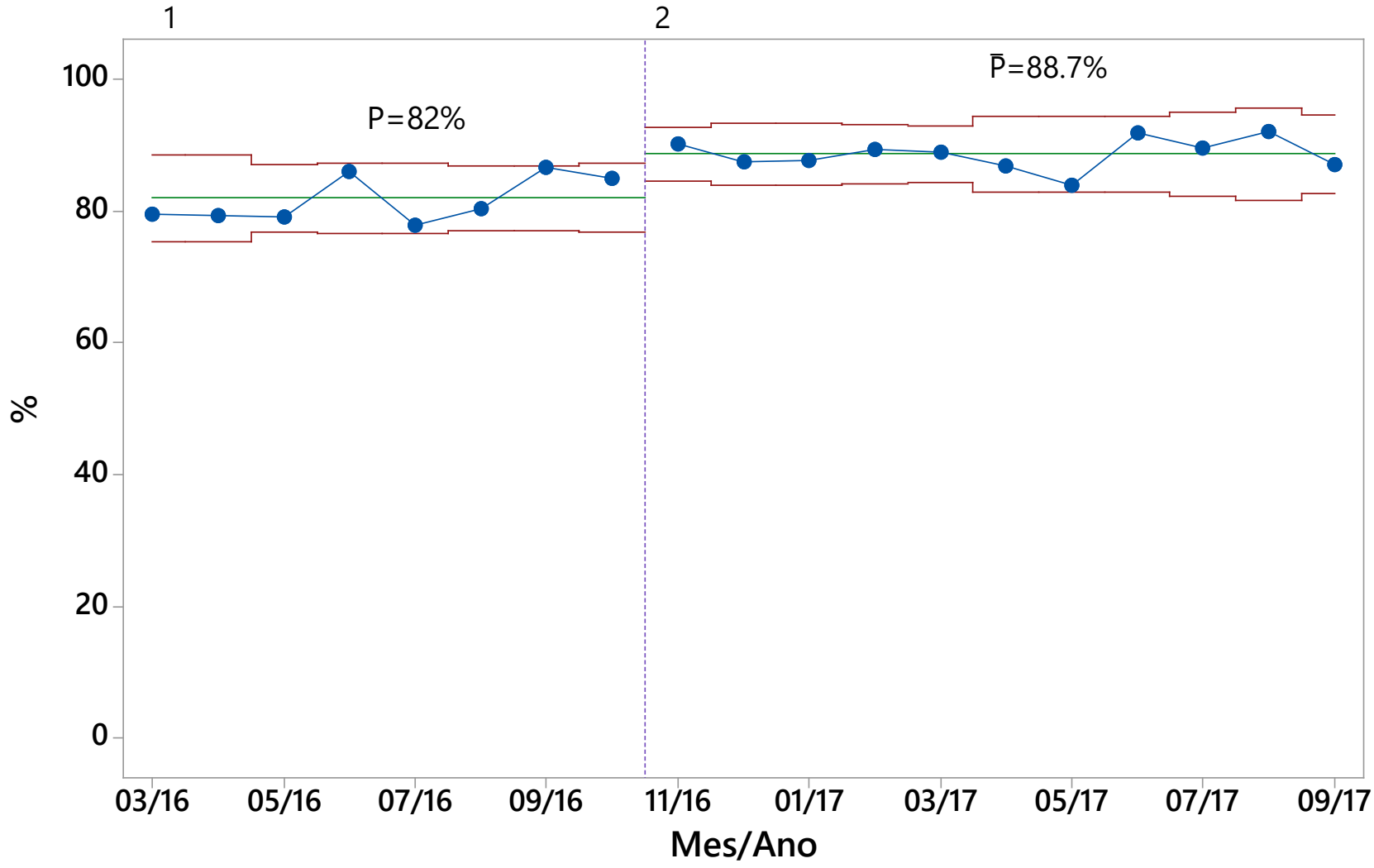


Catheter related infection – All 19 hospitals

Reduction of 61%



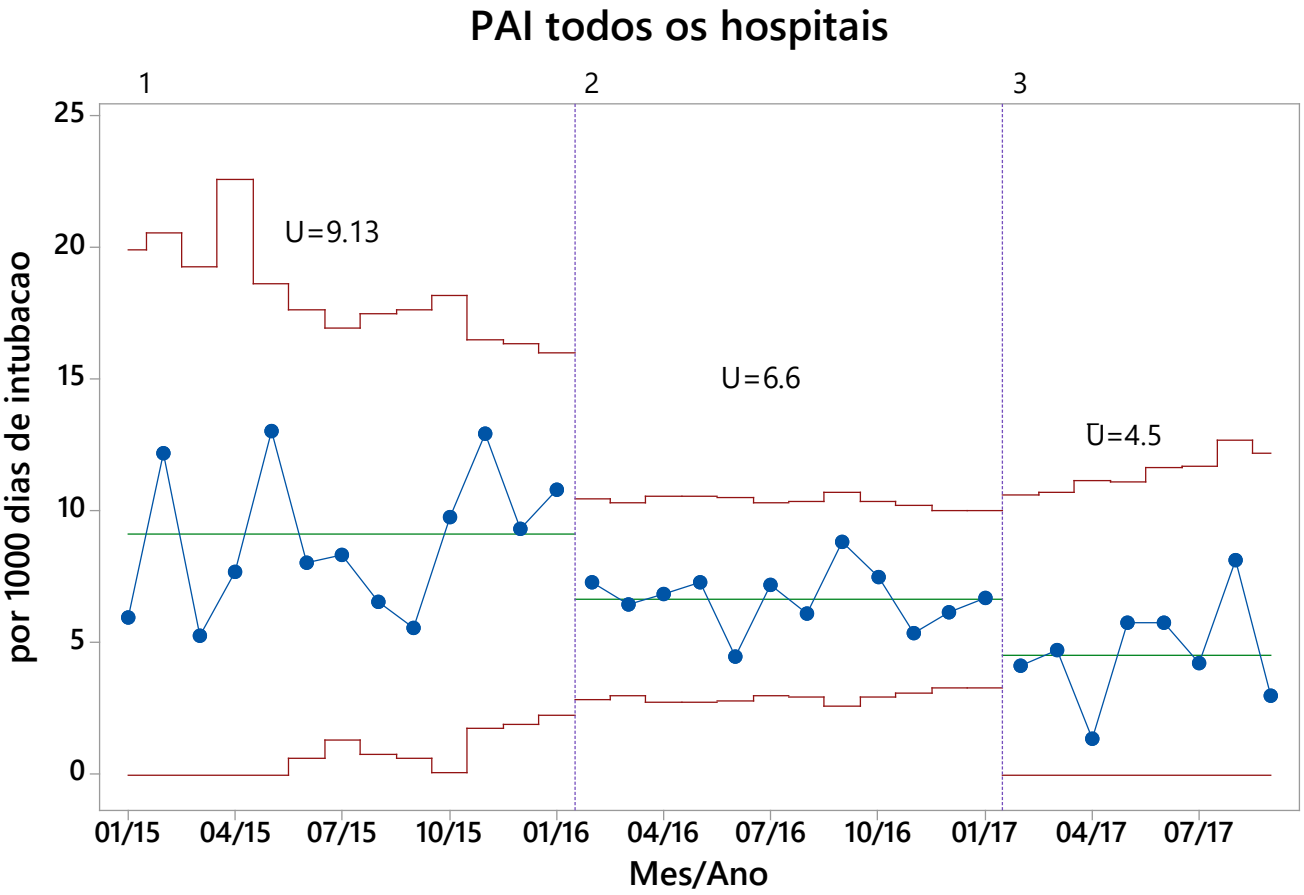
Compliance with the VAP prevention bundle



Tests performed with unequal sample sizes

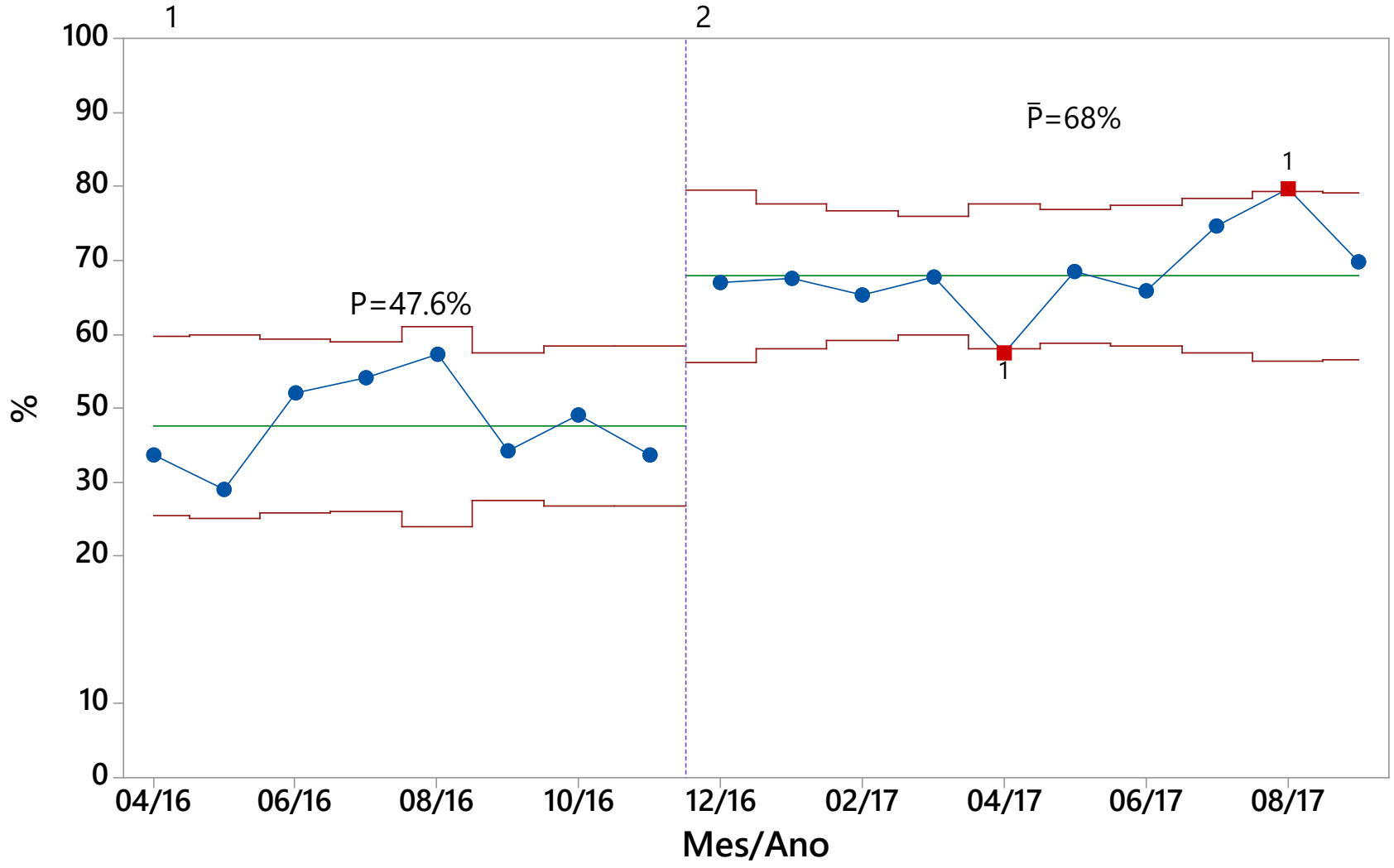
VAP – All 19 hospitals

Reduction of 51%



Tests performed with unequal sample sizes

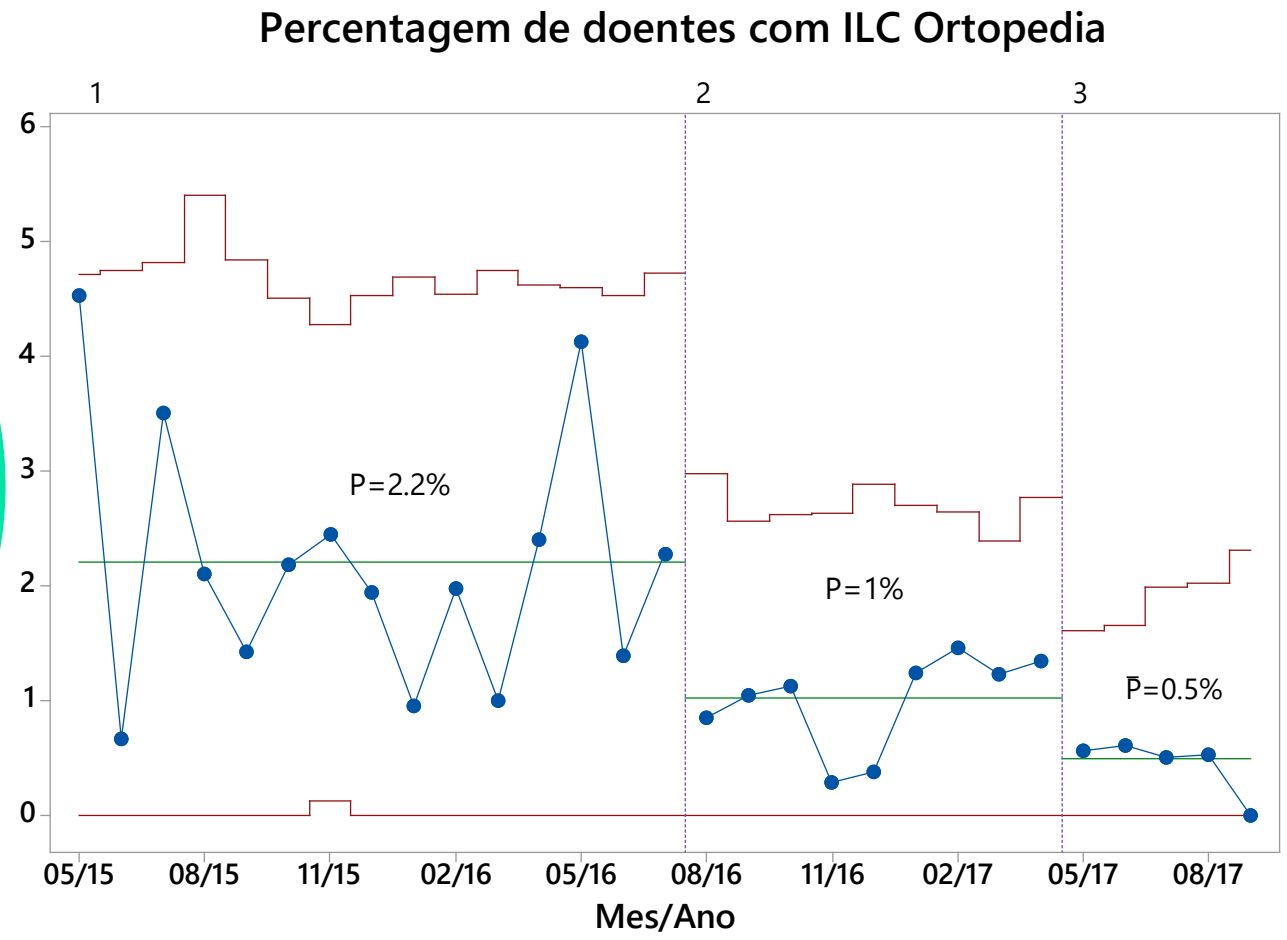
SSI in hip and knee replacement– compliance with SSI prevention bundle



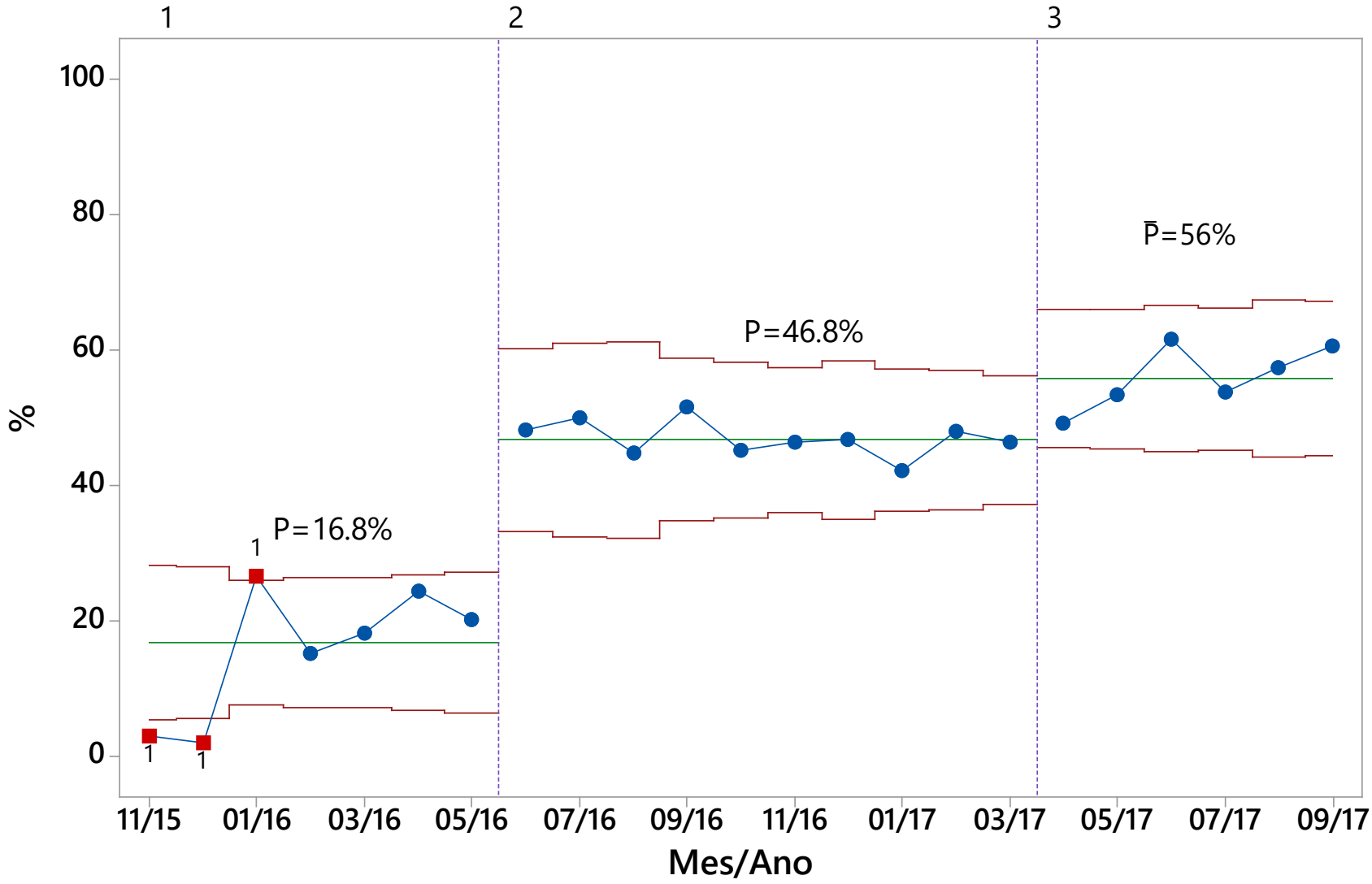
Tests performed with unequal sample sizes

SSI in hip and knee replacement– All 19 hospitals

Reduction of 78%

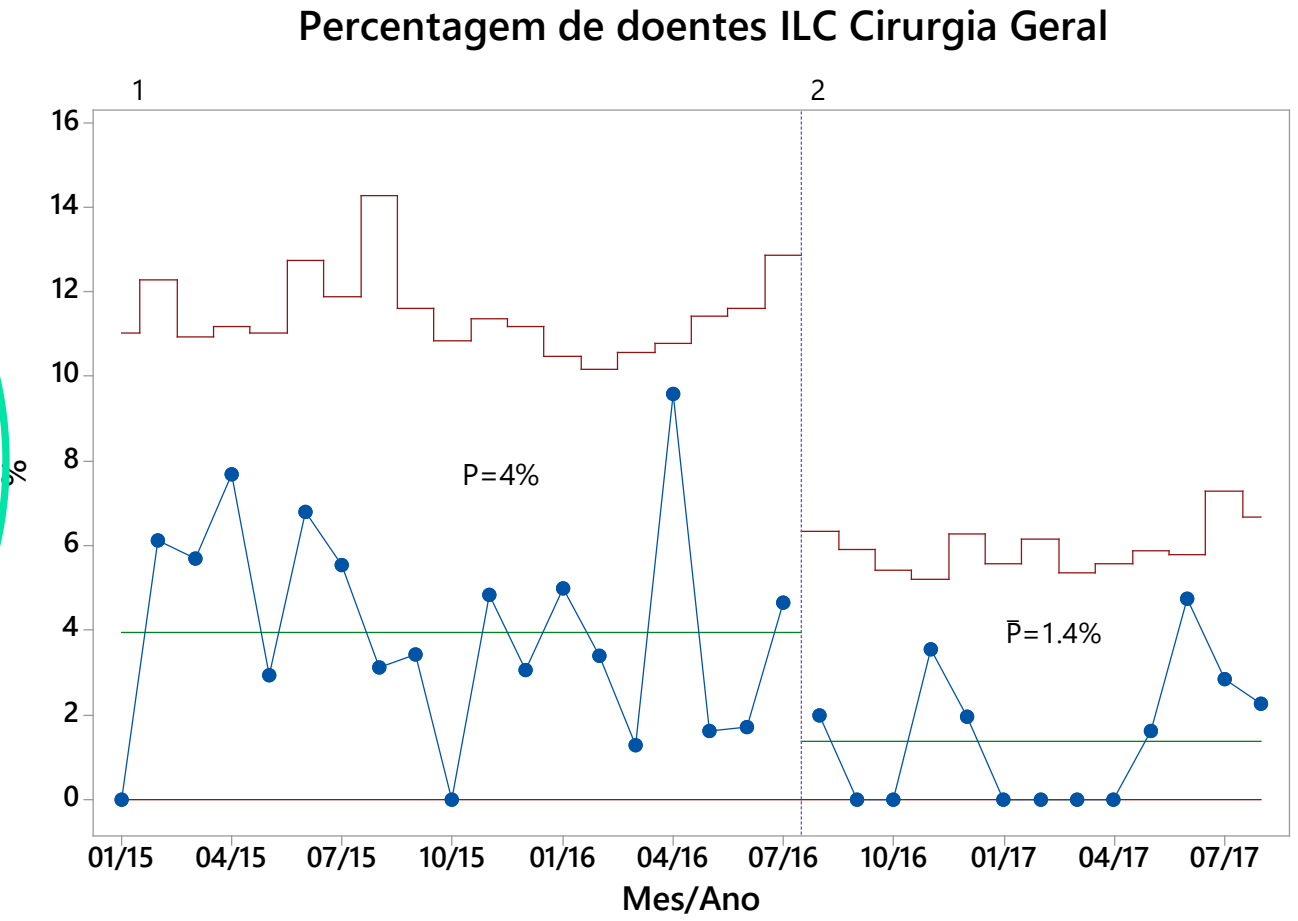


SSI in general surgery– compliance with the bundle

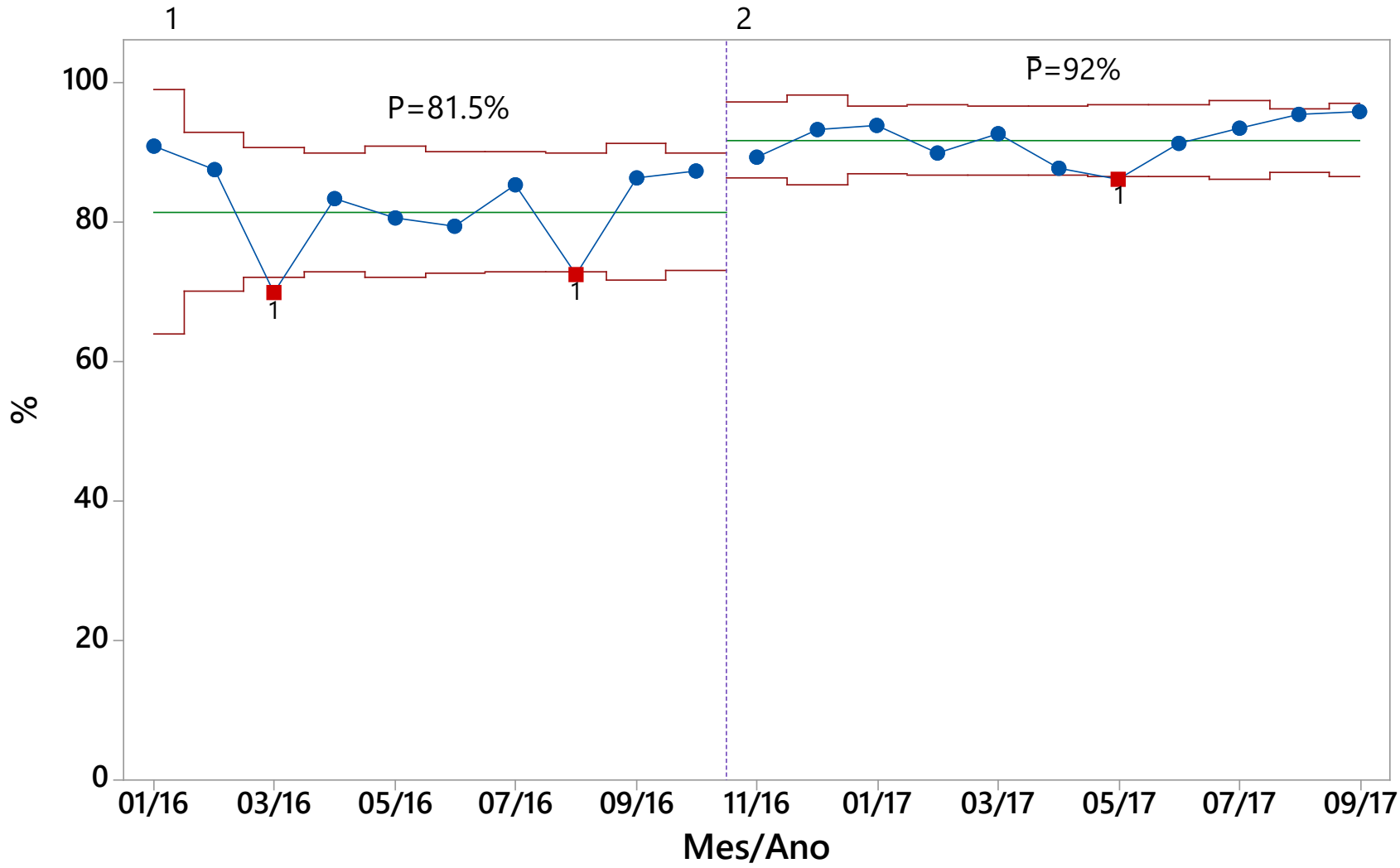


SSI in general surgery– All 19 hospitals

Reduction of 65%

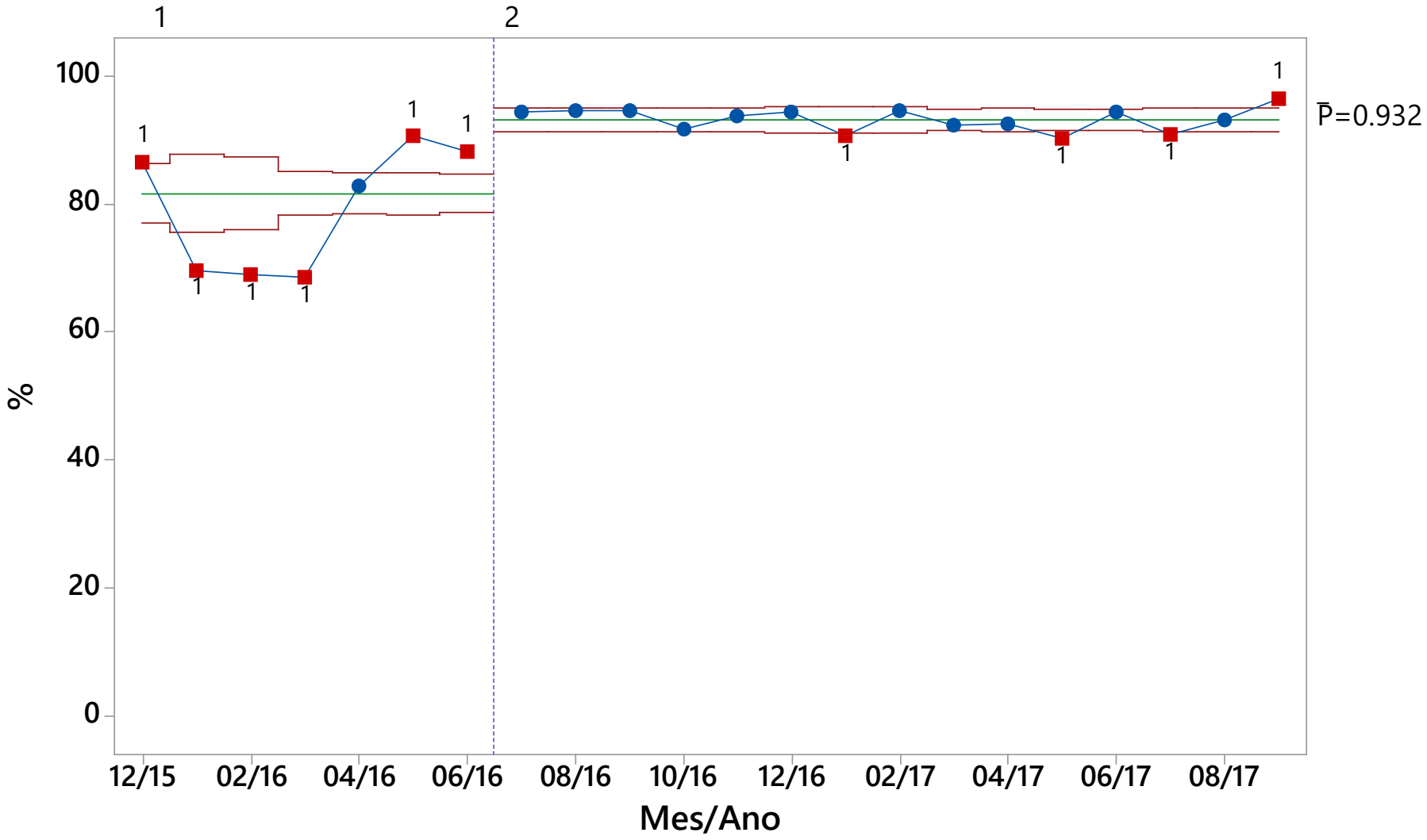


CAUTI prevention- compliance with insertion bundle



Tests performed with unequal sample sizes

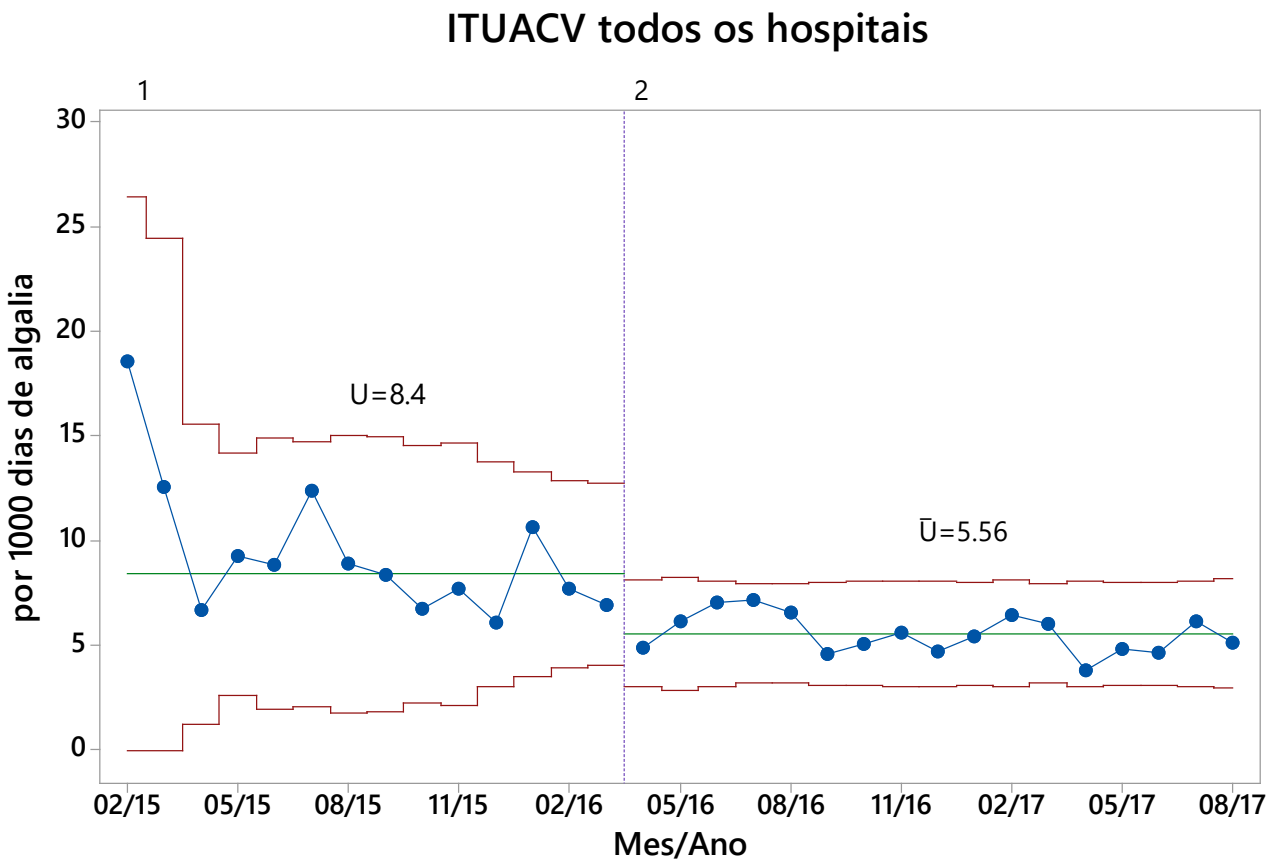
CAUTI prevention- compliance with maintenance bundle



Tests performed with unequal sample sizes

CAUTI – All 19 hospitals

Reduction of 35%



Tests performed with unequal sample sizes

Scale and spread

- The QI initiative STOP HAI will systematically work to spread the knowledge regarding safety interventions that have already been tested and implemented on prototype units in each participating hospital – **"scalable units"** - and that have achieved both reliability in processes and change in outcomes.

- Over time, the ambition of STOP HAI is that its results will influence department/hospital/health policies and other healthcare institutions throughout Portugal, who will learn from the initiative and be **"contaminated" by its underling methodology, practices and "philosophy".**

Sousa P, Paiva JA. Reducing Hospital-Acquired Infection in Portuguese Hospitals: A Collaborative Approach toward Quality Improvement. In Health Systems Improvement Across the Globe: Success Stories from 60 Countries. Edited by Jeffrey Braithwaite, et al. 2017. CRC Press 2017

PPCIRA Quality Index Law March 2016

1. A criação de um grupo de trabalho interinstitucional, que integra a Direção-Geral da Saúde, o Instituto Nacional de Saúde Doutor Ricardo Jorge, I. P., o INFARMED — Autoridade Nacional do Medicamento e Produtos de Saúde, I. P., e a Administração Central do Sistema de Saúde, I.P. (ACSS, I.P.).
2. O grupo de trabalho referido no número anterior é coordenado pela ACSS, I.P.
3. Este Grupo de Trabalho garante, até final de junho de 2016, os mecanismos que permitam obter os dados e os indicadores, por instituição hospitalar, relativos a consumo hospitalar de antibióticos, resistência antimicrobiana ("microrganismos problema" e "microrganismos alerta") e IACS (pneumonia associada à ventilação, infeção relacionada com cateter venoso central em medicina intensiva, infeção da corrente sanguínea, infeção urinária associada a algália e infeção neonatal).

4. Os dados e indicadores referidos no número anterior constituem o denominado "índice de qualidade PPCIRA", o qual é composto pelas seguintes variáveis, em relação às quais se definem objetivos para o triénio 2017-2019, nomeadamente:
   a) Consumo hospitalar global de antibióticos, medido em DDD por 1.000 doentes saídos dia (objetivo: redução de 10% ao ano);
   b) Consumo hospitalar global de carbapenemes, medido em DDD por 1000 doentes saídos
   c) Taxa de Staphylococcus aureus resistente à meticilina (MRSA) no total de Staphylococcus aureus isolados em amostras invasivas (sangue e liquor) (objetivo: redução de 5% ao ano);
   d) Taxa de Klebsiella pneumoniae produtora de carbapenemase no total de Klebsiella pneumoniae isoladas em amostras invasivas (objetivo: ≤ 1%);
   e) Ausência de surto de Enterobactereaceae produtora de carbapenemase nesse ano;
   f) Implementação de isolamento, rastreio de doentes com pelo menos um fator de risco de MRSA, conforme Norma anti-MRSA 018/2014, de 9 de dezembro de 2014, atualizada a 27 de abril de 2015, do PPCIRA/DGS;
   g) Taxa de adesão ao feixe de intervenções (bundle) de prevenção de infeção de local cirúrgico conforme Norma 020/2015, de 15 de dezembro de 2015, do PPCIRA/DGS (objetivo: n.º de cirurgias com adesão a todas as medidas do feixe/ n.º total de cirurgias > 75%);
   h) Taxa de adesão ao feixe de intervenções (bundle) de prevenção de infeção urinária associada a algália, conforme Norma 019/2015, de 15 de dezembro de 2015, do PPCIRA/DGS (objetivo: n.º de algaliações com cumprimento de todas as medidas do feixe / n.º total de algaliações > 75%);
   i) Taxa de adesão ao primeiro momento da higiene das mãos (objetivo: > 70%);
   j) Participação nos programas de vigilância epidemiológica de infeção relacionada com cateter, de pneumonia associada a ventilador, de infeção de local cirúrgico e de infeção nosocomial da corrente sanguínea (objetivo: cumprimento destas vigilâncias em pelo menos 9 dos 12 meses).

7. O "índice de qualidade PPCIRA" é integrado no processo de contratualização de cuidados de saúde que se encontra implementado no Serviço Nacional de Saúde, ficando associado a partir do ano de 2017 à aplicação de incentivos no âmbito dos contratos-programa estabelecidos anualmente entre as Administrações Regionais de Saúde e as instituições hospitalares, de forma a premiar as boas práticas e a melhoria da qualidade numa área critica para a gestão hospitalar e para a segurança dos utentes.

Infection and antibiotic resistance prevention: Quality improvement cycles can help

- Constant dynamic of quality improvement, followed by quality control
- Quality improvement initiatives
- Change package (bundles and establishment of clear targets)
- Iterative, incremental PDSA cycles, using educational and behavioral interventions
- Capacity building
- Data collection system
- Dynamic and feedbacked measurement
- High impact leadership commitment
- Progressive cultural change

PPCIRA + STOP Infeção Hospitalar
It´s happening in Portugal with success

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