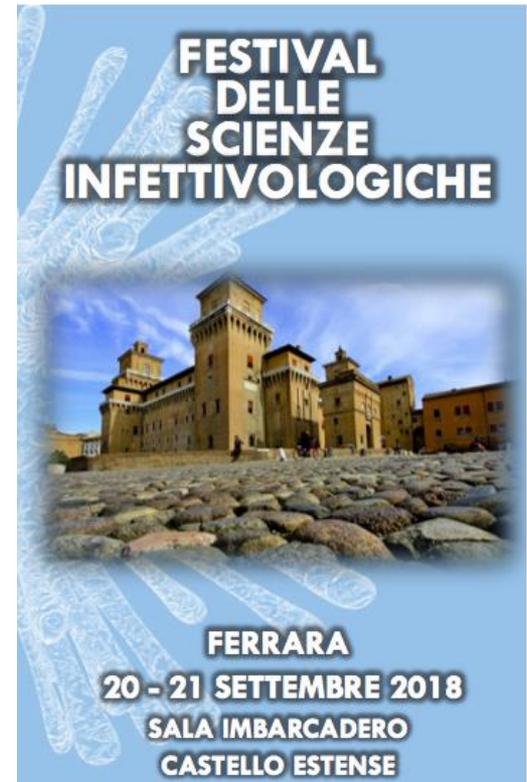


Garantire un'opportunità di cura per il futuro

Angelo Pan
UO di Malattie Infettive



Ospedale
di Cremona

Sistema Socio Sanitario



Regione
Lombardia

ASST Cremona

Conflitti di interesse

Finanziamenti per progetti:

- CCM
- SIMIT

Relazioni a congressi:

- Pfizer

Partecipazione a congressi:

- Janssen
- ViiV

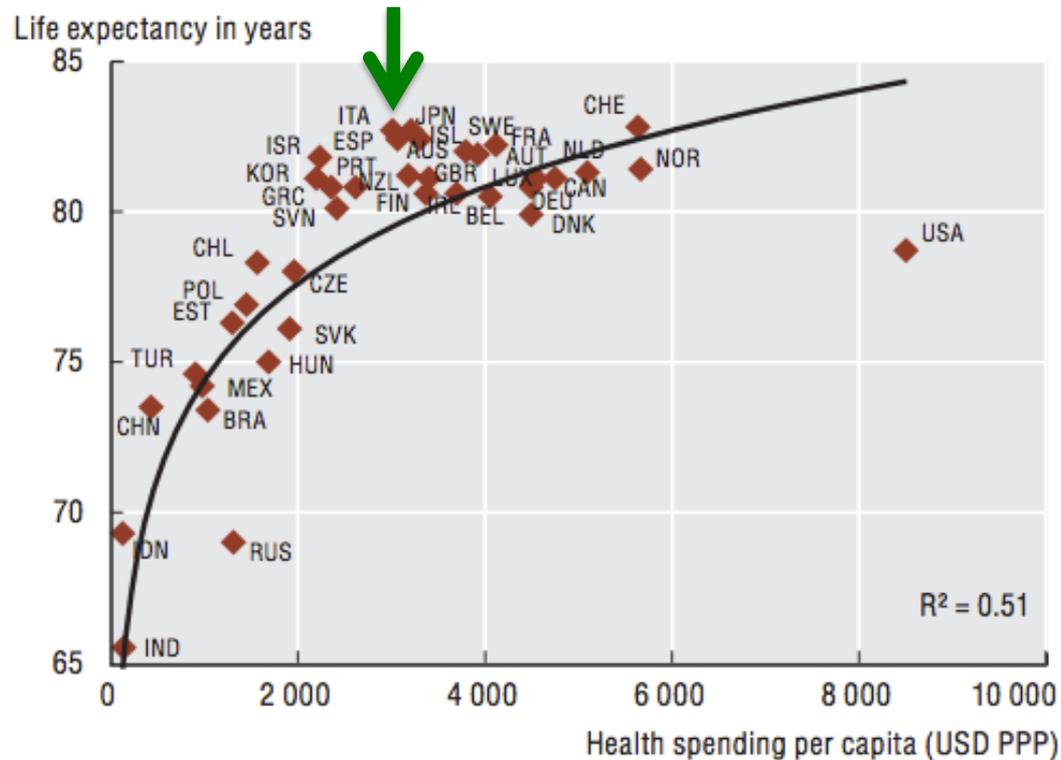
Introduzione

In quale contesto ci muoviamo?

1

Pazienti più complessi in Italia

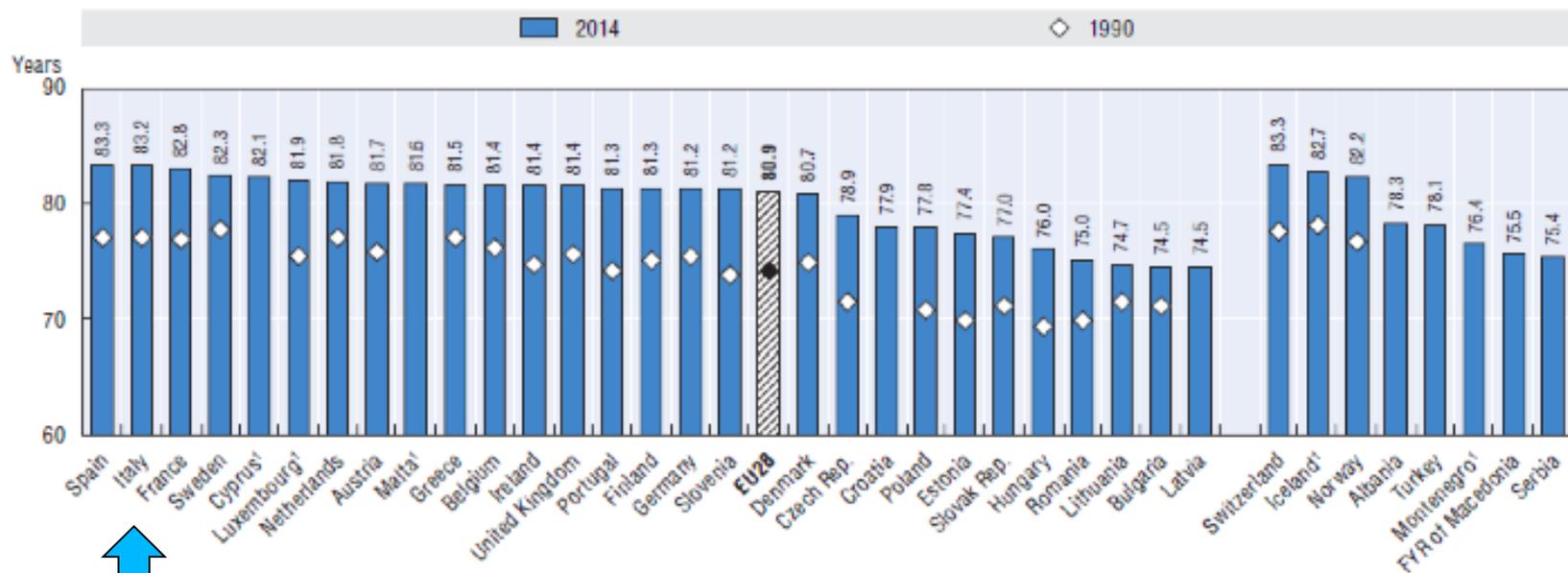
Spesa per la salute ed aspettativa di vita



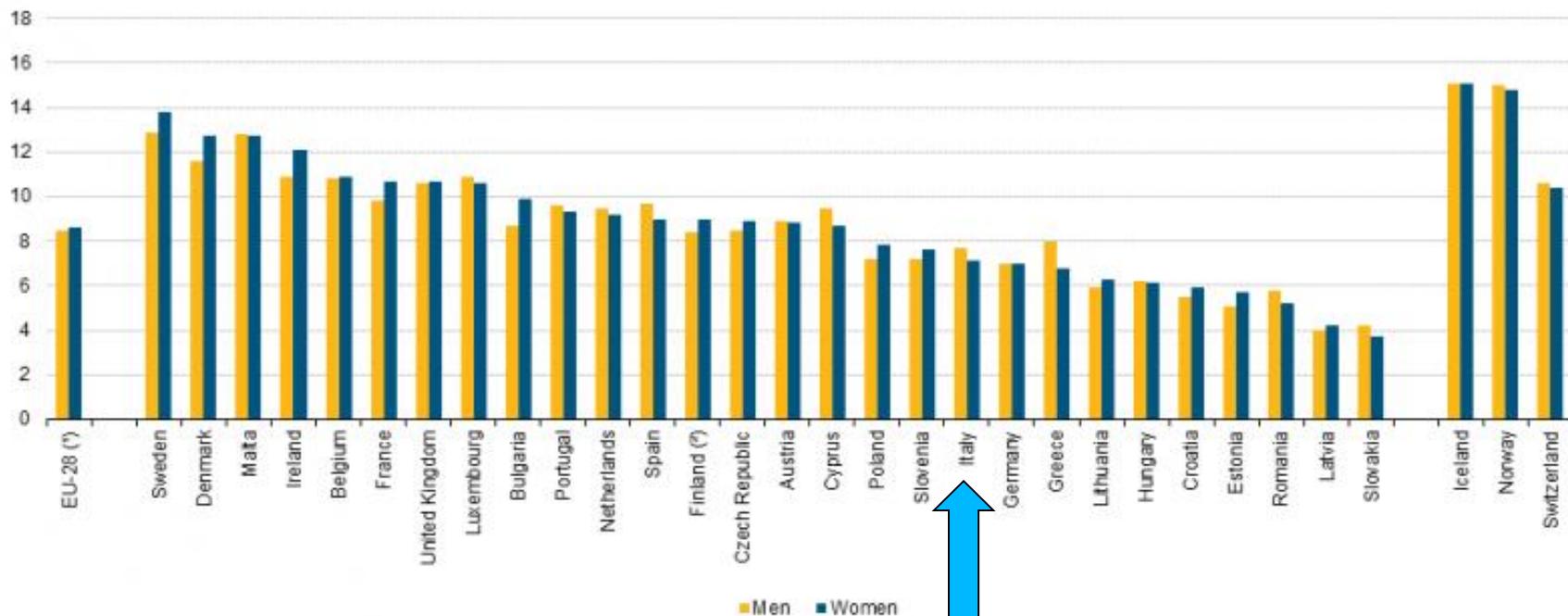
Source: OECD Health Statistics 2013, <http://dx.doi.org/10.1787/health-data-en>;
World Bank for non-OECD countries.

StatLink  <http://dx.doi.org/10.1787/888932916040>

Speranza di vita alla nascita Europa 1990 - 2014



Aspettativa di vita in salute a 65 anni Europa 2012



(*) Estimates.

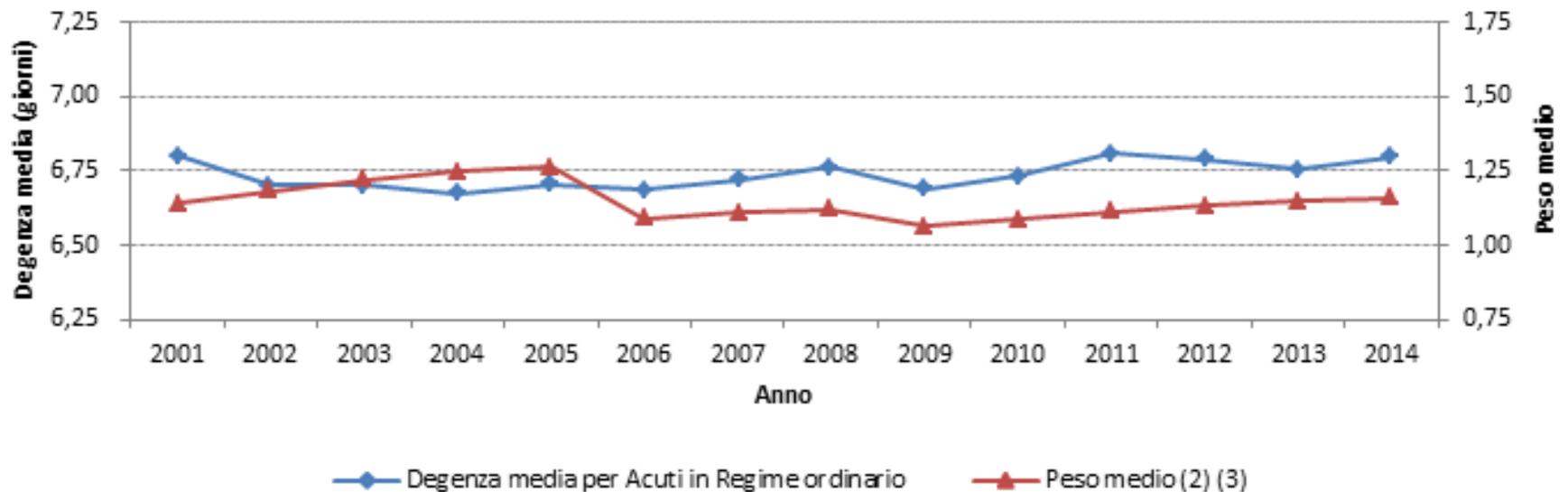
(*) 2012.

Source: Eurostat (online data code: h1th_h1ye)

Anni di vita in salute
(Healthy life years – HLY)

Complessità

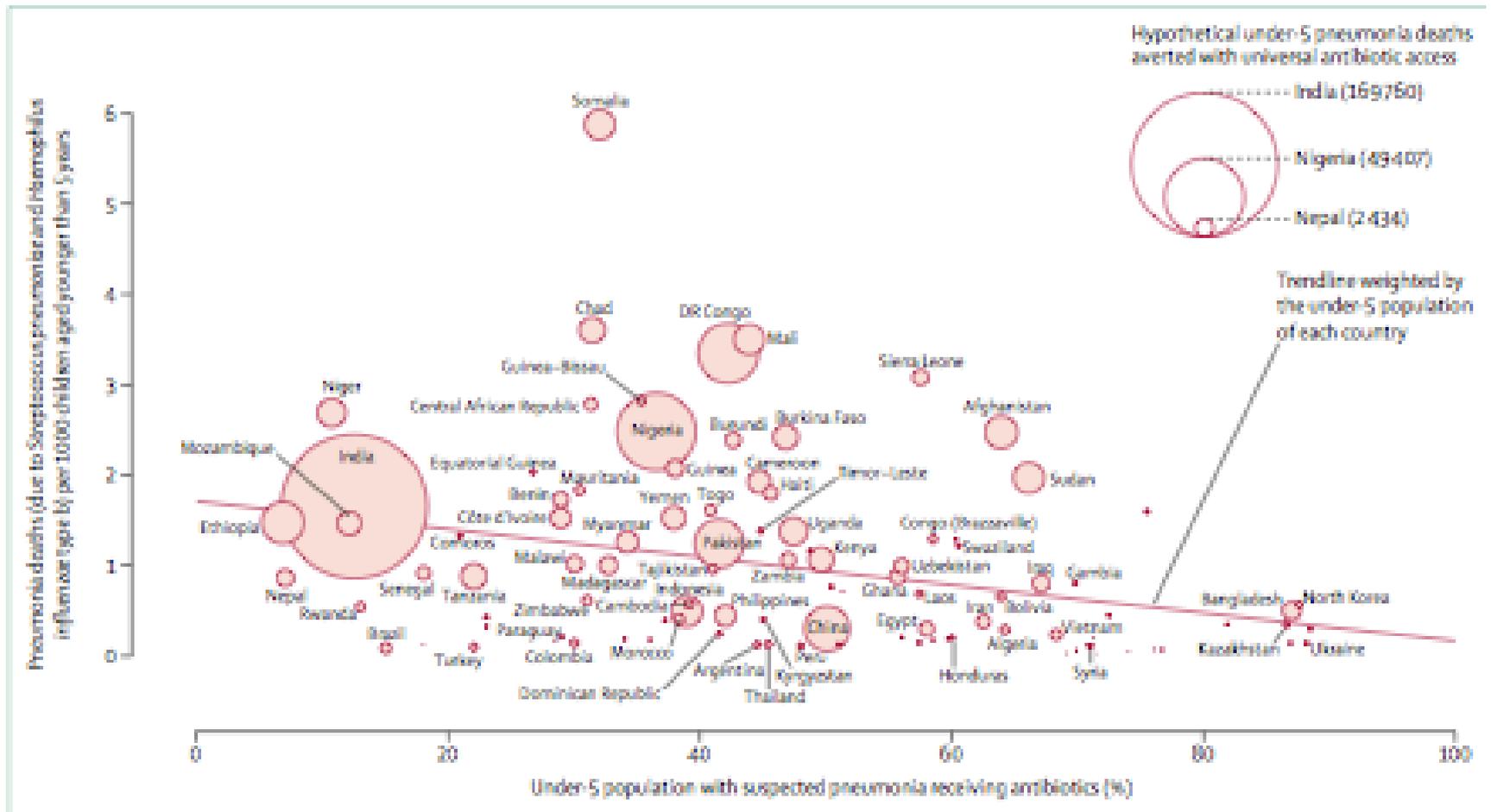
Trend degenza media e peso medio
(Attività per Acuti in Regime Ordinario)



2

Modificazioni del consumo di antibiotici

Accesso all'antibiotico per polmonite (età <5 anni)



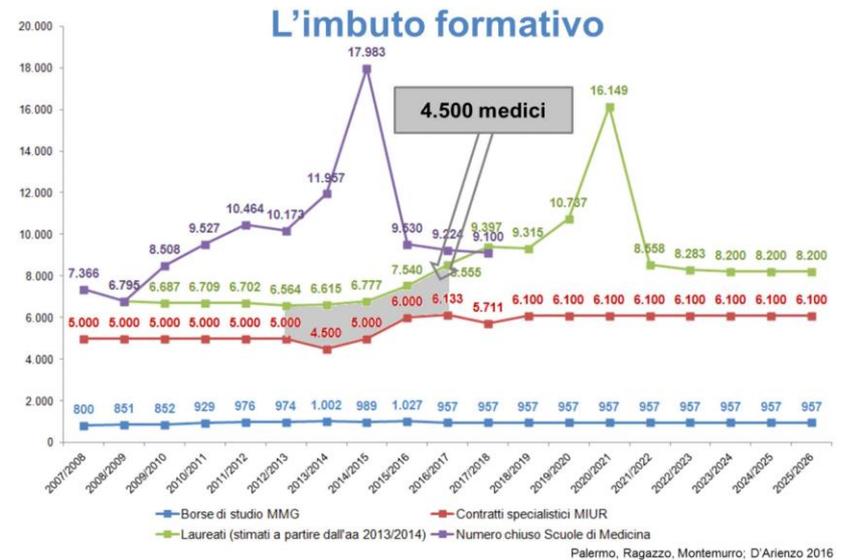
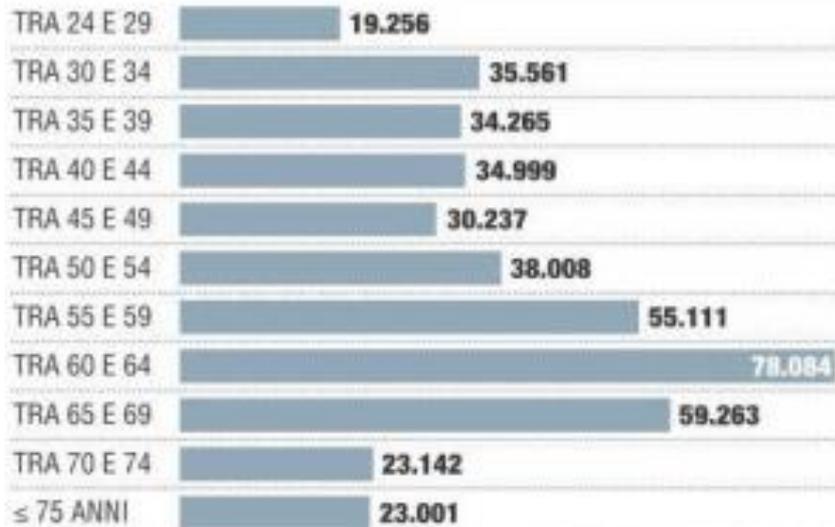
4

Altri fattori

Carenza di medici e specialisti in Italia

I MEDICI IN ITALIA PER FASCIA D'ETÀ

Dati 2017



Il riscaldamento globale

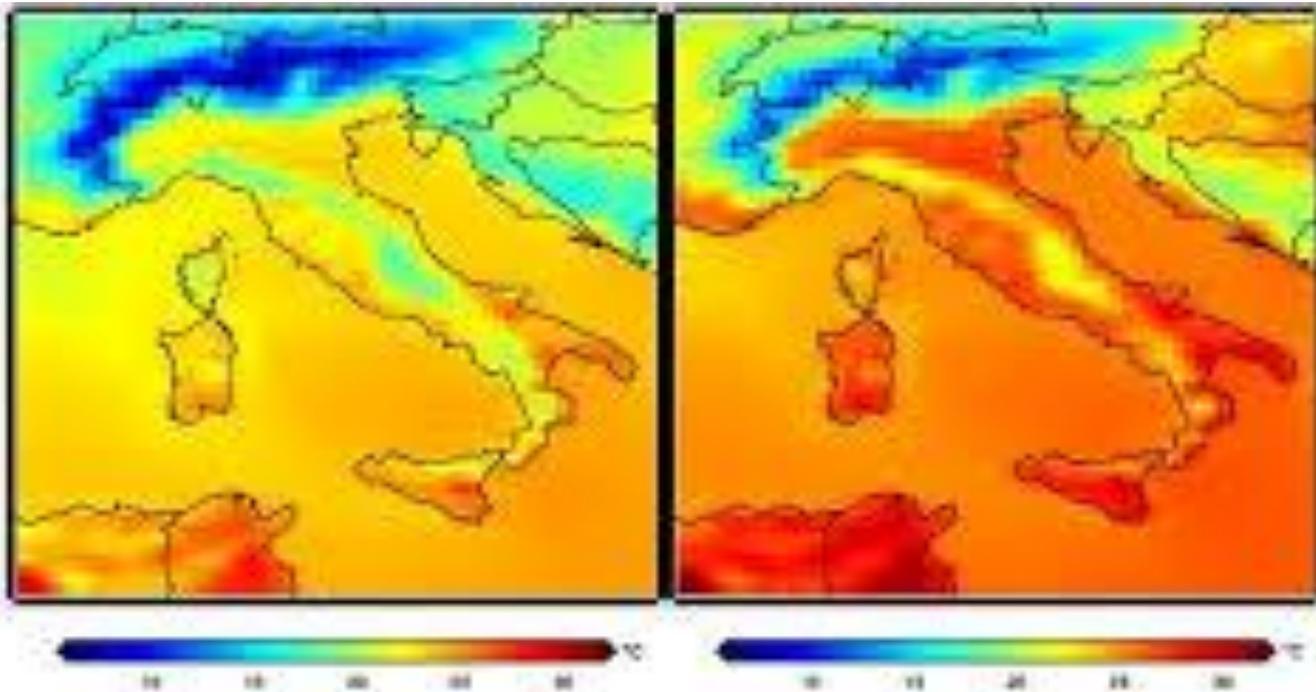
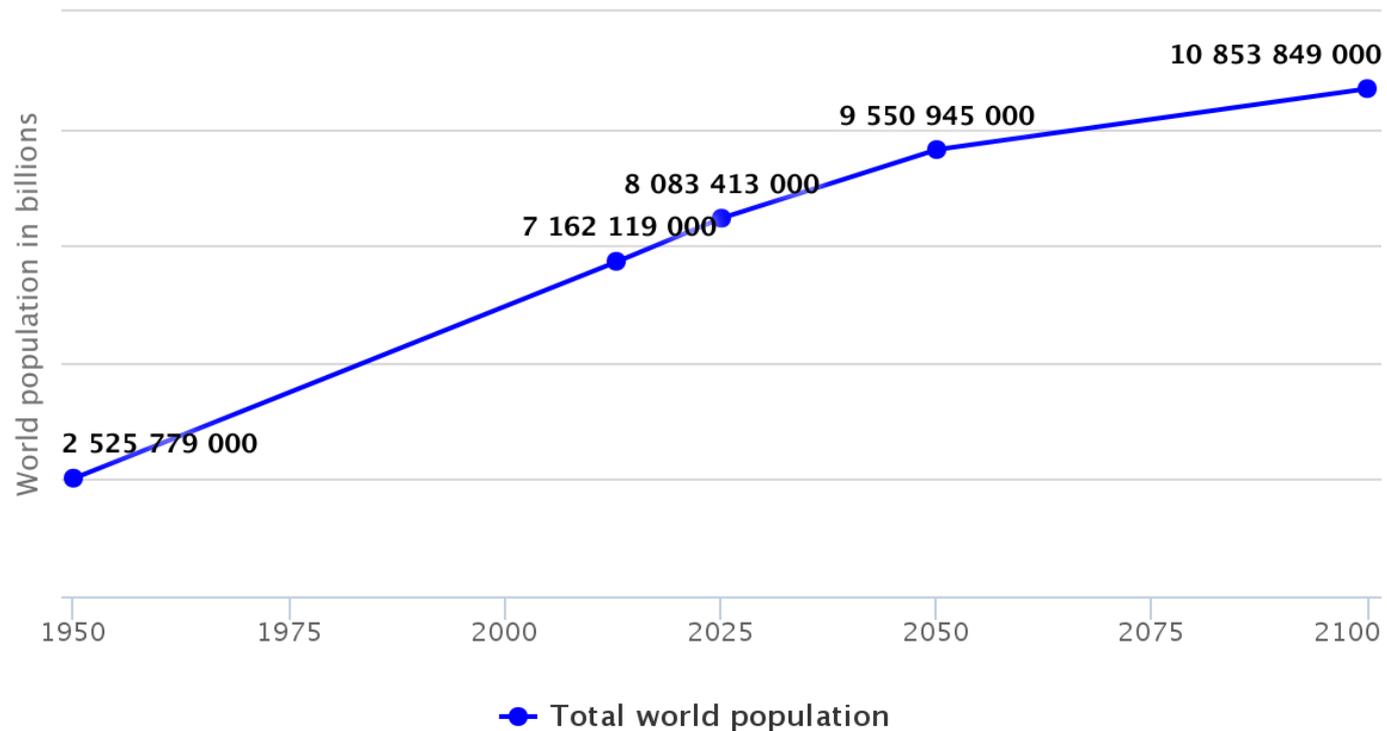


Figura 1: Simulazioni di temperatura media estiva presente (1979-2008) e futura (2039-2068) preparate da ISAC-CNR con il modello di clima globale EC-Earth nello scenario RCP 8.5 (risoluzione 25 km).

La popolazione mondiale

The changing world population over 150 years

Source: UN



Highcharts.com

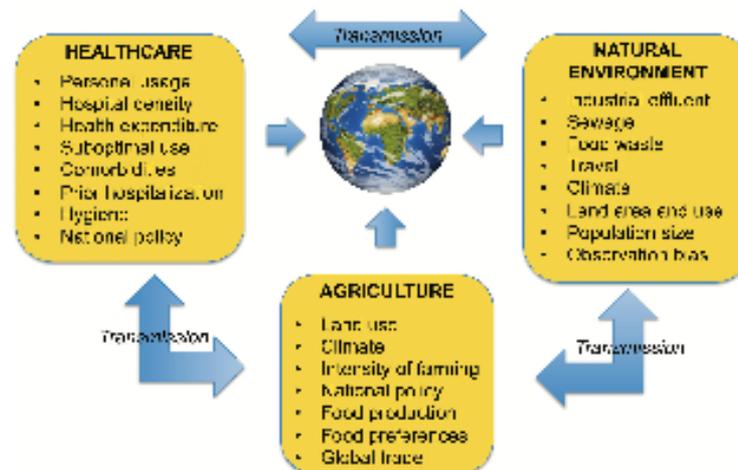
Addressing the Unknowns of Antimicrobial Resistance: Quantifying and Mapping the Drivers of Burden

Gwenan M. Knight,¹ Ceire Costelloe,¹ Kris A. Murray,^{2,3} Julie V. Robotham,^{1,4,5} Rifat Atun,^{6,7} and Alison H. Holmes^{1,8}

- Costruzione di una mappa dei sistemi globali: il sistema internazionale
 - Mappa a struttura flessibile
 - Definizioni comuni
 - Usare la struttura per ottenere il consenso
- Sintesi dei dati: i singoli Paesi
 - Sintesi di vecchi e nuovi dati
 - Confronto fra i Paesi per identificare i dati mancanti
 - Mappe come strumenti di visualizzazione del controllo dell'AMR
- Analisi dei modelli: la comunità scientifica sviluppa strumenti
 - Integrazione delle informazioni di diversa provenienza
 - Considerare ambienti e correlazioni diverse ed il comportamento stocastico
 - Fare previsioni sulla AMR

Addressing the Unknowns of Antimicrobial Resistance: Quantifying and Mapping the Drivers of Burden

Gwenan M. Knight,¹ Ceire Costelloe,¹ Kris A. Murray,^{2,3} Julie V. Robotham,^{1,4,5} Rifat Atun,^{6,7} and Alison H. Holmes^{1,8}



In quale contesto formale siamo?



Siamo tutti strettamente legati

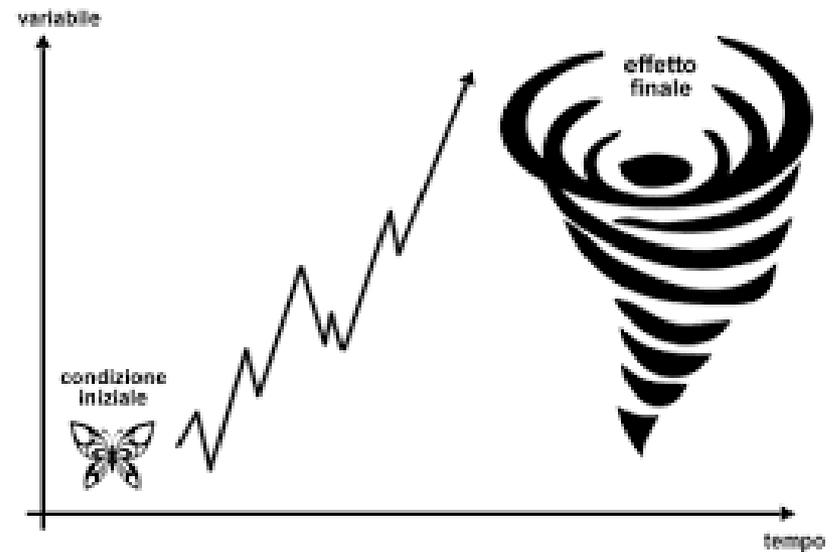
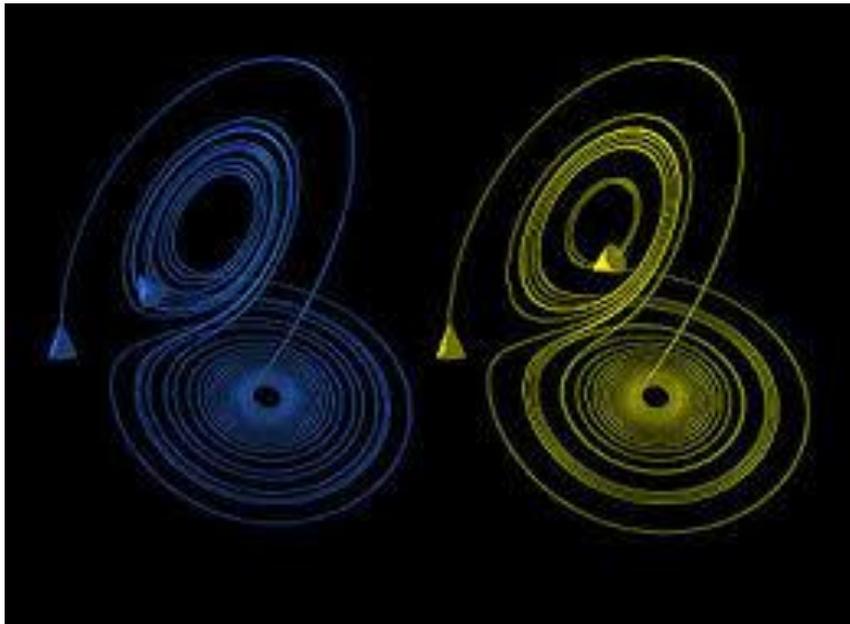


Vasi comunicanti



L'effetto farfalla

Teoria del caos



Garantire un'opportunità di cura, a chi?

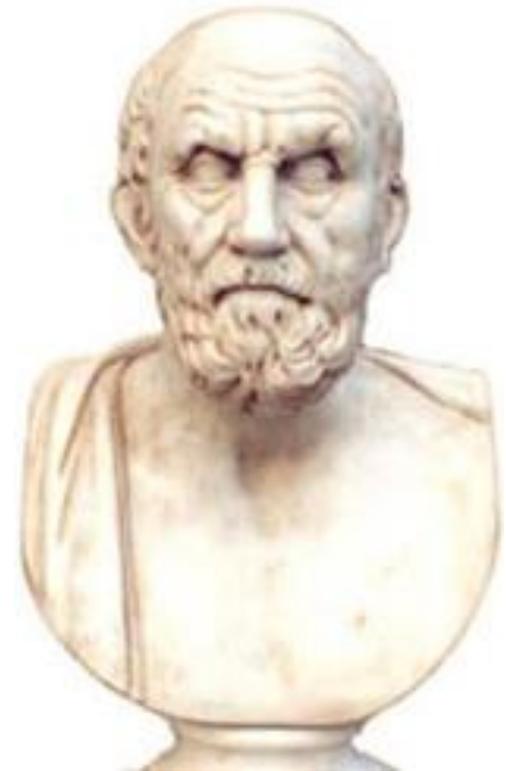
Qual è la mia prospettiva?

- Il mio reparto
- Il mio ospedale
- La mia azienda
- La mia provincia
- La mia regione
- Il mio Paese
- Il mio continente
- Il mio pianeta

Possiamo garantire una cura delle infezioni?

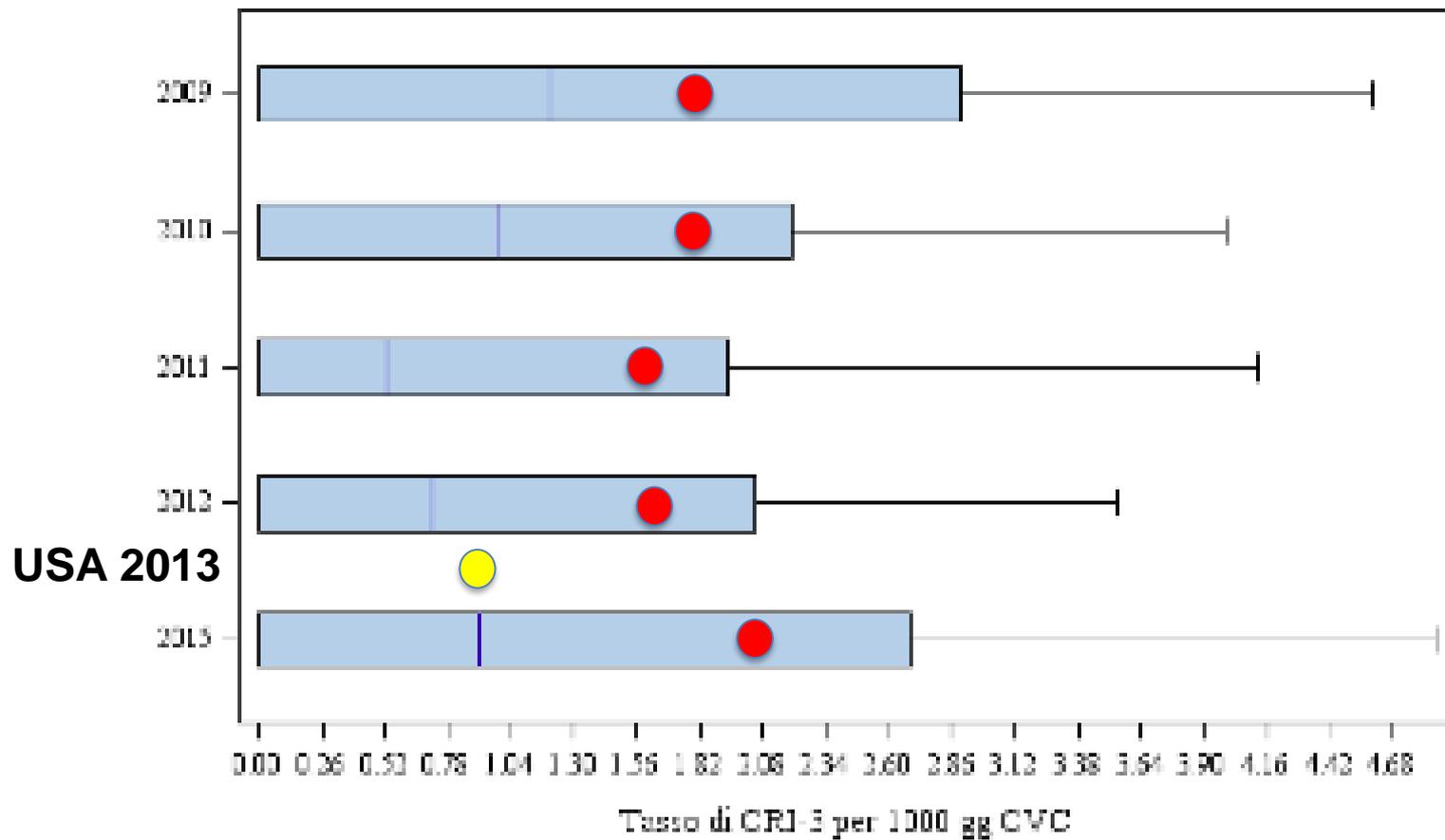
Possiamo fare di meglio: possiamo
prevenirle

aiutare, o
almeno non
recar
danno.



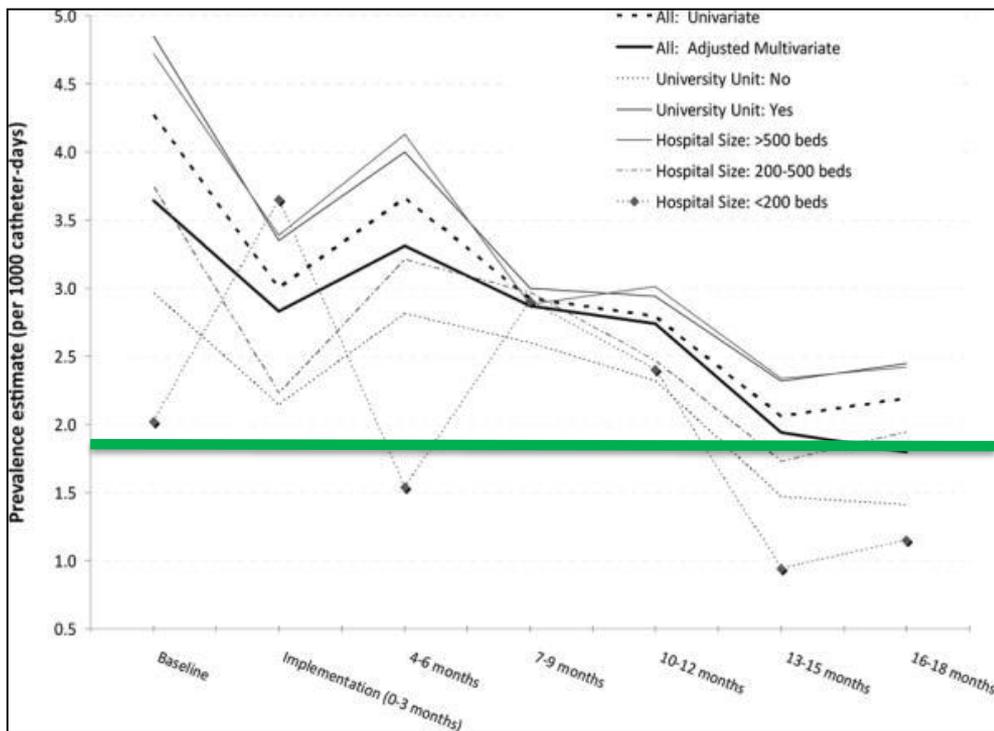
*Ippocrate di Cos, Epidemie,
Libro I, Sezione V*

Incidenza di batteriemie in terapia intensiva – Italia SITIN 2009 –2015



Casi per 1000 giorni catetere

Morsillo F, Report SITIN 2017



Dato Italiano (GIViTi)

2010	2015
1,8	1,8

Period	ICUs	Events		Catheter-days		Median Incidence Rate*
		n	Median (IQR) ^b	n	Median (IQR)	Median (IQR)
Baseline	106	334	2 (0-5)	78,092	582 (308-1,022)	3.07 (0.00-5.35)
Implementation (0-3 mo)	192	379	1 (0-3)	128,060	529 (280-930)	2.08 (0.00-3.71)
4-6 mo	192	454	1 (0-3)	125,834	492 (282-903)	2.50 (0.00-4.71)
7-9 mo	181	336	1 (0-3)	117,526	514 (277-894)	2.06 (0.00-4.07)
10-12 mo	162	308	1 (0-3)	112,719	519 (323-961)	2.10 (0.00-3.80)
13-15 mo	147	191	1 (0-2)	93,234	473 (253-876)	0.86 (0.00-2.58)
16-18 mo	100	110	1 (0-2)	51,983	370 (222-702)	1.12 (0.00-3.24)

IQR = interquartile range.
^aPer 1,000 catheter-days.
^bIQR = 25th-75th percentile.

Sistema di sorveglianza USA



HEALTHCARE
ASSOCIATED
INFECTIONS
PROGRESS



STATE HAI PROGRESS

ACUTE CARE HOSPITALS

LEGEND

-  2014 state SIR is significantly lower (better) than comparison group in column header
-  or  Change in 2014 state SIR compared to group in column header is not statistically significant
-  2014 state SIR is significantly higher (worse) than comparison group in column header
-  2014 state SIR cannot be calculated
-  Yes

STATE	CLABSIs: CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTIONS							
	2014 Reporting and Validation					2014 State CLABSI SIR		
	# Hospitals Reporting to NHSN [†]	State Reporting Mandate	State HD [‡] has Access to Data	Data Checked for Quality [§]	Additional In-Depth Data Review	vs. 2013 State SIR	vs. 2014 Nat'l SIR	vs. 2008 Nat'l Baseline
Alabama	70	✓	✓	✓	✓	↑	↑	↓
Alaska	11		✓			↑	↑	↓
Arizona	60		✓			↓	↑	↓
Arkansas	47	✓	✓	✓	✓	↑	↑	↓
California	358	✓	✓	✓	✓	↓	↑	↓
Colorado	53	✓	✓	✓	✓	↓	↓	↓
Connecticut	31	✓	✓	✓		↓	↓	↓
D.C.	8	✓	✓	✓		↓	↑	↓
Delaware	8	✓	✓	✓		↓	↑	↓
Florida	194					↓	↑	↓
Georgia	108	✓	✓			↓	↑	↓
Hawaii	16	✓	✓	✓		↓	↓	↓



NATIONAL

ACUTE CARE HOSPITALS



Healthcare-associated infections (HAIs) are infections patients can get while receiving medical treatment in a healthcare facility. Working toward the elimination of HAIs is a CDC priority. The standardized infection ratio (SIR) is a summary statistic that can be used to track HAI prevention progress over time; lower SIRs are better. The infection data are reported to CDC's National Healthcare Safety Network (NHSN). HAI data for nearly all U.S. hospitals are published on the Hospital Compare website. This report is based on 2014 data, published in 2016.

CLABSIs ↓ 50% LOWER COMPARED TO NAT'L BASELINE*

CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTIONS

When a tube is placed in a large vein and not put in correctly or kept clean, it can become a way for germs to enter the body and cause deadly infections in the blood.

- U.S. hospitals reported a significant decrease in CLABSIs between 2013 and 2014.

10% Among the 2,442 hospitals in U.S. with enough data to calculate an SIR, 10% had an SIR significantly higher (worse) than 0.50, the value of the national SIR.

CAUTIs 0% NO CHANGE COMPARED TO NAT'L BASELINE

CATHETER-ASSOCIATED URINARY TRACT INFECTIONS

When a urinary catheter is not put in correctly, not kept clean, or left in a patient for too long, germs can travel through the catheter and infect the bladder and kidneys.

- U.S. hospitals reported a significant decrease in CAUTIs between 2013 and 2014.

12% Among the 2,880 U.S. hospitals with enough data to calculate an SIR, 12% had an SIR significantly higher (worse) than 1.00, the value of the national SIR.

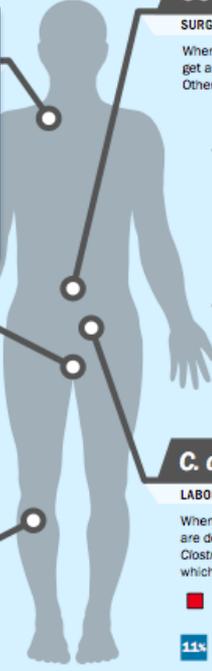
MRSA Bacteremia ↓ 13% LOWER COMPARED TO NAT'L BASELINE*

LABORATORY IDENTIFIED HOSPITAL-ONSET BLOODSTREAM INFECTIONS

Methicillin-resistant *Staphylococcus aureus* (MRSA) is bacteria usually spread by contaminated hands. In a healthcare setting, such as a hospital, MRSA can cause serious bloodstream infections.

- U.S. hospitals reported a significant decrease in MRSA bacteremia between 2013 and 2014.

8% Among the 2,042 U.S. hospitals with enough data to calculate an SIR, 8% had an SIR significantly higher (worse) than 0.87, the value of the national SIR.



SSIs

SURGICAL SITE INFECTIONS See pages 3-5 for additional procedures

When germs get into an area where surgery is or was performed, patients can get a **surgical site infection**. Sometimes these infections involve only the skin. Other SSIs can involve tissues under the skin, organs, or implanted material.

SSI: Abdominal Hysterectomy ↓ 17% LOWER COMPARED TO NAT'L BASELINE*

- U.S. hospitals reported no significant change in SSIs related to abdominal hysterectomy surgery between 2013 and 2014.

6% Among the 794 U.S. hospitals with enough data to calculate an SIR, 6% had an SIR significantly higher (worse) than 0.83, the value of the national SIR.

SSI: Colon Surgery ↓ 2% LOWER COMPARED TO NAT'L BASELINE*

- U.S. hospitals reported a significant increase in SSIs related to colon surgery between 2013 and 2014.

8% Among the 2,051 U.S. hospitals with enough data to calculate an SIR, 8% had an SIR significantly higher (worse) than 0.98, the value of the national SIR.

C. difficile Infections

LABORATORY IDENTIFIED HOSPITAL-ONSET C. DIFFICILE INFECTIONS

When a person takes antibiotics, good bacteria that protect against infection are destroyed for several months. During this time, patients can get sick from *Clostridium difficile* (*C. difficile*), bacteria that cause potentially deadly diarrhea, which can be spread in healthcare settings.

- U.S. hospitals reported a significant increase in *C. difficile* infections between 2013 and 2014.

11% Among the 3,554 U.S. hospitals with enough data to calculate an SIR, 11% had an SIR significantly higher (worse) than 0.92, the value of the national SIR.

* Statistically significant



Containment of a Country-wide Outbreak of Carbapenem-Resistant *Klebsiella pneumoniae* in Israeli Hospitals via a Nationally Implemented Intervention

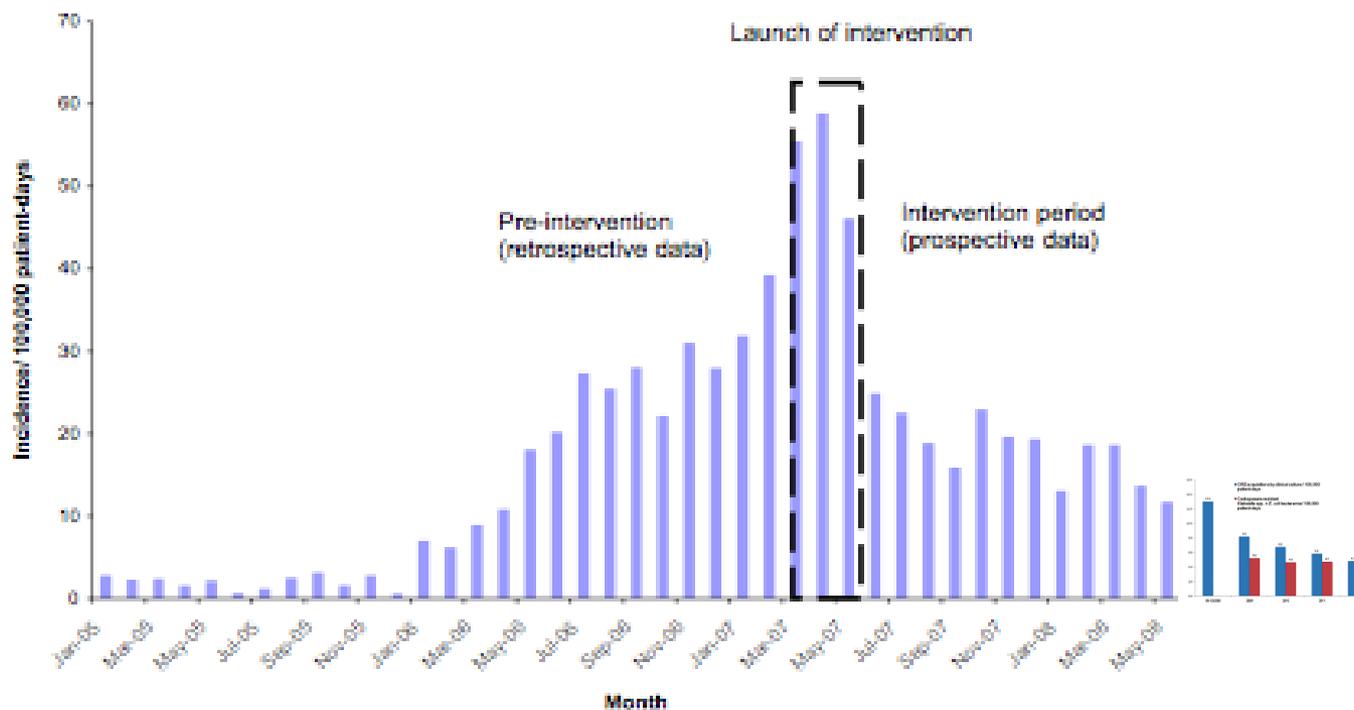
An Ongoing National Intervention to Contain the Spread of Carbapenem-Resistant Enterobacteriaceae

Mitchell J. Schwaber and Yehuda Carmeli
National Center for Infection Control, Tel Aviv, Israel

Mitchell J. Schwaber,¹ Boaz Lev,² Avi Israeli,² Ester Solter,¹ Gill Smollan,¹ Bina Rubinovitch,¹ Itamar Shalit,¹ Yehuda Carmeli,¹ and the Israel Carbapenem-Resistant Enterobacteriaceae Working Group*

¹National Center for Infection Control, Israel Ministry of Health, Tel Aviv, and ²Israel Ministry of Health, Jerusalem, Israel

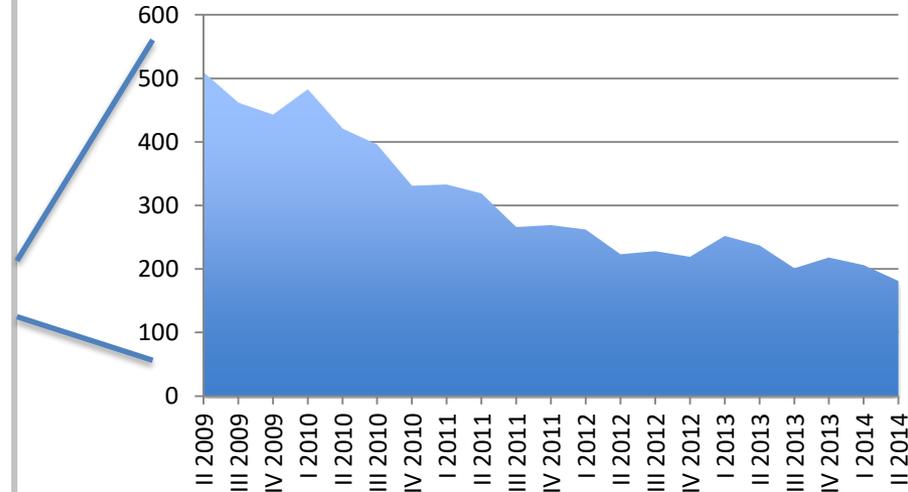
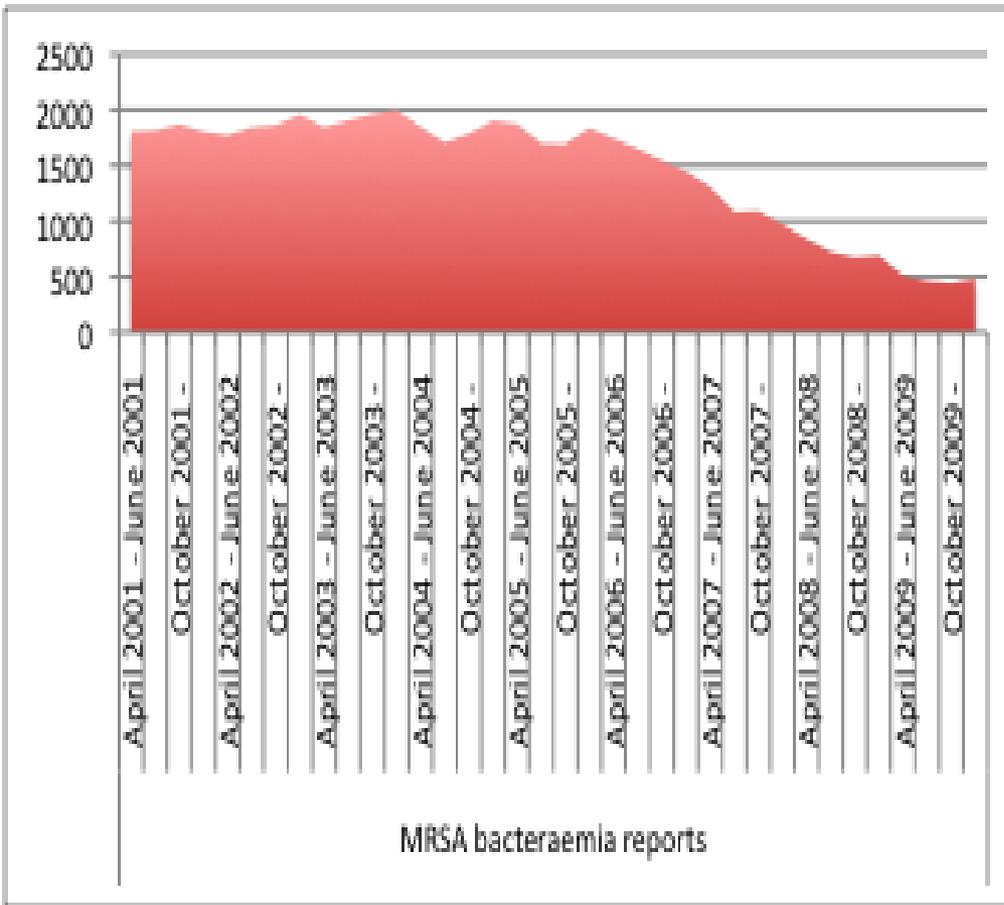
2007 – 2012: -91,3%



L'esperienza inglese batteriemie da MRSA

2001 - 2009

2009 - 2015



**2004 – 2015: -
91%**

Coordinated approach needed

“Although improvements within independent facilities are necessary, they might not be sufficient to reduce spread” *CDC, MMWR 2015*

FIGURE 2. Projected regional prevalence of carbapenem-resistant *Enterobacteriaceae* (CRE) over a 5-year period under three different intervention scenarios — 10-facility model, United States*

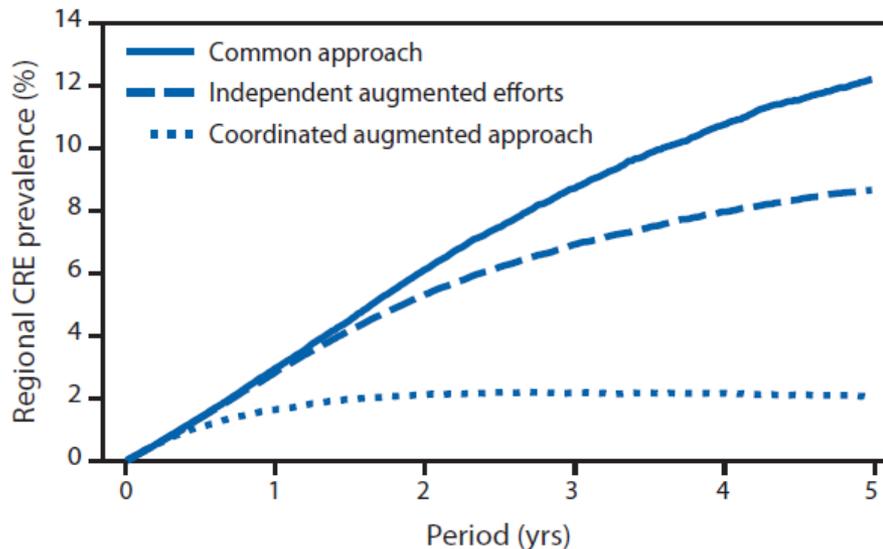
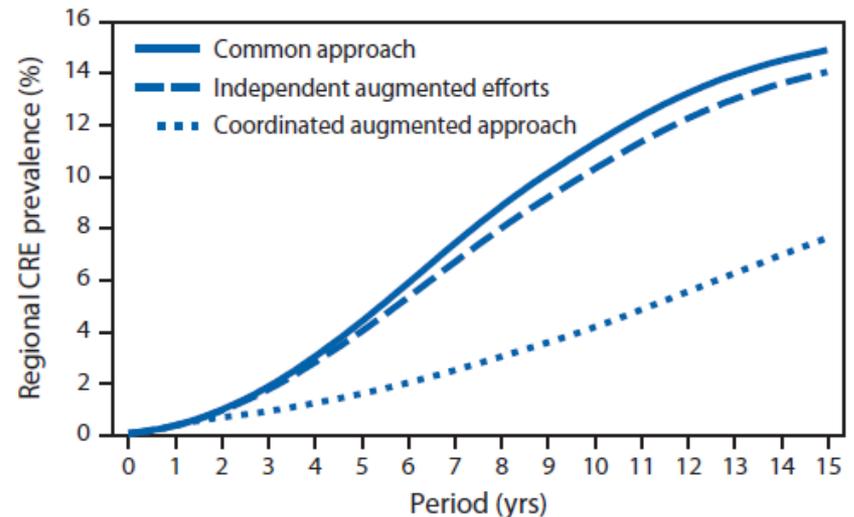


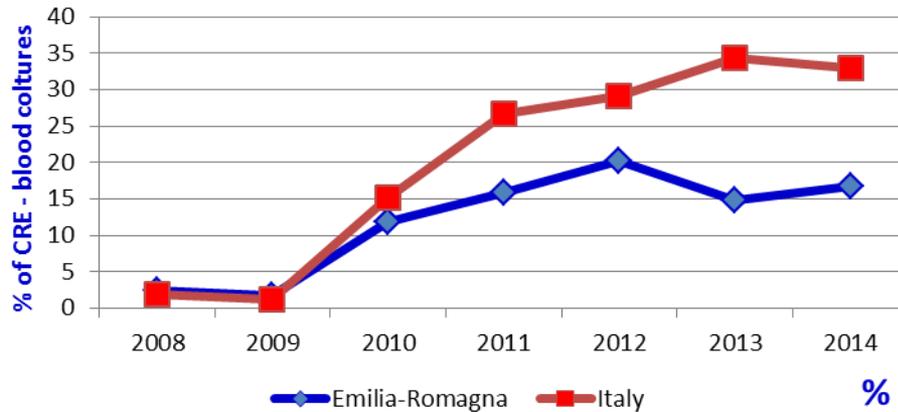
FIGURE 3. Projected countywide prevalence of carbapenem-resistant *Enterobacteriaceae* (CRE) over a 15-year period under three different intervention scenarios — 102-facility model, Orange County, California*



* Additional information available at <http://www.cdc.gov/drugresistance/resources/publications.html>. A video of the model simulations is available at <http://www.cdc.gov/drugresistance/resources/videos.html>.

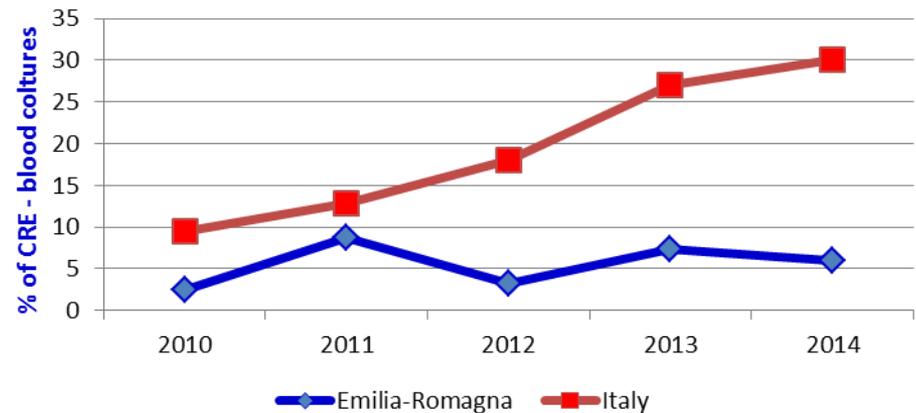
Emilia-Romagna e Italia

% CRE bacteremias, 2008-2014 Emilia-Romagna vs Italy



Emilia-Romagna: regional surveillance database
Italy: EARS-net data, ECDC

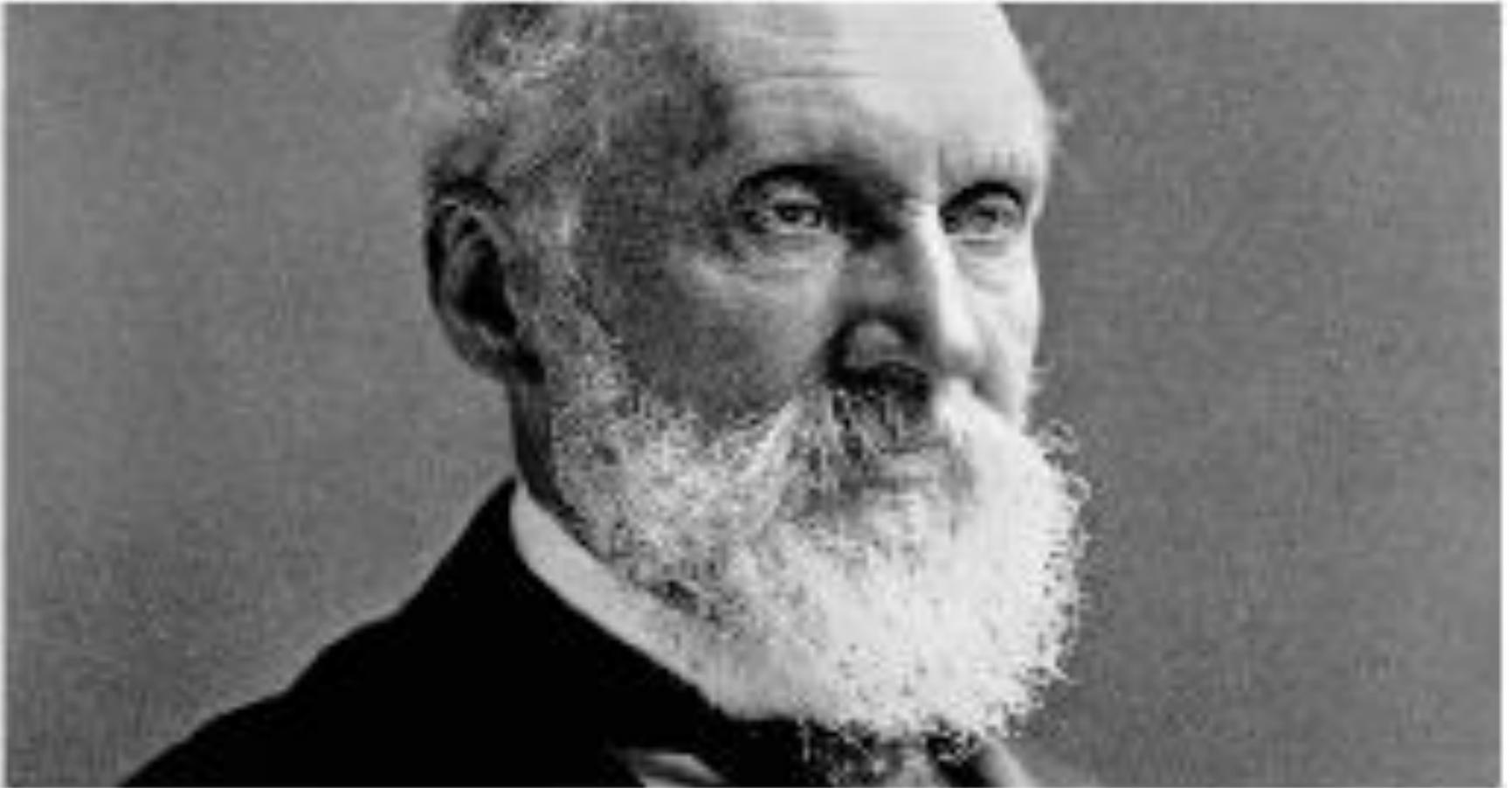
% colistin-R bacteremias 2010-2014, Emilia-Romagna vs Italy



Emilia-Romagna: regional surveillance database
Italy: Giacobbe DR et al, Clin Microb Infect 2015

Cortesia di ML

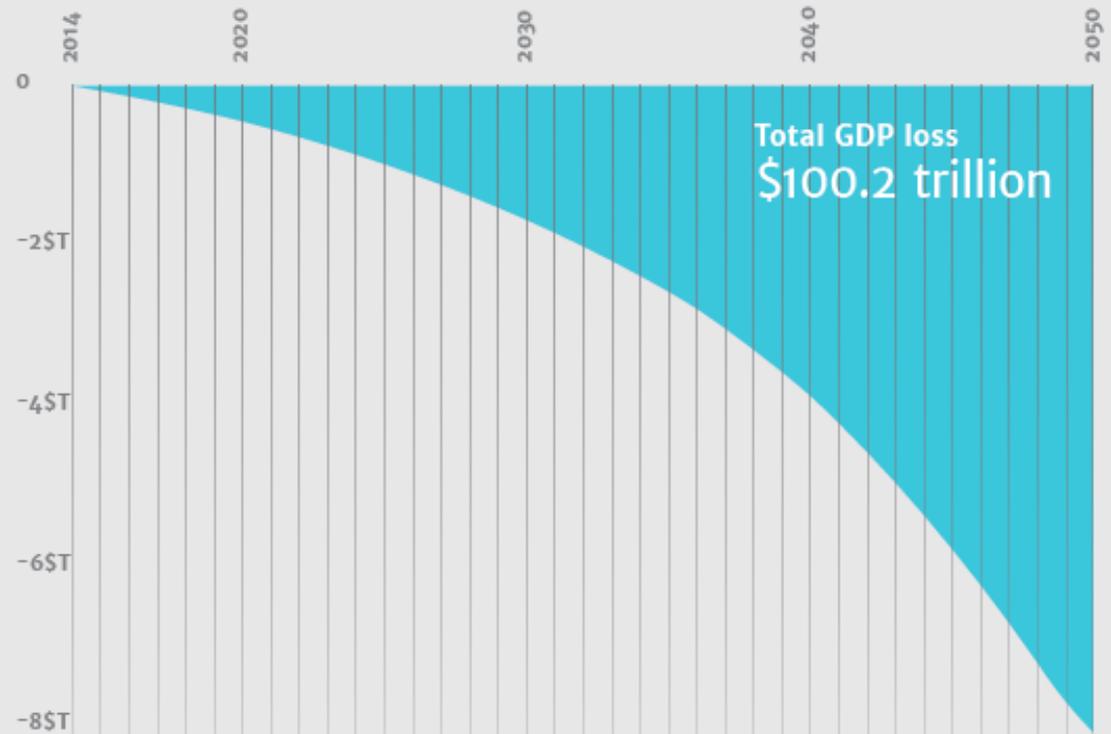
If you can not measure it, you can not improve it



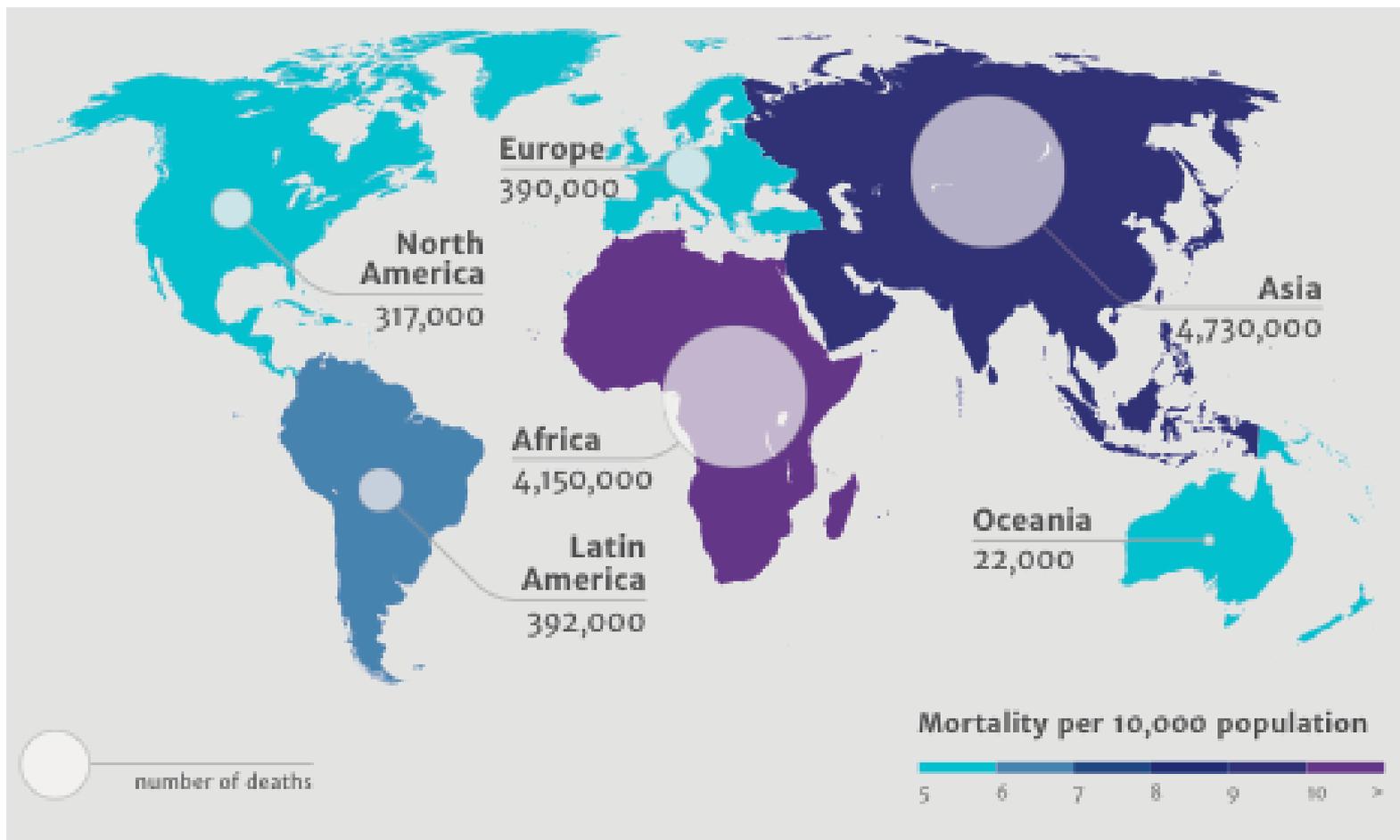
Lord Kelvin

Antimicrobial
Resistance:
Tackling a crisis
for the health and
wealth of nations

AMR's impact on World GDP in trillions of USD

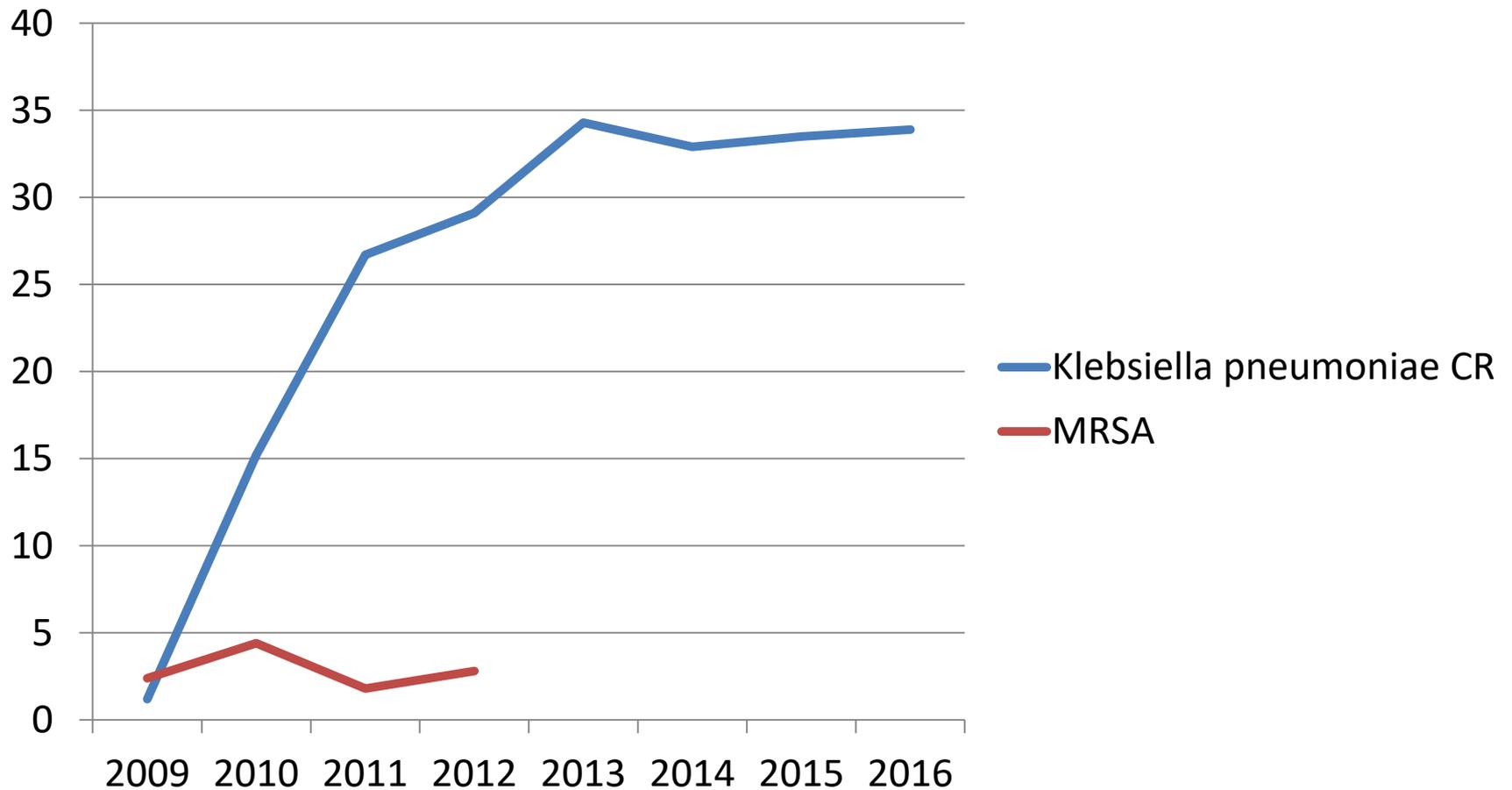


Antimicrobial
Resistance:
Tackling a crisis
for the health and
wealth of nations





Evoluzione delle principali resistenze in Italia 2009 - 2016





1

- Ministero

2

- Regioni

3

- Direzioni Generali
- Direzioni Mediche

4

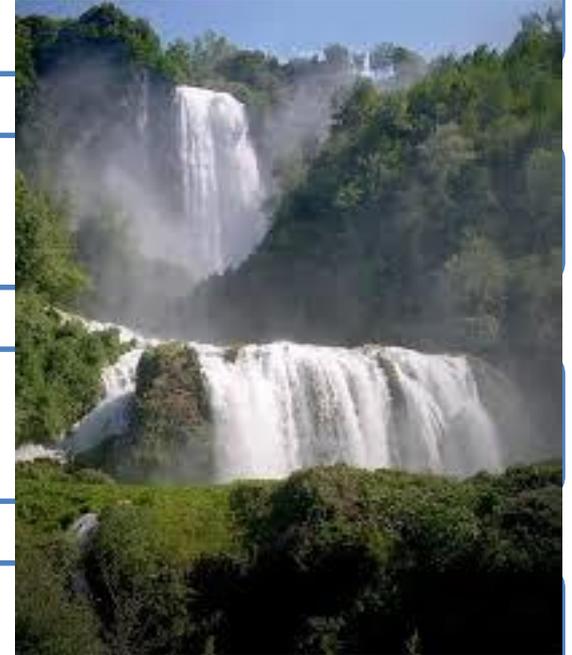
- CIO
- Rischio Clinico

5

- Rete dei Referenti di Reparti

6

- Personale dei Reparti e dei Servizi



Interventi
germe
specifici

Isolamento

Bundle dei device

Politica degli antibiotici

Igiene ambientale

Igiene delle mani

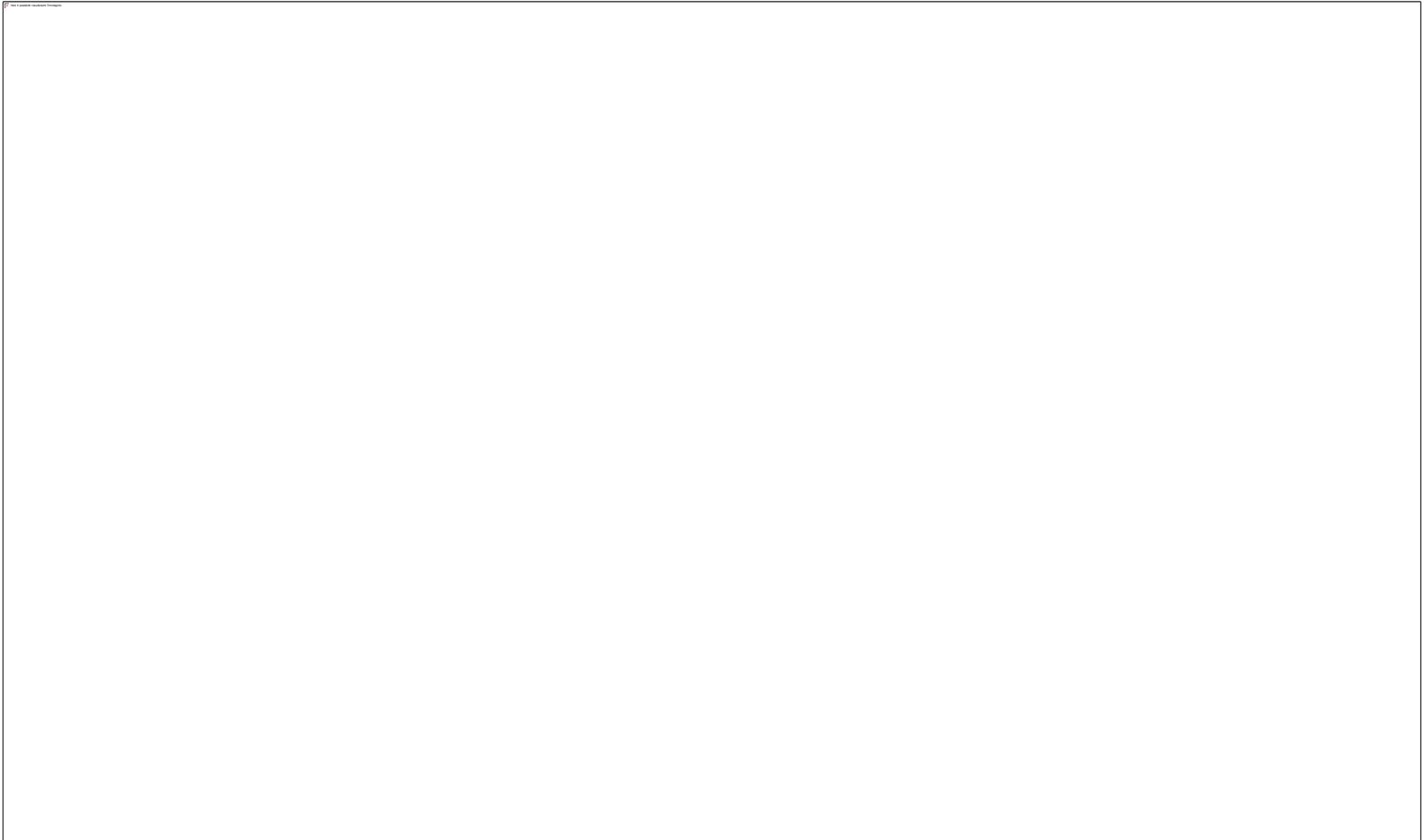
Sorveglianza

Educazione & formazione

Assetto organizzativo



Corso per neoassunti



Interventi
germe
specifici

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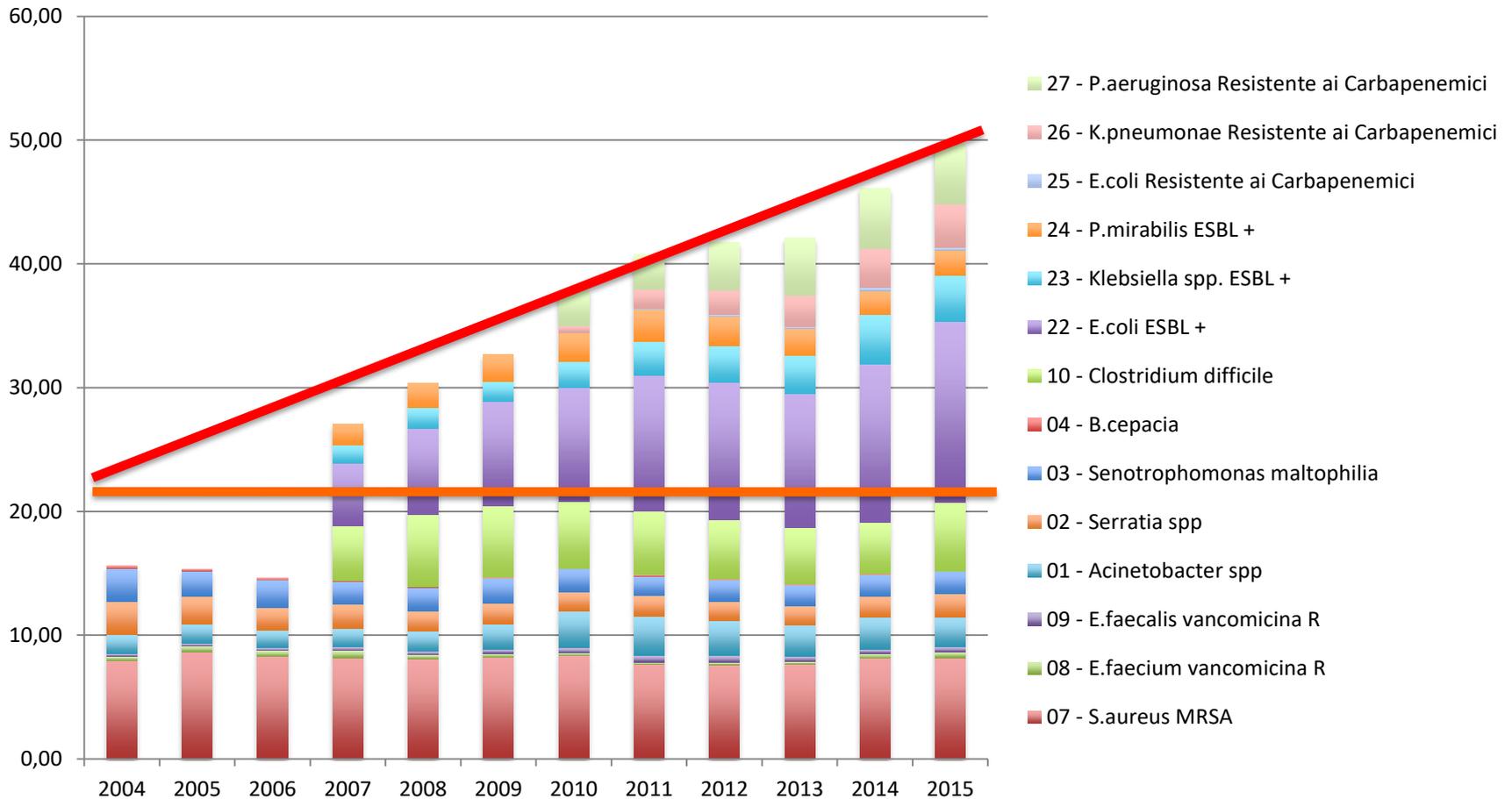
Assetto organizzativo



Isolati clinici di germi multiresistenti e difficili

Lombardia 1/1/2004 – 9/12/2015

Tasso per 1.000 ricoveri



The Italian national surgical site infection surveillance programme and its positive impact, 2009 to 2011

M Marchi^{1,2}, A Pan (apan@regione.emilia-romagna.it)^{1,2,3}, C Gagliotti¹, F Morsillo¹, M Parenti¹, D Resi^{1,4}, M L Moro¹, the Sorveglianza Nazionale Infezioni In Chirurgia (SNiCh) Study Group⁵

	Univariate analysis			Multivariate analysis ^a		
	OR	95% CI	p value	OR	95% CI	p value
Duration of operation^b						
Under 75th percentile	1	-	-	1	-	-
Over 75th percentile	1.93	1.74–2.15	<0.001	1.52	1.32–1.74	<0.001
ASA score						
<3	1	-	-	1	-	-
≥3	2.19	1.96–2.43	<0.001	1.42	1.22–1.65	<0.001
Wound class						
I	1	-	-	1	-	-
II	1.74	1.54–1.96	<0.001	1.36	1.08–1.72	<0.05
III	4.11	3.55–4.75	<0.001	1.71	1.29–2.26	<0.001
IV	6.81	5.61–8.21	<0.001	2.51	1.83–3.44	<0.001
Technique of operation						
Classic	1	-	-	1	-	-
Videoscopic	0.57	0.49–0.66	<0.001	0.49	0.40–0.61	<0.001
Hospital stay before operation						
<2 days	1	-	-	1	-	-
≥2 days	2.14	1.92–2.39	<0.001	1.22	1.05–1.41	<0.05
Sex						
Male	1	-	-	1	-	-
Female	0.72	0.65–0.80	<0.001	1.10	0.96–1.27	0.166
Age						
<65 years	1	-	-	1	-	-
≥65 years	1.70	1.54–1.87	<0.001	1.01	0.88–1.16	0.891
Urgent operation						
No	1	-	-	1	-	-
Years of continuous participation in the surveillance						
<2 years	1	-	-	1	-	-
≥2 years	0.60	0.53–0.68	<0.001	0.71	0.59–0.84	<0.001

Interventi
germe
specifici

Isolamento

Bundle dei device

Politica degli antibiotici

Igiene ambientale

Igiene delle mani

Sorveglianza

Educazione & formazione

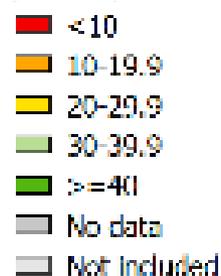
Assetto organizzativo



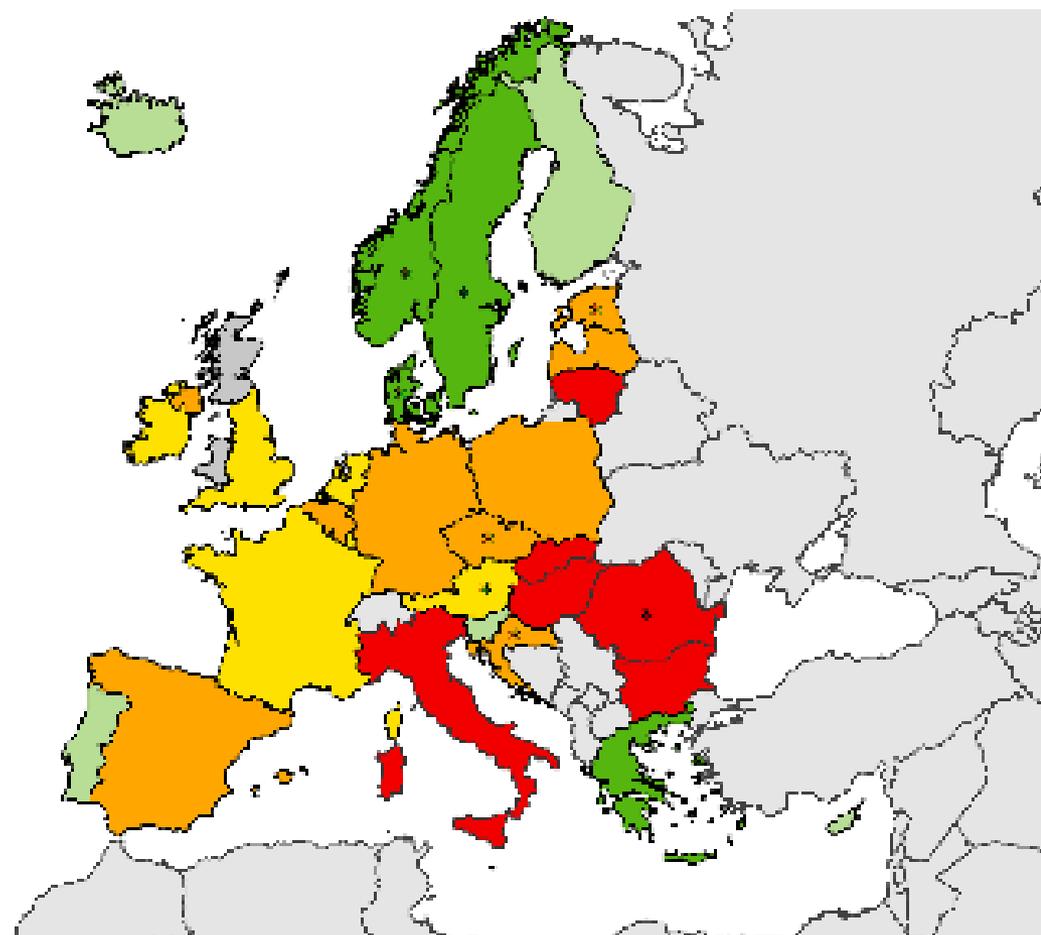
Igiene delle mani – Ospedali per acuti

Consumo di soluzione idroalcolica (L/1000 gg paz.)

Alcohol hand rub
consumption
(L/1000 patient days)



Non-visible countries



extra extra strong??



If you aren't totally clean, you are filthy.

Interventi
germe
specifici

Isolamento

Bundle dei device

Politica degli antibiotici

Igiene ambientale

Igiene delle mani

Sorveglianza

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Assetto organizzativo

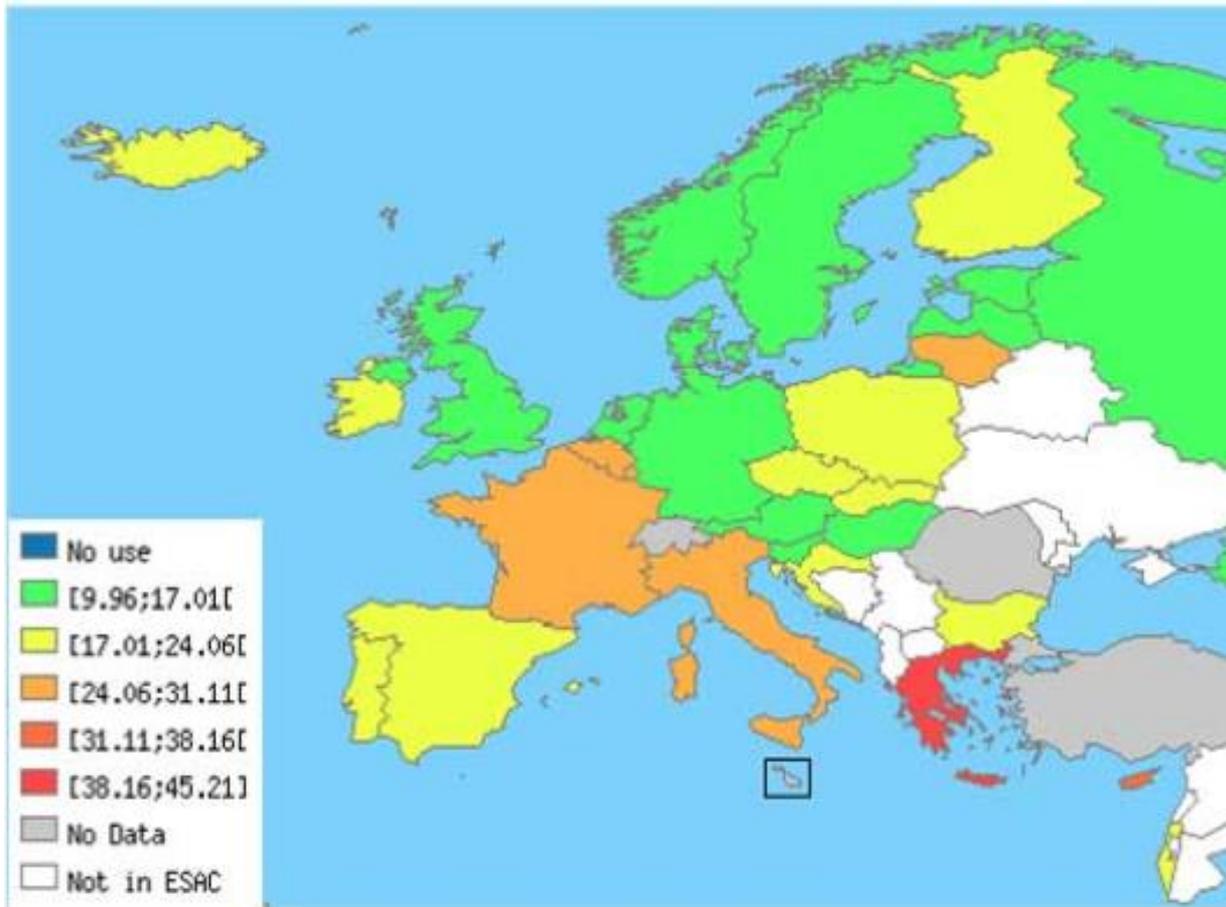


Contaminazione ambientale da VRE



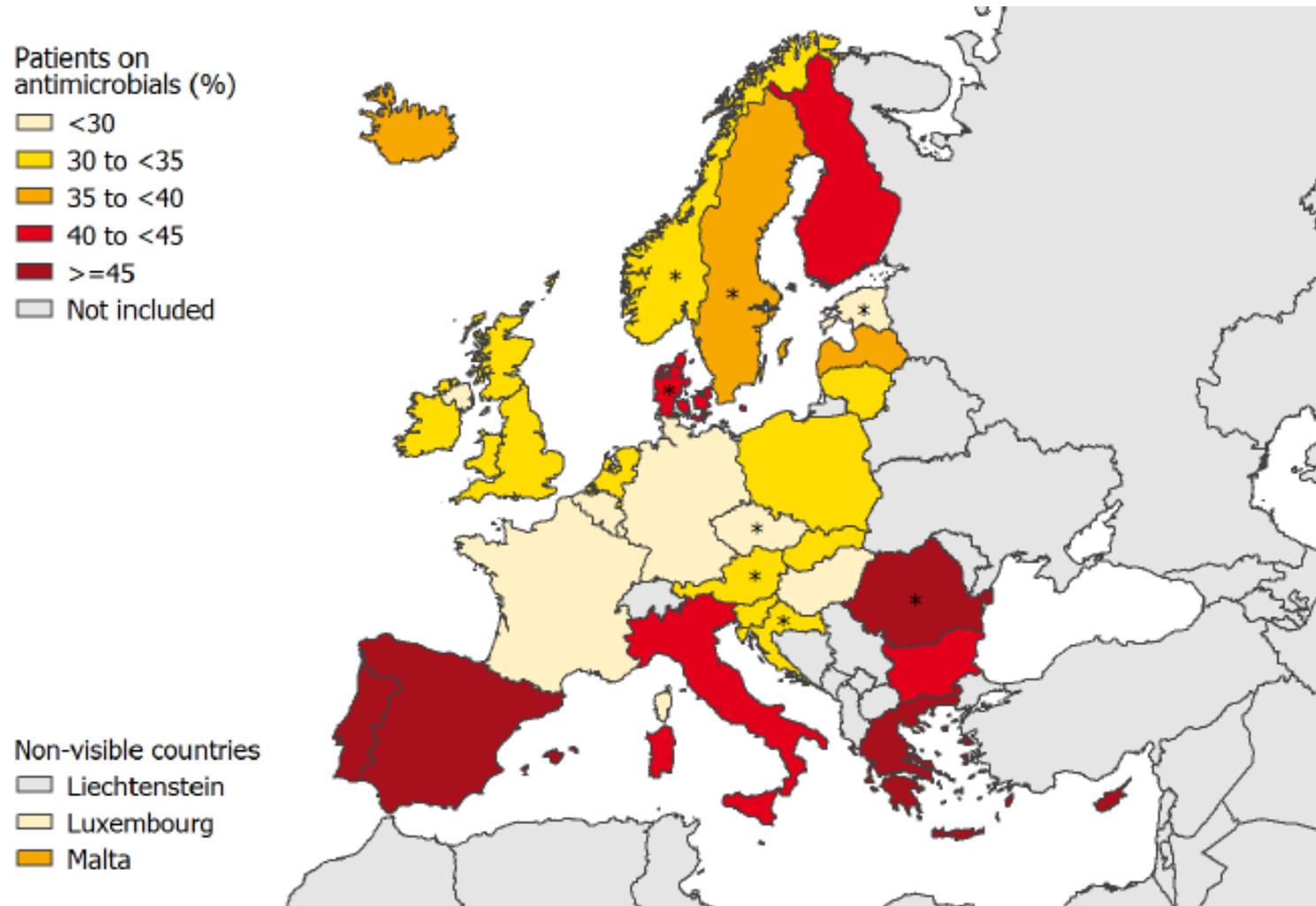


Consumo di antibiotici

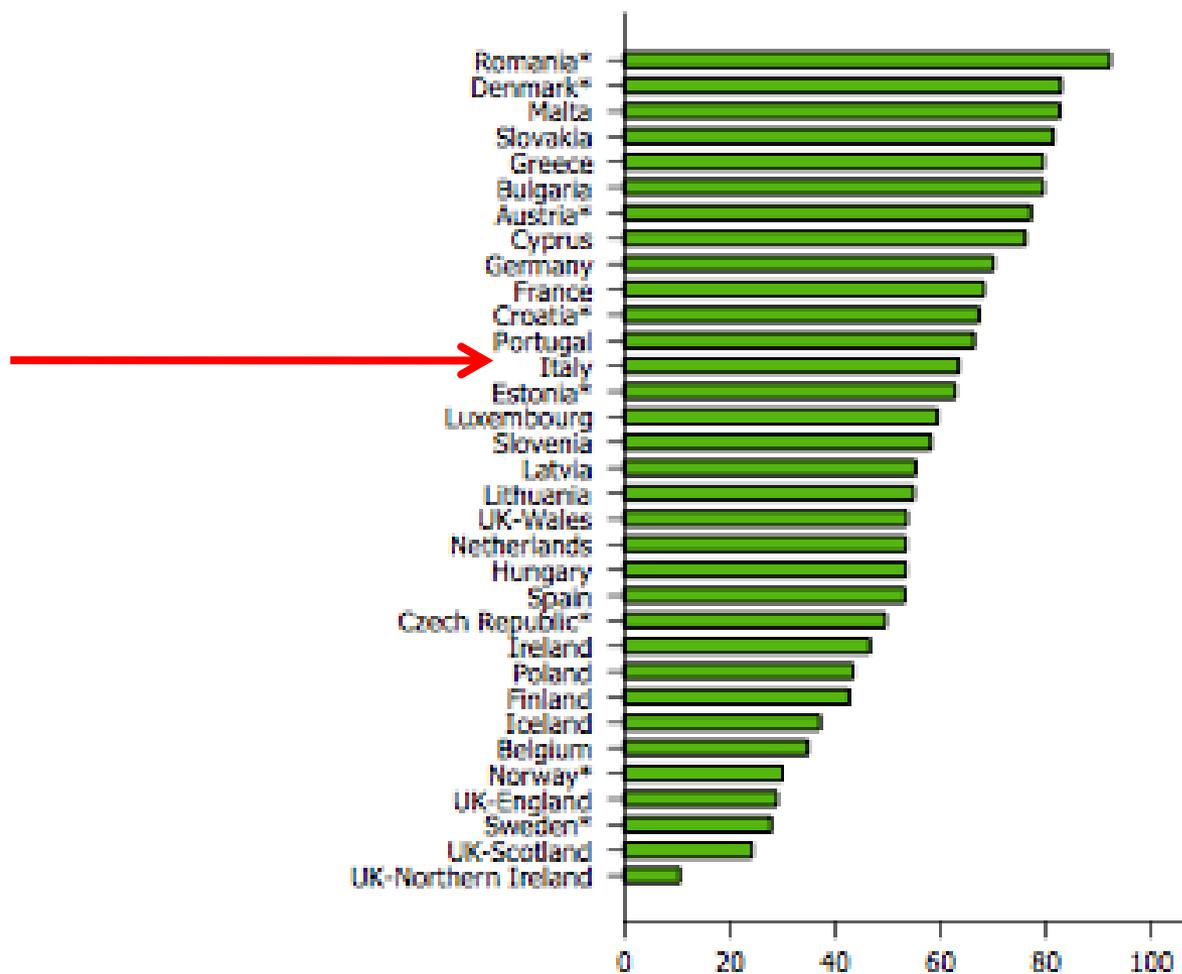


ESAC, 2010

Prevalenza nell'uso di antibiotici ECDC PPS 2011

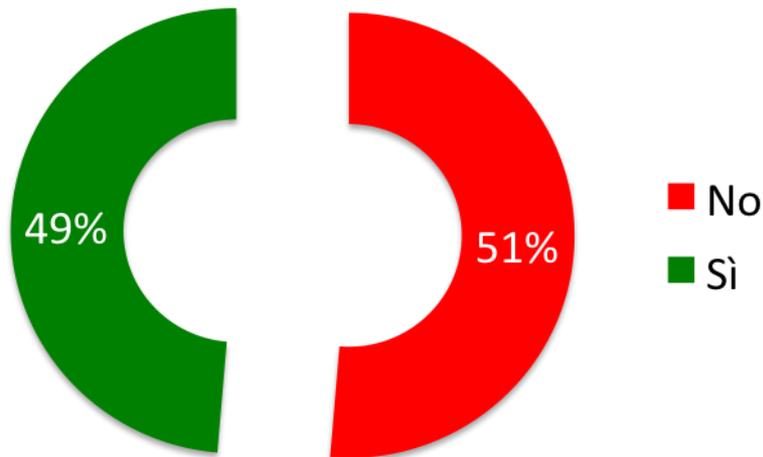


Antibiotico profilassi > 24 ore

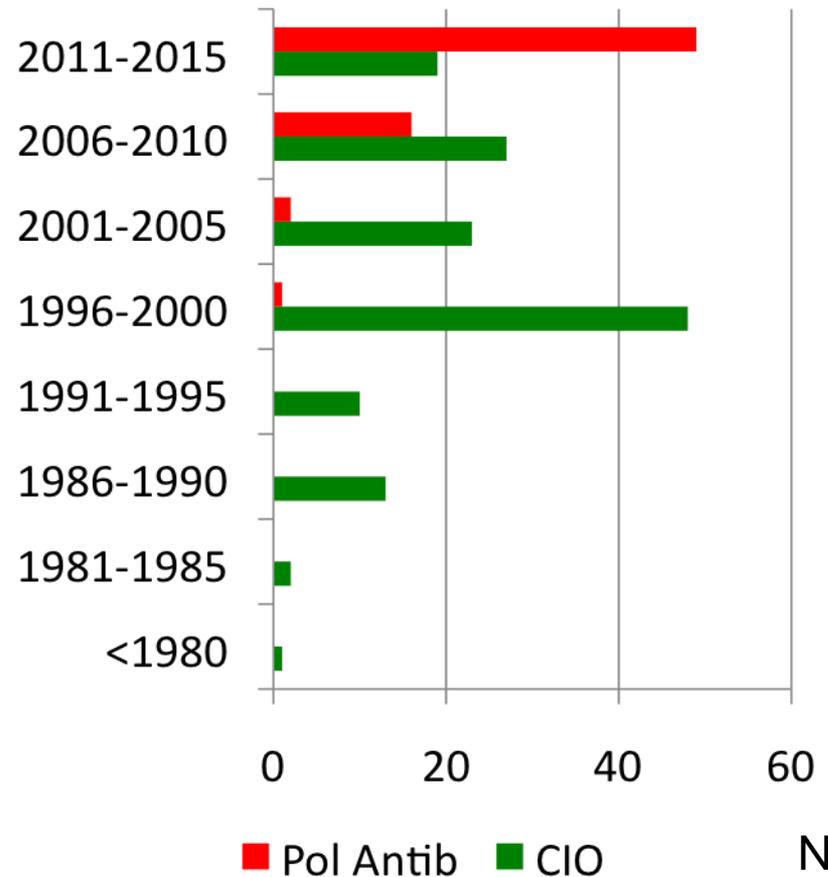


Organizzazione di sistema

Esiste gruppo di lavoro su antibiotici



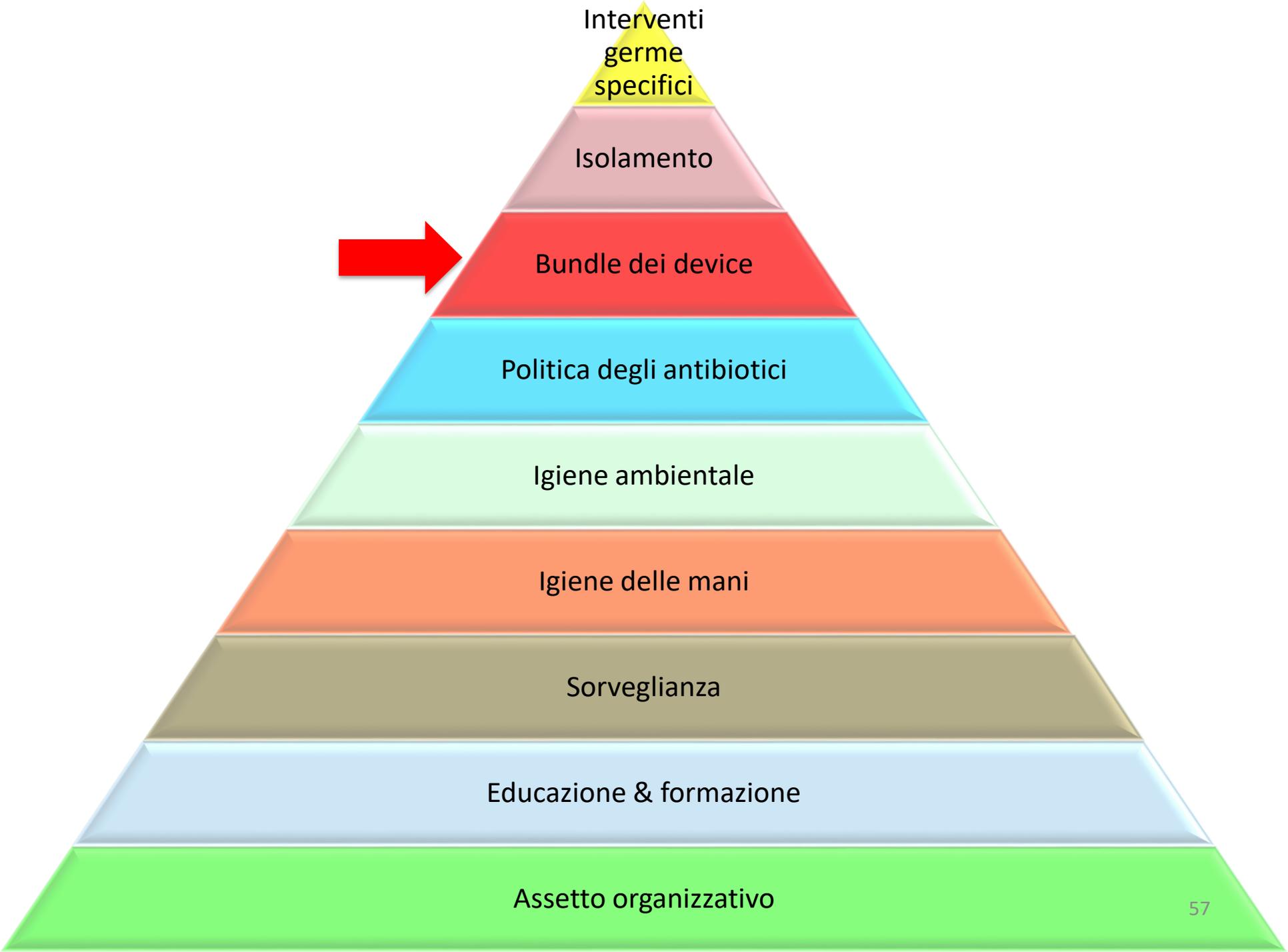
Anno di costituzione



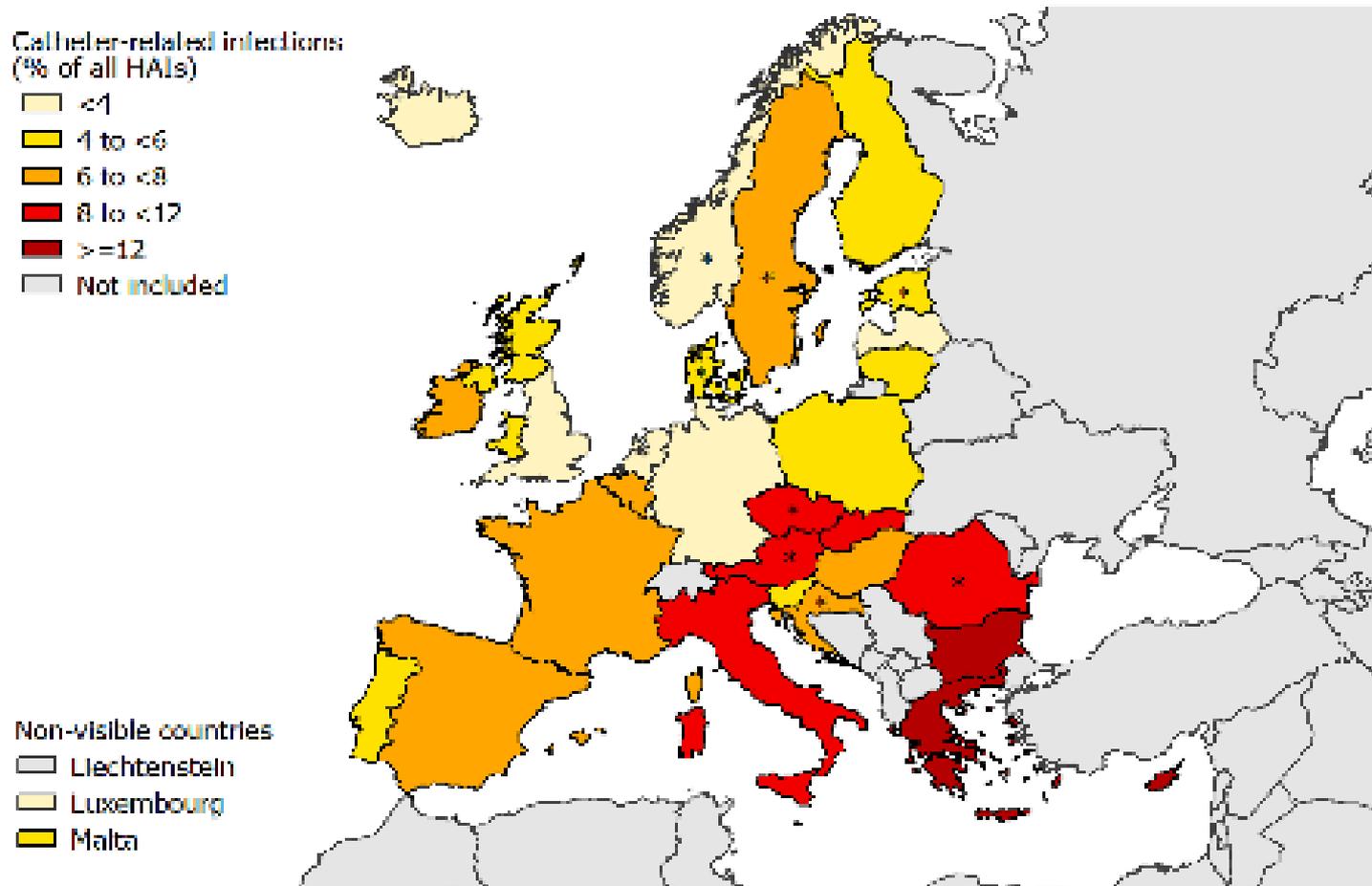
Progetto Multi Societario Italiano sul Controllo dell'Antibiotico Resistenza

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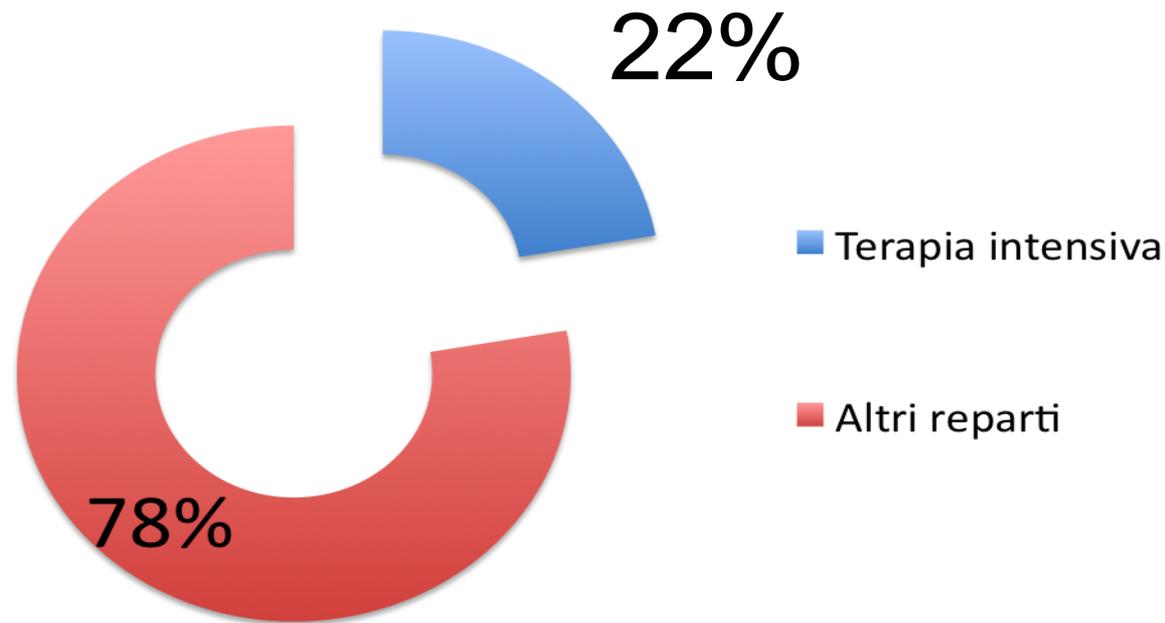




Infezioni CVC correlate



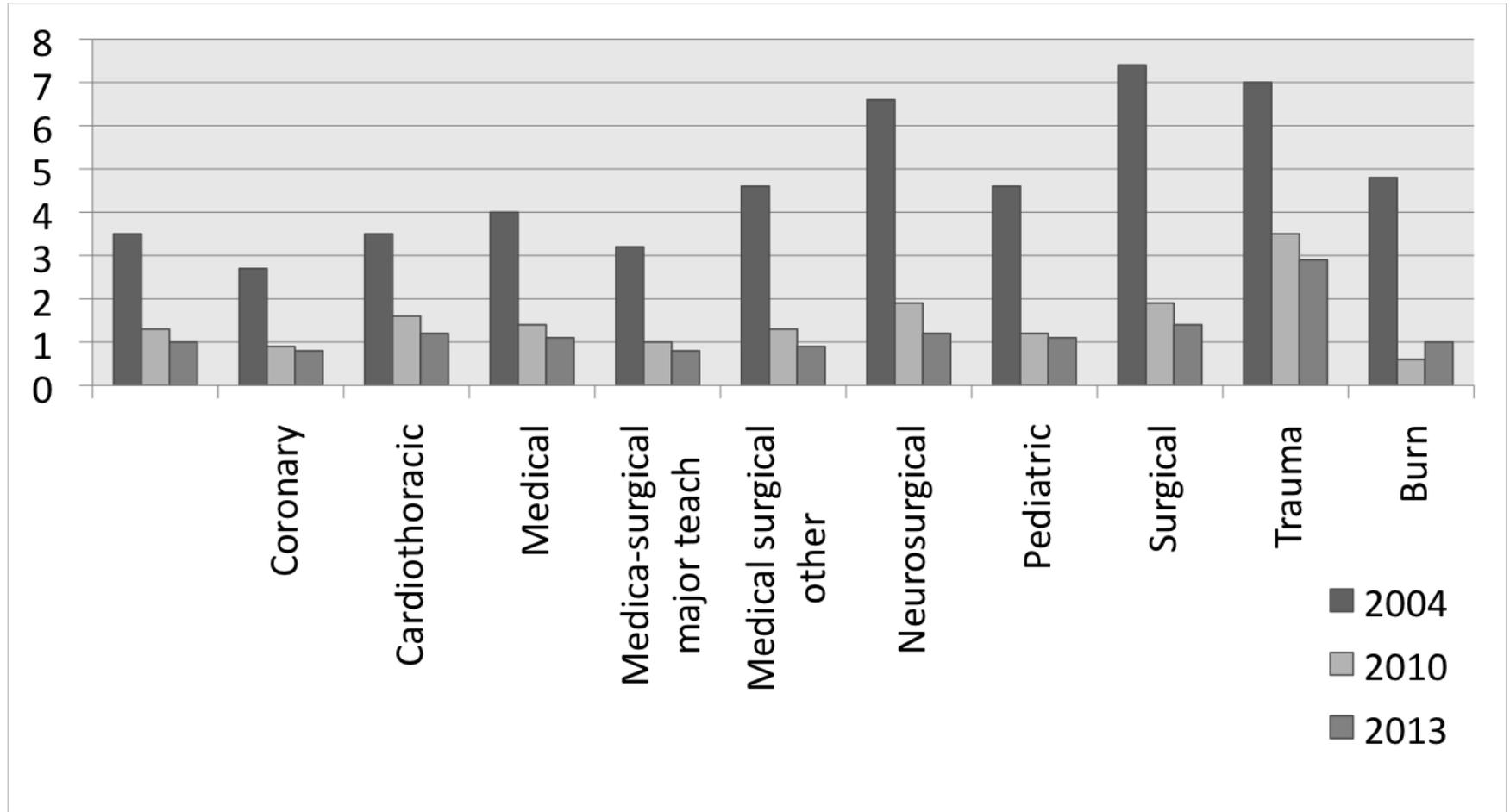
Quanti CVC fuori dalla terapia intensiva?



- CVC acquistati nel 2017 per tutto l'ospedale: 1800

Incidenza di batteriemie in terapia intensiva - USA

NNIS 1998 – NHSN 2013



Casi per 1000 giorni catetere



Management of Multidrug-Resistant Organisms In Healthcare Settings, 2006

Jane D. Siegel, MD; Emily Rhinehart, RN MPH CIC; Marguerite Jackson, PhD; Linda Chiarello, RN MS; the Healthcare Infection Control Practices Advisory Committee



Interventi
germe
specifici



Isolamento

Bundle dei device

Politica degli antibiotici

Igiene ambientale

Igiene delle mani

Sorveglianza

Educazione & formazione

Assetto organizzativo

Microrganismi	Germi Gram-MDR	ESBL	CPE	MRSA
Sorveglianza e screening	++	++	++	++
Isolamento al ricovero		++	++	
Sorveglianza durante epidemia		++	++	+
Isolamento per coorte (di pazienti e di staff dedicato)		++	++	++
Isolamento pz singolo		++	++	++
Igiene delle mani	+++	+++	+++	+++
Lavaggio con agenti antisettici	++	++	++	++
Precauzioni da contatto	++	++	++	++
Politiche antibiotiche		++	++	++
Pulizia degli ambienti	++	++	++	+++
Educazione staff	++	++	++	+++
Registrazione e notifica casi		++	++	++
Isolamento del reparto			++	

Compendio delle principali misure per la prevenzione e il controllo delle infezioni correlate all'assistenza

Progetto

**"Prevenzione e controllo delle infezioni nelle organizzazioni sanitarie e socio-sanitarie - INF-OSS"
finanziato dal Centro nazionale per la prevenzione e il controllo delle malattie - CCM**



Febbraio 2014

**Documento di indirizzo per il
controllo della diffusione delle infezioni
da *Enterobacteriaceae*
produttrici di carbapenemasi (CPE)**



MISSION REPORT

ECDC country visit to Italy to discuss antimicrobial resistance issues

9-13 January 2017

- During conversations in Italy, ECDC often gained the impression that these high levels of AMR appear to be accepted by stakeholders throughout the healthcare system, **as if they were an unavoidable state of affairs.**
- **Little sense of urgency** about the current AMR situation from most stakeholders and a tendency by many stakeholders to **avoid taking charge** of the problem



Il gruppo variegato

- Amministratore
- Igienista
- Chirurgo
- Farmacista
- Infermiera
- Microbiologo
- Internista
- Infettivologo
- Farmacologo
- ??





**"Be the
change
you wish
to see
in the world."**

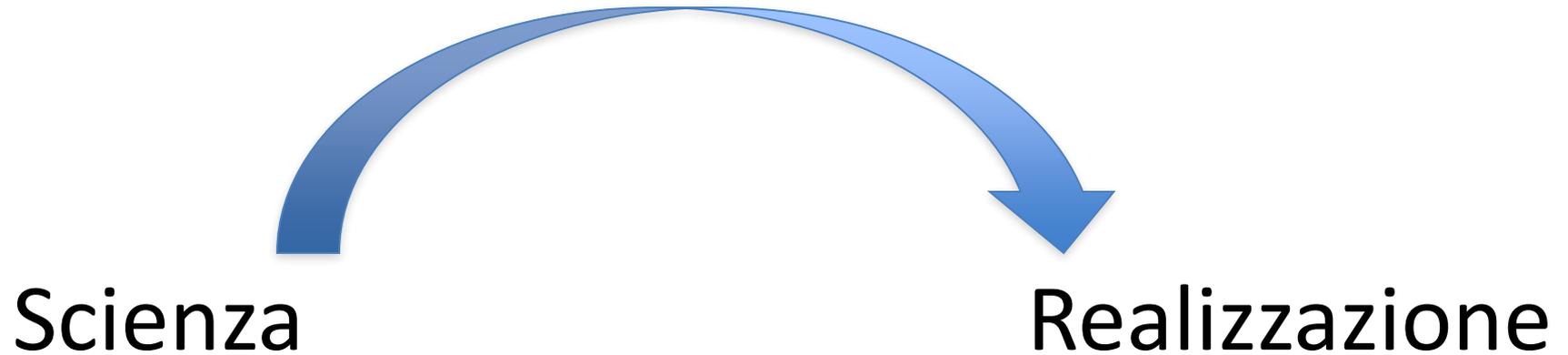
~Mahatma Gandhi

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Acquisizione di responsabilità





DECALOGO

**PER IL CORRETTO USO DEGLI ANTIBIOTICI E PER IL
CONTENIMENTO DELLE RESISTENZE BATTERICHE IN ITALIA**

Conclusioni

- Alcuni dati non si spiegano chiaramente
- Infettivologi, microbiologi, igienisti sono un piccolo gruppo che deve mettere in moto cambiamenti di sistema: collaborazione
- Dati per identificare le priorità in ospedale (e in comunità)!!!
- Interventi compatibili con le risorse e le caratteristiche della propria realtà
- Finanziamenti *ad hoc*

#HandHygiene #AntibioticResistance



FIGHT
ANTIBIOTIC
RESISTANCE
IT'S IN YOUR HANDS



KEEP
CALM
AND DO

ANTIMICROBIAL
STEWARDSHIP

Si ... può ... fare !!!



Grazie mille

Disponibili per ogni chiarimento

Dobbiamo fare rete