SERVIZIO SANITARIO REGIONALE
EMILIA-ROMAGNA
Azienda Unità Sanitaria Locale di Reggio Emilia
IRCCS Istituto in tecnologie avanzate e modelli assistenziali in oncologia

SERVIZIO SANITARIO REGIONALE
EMILIA-ROMAGNA
Azienda Unità Sanitaria Locale di Modena

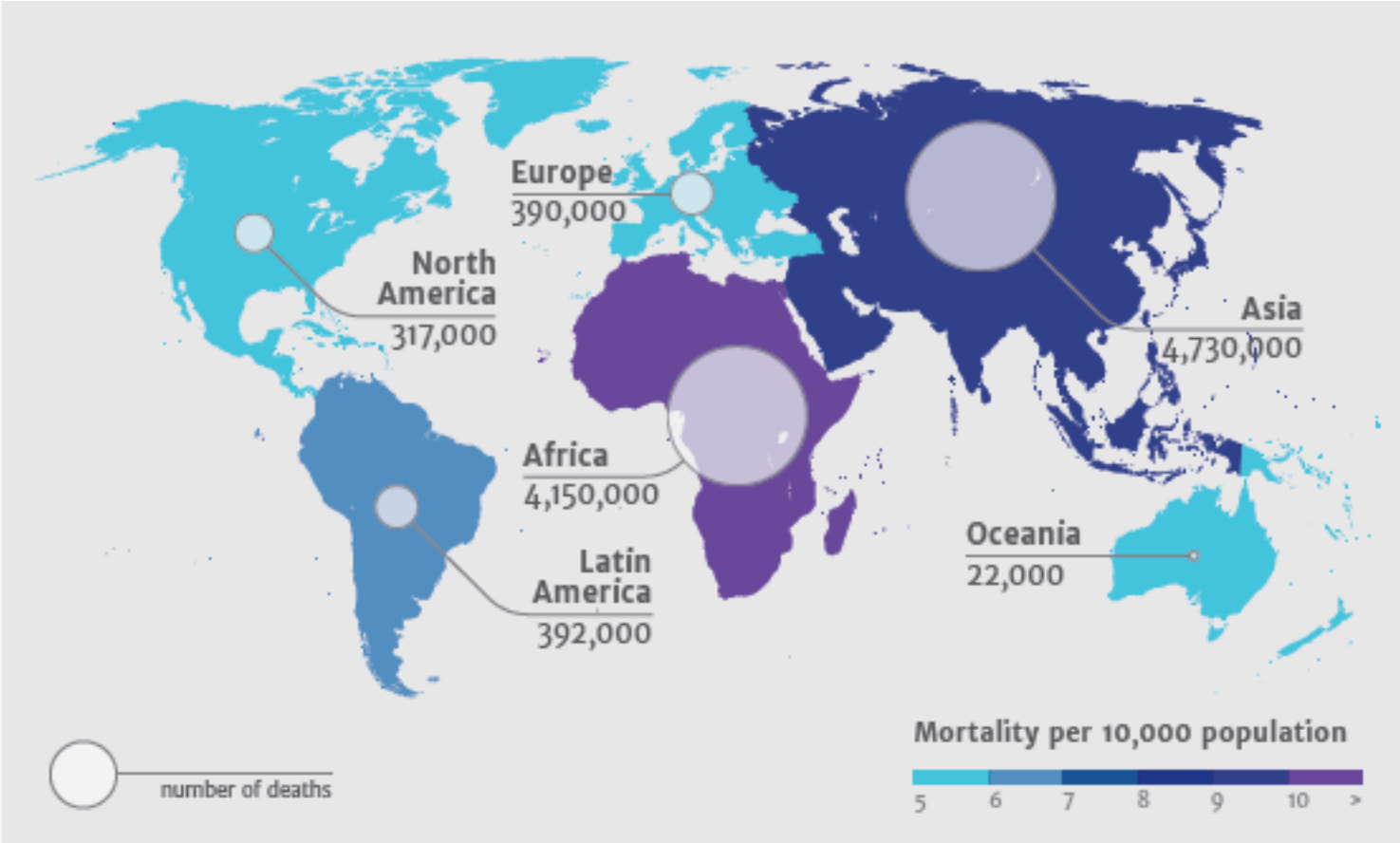
Regione Emilia-Romagna

Convegno nazionale

L'antibiotico resistenza in Regione Emilia-Romagna

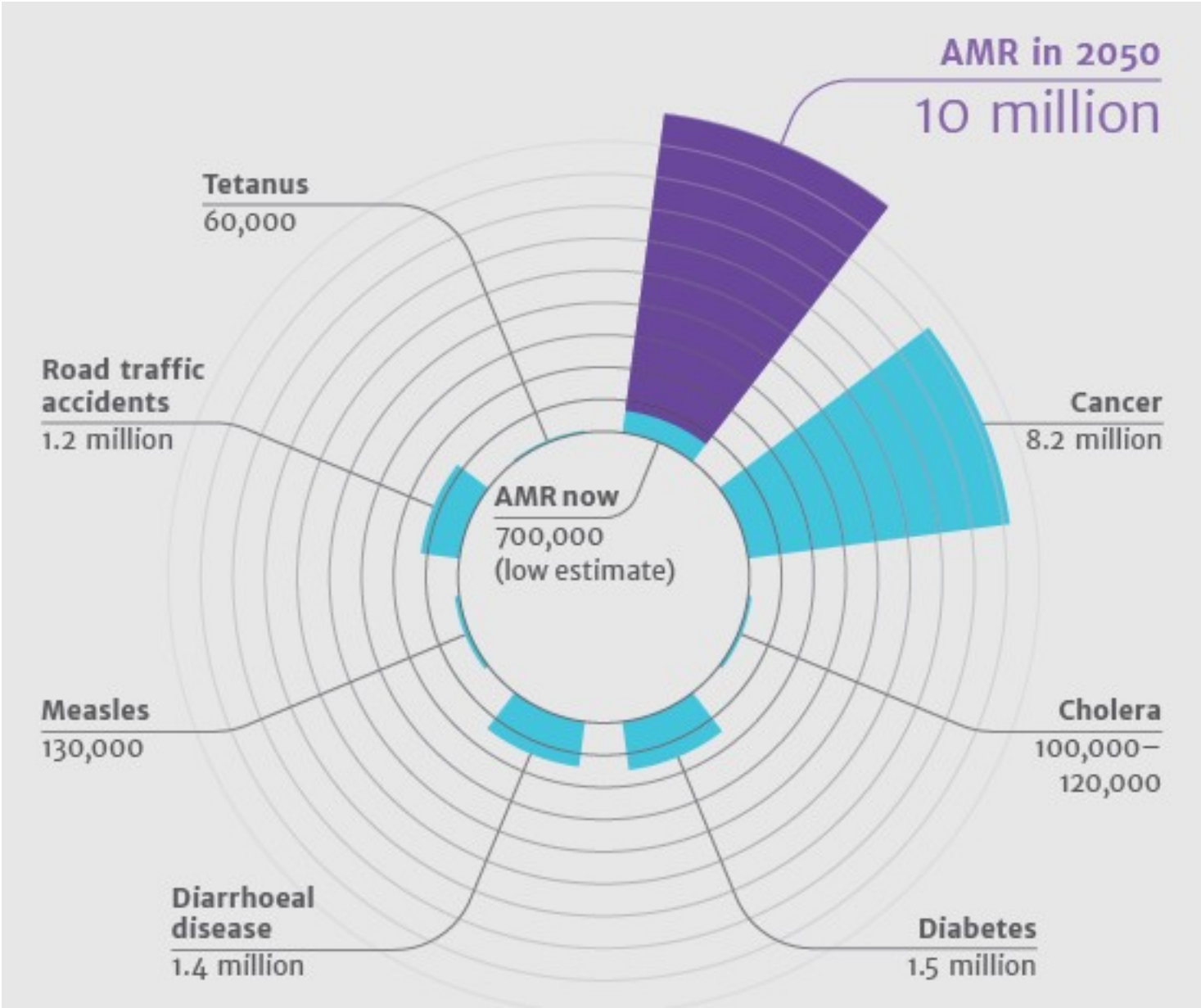
Giovedì 11 Ottobre 2018
ore 8.30-17.30

Hotel Classic
Via L. Pasteur 121/C, Reggio Emilia



The Review on Antimicrobial Resistance Chaired by Jim O'Neill

December 2014


AMR in 2050
10 million
Tetanus
60,000
Road traffic accidents
1.2 million
Cancer
8.2 million
AMR now
700,000
(low estimate)
Measles
130,000
Cholera
100,000–120,000
Diarrhoeal disease
1.4 million
Diabetes
1.5 million

Bacteria that already show concerning resistance levels	Broader public health issues for which resistance is a concern
Klebsiella pneumonia	HIV
Escherichia coli (E. coli)	Tuberculosis (TB)
Staphylococcus aureus	Malaria

The Review on Antimicrobial Resistance Chaired by Jim O'Neill

December 2014

Contents lists available at ScienceDirect

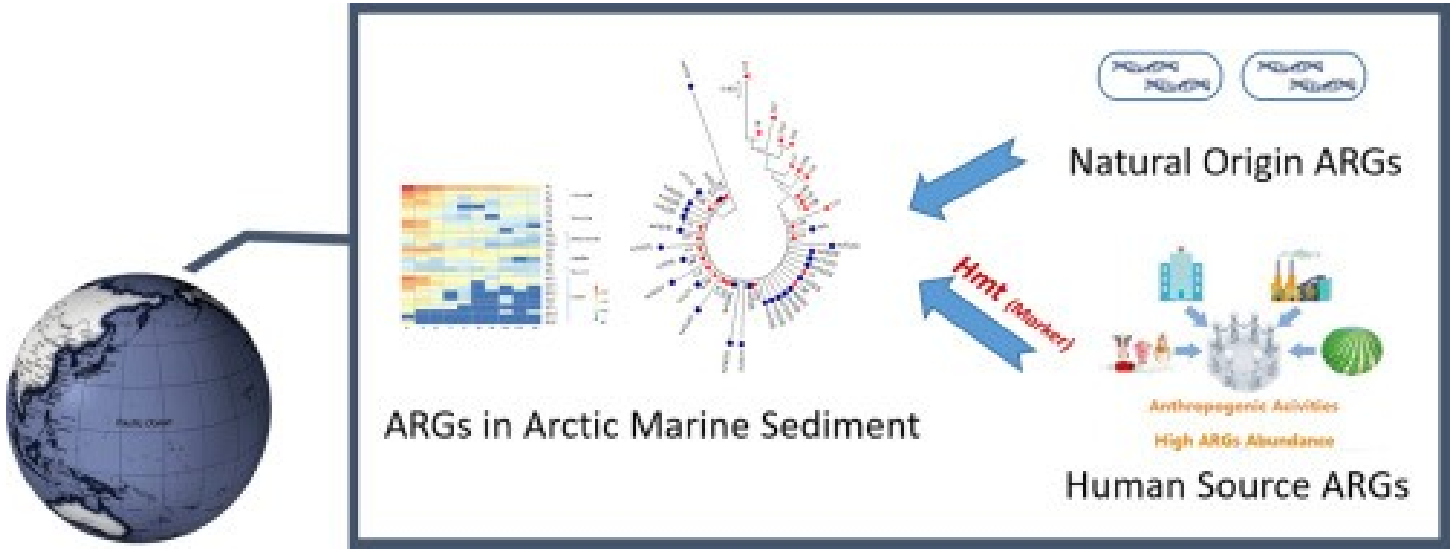
Science of the Total Environment

journal homepage: www.elsevier.com/locate/scitotenv

Arctic antibiotic resistance gene contamination, a result of anthropogenic activities and natural origin

Lu Tan [a], Linyun Li [c], Nicholas Ashbolt [a,d], Xiaolong Wang [a], Yuxiao Cui [a], Xiao Zhu [a], Yan Xu [a], Yang Yang [a], Daqing Mao [b,*], Yi Luo [a,*]

[a] Ministry of Education Key Laboratory of Pollution Processes and Environmental Criteria, College of Environmental Science and Engineering, Nankai University, Tianjin, China
[b] School of Medicine, Nankai University, Tianjin, China
[c] School of Environmental Science and Engineering, Tianjin University, Tianjin, China
[d] School of Public Health, University of Alberta, Edmonton, AB, Canada



Van Goethem *et al. Microbiome* (2018) 6:40
https://doi.org/10.1186/s40168-018-0424-5

Microbiome

RESEARCH Open Access

A reservoir of 'historical' antibiotic resistance genes in remote pristine Antarctic soils

Marc W. Van Goethem[1†], Rian Pierneef[2†], Oliver K. I. Bezuidt[1], Yves Van De Peer[1,3,4,5], Don A. Cowan[1] and Thulani P. Makhalanyane[1*]

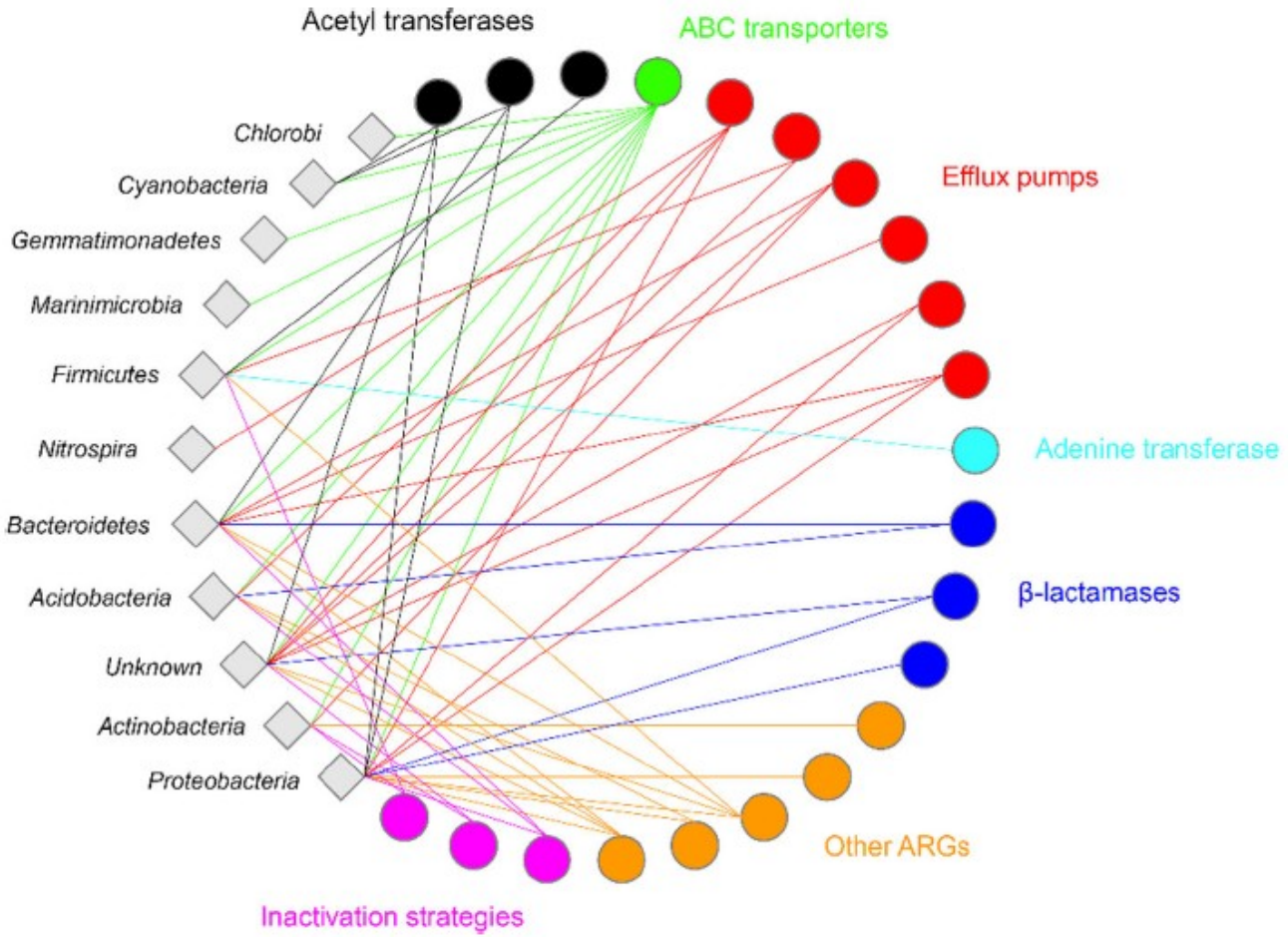


Fig. 3 Co-occurrence network of ARG mechanisms showing resistance mechanisms encoded by diverse soil bacterial phyla. Phyla from all 17 soils that were assigned an ARG are presented here (diamond-shaped nodes), with significant co-occurrences with a specific ARG (circles) indicated (edges)

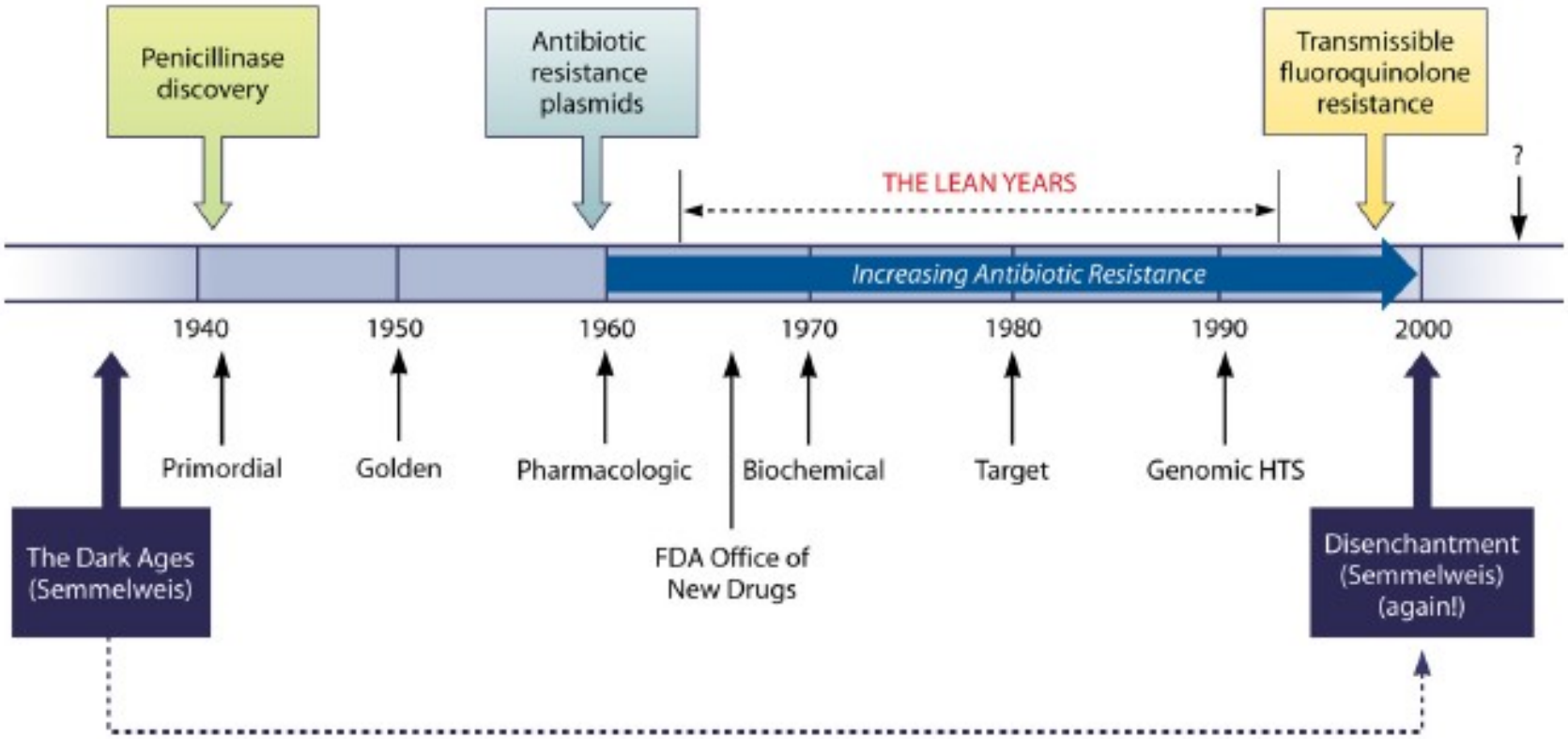
MICROBIOLOGY AND MOLECULAR BIOLOGY REVIEWS, Sept. 2010, p. 417–433 Vol. 74, No. 3
1092-2172/10/$12.00 doi:10.1128/MMBR.00016-10

Origins and Evolution of Antibiotic Resistance

Julian Davies* and Dorothy Davies

Department of Microbiology and Immunology, Life Sciences Institute, University of British Columbia, 2350 Health Sciences Mall, Vancouver, British Columbia V6T 1Z3, Canada

Events in the Age of Antibiotics



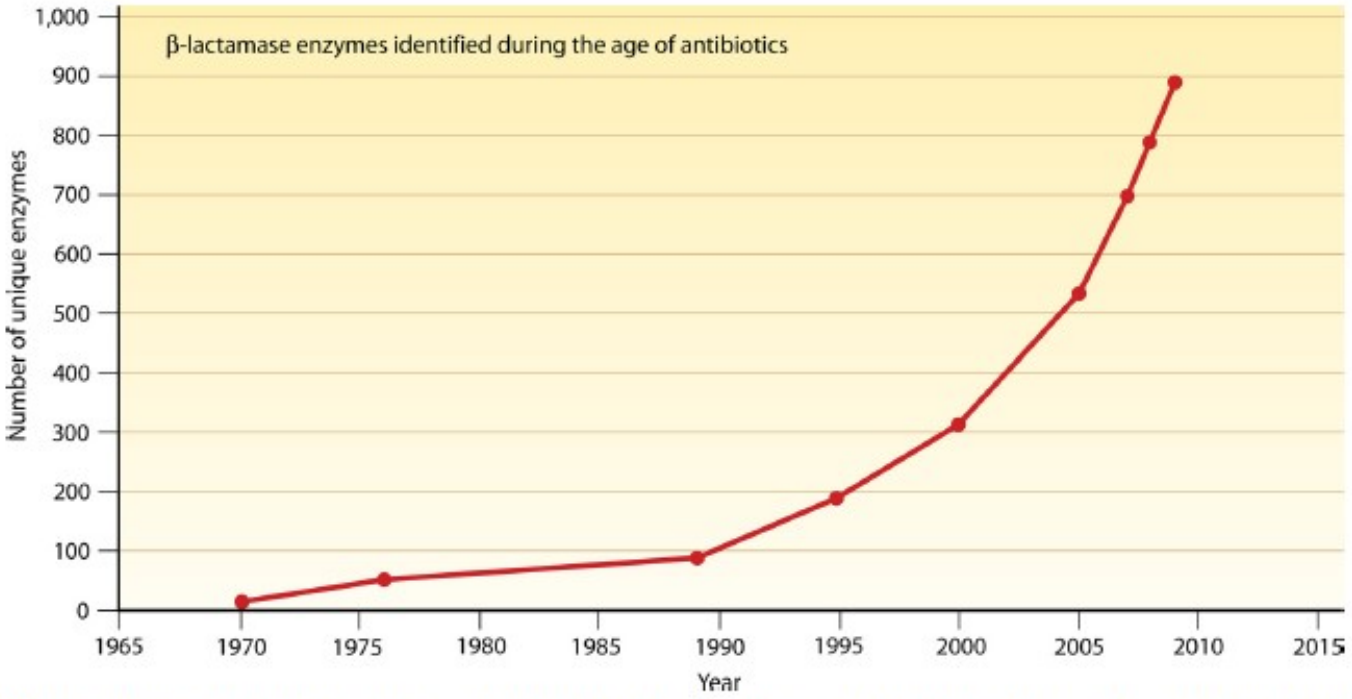


FIG. 2. Numbers of unique β-lactamase enzymes identified since the introduction of the first β-lactam antibiotics. (Up-to-date numbers are courtesy of Karen Bush.)

Surveillance Atlas of Infectious Diseases

Antimicrobial resistance | Escherichia coli | Third-generation cephalosporins

Non-susceptible (I and R) isolates proportion | 2002

Region	Non-susceptible (I and R) isolates proportion (%)
Greece	7.7
Hungary	2.6
Iceland	0.0
and	3.0
Italy	3.3
Latvia	.
Lithuania	.
Luxembourg	4.2
Malta	2.7

Italy

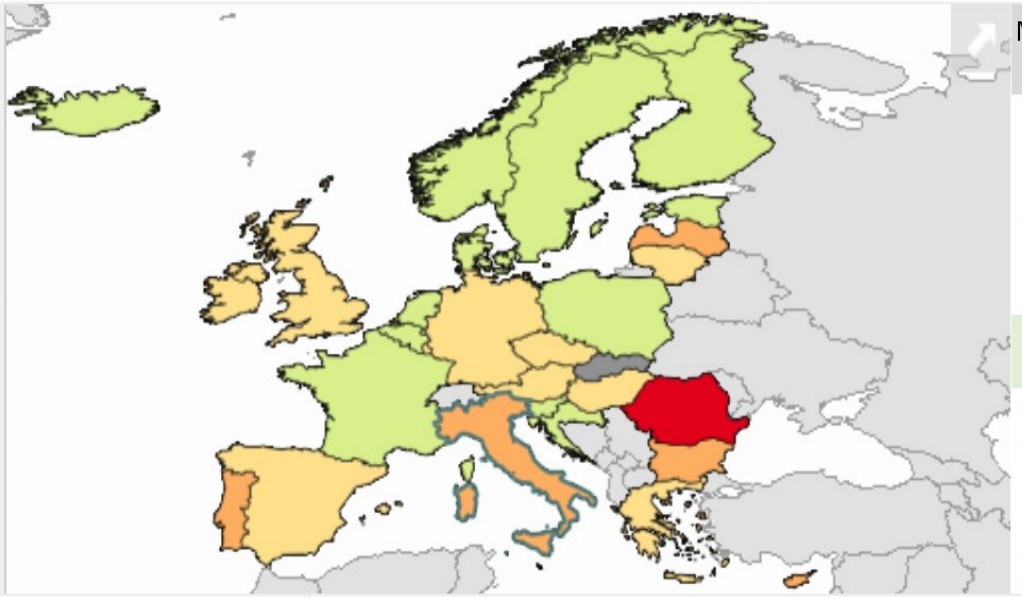
Surveillance Atlas of Infectious Diseases

Antimicrobial resistance | Escherichia coli | Third-generation cephalosporins

Non-susceptible (I and R) isolates proportion | 2007

Region	Non-susceptible (I and R) isolates proportion (%)
Greece	8.8
Hungary	5.4
Iceland	1.9
and	5.7
Italy	12.1
Latvia	14.5
Lithuania	7.7
Luxembourg	5.1
Malta	14.5

Italy

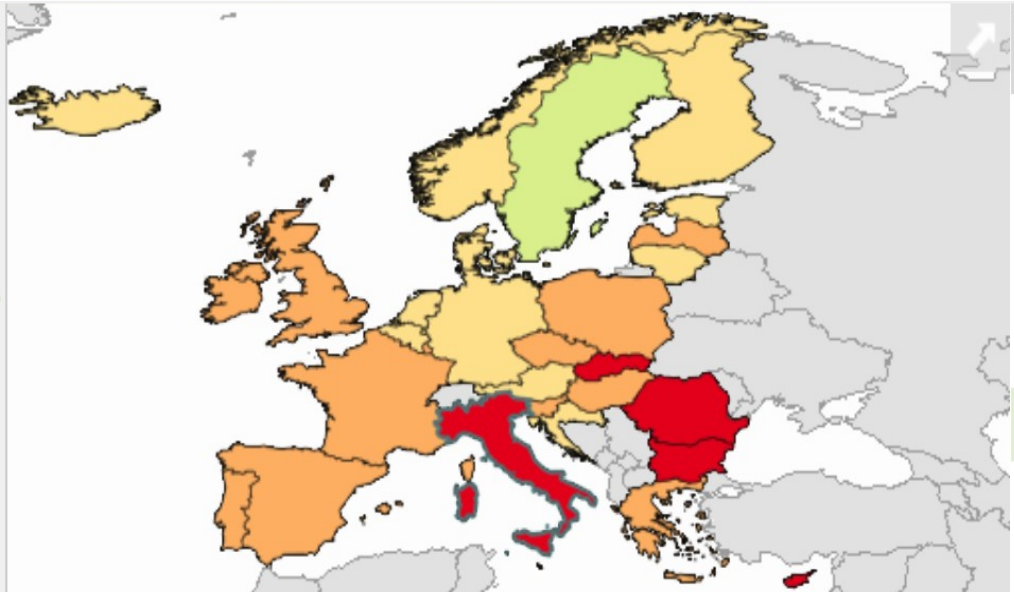


Surveillance Atlas of Infectious Diseases

Antimicrobial resistance | Escherichia coli | Third-generation cephalosporins

Non-susceptible (I and R) isolates proportion | 2012

Region	Non-susceptible (I and R) isolates proportion (%)
Greece	18.9
Hungary	17.8
Iceland	5.1
Ireland	10.0
Italy	27.1
Latvia	14.9
Lithuania	7.4
Luxembourg	12.3

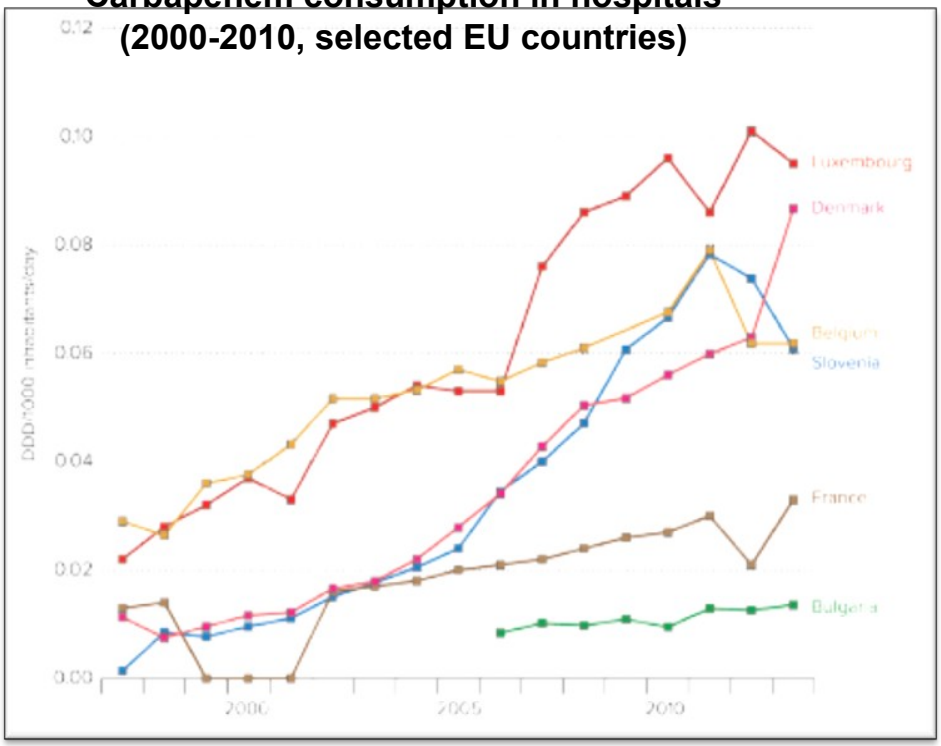


The evolution of ESBL-producing *Enterobacteriaceae*

- Global dissemination
- Hospital, but also community-acquired infections
- Long-term care facilities and nursing homes: hubs for ESBL producers
- Healthy carriers in the community
- Animals (Livestock, Pets, Wildlife)
- Environment

Doi *et al* - Clin Infect Dis 2013
Rooney *et al* - J Antimicrob Chemother 2009
Dhanji *et al* -J Antimicrob Chemother 2011
Woerther *et al* – Clin Microbiol Rev 2013
Michael *et al* – Fut Microbiol 2015
Rubin & Pitout – Vet Microbiol 2014

Carbapenem consumption in hospitals (2000-2010, selected EU countries)



ESAC-NET, 2015

Disseminazione Enterobatteri ESBL+

↓

Sovrautilizzo di carbapenemi

A. baumannii

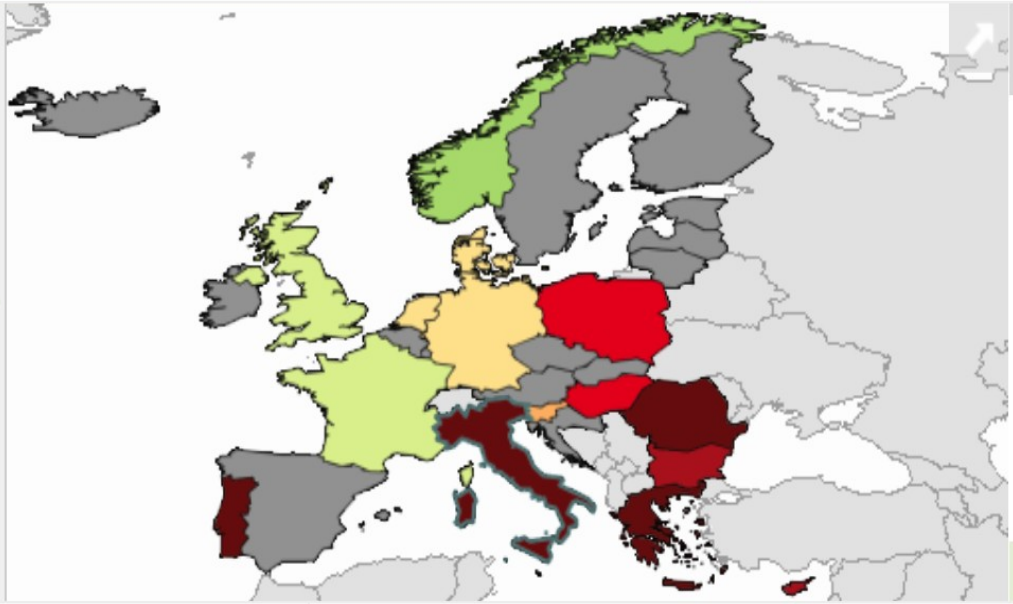
Antibiotico	MIC mg/L(S/I/R)
Amp/Sulb	16 I
Pip/Tazo	>128 R
Ceftriaxone	>64 R
Ceftazidime	>64 R
Cefepime	>64 R
Ertapenem	>32 R
Imipenem	>32 R
Meropenem	>32 R
Aztreonam	>64 R
Amikacina	>64 R
Gentamicina	>64 R
Tobramycina	>16 R
Ciprofloxacina	>4 R
Levofloxacina	>8 R
Colistina	0.5 S

Surveillance Atlas of Infectious Diseases

Antimicrobial resistance | Acinetobacter spp. | Carbapenems

Resistant (R) isolates proportion | 2012

Region	Resistant (R) isolates proportion (%)
Greece	87.8
Hungary	48.1
Iceland	-
Ireland	-
Italy	83.1
Latvia	-
Lithuania	-
Luxembourg	-

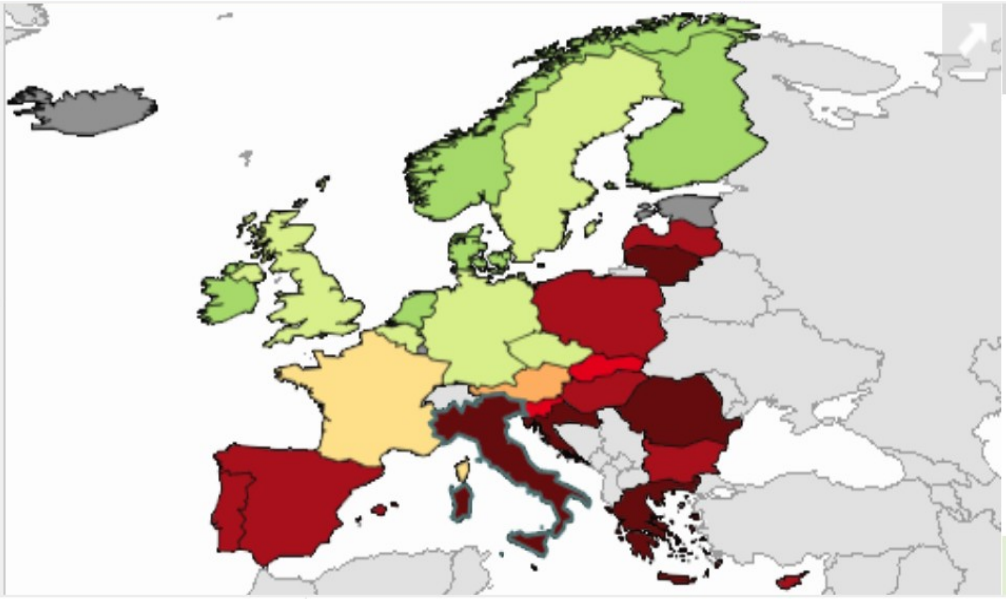


Surveillance Atlas of Infectious Diseases

Antimicrobial resistance | Acinetobacter spp. | Carbapenems

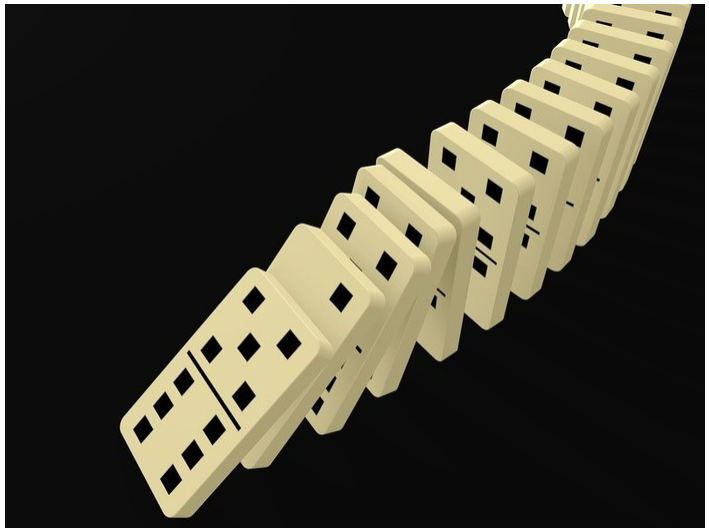
Resistant (R) isolates proportion | 2016

Region	Resistant (R) isolates proportion (%)
Greece	95.4
Hungary	58.6
Iceland	-
Ireland	0.0
Italy	78.5
Latvia	73.2
Lithuania	81.6
Luxembourg	-



Resistant (R) isola proportion (%)

- <1%
- 1-<5%
- 5-<10%
- 10-<25%
- 25-<50%
- 50-<75%
- >=75%



Disseminazione Enterobatteri ESBL+

↓

Sovrautilizzo di carbapenemi

↓

Disseminazione di CRA e CRE

The Journal of Infectious Diseases

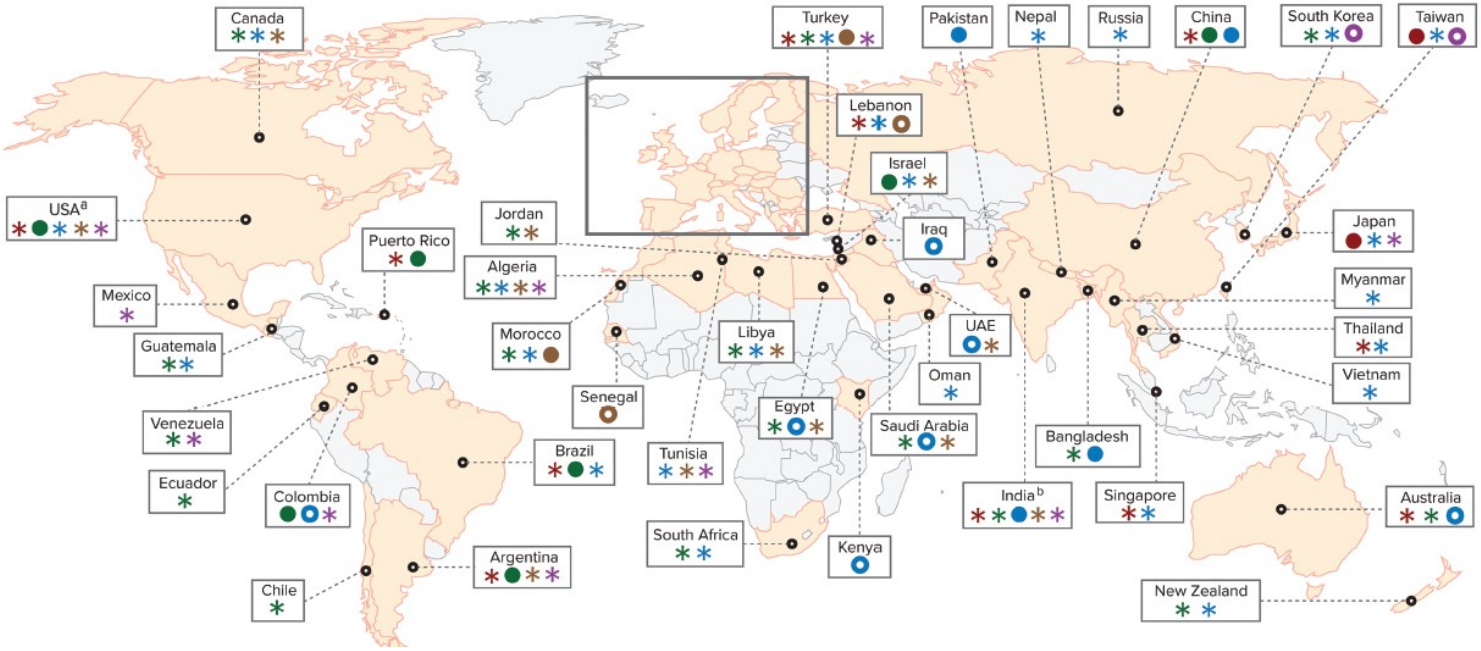
SUPPLEMENT ARTICLE

The Epidemiology of Carbapenem-Resistant Enterobacteriaceae: The Impact and Evolution of a Global Menace

The Journal of Infectious Diseases® 2017;215(S1):S28–36

Latania K. Logan[1,3] and Robert A. Weinstein[2,3]

[1]Section of Pediatric Infectious Diseases, Department of Pediatrics, [2]Division of Infectious Diseases, Department of Internal Medicine, Rush Medical College, Rush University Medical Center, and [3]Cook County Health and Hospitals System, Chicago, Illinois



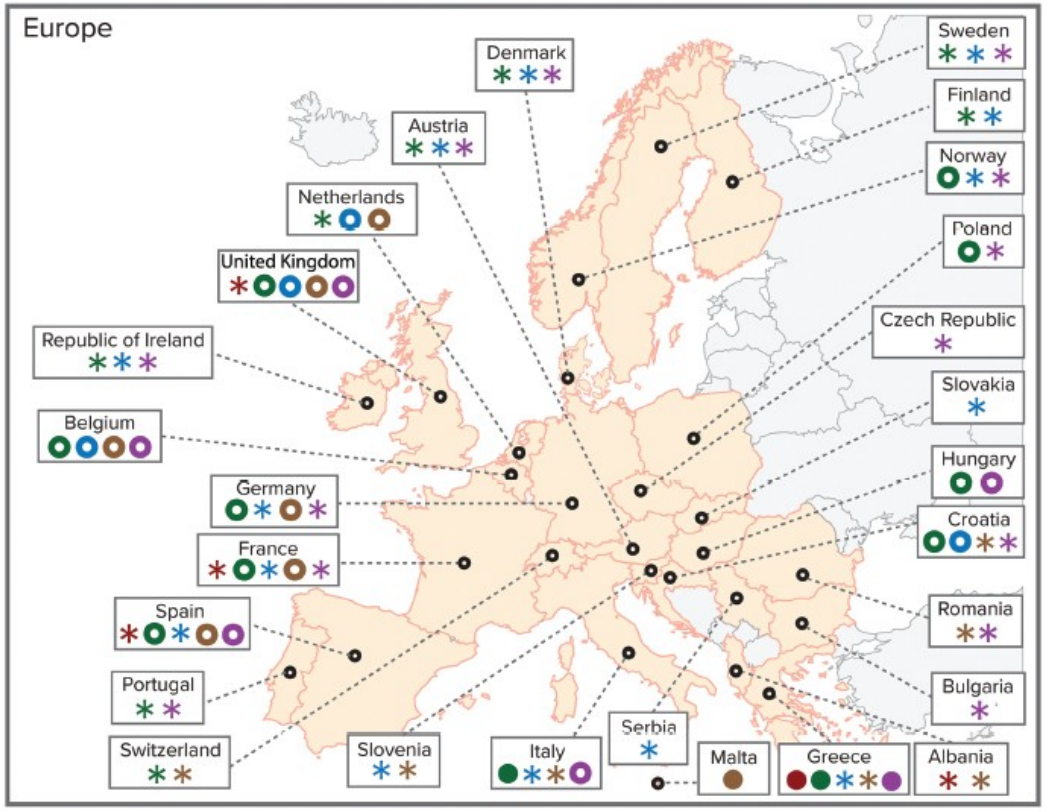
The Journal of Infectious Diseases

SUPPLEMENT ARTICLE

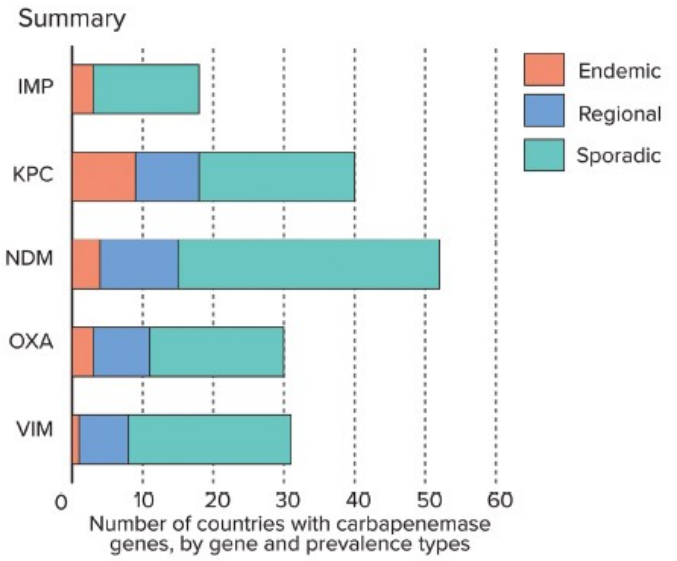
The Epidemiology of Carbapenem-Resistant Enterobacteriaceae: The Impact and Evolution of a Global Menace

Latania K. Logan[1,3] and Robert A. Weinstein[2,3]

[1]Section of Pediatric Infectious Diseases, Department of Pediatrics, [2]Division of Infectious Diseases, Department of Internal Medicine, Rush Medical College, Rush University Medical Center, and [3]Cook County Health and Hospitals System, Chicago, Illinois



	IMP	KPC	NDM	OXA	VIM
Endemic/nationwide distribution	●	●	●	●	●
Significant outbreaks/ regional spread	○	○	○	○	○
Sporadic outbreak/ occurences	*	*	*	*	*



K. pneumoniae KPC +

Antibiotico	MIC mg/L(S/I/R)
Amp/Sulb	> 64 R
Pip/Tazo	>128 R
Ceftriaxone	>64 R
Ceftazidime	>64 R
Cefepime	>64 R
Ertapenem	>32 R
Imipenem	>16 R
Meropenem	>16 R
Aztreonam	>64 R
Amikacina	>64 R
Gentamicina	8 I
Tobramycina	>16 R
Ciprofloxacina	>4 R
Trimet./Sulfam.	>4 R
Colistina	0.5 S

Surveillance Atlas of Infectious Diseases

Antimicrobial resistance | Klebsiella pneumoniae | Carbapenems

Resistant (R) isolates proportion | 2009

Region	Resistant (R) isolates proportion (%)
Greece	43.5
Hungary	0.6
Iceland	0.0
Ireland	0.0
Italy	1.3
Latvia	0.0
Lithuania	0.0
Luxembourg	0.0

Resistant (R) isolates proportion (

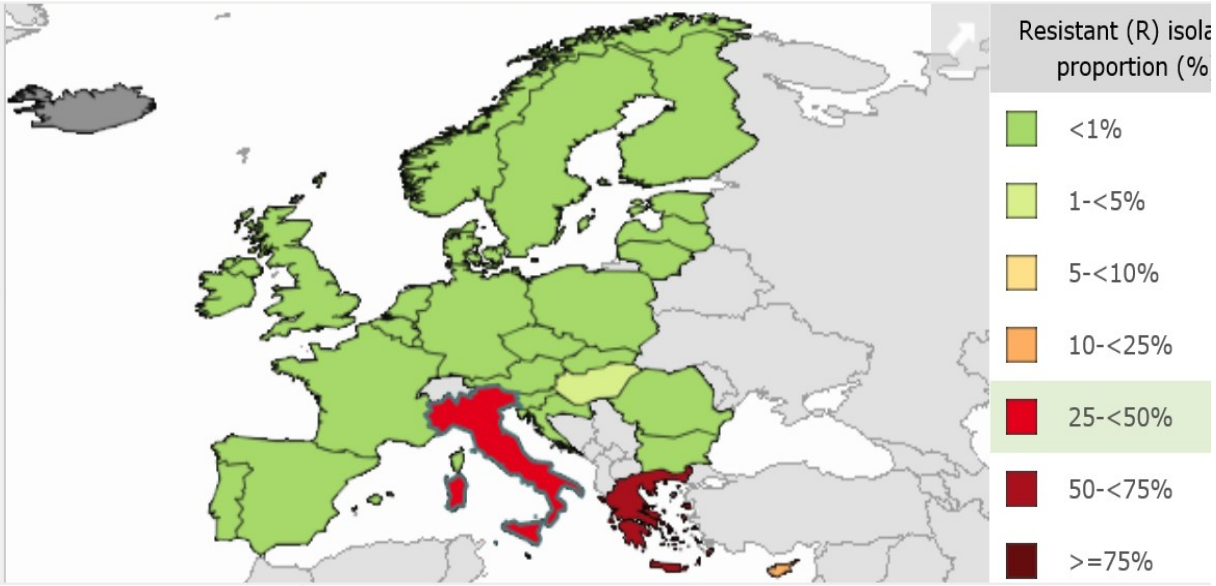
- <1%
- 1-<5%
- 5-<10%
- 10-<25%
- 25-<50%
- 50-<75%
- >=75%

Surveillance Atlas of Infectious Diseases

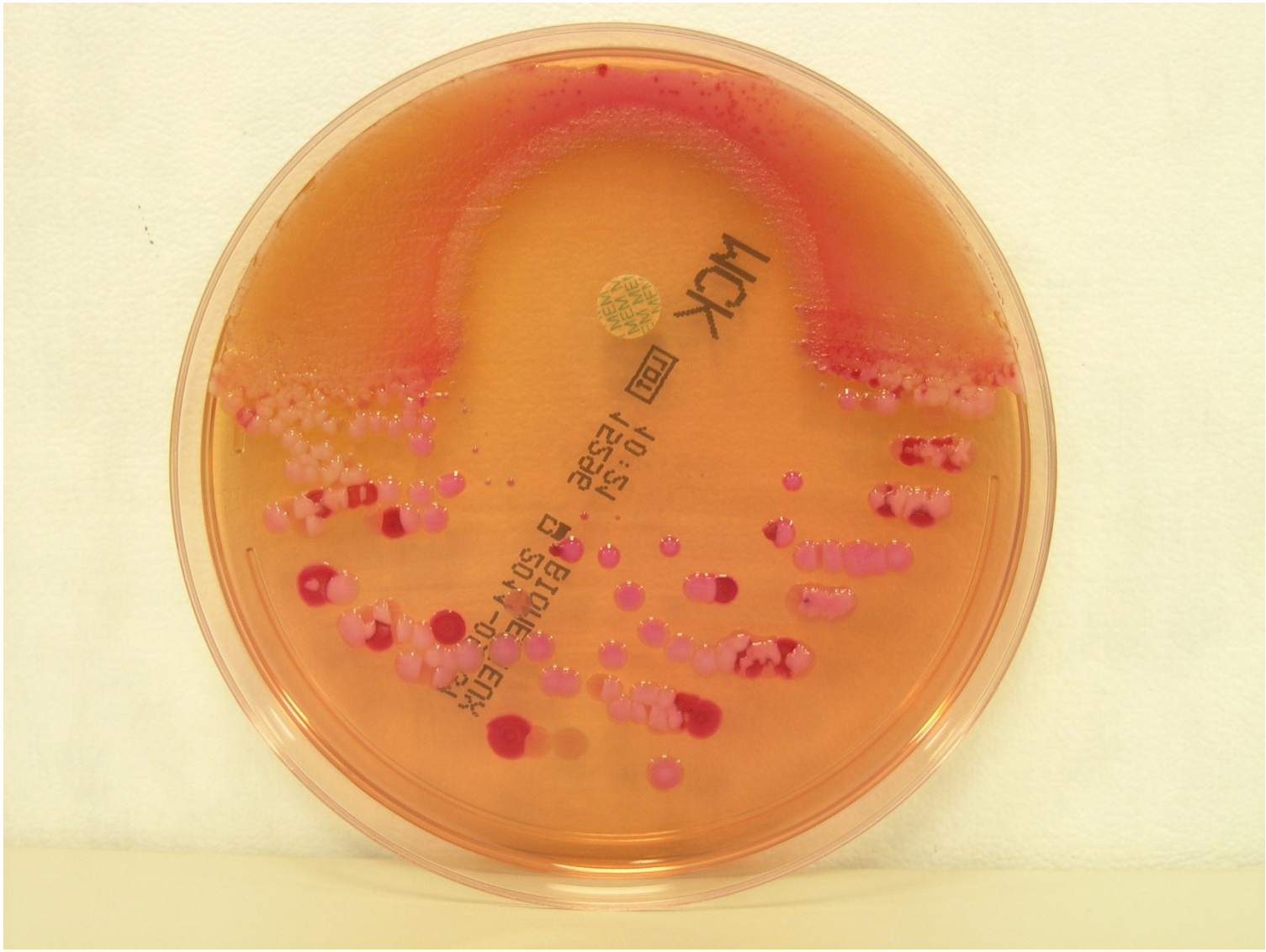
Antimicrobial resistance | Klebsiella pneumoniae | Carbapenems

Resistant (R) isolates proportion | 2011

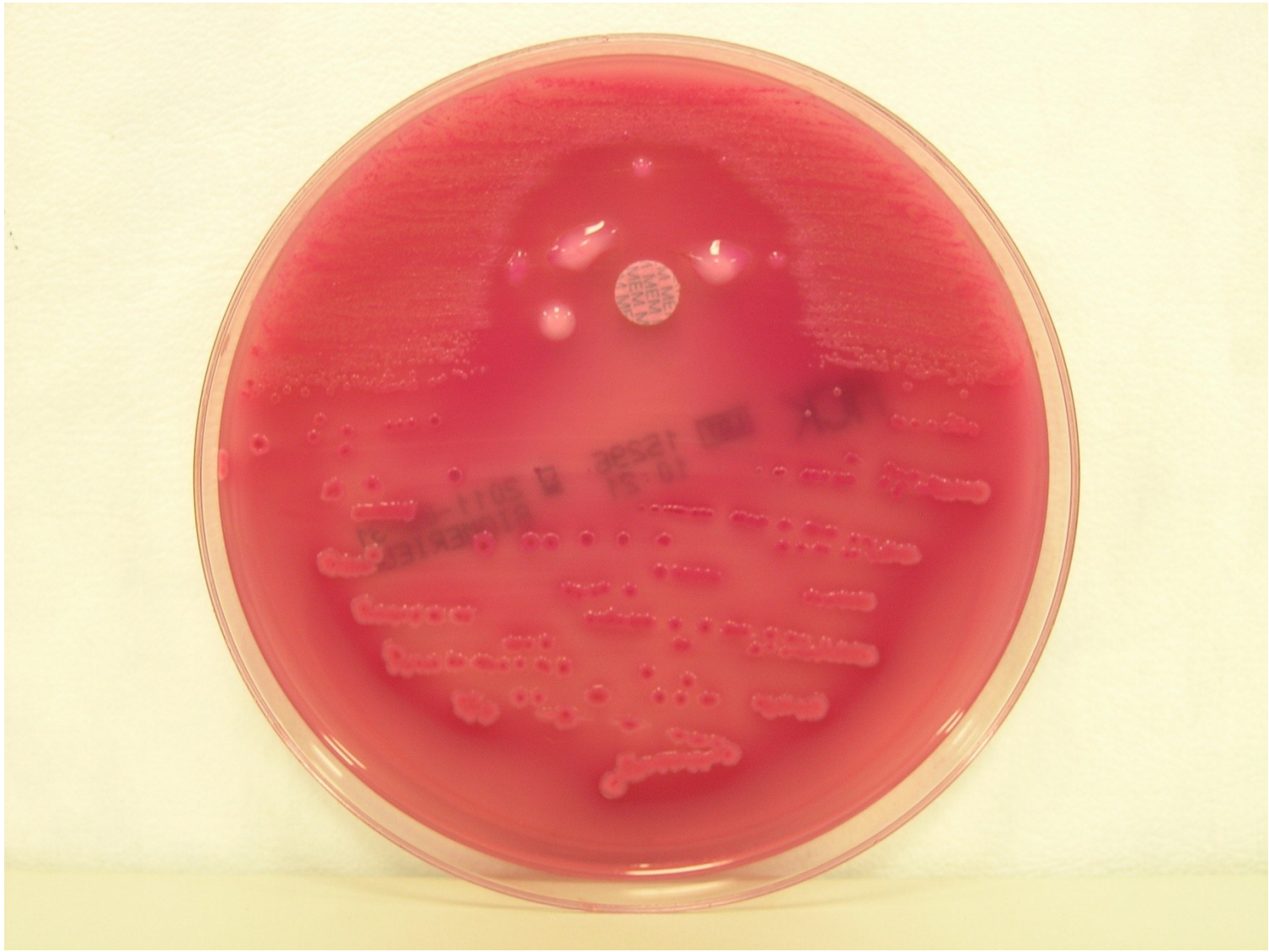
Region	Resistant (R) isolates proportion (%)
Greece	68.2
Hungary	1.9
Iceland	-
Ireland	0.3
Italy	26.7
Latvia	0.0
Lithuania	0.0
Luxembourg	0.0



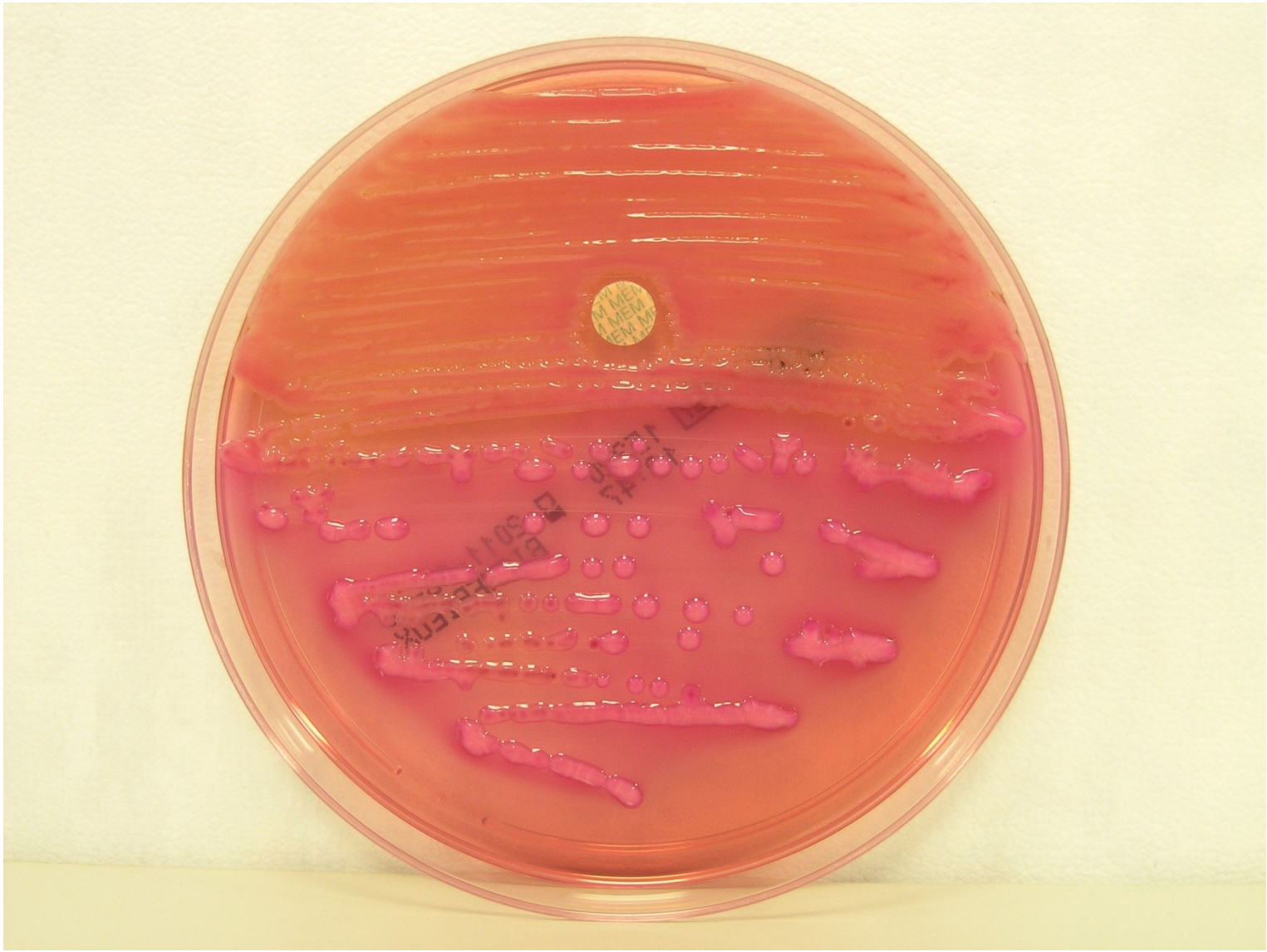
Coltura da tampone rettale in paziente non colonizzato



Coltura da tampone rettale in paziente asintomatico con colonizzazione di basso livello da Kp KPC



Coltura da tampone rettale in paziente asintomatico con colonizzazione di alto livello da Kp KPC



Bell *et al. BMC Infectious Diseases* 2014, **14**:13
http://www.biomedcentral.com/1471-2334/14/13

BMC Infectious Diseases

RESEARCH ARTICLE Open Access

A systematic review and meta-analysis of the effects of antibiotic consumption on antibiotic resistance

Brian G Bell[1*], Francois Schellevis[2,3], Ellen Stobberingh[4], Herman Goossens[5] and Mike Pringle[1]

Conclusions: Using a large set of studies we found that antibiotic consumption is associated with the development of antibiotic resistance. A subsequent meta-analysis, with a subsample of the studies, generated several significant predictors. Countries in southern Europe produced a stronger link between consumption and resistance than other regions so efforts at reducing antibiotic consumption may need to be strengthened in this area. Increased consumption of antibiotics may not only produce greater resistance at the individual patient level but may also produce greater resistance at the community, country, and regional levels, which can harm individual patients.

American Journal of Infection Control 42 (2014) 1006-8

Contents lists available at ScienceDirect

American Journal of Infection Control

journal homepage: www.ajicjournal.org

Brief report

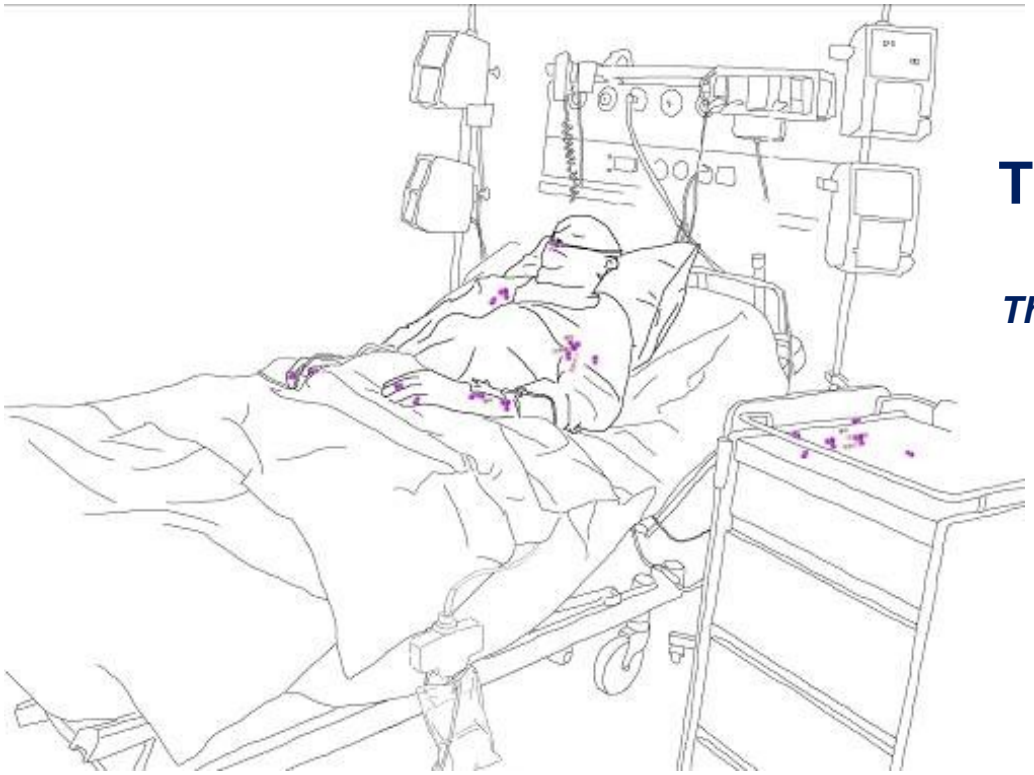
Risk factors for colonization with carbapenemase-producing *Klebsiella pneumoniae* in hospital: A matched case-control study

Carlo Gagliotti MD[a,*], Stefano Giordani MD[b], Vincenzo Ciccarese MD[b], Agostino Barozzi BSc[b], Antonio Giovinazzi MD[c], Anne Marie Pietrantonio MD[b], Maria Luisa Moro MD[a], Giovanni Pinelli MD[b], Mario Sarti MD[b]

[a] *Regional Health and Social Agency of Emilia-Romagna, Bologna, Italy*
[b] *Modena Health Trust, Nuovo Ospedale Civile S. Agostino Estense, Baggiovara, Italy*
[c] *Department of Diagnostic, Clinical and Public Health Medicine, University of Modena and Reggio Emilia, Modena, Italy*

Table 1
Univariate and multivariate analyses for exposures associated with carbapenemase-producing *K pneumoniae* colonization

Variable	Cases (n = 50)	Controls (n = 100)	Univariate analysis*			Multivariate analysis†		
			OR	95% CI	*P*	OR	95% CI	*P*
Male sex, %	56.0	43.0	1.68	0.85-3.34	.139			
Age y, mean (SD)	77.9 (11.0)	78.0 (14.3)	1	0.97-1.03	.989			
Length of hospital stay, d, mean (SD)	22.5 (18.8)	20.4 (23.1)	1.01	0.99-1.02	.523			
Provenance of patients at admission, %‡					.299			
Home	88	90.9	1					
Long-term health care facility	6.0	8.1	0.86	0.21-3.61				
Other hospital	6.0	1.0	4.97	0.49-49.8				
Antibiotic prescriptions before admission (previous 30 days), %	84.0	64.3	3.12	1.24-7.85	.015			
Antibiotic prescriptions in the current hospitalization (period before screening), %								
Carbapenems	28.0	9.0	4.0	1.51-10.56	.005	3.67	1.37-9.83	.010
Penicillins	50.0	33.0	2.34	1.06-5.17	.035			
Cephalosporins	16.0	20.0	0.72	0.27-1.93	.518			
Fluoroquinolones	26.0	21.0	1.3	0.60-2.81	.505			
Other antibiotics	36.0	30.0	1.29	0.64-2.58	.477			
Any antibiotics other than carbapenems	80.0	61.0	3.06	1.21-7.74	.018	2.83	1.10-7.31	.032



Trasmissione tramite le mani: step 1

The Lancet Infectious Diseases 2006

Germi presenti sulla cute del paziente e sulle superfici dell'ambiente circostante

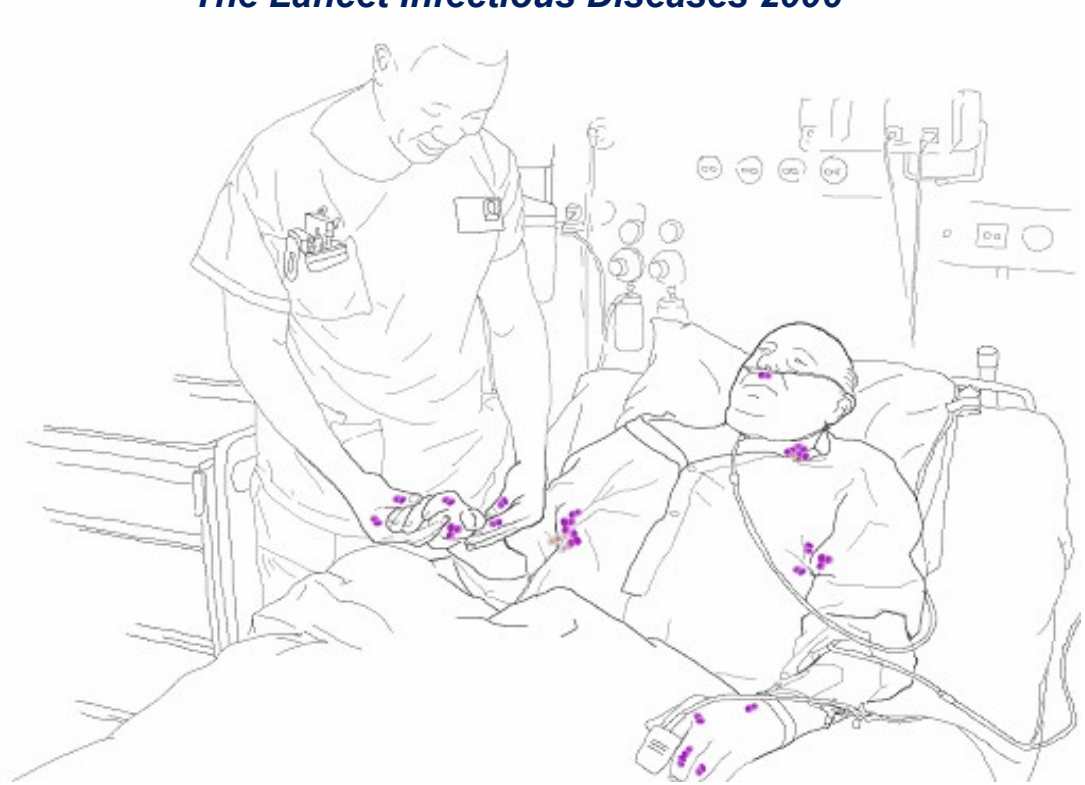
Germi presenti sulla cute integra del paziente

Circa 1 milione di cellule di desquamazione contenenti germi sono eliminate ogni giorno dalla cute normale

Oggetti attorno al paziente (letto, arredi,ecc) si contaminano con germi del paziente

Trasmissione tramite le mani: step 2

The Lancet Infectious Diseases 2006

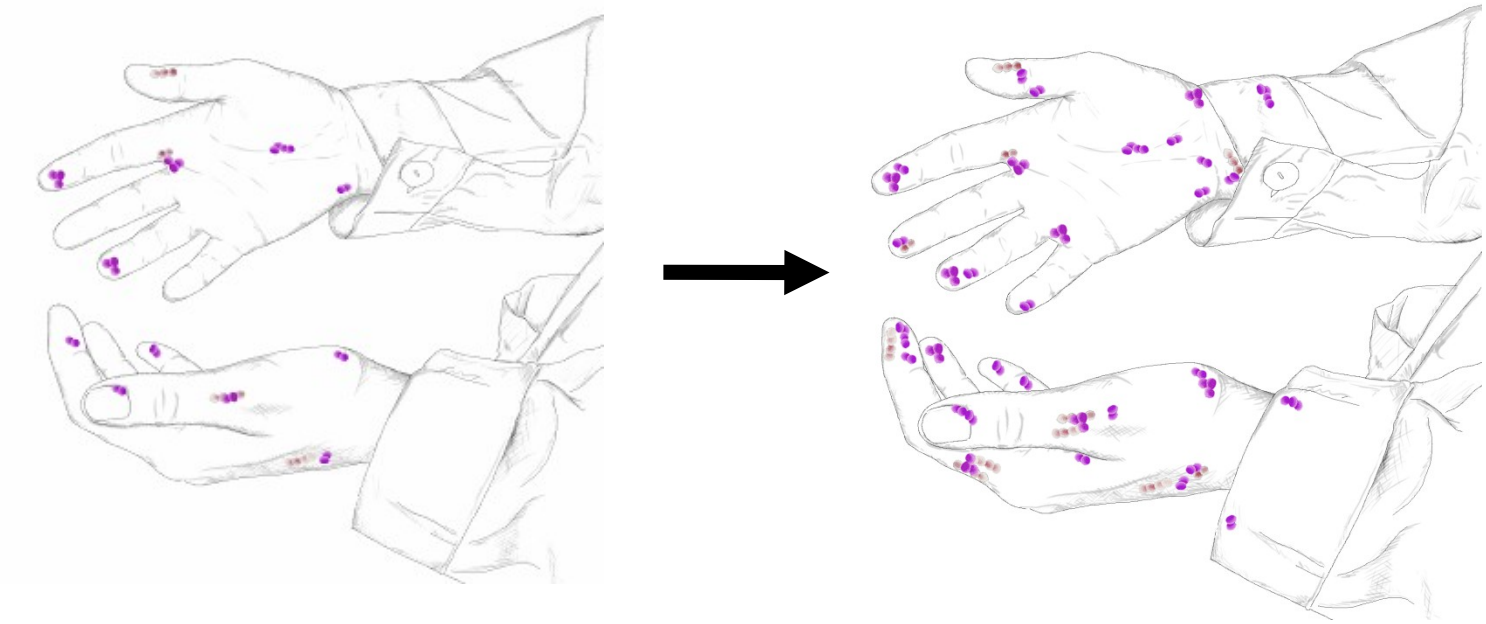


Le mani si contaminano durante le attività di "assistenza"

sollevando un paziente, valutando il polso, la pressione arteriosa, la temperatura orale…..

Trasmissione tramite le mani: step 3

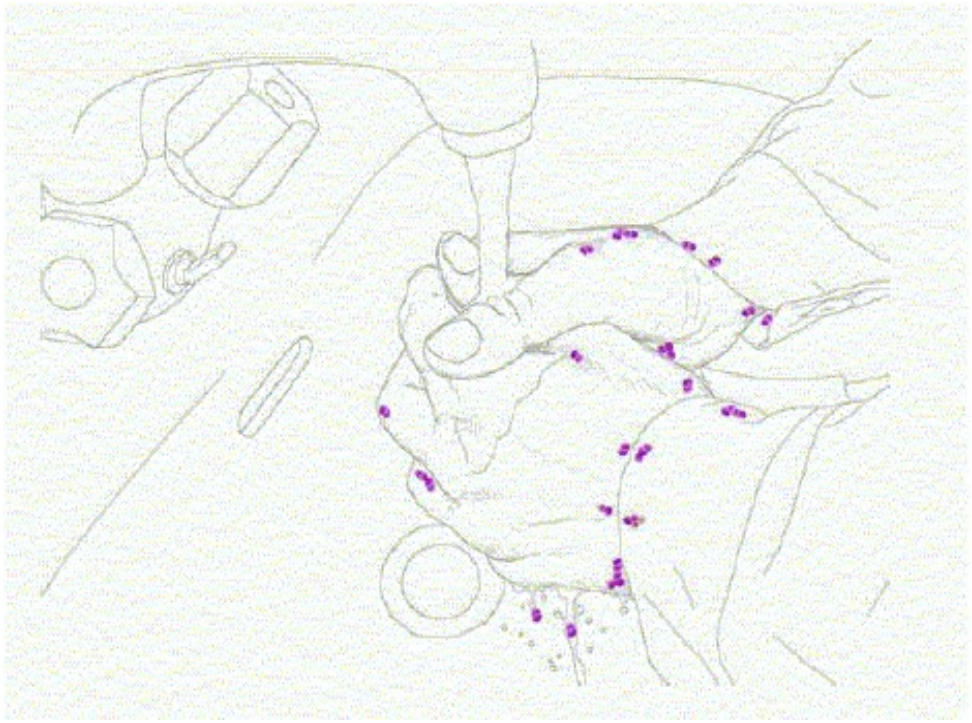
The Lancet Infectious Diseases 2006



I germi sopravvivono sulle mani

I germi possono sopravvivere sulle mani per un tempo variabile

In assenza di azioni di igiene delle mani, più lunga è l'assistenza fornita, più alto è il grado di contaminazione delle mani



Trasmissione tramite le mani: step 4

The Lancet Infectious Diseases 2006

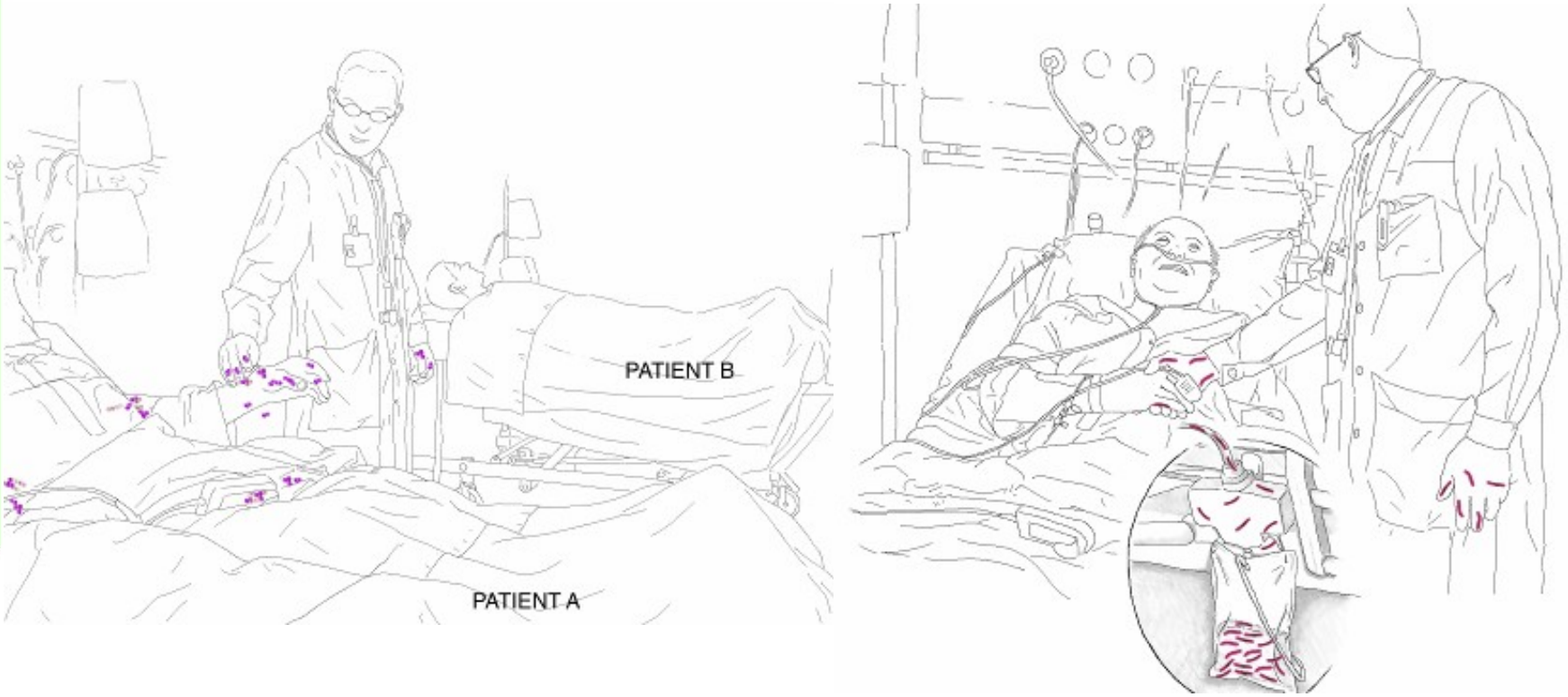
Una igiene delle mani scorretta significa mantenere le mani contaminate

Una quantità insufficiente di prodotto e/o una durata insufficiente dell'azione di igiene delle mani determina una scarsa decontaminazione delle Mani

Microrganismi non residenti sono ancora presenti sulle mani dopo il lavaggio con acqua e sapone, mentre è dimostrato che la frizione con un prodotto a base alcolica è significativamente più efficace

Trasmissione tramite le mani : step 5

The Lancet Infectious Diseases 2006



Mani contaminate trasmettono germi

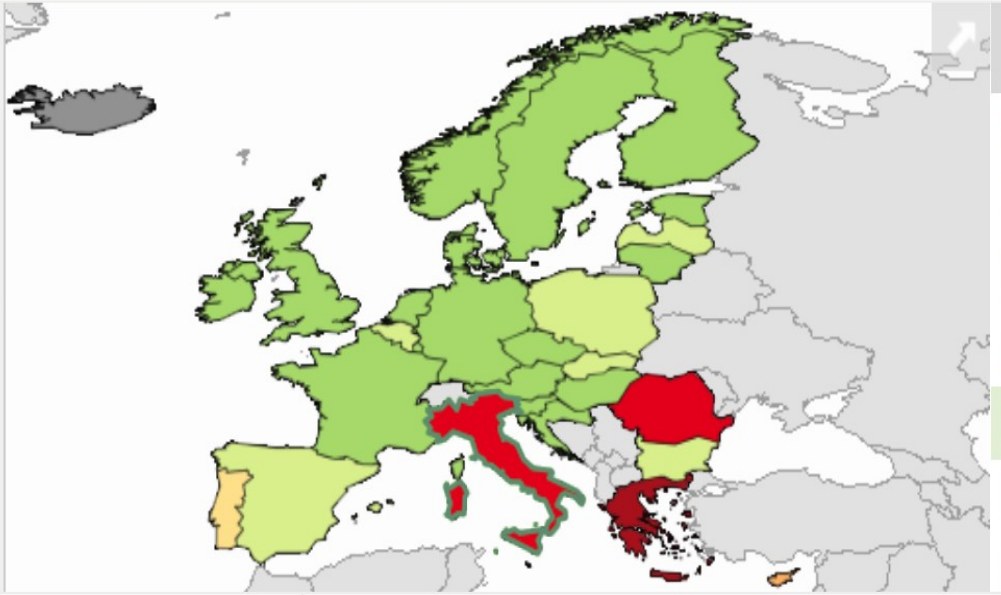
In molte epidemie, è stata dimostrata la trasmissione dei germi tra pazienti e dall'ambiente ai pazienti attraverso gli operatori sanitari

Surveillance Atlas of Infectious Diseases

Antimicrobial resistance | Klebsiella pneumoniae | Carbapenems

Resistant (R) isolates proportion | 2016

Region	Resistant (R) isolates proportion (%)
Greece	66.9
Hungary	0.4
Iceland	-
Ireland	0.7
Italy	33.9
Latvia	2.2
Lithuania	0.0
Luxembourg	0.0

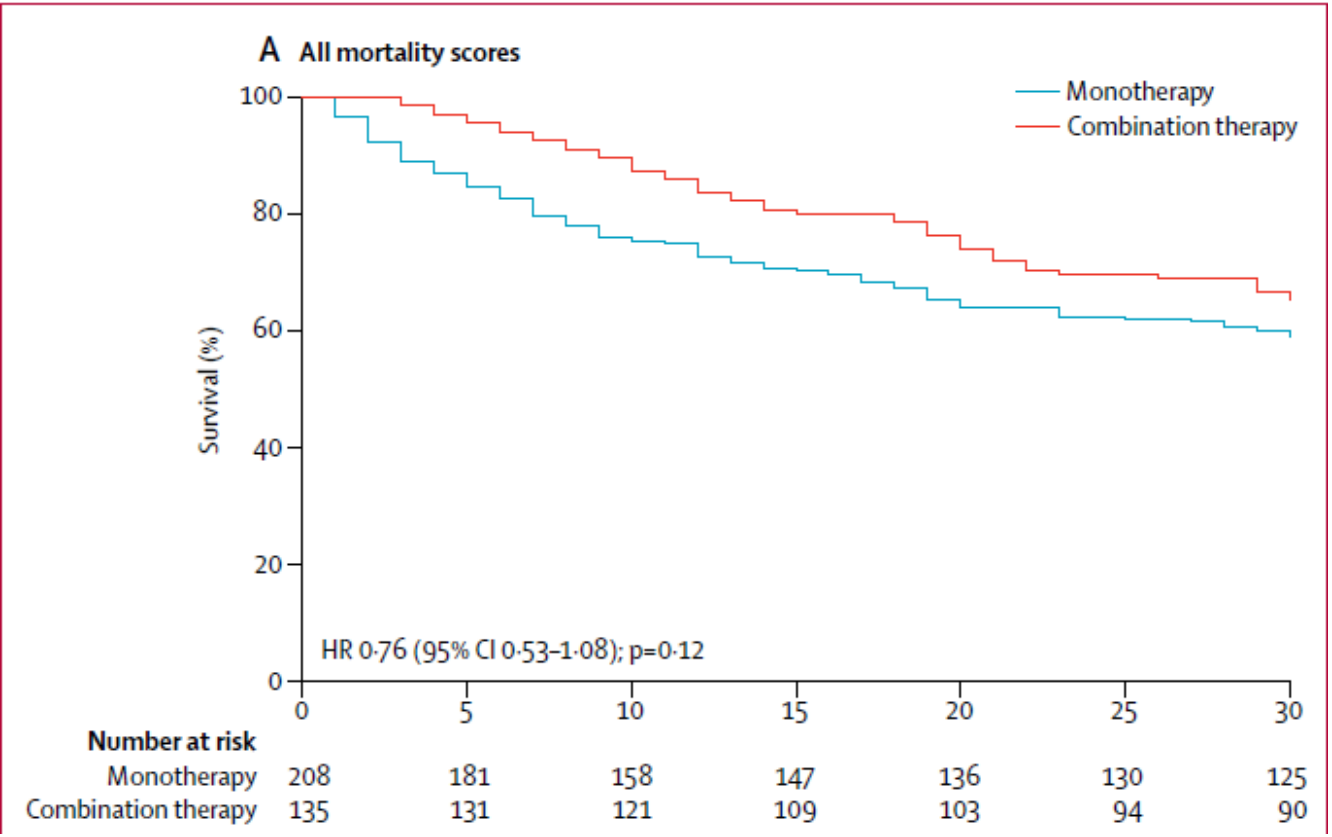


Effect of appropriate combination therapy on mortality of patients with bloodstream infections due to carbapenemase-producing Enterobacteriaceae (INCREMENT): a retrospective cohort study

Belén Gutiérrez-Gutiérrez, Elena Salamanca*, Marina de Cueto, Po-Ren Hsueh, Pierluigi Viale, José Ramón Paño-Pardo, Mario Venditti, Mario Tumbarello, George Daikos, Rafael Cantón, Yohei Doi, Felipe Francisco Tuon, Ilias Karaiskos, Elena Pérez-Nadales, Mitchell J Schwaber, Özlem Kurt Azap, Maria Souli, Emmanuel Roilides, Spyros Pournaras, Murat Akova, Federico Pérez, Joaquín Bermejo, Antonio Oliver, Manel Almela, Warren Lowman, Benito Almirante, Robert A Bonomo, Yehuda Carmeli, David L Paterson, Alvaro Pascual, Jesús Rodríguez-Baño, and the REIPI/ESGBIS/INCREMENT Investigators†*

Interpretation Appropriate therapy was associated with a protective effect on mortality among patients with BSIs due to CPE. Combination therapy was associated with improved survival only in patients with a high mortality score. Patients with BSIs due to CPE should receive active therapy as soon as they are diagnosed, and monotherapy should be considered for those in the low-mortality-score stratum.

Lancet Infect Dis 2017;
17: 726–34



	Appropriate therapy (n=343)	Inappropriate therapy (n=94)	p value
Age (years)	66 (55·5–76·0)	66 (50–77)	0·76
Male sex	197 (57%)	58 (62%)	0·46
Enterobacteriaceae	..	..	0·27
Klebsiella pneumoniae	291 (85%)	84 (89%)	..
Other	52 (15%)	10 (11%)	..
Enterobacter cloacae	24 (7%)	4 (4%)	..
Escherichia coli	14 (4%)	3 (3%)	..
Enterobacter aerogenes	10 (3%)	3 (3%)	..
Citrobacter spp	3 (1%)	0	..
Serratia marcescens	1 (<1%)	0	..
Type of carbapenemase	..	..	0·64
OXA-48	57 (17%)	12 (13%)	..
KPC	253 (74%)	76 (81%)	..
Metallo-β-lactamases	33 (10%)	6 (6%)	..
VIM	30 (9%)	6 (6%)	..
Other	3 (1%)	0	..
Nosocomial acquisition	298 (87%)	87 (93%)	0·13
Source other than urinary or biliary tract	272 (79%)	76 (81%)	0·74
Vascular catheter	87 (25%)	13 (14%)	..
Pneumonia	34 (10%)	9 (10%)	..
Intra-abdominal	37 (11%)	7 (7%)	..
Skin and skin structures	11 (3%)	5 (5%)	..
Other	10 (3%)	3 (3%)	..
Unknown	93 (27%)	39 (41%)	..
ICU admission	123 (36%)	36 (38%)	0·66
Charlson comorbidity index score	2 (1–4)	2 (2–4)	0·74
Pitt bacteraemia score	2 (1–5)	3 (0–5)	0·50
Severe sepsis or septic shock	172 (50%)	57 (61%)	0·07
Mental status: not alert	156 (45%)	43 (46%)	0·96
Leukaemia or metastatic cancer	52(15%)	13 (14%)	0·75
Chronic liver disease	41 (12%)	16 (17%)	0·20
Chronic kidney disease	80 (23%)	18 (19%)	0·39
High-mortality-risk centre	105 (31%)	41 (44%)	0·02
Study period 2004–11 (reference 2012–13)	237 (69%)	67 (71%)	0·68
30 day mortality	132 (38%)	57 (61%)	0·0001

Data are n (%) or median (IQR). OXA=oxacillinase. KPC=*Klebsiella pneumoniae* carbapenemase. VIM=Verona integron-encoded metallo-β-lactamase. ICU=intensive care unit.

Table 1: **Characteristics of patients with bloodstream infections due to carbapenemase-producing Enterobacteriaceae**

Lancet Infect Dis 2017;
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Research Article

EASL EUROPEAN ASSOCIATION FOR THE STUDY OF THE LIVER | JOURNAL OF HEPATOLOGY

Epidemiology and outcomes of bloodstream infection in patients with cirrhosis

Michele Bartoletti[1], Maddalena Giannella[1], Paolo Caraceni[1], Marco Domenicali[1], Simone Ambretti[2], Sara Tedeschi[1], Gabriella Verucchi[1], Lorenzo Badia[1], Russell E. Lewis[1], Mauro Bernardi[1], Pierluigi Viale[1,*]

[1]*Department of Medical and Surgical Sciences, University of Bologna, Bologna, Italy;* [2]*Microbiology Unit, S. Orsola-Malpighi Hospital Bologna, Italy*

Conclusion: An increasing proportion of BSIs in cirrhotic patients are caused by resistant GNB and *Candida* spp. Accurate evaluation of risk factors for mortality may improve early appropriate therapeutic management.

Research Article

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[1]*Department of Medical and Surgical Sciences, University of Bologna, Bologna, Italy;* [2]*Microbiology Unit, S. Orsola-Malpighi Hospital Bologna, Italy*

Table 2. Microbiology etiology distribution between survivors and non-survivors groups per BSI episode.

	Total, n = 162 episodes (100%)	Survivors, n = 115 episodes (71%)	Non-survivors, n = 47 episodes (29%)	*p* value
Enterobacteriaceae	77 (47)	57 (50)	22 (47)	0.86
Escherichia coli	22 (13)	18 (16)	4 (9)	0.23
Escherichia coli (FQR)	4 (2)	4 (3)	0 (0)	0.65
Escherichia coli (ESBL)	17 (10)	13 (11)	4 (9)	0.60
Enterobacter species	7 (4)	6 (5)	1 (2)	0.18
Klebsiella pneumoniae	4 (2)	3 (3)	1 (2)	0.86
Klebsiella pneumoniae (FQR)	4 (2)	4 (3)	0 (0)	0.20
Klebsiella pneumoniae (ESBL)	7 (4)	2 (2)	5 (11)	0.01
Klebsiella pneumoniae (KPC)	14 (8)	7 (6)	7 (15)	0.07
Other *enterobactericeae*[b]	3 (1)	2 (2)	1 (2)	0.99
Non-fermenters	25 (15)	19 (17)	6 (13)	0.64
Pseudomonas aeruginosa	10 (6)	8 (7)	2 (4)	0.73
Acinetobacter baumanii	10 (6)	8 (7)	2 (4)	0.73
Stenotrophomonas maltophilia	5 (3)	3 (3)	2 (4)	0.63

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Epidemiology, microbiology and outcomes of healthcare-associated and community-acquired bacteremia: A multicenter cohort study

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World J Gastroenterol 2016 April 21; 22(15): 4049-4056
ISSN 1007-9327 (print) ISSN 2219-2840 (online)

ORIGINAL ARTICLE

Prospective Study

Extensively drug-resistant bacteria are an independent predictive factor of mortality in 130 patients with spontaneous bacterial peritonitis or spontaneous bacteremia

Alexandra Alexopoulou, Larisa Vasilieva, Danai Agiasotelli, Kyriaki Siranidi, Sophia Pouriki, Athanasia Tsiriga, Marina Toutouza, Spyridon P Dourakis

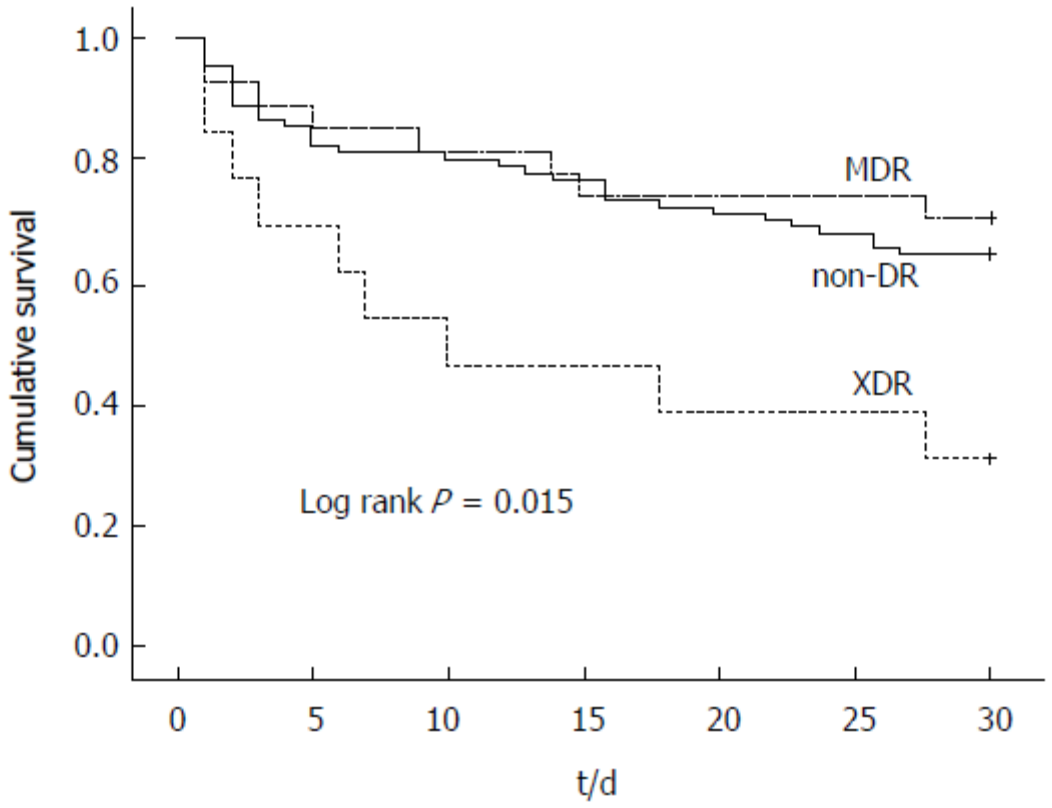

Figure 1 Comparison of survival among patients infected with extensively drug-resistant, multi-drug-resistant and non-drug-resistant bacteria. Non-DR: Non-drug-resistant bacteria; MDR: Multi-drug resistant; XDR: Extensively drug-resistant.

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CONCLUSION: XDR bacteria are an independent life-threatening factor in SBP/SB. Strategies aiming at restricting antibiotic overuse and rapid identification of the responsible bacteria could help improve survival.

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SYSTEMATIC REVIEWS

Nosocomial spontaneous bacterial peritonitis antibiotic treatment in the era of multi-drug resistance pathogens: A systematic review

Marco Fiore, Alberto Enrico Maraolo, Ivan Gentile, Guglielmo Borgia, Sebastiano Leone, Pasquale Sansone, Maria Beatrice Passavanti, Caterina Aurilio, Maria Caterina Pace

Summary *Objectives:* Classically, infections have been considered either nosocomial or community-acquired. Healthcare-associated infection represents a new classification intended to capture patients who have infection onset outside the hospital, but who, nonetheless, have interactions with the healthcare system. Regarding bloodstream infection (BSI), little data exist differentiating healthcare-associated bacteremia (HCAB) from community-acquired bacteremia (CAB). We studied the epidemiology and outcomes associated with HCAB.

Methods: We conducted a multicenter, retrospective chart review at 7 US hospitals, of consecutive patients admitted with a BSI during 2006, who met pre-defined selection criteria. We defined HCAB as a BSI in a patient who met $\geq$1 of the criteria: 1) hospitalization within 6 months; 2) immunosuppression; 3) chronic hemodialysis; or 4) nursing home residence. The rest were classified as CAB. We examined patient demographics, severity of illness, and in-hospital mortality rates by HCAB vs. CAB status. A bootstrap logistic regression model was developed to quantify the independent association between HCAB and hospital mortality.

Results: Of the total 1143 patients included, HCAB accounted for 63.7%, with the percentage ranging from 49.0% to 78.1% across centers. HCAB patients were older (58.5 $\pm$ 17.5 vs. 55.0 $\pm$ 19.9 years, $p = 0.003$) and slightly more likely to be male (56.1% vs. 50.2%, $p = 0.044$) than those with CAB. HCAB was associated with a higher mean Acute Physiology Score (12.6 $\pm$ 6.2 vs. 11.4 $\pm$ 5.7, $p = 0.009$) and recent hospitalization was the most prevalent criteria for defining HCAB (76.5%). Hospital LOS was longer in the HCAB (median 8, IQR 5–15


Antibiotic
Resistance
bacteria
less effective
bacteria infection
abuse
overuse
unnecessarily
airplane
water
ability
spread
antibiotics
coughing
mutations
resist
place
wind
resistant
Different
hands
contact
cold
treatment
genetic
Internet
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effective
therapeutic
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occurs
phenomenon
levels
courses
potent
People
acquire
produce
attacks
clinical
treat
survival
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chance
others
New resistance
yield
unwashed
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target
words
risk
travel
prevention
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enzymes
ever-increasing
Patients
multiply
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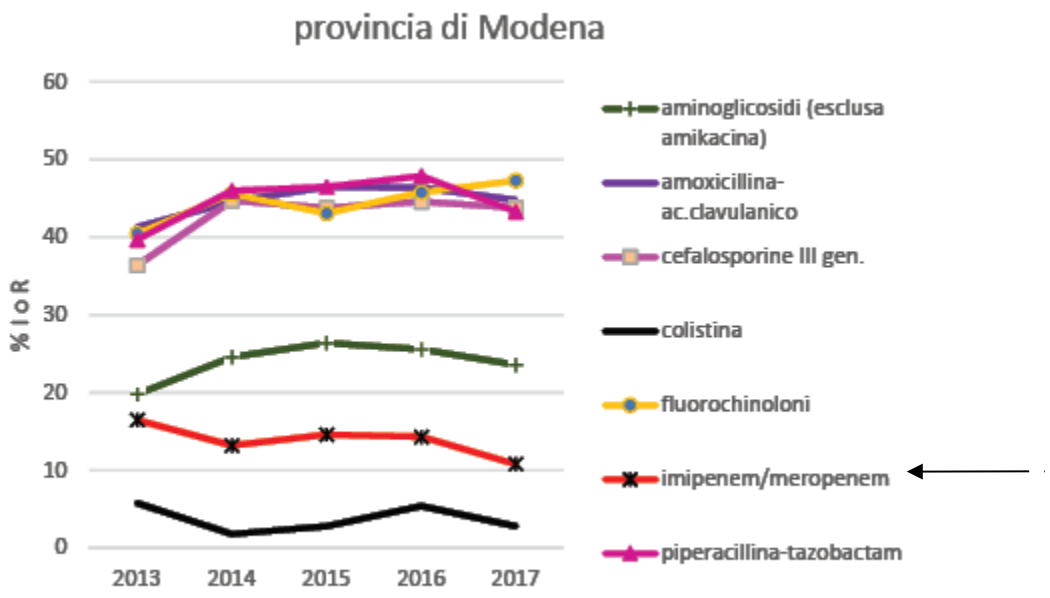
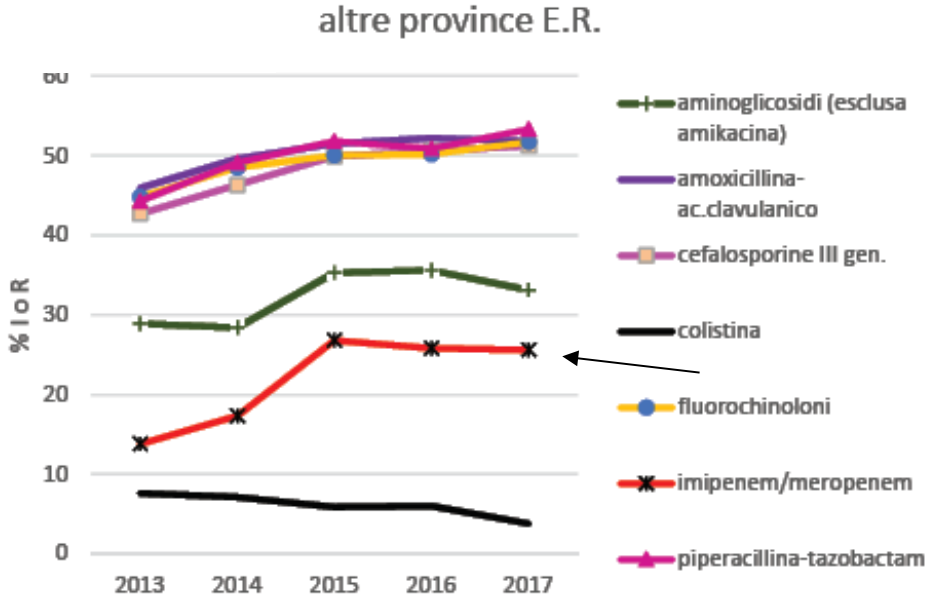
lost
outcomes

Scheda 9: ***Antibioticoresistenze – K. pneumoniae – Sangue – anni 2013-2017 (% paz. con isolato I o R)***





Indicazioni pratiche e protocolli operativi per la diagnosi, la sorveglianza e il controllo degli enterobatteri produttori di carbapenemasi nelle strutture sanitarie e socio-sanitarie

Luglio 2011

Regione Emilia-Romagna

Agenzia sanitaria e sociale regionale

Indicazioni pratiche e protocolli operativi per la diagnosi, la sorveglianza e il controllo degli enterobatteri produttori di carbapenemasi nelle strutture sanitarie e socio-sanitarie

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(Questo documento sostituisce il precedente redatto nel mese di Luglio 2011)

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Febbraio 2017

(Questo documento sostituisce il precedente redatto nel mese di Gennaio 2013)

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Microbiologia

Refertazione (SIO)

Comunicazione telefonica per: CPE, Acinetobacter baumannii MDR, Legionella pneumophila

Unità Operativa

@

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Batteriemie CPE

ANTIMICROBIAL STEWARDSHIP

- Antimicrobial stewardship refers to **coordinated interventions designed to improve and measure the appropriate use of antimicrobial agents by** promoting the **selection of the optimal antimicrobial drug regimen** including dosing, duration of therapy, and route of administration. The major objectives of antimicrobial stewardship are to achieve **best clinical outcomes related to antimicrobial use while minimizing toxicity and other** adverse events, thereby limiting the selective pressure on bacterial populations that drives the emergence of **antimicrobial-resistant strains.** Antimicrobial stewardship **may also reduce excessive costs attributable to** suboptimal antimicrobial use.

Policy Statement on Antimicrobial Stewardship by the Society for Healthcare Epidemiology of America (SHEA), the Infectious Diseases Society of America (IDSA), and the Pediatric Infectious Diseases Society (PIDS), 2012

Grazie per l'attenzione