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Curso de Medicina – UNISC
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- **Candidemia**
- ***Clostridium spp.***
- **Influenza vs *Antibiotic Stewardship***
- **MRSA/VRE vs CHG vs Mupirocin**
- **ITU vs Unncessary urine cultures vs Antimicrobial**
- **Antimicrobial Resistance vs Stewardship**
- **Nosocomial Tuberculosis**

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RESEARCH ARTICLE

Epidemiology and Microbiologic Characterization of Nosocomial Candidemia from a Brazilian National Surveillance Program

André Mario Doi[1], Antonio Carlos Campos Pignatari[1], Michael B. Edmond[4], Alexandre Rodrigues Marra[2], Luis Fernando Aranha Camargo[3], Ricardo Andreotti Siqueira[1], Vivian Pereira da Mota[5], Arnaldo Lopes Colombo[1]*

1 Department of Medicine, Division of Infectious Diseases, Universidade Federal de São Paulo, São Paulo, SP, Brazil, **2** Division of Medical Practice, Hospital Israelita Albert Einstein, São Paulo, SP, Brazil, **3** Instituto Israelita de Ensino e Pesquisa Albert Einstein, Hospital Israelita Albert Einstein, São Paulo, SP, Brazil, **4** Department of Internal Medicine, University of Iowa Carver College of Medicine, Iowa City, IA, United States of America, **5** Laboratório Central, Hospital São Paulo, São Paulo, SP, Brazil

BRSCOPE
16 hospitals
- RS (2)

2563 BSI
(2007-2010)

Prevalence
Candidemia
= 5,6%

PLOS ONE | DOI:10.1371/journal.pone.0146909 January 25, 2016

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Resistence = 34% (Fluconazol)
C. glabrata
C. krusei

RF Candidemia not albicans:
- Ca
- CVC
- PNT
- Neutropenia

Table 1. Demographics and clinical characteristics of the 137 patients with *Candida* spp. monomicrobial nosocomial bloodstream infections.

Parameters	No
Demographics	
Male	71 (51.8%)
Age (median)	56 y.o
Hospitalization	
Time to candidemia*	29 days
ICU admission**	88 (64.2%)
ICU at the time of candidemia	64 (46.7%)
Underlying Conditions	
Malignancy	44 (32.1%)
Gastrointestinal	26 (18.9%)
Neurologic	11 (8.0%)
Respiratory	9 (6.5%)
Renal	9 (6.5%)
Hepatic	8 (5.8%)
Cardiovascular	7 (5.1%)
Trauma	6 (4.3%)
Transplantation (solid organ)	5 (2.9%)
Transplantation (bone marrow)	2 (1.4%)

*Time to candidemia: time from hospital admission to first culture positive for *Candida* spp.
** ICU—Intensive Care Unit.

PLOS ONE | DOI:10.1371/journal.pone.0146909 January 25, 2016

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Mortality > contries of Northern Hemisphere

Table 2. Crude mortality of patients with candidemia stratified by venue.

	Total (137)	ICU *(64)	Non ICU (73)	Private Hospital **(28)	Non-private Hospital (109)
Crude Mortality	72.2% (99)	85.0% (55)	53.0% (39)	75.0% (21)	66.9% (73)

*ICU vs. non-ICU—p-value <0.01 (OR = 5.3 95%CI 2.2–13.6).

**Private hospital vs. non-private hospital—p-value = 0.42 (OR = 1.5 95%CI 0.5–4.3).

Mortality – main hypotheses

- Age (>56 y and < 12 y)
- Ca (32,1%)
- UTI – 47% - APACHE High
- Late diagnosis
- Sub-optimal treatment (fluconazol)
- Without focus control

PLOS ONE | DOI:10.1371/journal.pone.0146909 January 25, 2016

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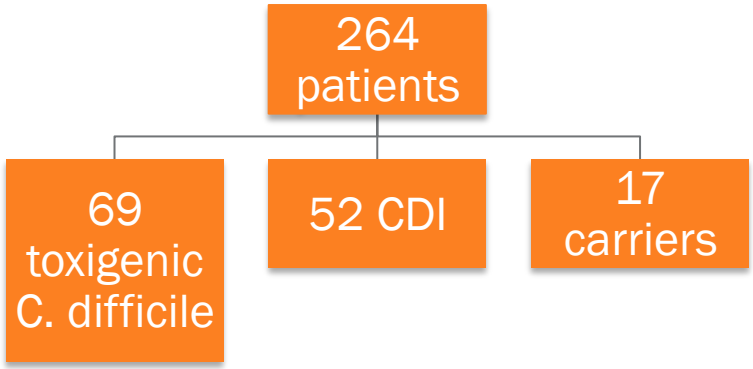
Transmission of *Clostridium difficile* During Hospitalization for Allogeneic Stem Cell Transplant

Mini Kamboj, MD;[1,2,3] Anna Sheahan, PhD;[1] Janet Sun, BS;[1] Ying Taur, MD, MPH;[2,3] Elizabeth Robilotti, MD, MPH;[1,2,3] Esther Babady, PhD;[4] Genovefa Papanicolaou, MD;[2,3] Ann Jakubowski, MD, PhD;[3,5] Eric Pamer, MD;[2,3] Kent Sepkowitz, MD[1,2,3]

INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY JANUARY 2016, VOL. 37, NO. 1

Most cases of CDI after stem cell transplant represent delayed onset disease in non symptomatic carriers. Transmission on stem cell transplant unit was confirmed in 19% of early CDI cases in our cohort with a probable donor source established in half of the cases.



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Clostridium difficile—To Test or Not to Test?

Anna-Rose Prior, MB, MRPCI, FRCPath;[1,2]
Fidelma Fitzpatrick, MD, BA(Mod), FRCPI, FRCPath[1,2]
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a week of admission

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Anna-Rose Prior, MB, MRPCI, FRCPath;[1,2]
Fidelma Fitzpatrick, MD, BA(Mod), FRCPI, FRCPath[1,2]

INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY MARCH 2016, VOL. 37, NO. 3

C. difficile laboratory results are used not only to manage patients with CDI but also to minimize C. difficile transmission risk, we argue that delaying specimen acquisition until the patient has had ≥3 episodes of diarrhea in 24 hours increases the risk of C. difficile transmission.

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"Test all with risk factors independent of the number of episodes of diarrhea."

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COMMENTARY

Clostridium difficile: The More We Learn, the Less We Know

Virginia R. Roth
Canada

USA

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Clostridium difficile: The More We Learn, the Less We Know

Virginia R. Roth

"Acquisition is traditionally thought to involve the ingestion of spores from the contaminated healthcare environment by patients whose normal bowel flora is altered by antibiotics. While the majority of these patients remain asymptomatic, some develop diarrhea, further contaminating the environment and serving as a source of ongoing transmission. "

INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY JANUARY 2016, VOL. 37, NO. 1

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Efficacy of Oral Vancomycin in Preventing Recurrent *Clostridium difficile* Infection in Patients Treated With Systemic Antimicrobial Agents

Nicholas W. Van Hise,[1] Alex M. Bryant,[2] Erin K. Hennessey,[2,4] Andrew J. Crannage,[2,4] Jad A. Khoury,[3] and Farrin A. Manian[5]

CID 2016:63 (1 September)

The incidence of C. difficile infection was significantly lower in patients receiving prophylaxis (4.2% vs 26.6% in those without prophylaxis; odds ratio, 0.12; 95% confidence interval, .04–.4; P < .001). Prospective studies are needed to better define the risks and benefits of OVP in this vulnerable patient population.

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INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY MAY 2016, VOL. 37, NO. 5

ORIGINAL ARTICLE

Antibiotic Utilization and Opportunities for Stewardship Among Hospitalized Patients With Influenza Respiratory Tract Infection

Islam M. Ghazi, PharmD;[1] David P. Nicolau, PharmD;[1,2] Michael D. Nailor, PharmD;[3,4] Jaber Aslanzadeh, PhD;[5] Jack W. Ross, MD;[2] Joseph L. Kuti, PharmD[1]

Retrospectively studied – 322 adults (2012-2014)

Influenza respiratory tract infections

65,5% use antimicrobial

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- Inappropriate antibiotic duration (IAD) was defined as antibiotic use for >24 hours after a positive influenza test = 34,5% (had a longer length of stay – 6 days)

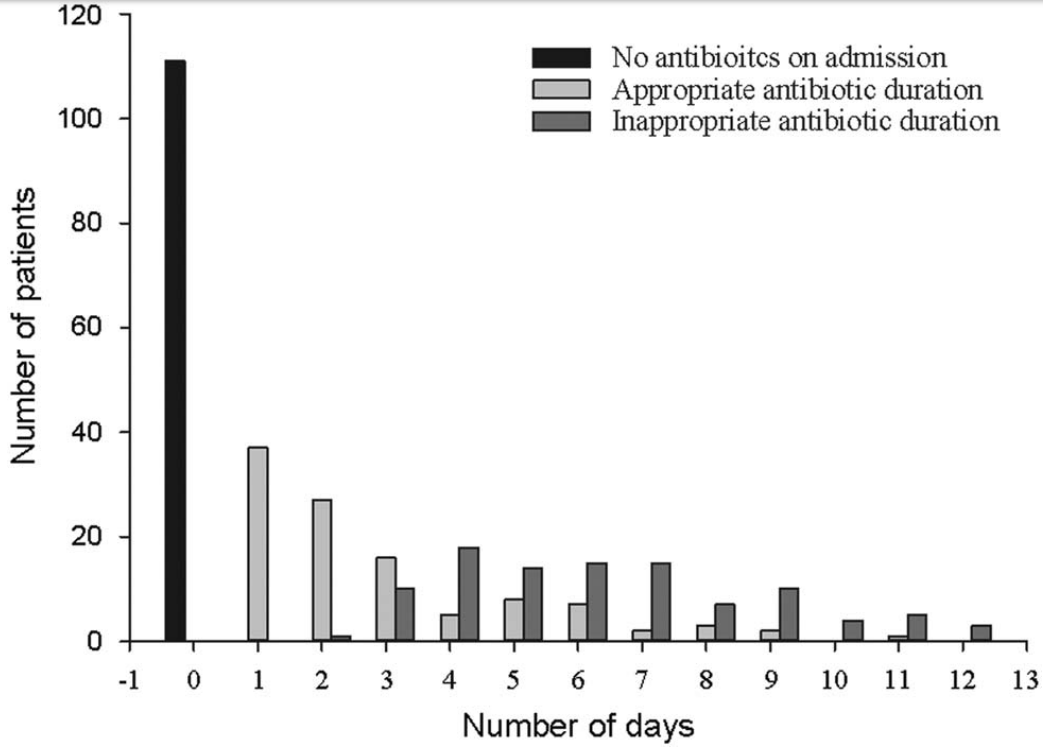

FIGURE 1. Number of patients treated with antibiotics per number of days in appropriate antibiotic duration versus inappropriate antibiotic duration groups.

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TABLE 2. Clinical and Economic Outcomes by No Antibiotics on Admission Versus Appropriate Antibiotic Duration Versus Inappropriate Antibiotic Duration

Outcome	Total cohort (N = 322)	No Antibiotics on Admission (N = 111; 34.4%)	Appropriate Antibiotic Duration (N = 138; 42.8%)	Inappropriate Antibiotic Duration (N = 73; 22.7%)	*P* Value
Mortality	11 (3.4)	2 (1.8)	6 (4.3)	3 (4.1)	.510
Time to temperature normalization, median d (IQR)	1 (1–2)	1 (1–2)	1 (1–2)	1 (1–2)	.373
Time to WBC normalization, median d (IQR)	2 (1–3)	1 (1–1.5)	2 (1–4.25)	2 (1–3.75)	.050
LOS, median d (IQR)	5 (3–7)	4 (3–6)	5 (3–8)	6 (4–9)	<.001[a]
Discharge status					
Home	218 (70.1)	83 (74.7)	91 (65.9)	44 (60.2)	.154
Health care	93 (29.9)	26 (23.4)	41 (24.7)	26 (35.6)	
30-day readmission	40 (12.4)	11 (9.9)	21 (15.2)	9 (12.3)	.455
Total hospital cost, median $ (IQR)	7,553 (5,002–13,077)	5,961 (4,711– 9,575)	7,479 (4,866–12,922)	10,645 (6,485–18,035)	<.001[a]
Hospital net revenue, median $ (IQR)[b]	2,214 (−2,091–4,623)	2,202 (−507–4,342)	2,957 (−1,616–6,439)	881 (−4,892–3,196)	<.001[a]

- Median loss in net hospital revenue of $ 2.076/IAD

- Mortality was similar.

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ORIGINAL ARTICLE

Prevalence of *qacA/B* Genes and Mupirocin Resistance Among Methicillin-Resistant *Staphylococcus aureus* (MRSA) Isolates in the Setting of Chlorhexidine Bathing Without Mupirocin

David K. Warren, MD, MPH;[1] Martin Prager, MD;[1] Satish Munigala, MBBS, MPH;[1] Meghan A. Wallace, BS;[2] Colleen R. Kennedy;[2] Kerry M. Bommarito, PhD;[1] John E. Mazuski, MD, PhD;[3] Carey-Ann D. Burnham, PhD[2]

To determine the frequency of qacA/B chlorhexidine tolerance genes and high-level mupirocin resistance among MRSA isolates before and after the introduction of a chlorhexidine (CHG) daily bathing intervention in a surgical intensive care unit.

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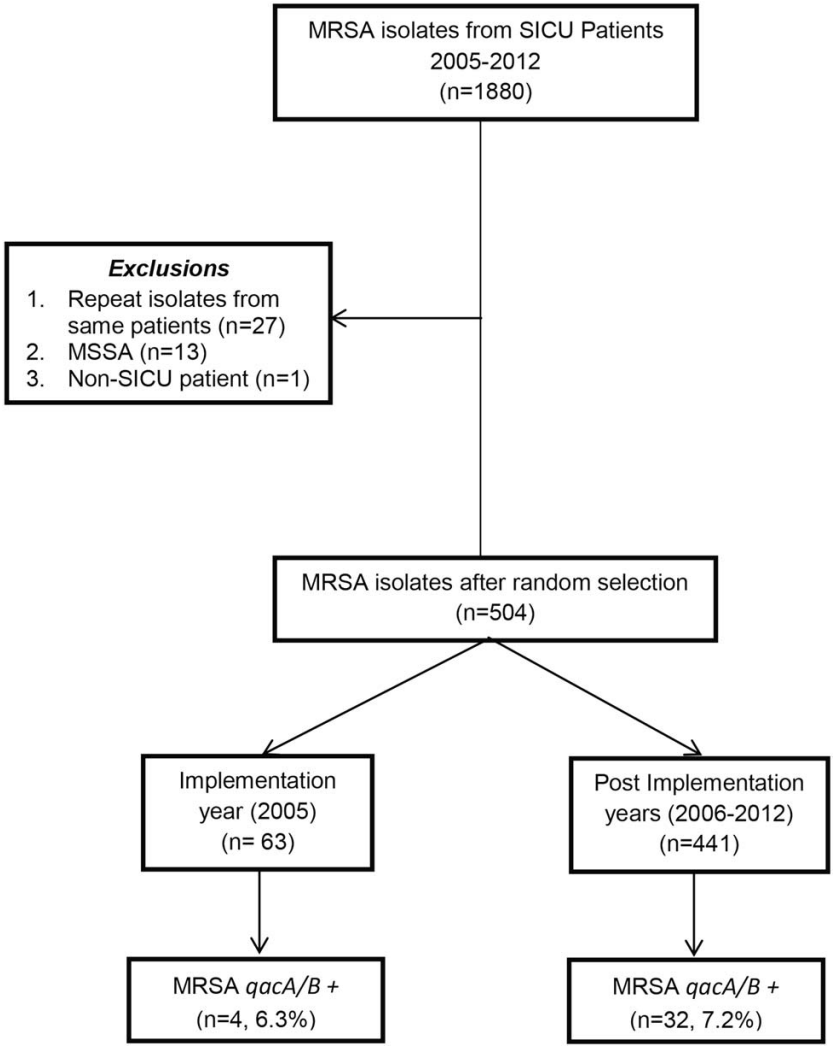

36,5% SCC*mec* tipo IV

The prevalence of MRSA with SCCmec type IV increased over the study period.

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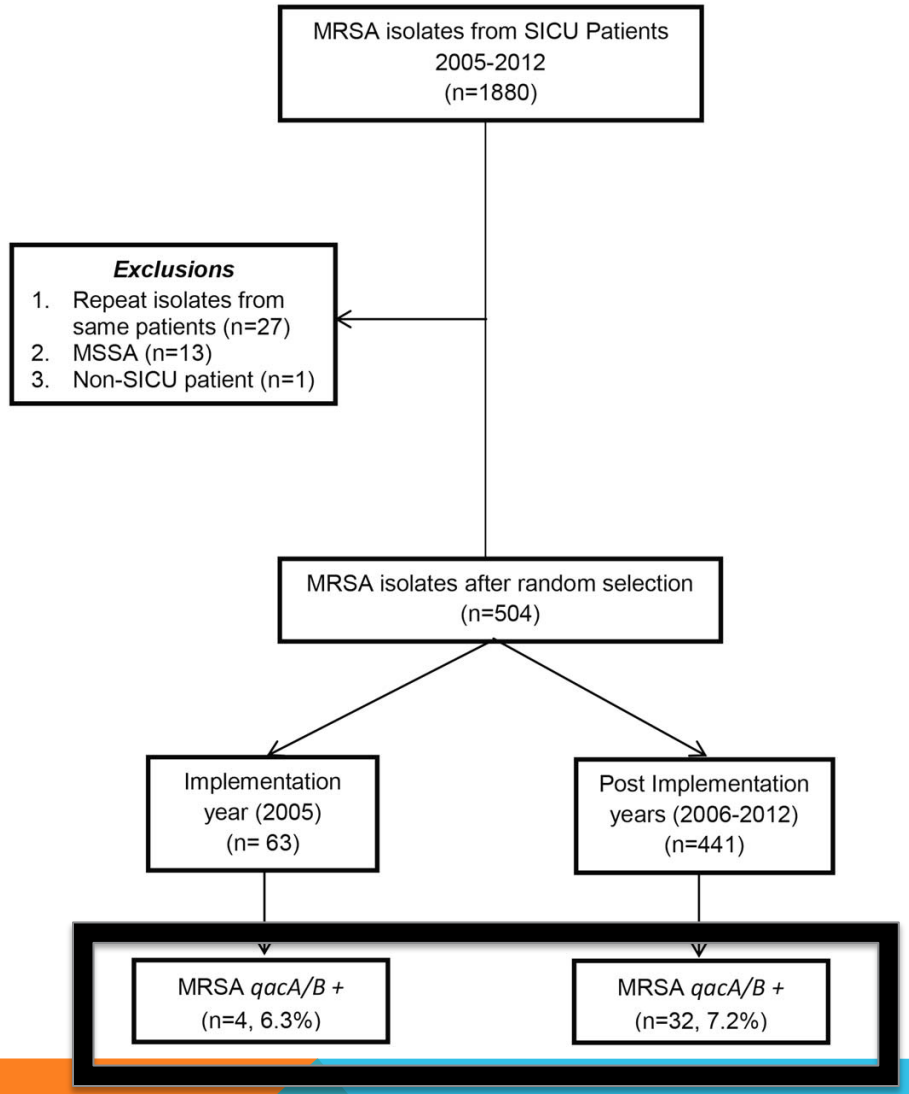

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TABLE 3. Comparison of MRSA Isolate Characteristics by *qacA/B* Status

	qacA/B(+) MRSA, No. (%) (n = 36)	*qacA/B*(−) MRSA, No. (%) (n = 468)	*P* Value
mupA(+)	9 (25)	26 (5.6)	**.003**
mupA(−)	27 (75)	442 (94.4)	
SCCmec type			
I	2 (5.5)	8 (1.7)	.15
II	18 (50.0)	287 (61.4)	.21
III	0	3 (0.6)	.00
IV	15 (41.7)	169 (36.1)	.59
V	1 (2.8)	1 (0.2)	.13

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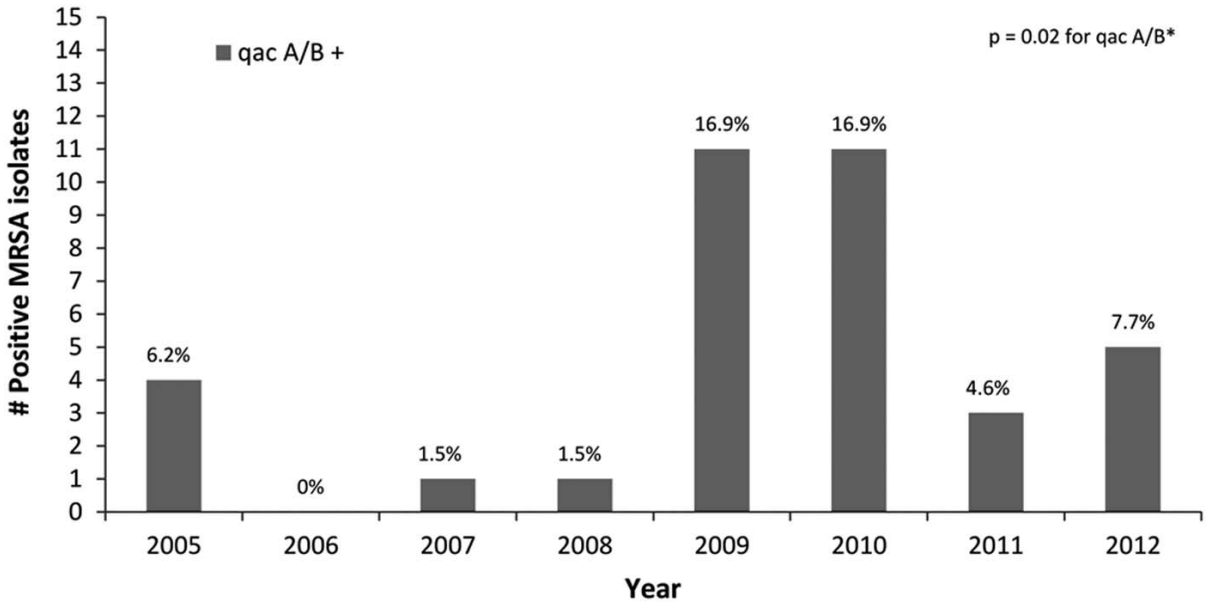
This change in the frequency of qacA/B genes is most likely due to patients in those years being exposed in prior admissions.



This was not a linear relationship

FIGURE 2. Prevalence of *qacA/B*(+) among sampled MRSA nasal isolates, per year (2005–2012). MRSA, methicillin-resistant *S. aureus*; p, *P* value.

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CONCLUSIONS

- Prevalence of qacA/B associated with chlorhexidine tolerance did change over time among colonizing MRSA isolates over the 8-year period of daily patient bathing with chlorhexidine soap;

- Further studies are needed to determine whether other ICU-based decolonization strategies, such as universal treatment with chlorhexidine and intranasal mupirocin, will result in selection of co-resistant isolates.

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Evaluation of a Novel Intervention to Reduce Unnecessary Urine Cultures in Intensive Care Units at a Tertiary Care Hospital in Maryland, 2011–2014

Lauren Epstein, MD, MSc;[1,2] Jonathan R. Edwards, Mstat;[1] Alison Laufer Halpin, PhD;[1] Michael Anne Preas, RN, BSN, CIC;[3] David Blythe, MD, MPH;[4] Anthony D. Harris, MD, MPH;[5] David Hunt, MSN, MBA, RN;[3] J. Kristie Johnson, PhD;[5] Mala Filippell, RN, BSN, CIC;[3] Carolyn V. Gould, MD, MSc;[1] Surbhi Leekha, MBBS, MPH[5]

Infect Control Hosp Epidemiol 2016;37:606–609

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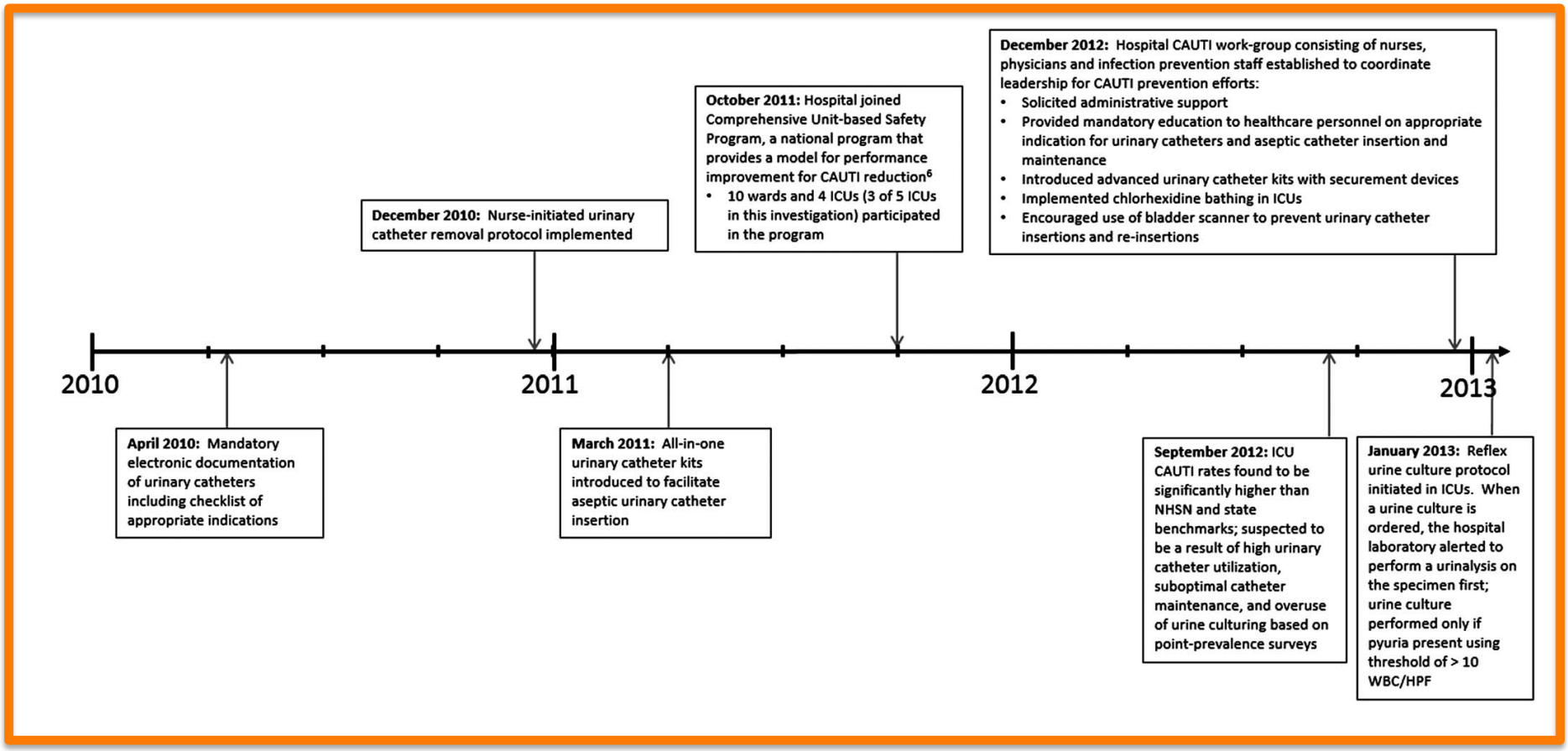

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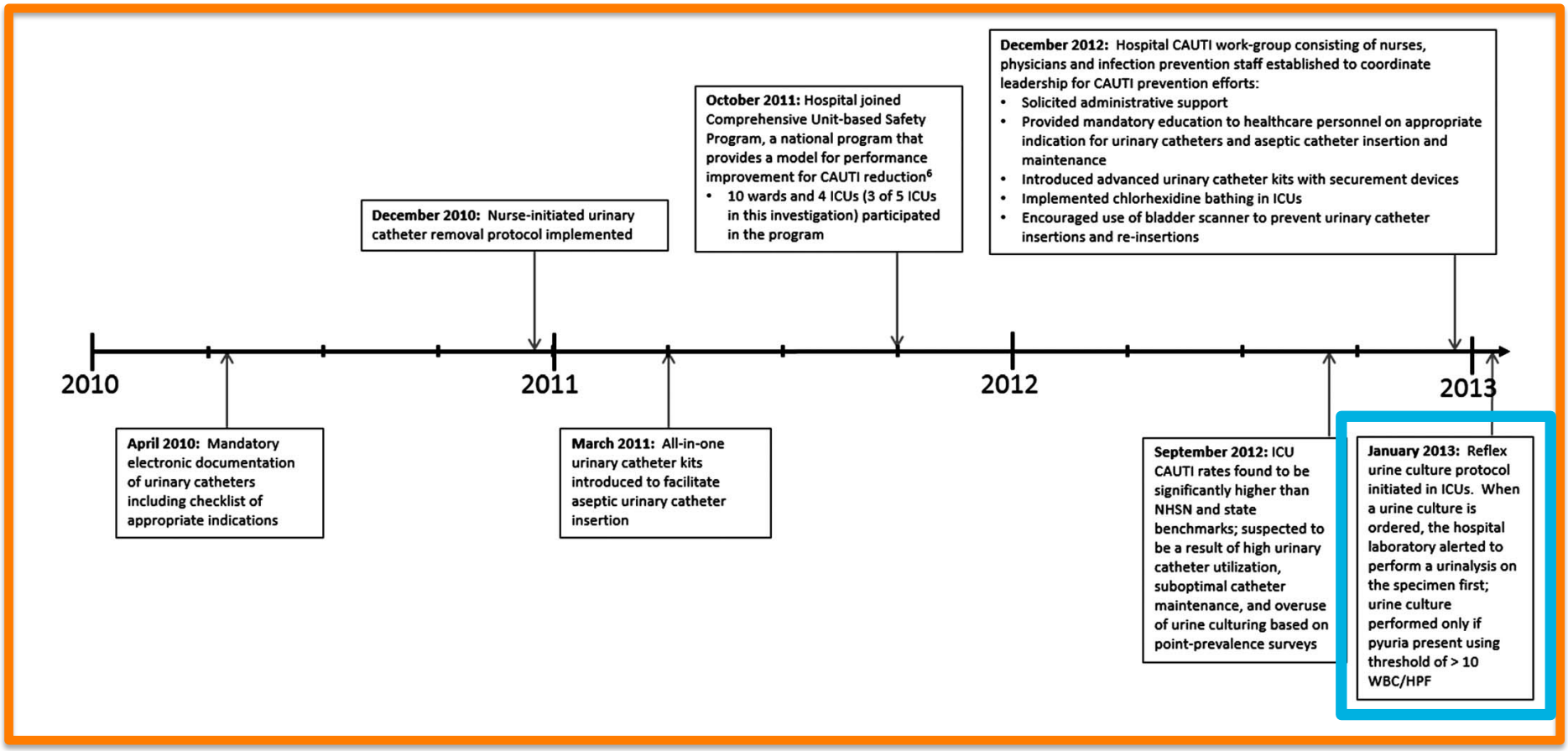

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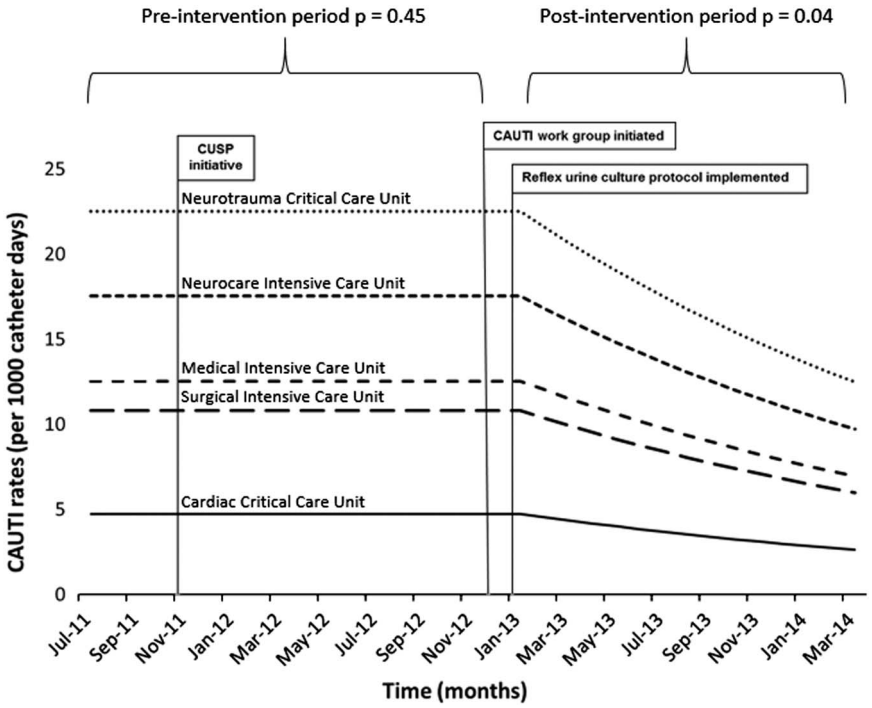

FIGURE 3. Predicted catheter-associated urinary tract infection (CAUTI) rates in 5 intensive care units in relation to hospital interventions, July 1, 2011–March 31, 2014. CAUTI rates at the beginning of the preintervention period differed significantly among the 5 intensive care unit locations; therefore, each unit is shown individually. CUSP, Comprehensive Unit-based Safety Program.

Infect Control Hosp Epidemiol 2016;37:606–609

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Evaluation of a Novel Intervention to Reduce Unnecessary Urine Cultures in Intensive Care Units at a Tertiary Care Hospital in Maryland, 2011–2014

These findings also hint at a broader question of whether test ordering practices can be modified to optimize test performance and patient outcomes. Assessing the impact of laboratory-based interventions on other outcomes such as antimicrobial use will inform future interventions.

Infect Control Hosp Epidemiol 2016;37:606–609

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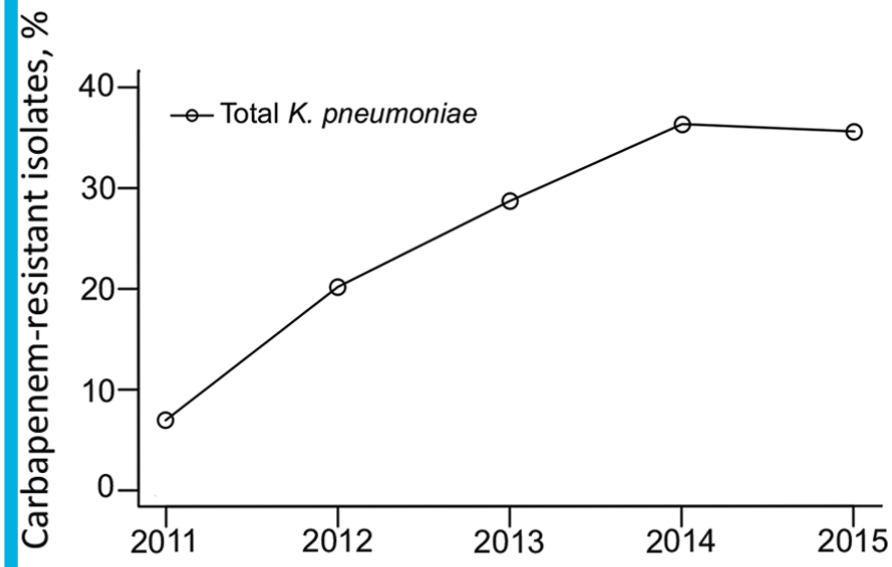
Polymyxin B Resistance in Carbapenem-Resistant *Klebsiella pneumoniae*, São Paulo, Brazil

Flávia Bartolleti, Bruna Mara Silva Seco, Carla Capuzzo dos Santos, Carolina Bragança Felipe, Mara Elisa Borsato Lemo, Tatiane da Silva Alves, Lilian F. Passadore, Marcelo J. Mimica, Suely Carlos Ferreira Sampaio, Alexandre Prehn Zavascki, Jorge Luiz Mello Sampaio

N = 3,085; p<0.001).



Emerging Infectious Diseases • www.cdc.gov/eid • Vol. 22, No. 10, October 2016

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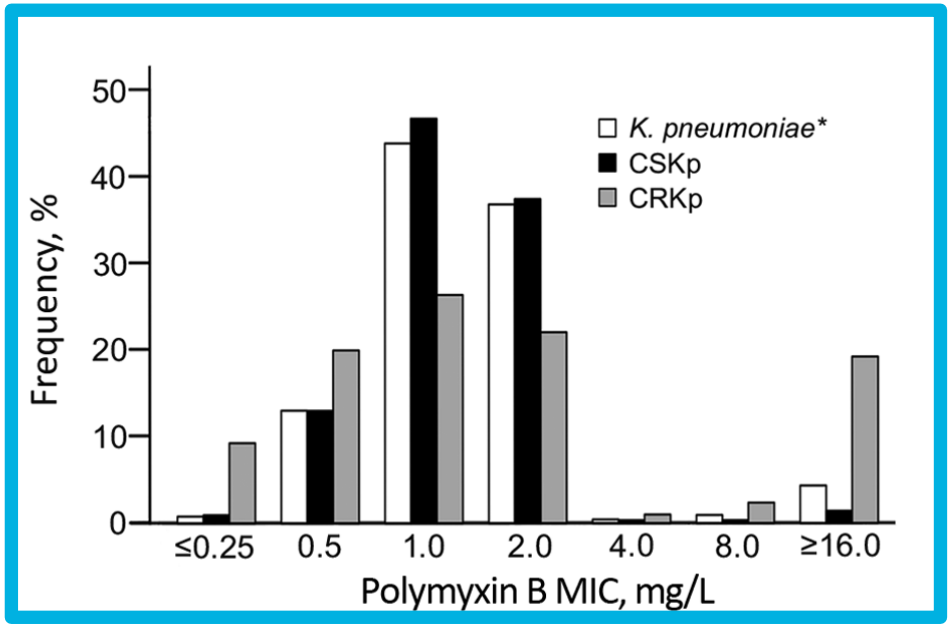
Polymyxin B Resistance in Carbapenem-Resistant *Klebsiella pneumoniae*, São Paulo, Brazil

Flávia Bartolleti, Bruna Mara Silva Seco, Carla Capuzzo dos Santos, Carolina Bragança Felipe, Mara Elisa Borsato Lemo, Tatiane da Silva Alves, Lilian F. Passadore, Marcelo J. Mimica, Suely Carlos Ferreira Sampaio, Alexandre Prehn Zavascki, Jorge Luiz Mello Sampaio



Emerging Infectious Diseases • www.cdc.gov/eid • Vol. 22, No. 10, October 2016

Brazil

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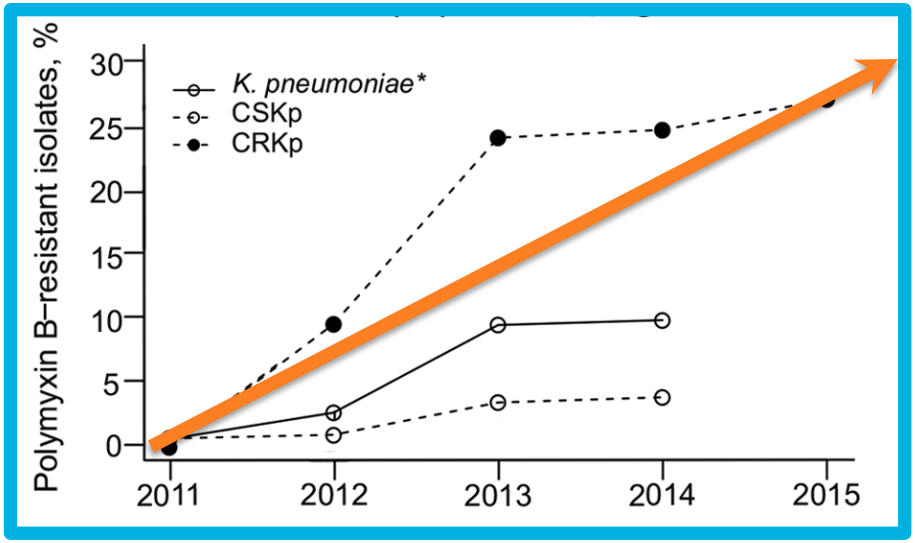

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Review

Antimicrobial resistance in *Enterobacteriaceae* in Brazil: focus on β-lactams and polymyxins

Jorge Luiz Mello Sampaio[a,b,*], *Ana Cristina Gales*[c,*]

BRAZILIAN JOURNAL OF MICROBIOLOGY 47S (2016) 31–37

- During the last 30 years there has been a dissemination of plasmid-mediated B-lactamases in Enterobacteriaceae in Brazil.
- Klebsiella pneumoniae carbapenemase-producing Enterobacteriaceae became widely disseminated in Brazil during the last decade and KPC production is currently the most frequent resistance mechanism (96.2%) in carbapenem resistant K. pneumoniae.

Brazil

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Current evidence on hospital antimicrobial stewardship objectives: a systematic review and meta-analysis

Emelie C Schuts, Marlies E J L Hulscher, Johan W Mouton, Cees M Verduin, James W T Cohen Stuart, Hans W P M Overdiek, Paul D van der Linden, Stephanie Natsch, Cees M P M Hertogh, Tom F W Wolfs, Jeroen A Schouten, Bart Jan Kullberg, Jan M Prins

Lancet Infect Dis. 2016 Jul;16(7):847-856.

Antimicrobial stewardship is advocated to improve the quality of antimicrobial use. We did a systematic review and meta-analysis to assess whether antimicrobial stewardship objectives had any effects in hospitals and long-term care facilities on four predefined patients' outcomes: clinical outcomes, adverse events, costs, and bacterial resistance rates.

Netherlands

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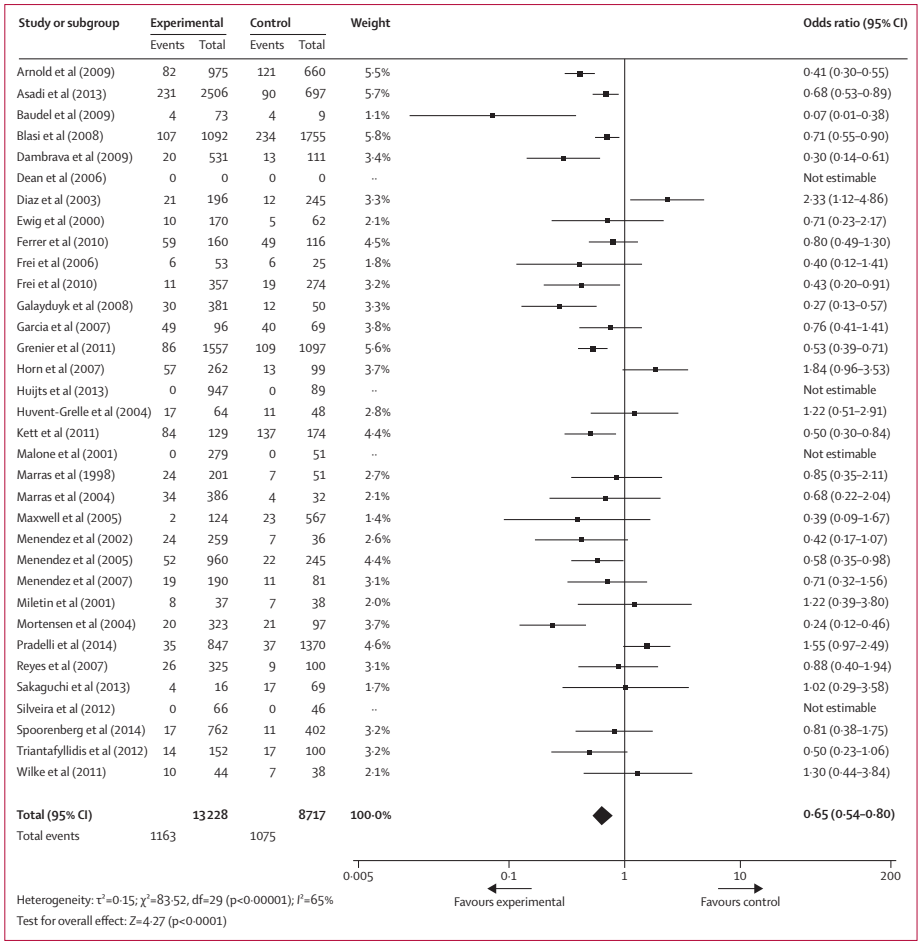

Figure 2: **Effect on mortality of prescribing empirical antimicrobial therapy according to guidelines**

Guideline-adherent empirical therapy was associated with a RR reduction for mortality of 35% (RR 0.65, 95% CI 0·54–0·80, p<0·0001) and for de-escalation of 66% (RR 0.44, 0·30–0·66, p<0·0001).

Lancet Infect Dis. 2016 Jul;16(7):847-856.

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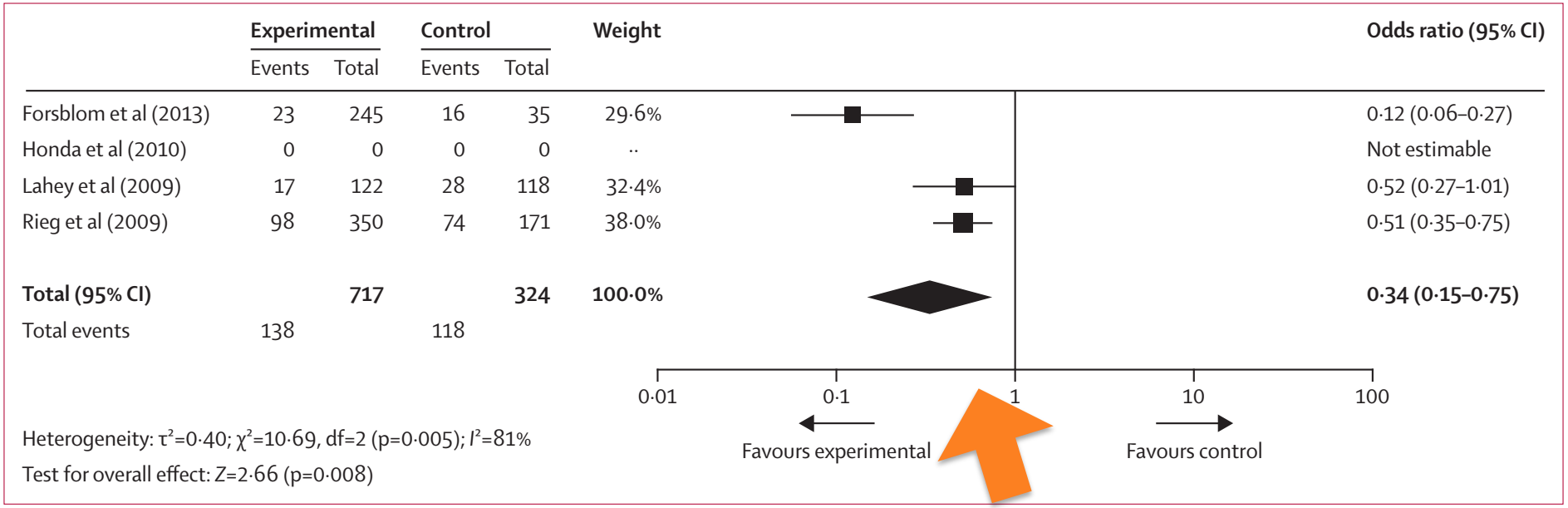

***Figure 4*: Effect of bedside consultation for *Staphylococcus aureus* bacteraemia on mortality**

Lancet Infect Dis. 2016 Jul;16(7):847-856.

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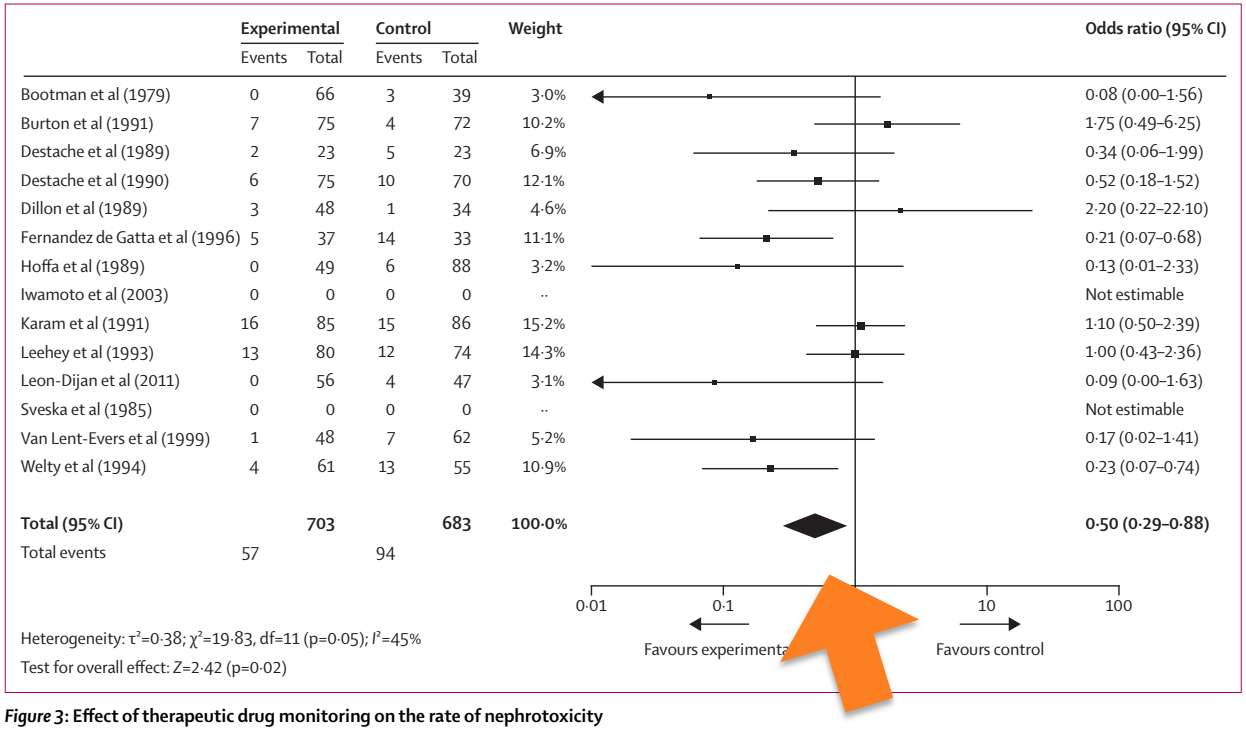

***Figure 3*: Effect of therapeutic drug monitoring on the rate of nephrotoxicity**

Evidence of effects was less clear for adjusting therapy according to renal function, discontinuing therapy based on lack of clinical or microbiological evidence of infection, and having a local antibiotic guide.

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- Polymyxin B resistance in KPC-2-producing K. pneumoniae has come to an alarming rate of 27.1% in 2015 in São Paulo, the largest city in Brazil.
- New Delhi metallo-B-lactamase was detected in Brazil in 2013, has been reported in different Brazilian states but are not widely disseminated.
- Antimicrobial resistance in Enterobacteriaceae in Brazil is a very serious problem that needs urgent actions which includes both more strict adherence to infection control measures and more judicious use of antimicrobials.

Brazil

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Antimicrobial Stewardship: A Call to Action for Surgeons

Massimo Sartelli,[1] Therese M. Duane,[2] Fausto Catena,[3] Jeffrey M. Tessier,[4] Federico Coccolini,[5] Lillian S. Kao,[6] Belinda De Simone,[3] Francesco M. Labricciosa,[7] Addison K. May,[8] Luca Ansaloni,[5] and John E. Mazuski[9]

SURGICAL INFECTIONS
Volume 17, Number 6, 2016

Review

"Surgeons: Hear your call. It is your time to participate and your time to lead. Now is the time to act!"

Italy

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- **Candidemia**
- ***Clostridium spp.***
- **Influenza vs *Antibiotic Stewardship***
- **MRSA/VRE vs CHG vs Mupirocin**
- **ITU vs Unncessary urine cultures vs Antimicrobial**
- **Antimicrobial Resistance vs Stewardship**
- **Nosocomial Tuberculosis**

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Protecting Our Front-liners: Occupational Tuberculosis Prevention Through Infection Control Strategies

Sabine Verkuijl[1] and Keren Middelkoop[2,3]

Clinical Infectious Diseases® 2016;62(S3):S231–7

"HCWs are on the front lines of care—and on the front lines of risk. We must also be on the front lines of change"

South Africa

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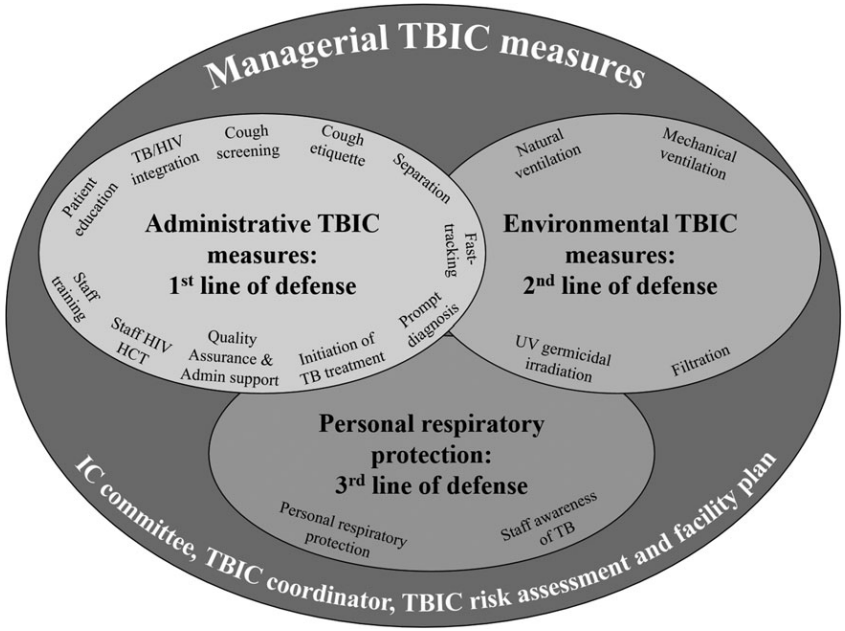

Table 1. Fears Expressed by Healthcare Workers in Drug-Resistant Tuberculosis Hospital Wards

Working Environment	HCWs' Own Well-being	Well-being of Family/ Dependents
• Inadequate infection control implementation • Patients' behavior • Lack of particulate respirators • Stigma should they develop MDR or XDR tuberculosis	• Developing MDR or XDR tuberculosis • Treatment course (including the injections, long period of hospitalization, and side effects such as hearing loss) • Lack of psychosocial support (including stigma) • Poor treatment outcomes • Dying	• Infecting family members • Family managing without them should they be ill, be hospitalized, or die • Financial implications (the lack of compensation) • Lack of psychosocial support for the family (including stigma)

South Africa

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Obrigado.