HEM D'AÏLLAR ELS MALALTS AMB COLONITZACIÓ/INFECCIÓ PER MICROORGANISMES MULTIRESISTENTS?

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Servei Malalties Infecioses

Hospital Universitari Mútua Terrassa

ÍNDEX

- Introducció i definicions de precaucions de contacte i MOMR
- Evidències
- SARM
- Enterobacteris productos de BLEE
- Conclusions

INTRODUCCIÓ I DEFINICIONS

INTRODUCCIÓ

- **Simples o senzills.** Hi ha una recepta, i s la seguim, les probabilitats que surti tot bé són molt altes.
  - Exemple: preparació d´un pastís.
- **Complicats.** Es poden subdividir en sèries de problemes simples, però no hi ha una recepta com a tal. Quan sap com fer-ho, es pot repetir el procés i perfeccionar-lo.
  - Exemple: enviar un coet a la lluna.
- **Complexos**. S'assemblen a criar un nen. El desenllaç és incert, ja que cada nen és únic, i l'èxit amb un no garanteix res amb el següent.
  - Exemple: els microorganismes multiR

INTRODUCCIÓ

- El CDC va recomanar les PC als anys 70 basades en opinions d'expert i amb 7 categories.
- Als 80 amb l'arribada del VIH es van desenvolupar les PE
- El 2007 les guies se centren en PC adreçades a MOMR
- L'evidència que recolza aquesta mesura sorgeix de brots manegats amb bundles.
- Les PC inclouen els cultius de vigilància, la identificació, decolonització i desidentificació dels pacients colonitzats/infectats

Morgan, Wenzel, Bearman JAMA 2017

PRECAUCIONS DE CONTACTE

HABITACIÓ INDIVIDUAL:
Aïllar físcament un paciente de la resta

BATA:
Protegeix el personal sanitari

GUANTS:
Protegeix el personal sanitari

MATERIAL D' ÚS EXCLUSIU

Vuichard Gysin et al. Antimicrobial Resistance and Infection Control 2019

ORIGINAL CONTRIBUTION

Stelfox. JAMA 2003

Safety of Patients Isolated for Infection Control

Open access Original research

BMJ Open

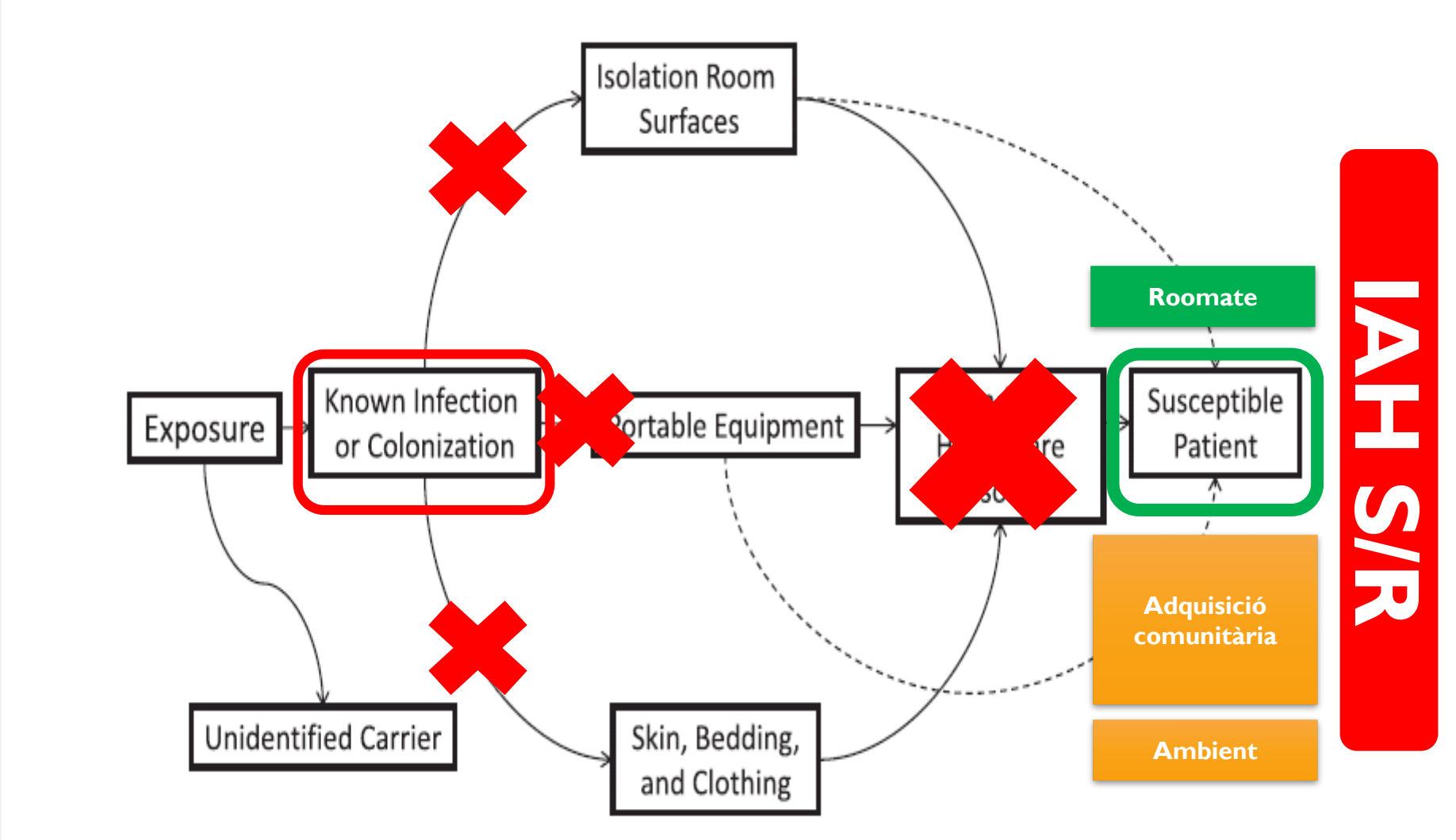
2021

Higher incidence of adverse events in isolated patients compared with non-isolated patients: a cohort study

Fátima Jiménez-Pericás ,[1] María Teresa Gea Velázquez de Castro,[1] María Pastor-Valero,[2,3] Carlos Aibar Remón,[4,5] Juan José Miralles,[2] María del Carmen Meyer García,[6] Jesús Maria Aranaz Andrés[3,7]

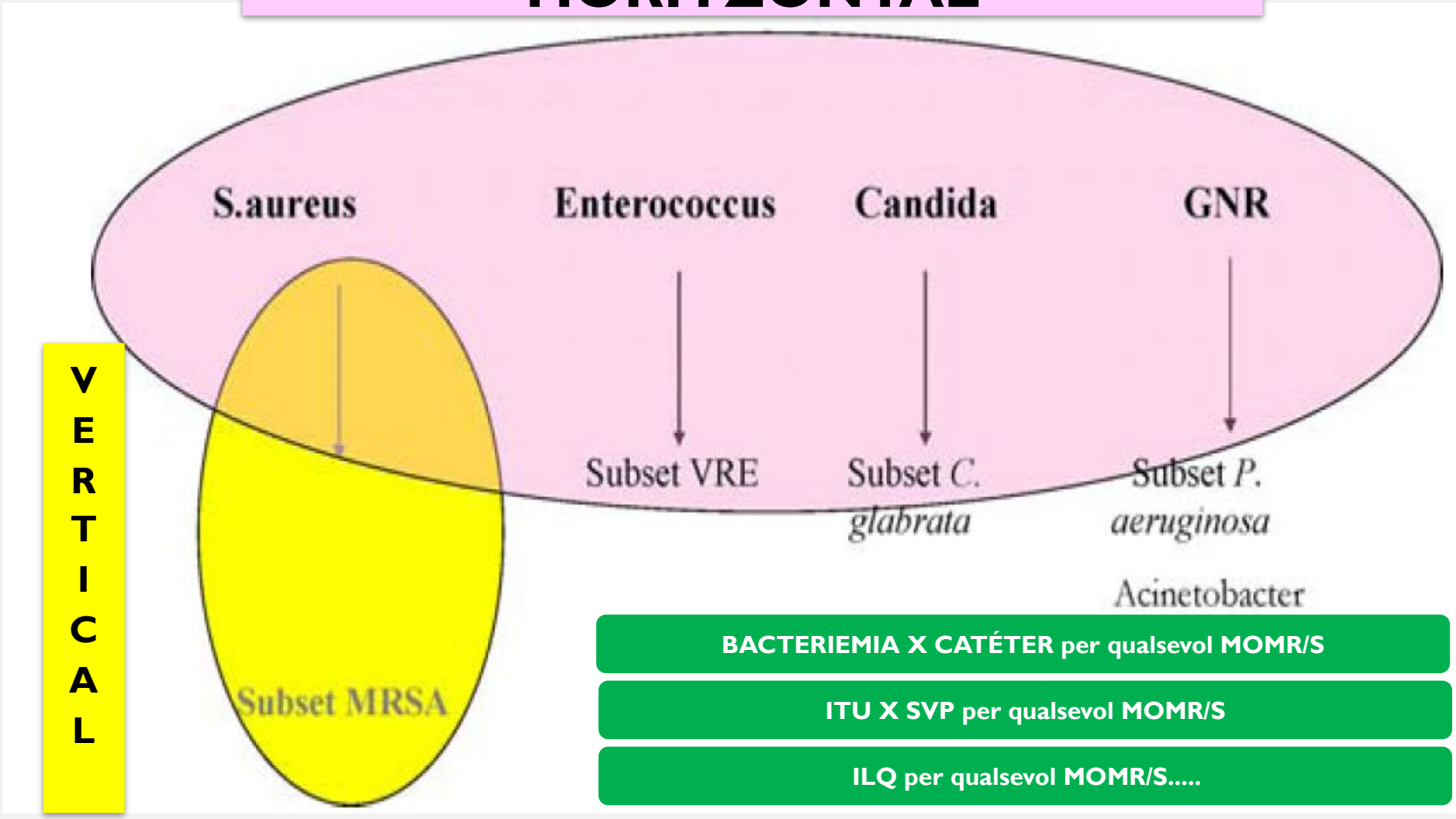
- Major taxa d'efectes adversos (x2)
- Menor registre de constants i cursos d'infermeria i metges
- Major taxa d'EA prevenibles
- Major insatisfacció dels pacients

PRECAUCIONES DE CONTACTO



ESTRATÈGIES HORITZONTALS O VERTICALS A GRAM POSITIUS (SARM I ERV)

HORITZONTAL



VERTICAL

BACTERIEMIA X CATÉTER per qualsevol MOMR/S

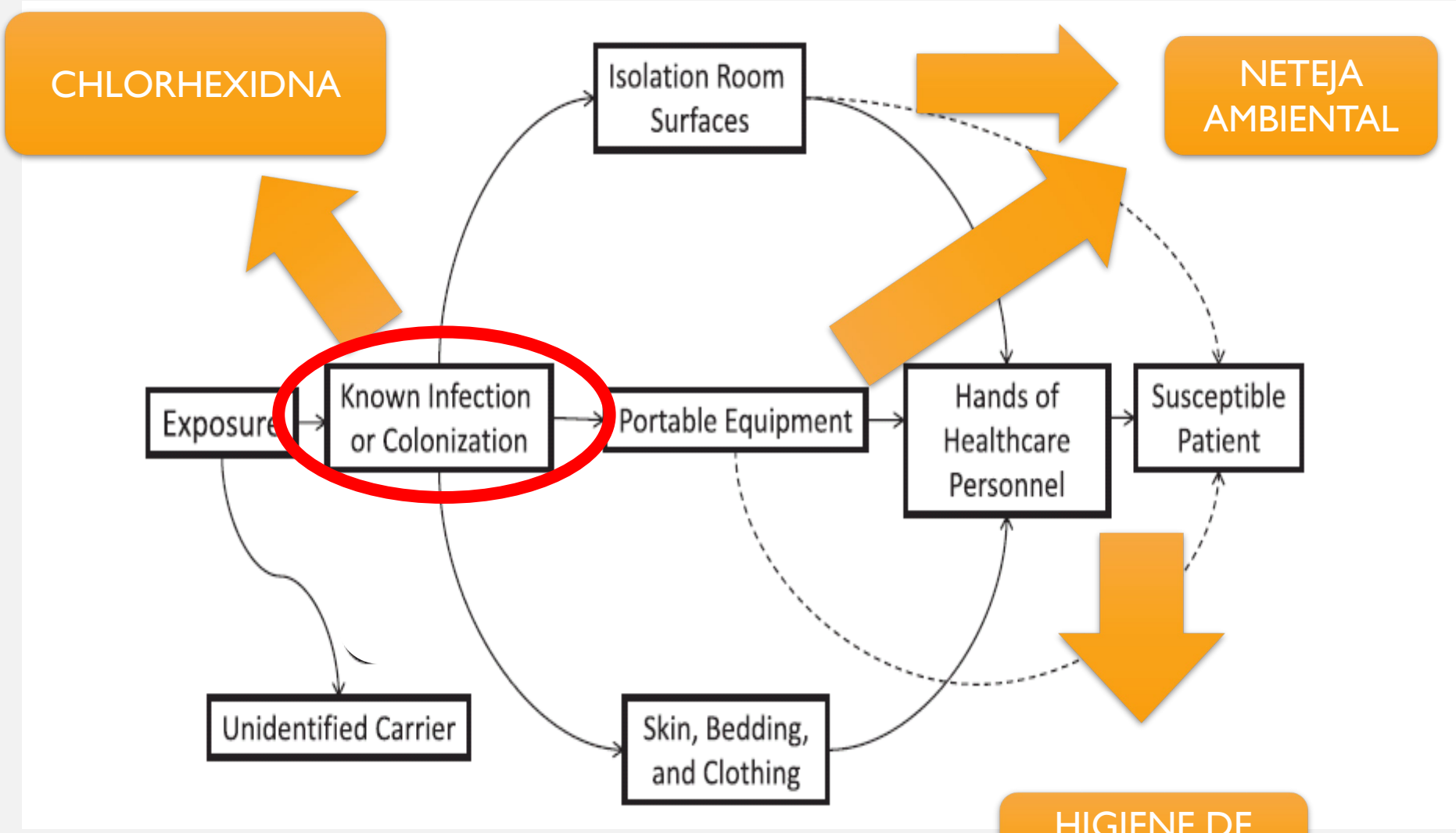
ITU X SVP per qualsevol MOMR/S

ILQ per qualsevol MOMR/S.....

BACTERIÈMIA (per CATÉTER) PER SARM

Wenzel et al. Int J Infect Dis 2010

APROXIMACIÓN HORIZONTAL



LIMITACIONS DELS ESTUDIS PC

- La majoria s'han dut a terme en **context de brots**
- Variabilitat en la **intensitat de recerca de colonitzats** asimptomàtics
- Manquen de **grup control**
- **Unicèntrics** amb biaixos locals
- Les precaucions de contacte són valorades en el context de **paquets de mesures**
- **Lloc** d´aïllament
  - Planta especialitzada
  - Cohorting amb/sense personal propi
  - Planta general amb habitació individual sense personal propi
- **Definició** de MOMR
- **Durada** de les PC heterogènia

DILEMA *(en endèmia)*

Bata i guants

Vigilància activa (**cribatge**)

Habitació individual (¿durada?)

Cohorting en espacis diferenciats

Personal exclusiu

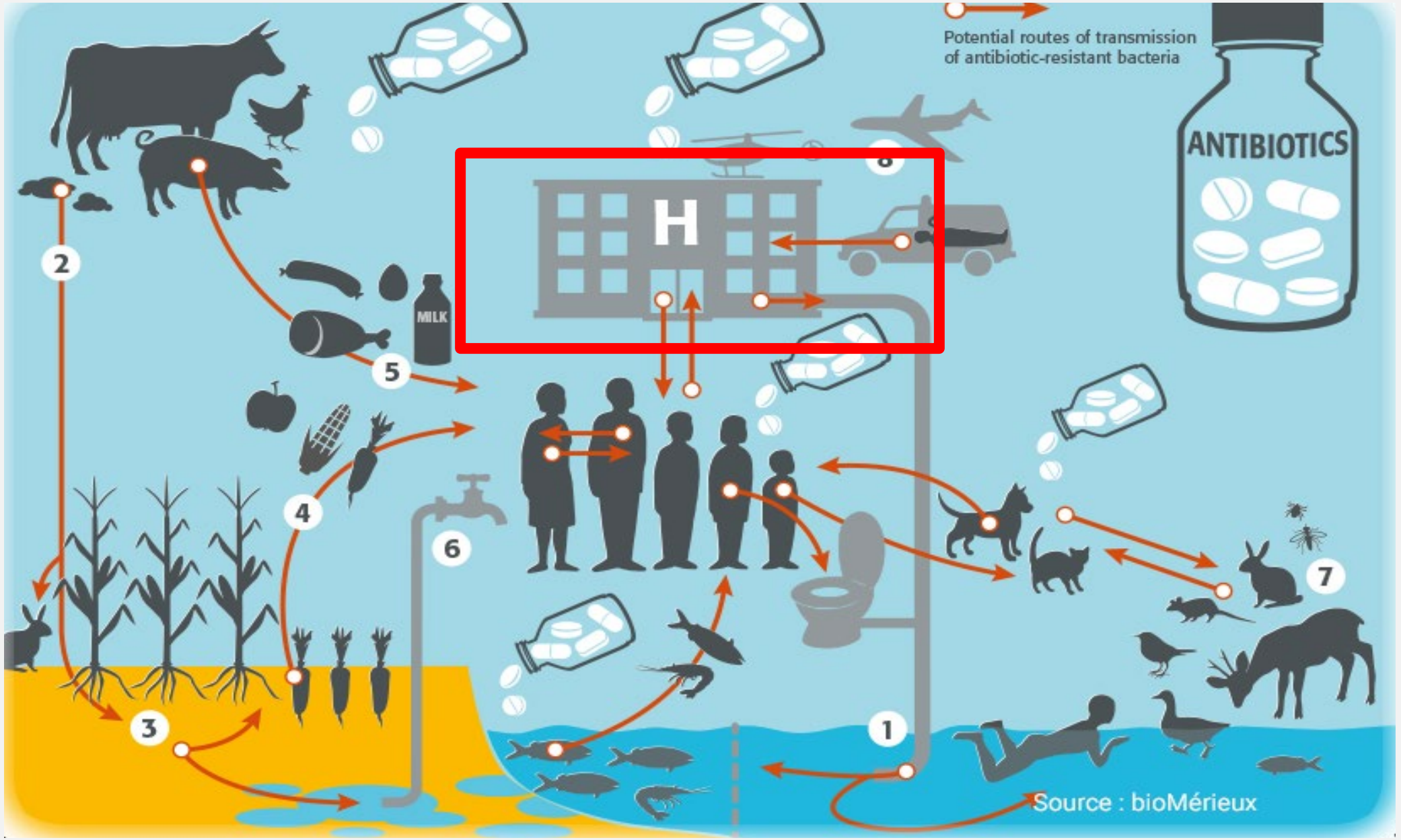
Aïllament **preventiu** per factors de risc

Higiene de mans

Descolonització

Intervencions dirigides (CVC, ITU-SVP, ILQ..)

Higiene ambiental


Potential routes of transmission
of antibiotic-resistant bacteria
ANTIBIOTICS
H
MILK
1
2
3
4
5
6
7
8
Source : bioMérieux

PRECAUCIONS DE CONTACTE: DIFCULTATS

SEGURETAT: impacte sobre l'atenció al pacient

COST: número d' aïllat per prevenir 1 event de transmissió

LOGÍSTICA: capacitat de complir amb una habitació única

COLONIZACIÓ OCULTA: base de l'iceberg

FUTILITAT:
predomini de la transmissió comunitària o de reservoris ambientals

Les PC no són superiors a PE ben aplicades per controlar l'adquisició de MOMR als hospitals.

EVIDÈNCIES

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Veterans Affairs Initiative to Prevent Methicillin-Resistant *Staphylococcus aureus* Infections

Rajiv Jain, M.D., Stephen M. Kralovic, M.D., M.P.H., Martin E. Evans, M.D., Meredith Ambrose, M.H.A., Loretta A. Simbartl, M.S., D. Scott Obrosky, M.S., Marta L. Render, M.D., Ron W. Freyberg, M.S., John A. Jernigan, M.D., Robert R. Muder, M.D., LaToya J. Miller, M.P.H., and Gary A. Roselle, M.D.

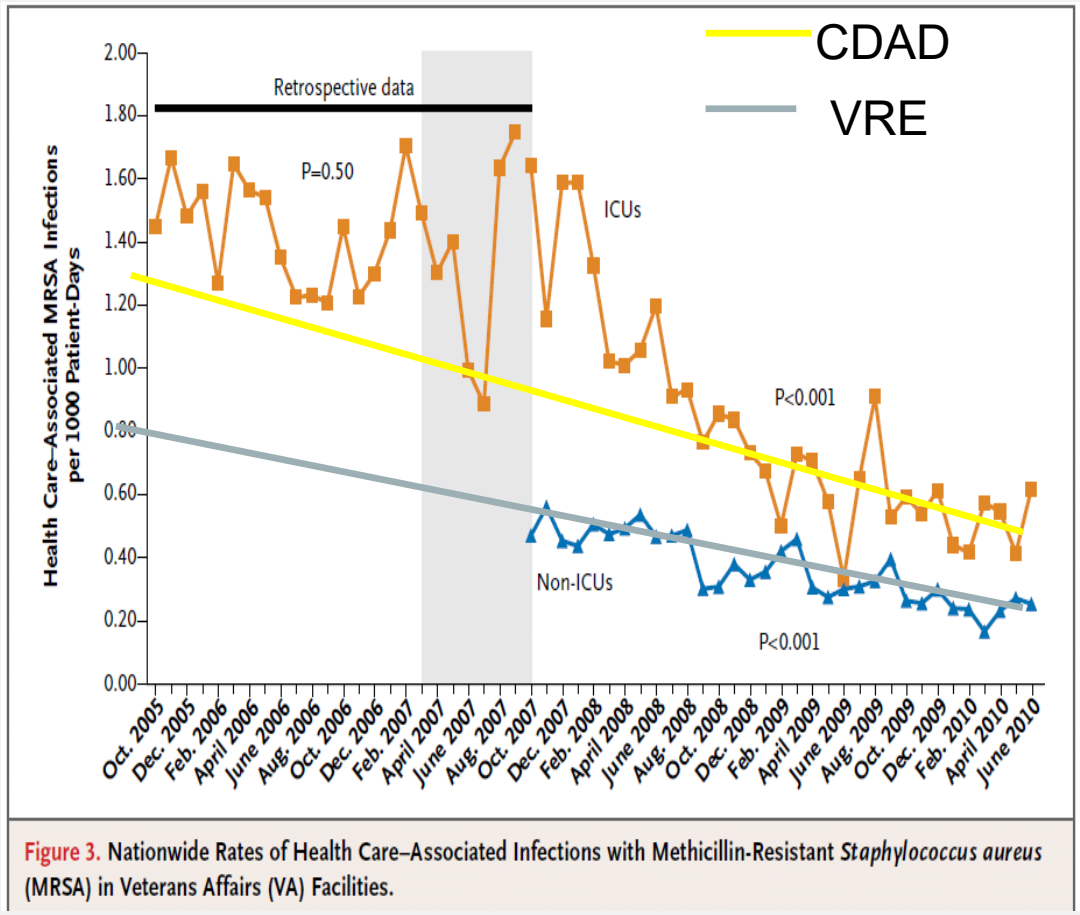


Figure 3. Nationwide Rates of Health Care–Associated Infections with Methicillin-Resistant *Staphylococcus aureus* (MRSA) in Veterans Affairs (VA) Facilities.

1,934,598 ingresos

- **Cribatge universal** nasal de SARM
- **•13%** de colonització basal a l' ingrés
- **Precaucions de contacte** xls colonizats/ infectats per SARM (**no hi ha dades de cumplimient**)
- **Higiene de mans**
- **Canvi en la cultura** institucional

Bundle (HM+PC+…) milloren **TOTS els MOMR**

Jain et al. NEJM 2011

JAMA. 2013 October 16; 310(15): 1571–1580. doi:10.1001/jama.2013.277815.

Universal Glove and Gown Use and Acquisition of Antibiotic resistant bacteria in the ICU: A Randomized Trial

Anthony D Harris, MD, MPH[1], Lisa Pineles, MA[1], Beverly Belton, RN, MSN[2], J. Kristie Johnson, PhD[1], Michelle Shardell, PhD[1], Mark Loeb, MD, MSc[3], Robin Newhouse, RN, PhD[4], Louise Dembry, MD, MS, MBA[2], Barbara Braun, PhD[5], Eli N Perencevich, MD, MS[6], Kendall K. Hall, MD, MS[7], Daniel J Morgan, MD, MS[1,8], and the Benefits of Universal Glove and Gown (BUGG) investigators

Rates (per 1,000 patient-days at risk) of acquisition of drug-resistant bacteria

	Intervention ICUs			Control ICUs				
	# acquisitions	Patient-days at risk	Mean Rate (95% CI)[a]	# acquisitions	Patient-days at risk	Mean Rate (95% CI)[a]	Difference (95% CI)[b]	P-value[c]
Drug-Resistant Bacteria								
VRE or MRSA								
Study Period	577	32,693.0	16.91 (14.09 to 20.28)	517	31,765.0	16.29 (13.48 to 19.68)		
Baseline	178	8,684.0	21.35 (17.57 to 25.94)	176	9,804.5	19.02 (14.20 to 25.49)		
Change[d]			−4.47 (−9.34 to 0.45)			−2.74 (−6.98 to 1.51)	−1.71 (−6.15 to 2.73)	0.57
VRE								
Study Period	411	27,765.5	13.59 (10.26 to 17.99	337	28,340.5	11.88 (8.65 to 16.33)		
Baseline	108	7,691.5	15.18 10.50 to 21.95)	122	8,818.0	14.37 (10.31 to 20.02)		
Change[d]			−1.60 (−7.18 to 3.98)			−2.48 (−5.53 to 0.56)	0.89 (−4.27 to 6.04)	0.70
MRSA								
Study Period	199	30,454.5	6.00 (4.63 to 7.78)	191	30,024.0	5.94 (4.59 to 7.67)		
Baseline	77	7,841.0	10.03 (8.05 to 12.50)	59	9,182.0	6.98 (4.50 to 10.83)		
Change[d]			−4.03 (−6.50 to −1.56)			−1.04 (−3.37 to 1.28)	−2.98 (−5.58 to −0.38)	0.046

- Cluster-RCT
- Ús de guants + bata universal
- 26.000 pacients, 20 UCI
- Totes UCI (control + intervenció) van baixar les taxes
- Baixen les entrades hab, puja HM
- Ús universal de guants i bata evita
  - **1 adquisició /336 día-pacient**
- 4 entrades/h (96/día)
  - **> 300.000** trobades protegides per evitar una transmissió
  - **>500.000** per evitar una infecció

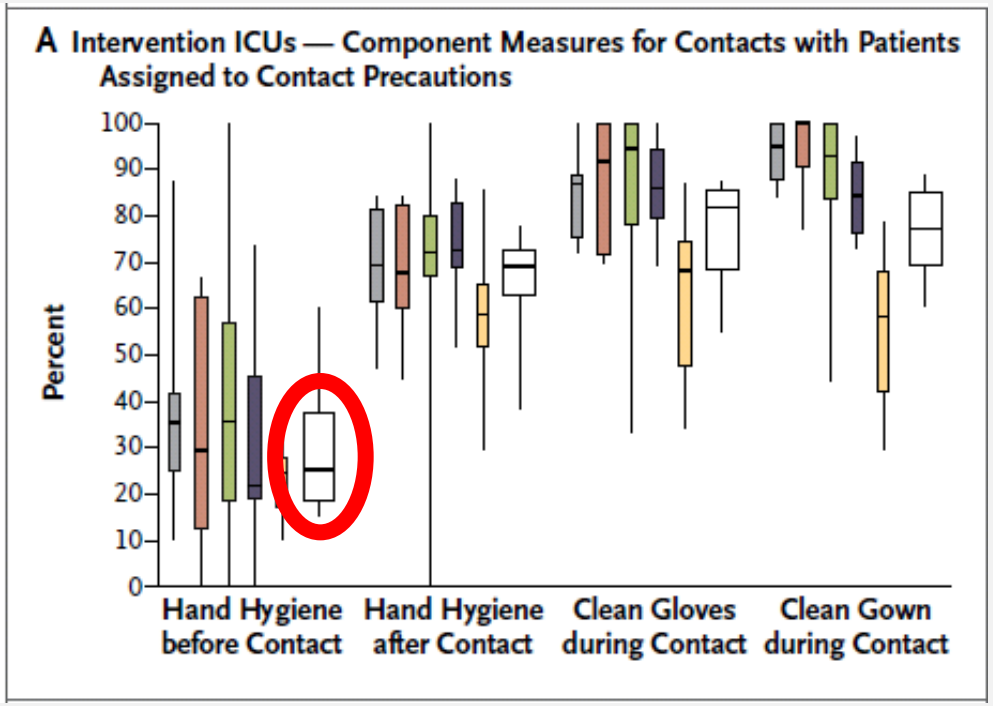
Ús universal de guants i bates no disminueix MOMR

Harris JAMA 2013

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Intervention to Reduce Transmission of Resistant Bacteria in Intensive Care



Baix cumplimient
Presa de cultius 5,2 d de l'ingrés
No hi ha diferències

- RCT
- 10 UCI
- 5400 ingresos
- **Intervenció**: AS+PC si positius+ us universal de guants per la resta de pacients
- **Control**: AS por fx de riesgo + PC si postius + PE para el resto de pacients

Huskin NEJM 2011

Interventions to reduce colonisation and transmission of antimicrobial-resistant bacteria in intensive care units: an interrupted time series study and cluster randomised trial

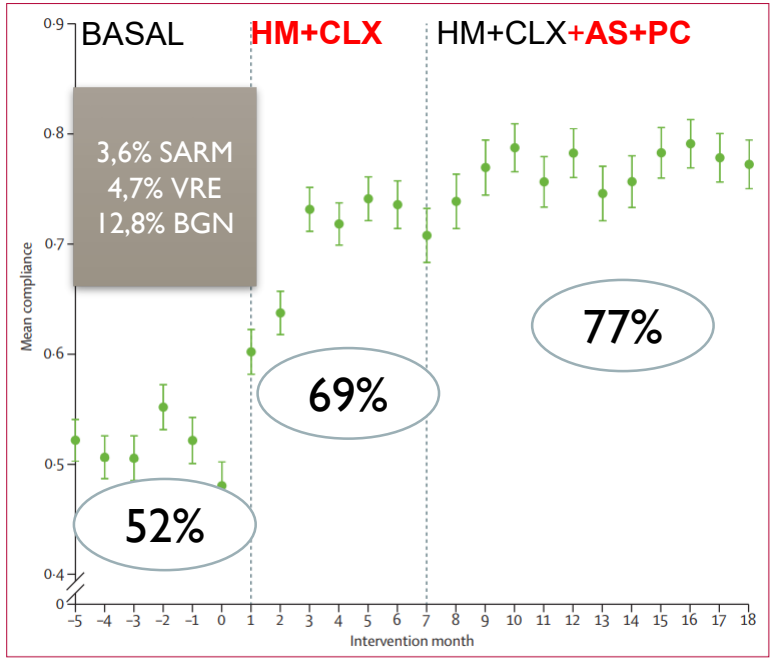


Figure 2: **Mean hand hygiene compliance per month**
Hand hygiene improvement intervention introduced at month 0. Error bars are 95% CIs.

13 UCI EU, 3 cultius setmanals.

Fase 2 de mejora medidas básicas (ciegos a los resultados de los cultivos)

Fase 3 aleatorización dx rápido vs convencional en la vigilancia.

La mejora HM y el baño con clorhexidina se asocian con una reducción en la adquisición de SARM no de BGN.

El cribado y el aislamiento de los portadores no redujeron la adquisición de bacterias multirresistentes

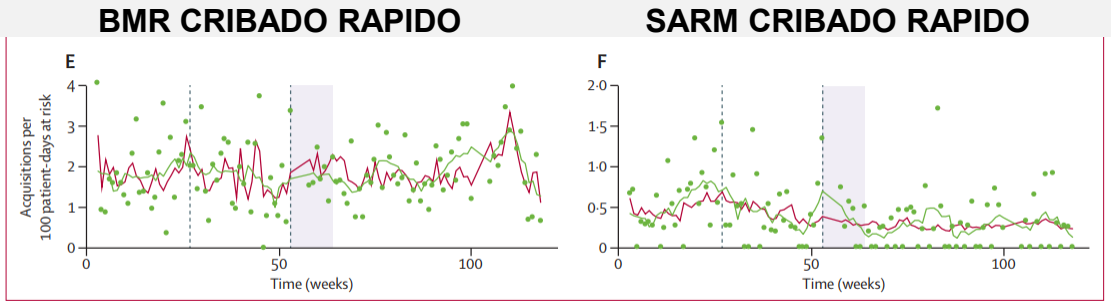


Figure 3: **Acquisition of antimicrobial-resistant bacteria and meticillin-resistant *Staphylococcus aureus* per 100 patient-days at risk**

DERDE Lancet 2014

Effect of Daily Chlorhexidine Bathing on Hospital-Acquired Infection

Table 2. Incidence of Hospital-Acquired Bloodstream Infections and Acquisition of Multidrug Resistant Organisms (MDROs), MRSA, and VRE.*

Variable	Intervention Period	Control Period	P Value
No. of admissions	3970	3842	0.32
Total days of care	24,902	24,983	0.85
Central-catheter use (days)	13,425	13,049	0.14
Mean length of stay (days)	6.4	6.4	0.53
MRSA prevalence (%)	13.8	12.8	0.14
VRE prevalence (%)	16.3	15.1	0.24
MDRO acquisition			
No. of infections	127	165	0.03
Incidence rate (no./1000 patient-days)	5.10	6.60	
VRE acquisition			
No. of infections	80	107	0.05
Incidence rate (no./1000 patient-days)	3.21	4.28	
MRSA acquisition			
No. of infections	47	58	0.29
Incidence rate (no./1000 patient-days)	1.89	2.32	
Hospital-acquired bloodstream infection			
No. of infections	119	165	0.007
Incidence rate (no./1000 patient-days)	4.78	6.60	
Primary bloodstream infection			
No. of infections	90	131	0.006
Incidence rate (no./1000 patient-days)	3.61	5.24	
Central-catheter–associated bloodstream infection			
No. of infections	21	43	0.004
Incidence rate (no./1000 catheter-days)	1.55	3.30	
Secondary bloodstream infection			
No. of infections	29	34	0.45
Incidence rate (no./1000 patient-days)	1.20	1.40	

- 9 UCI i TMO
- Higiene diària amb clorhexidina.
- Es mantenen les precaucions de contacte

Disminueix la colonització i les bacterièmies

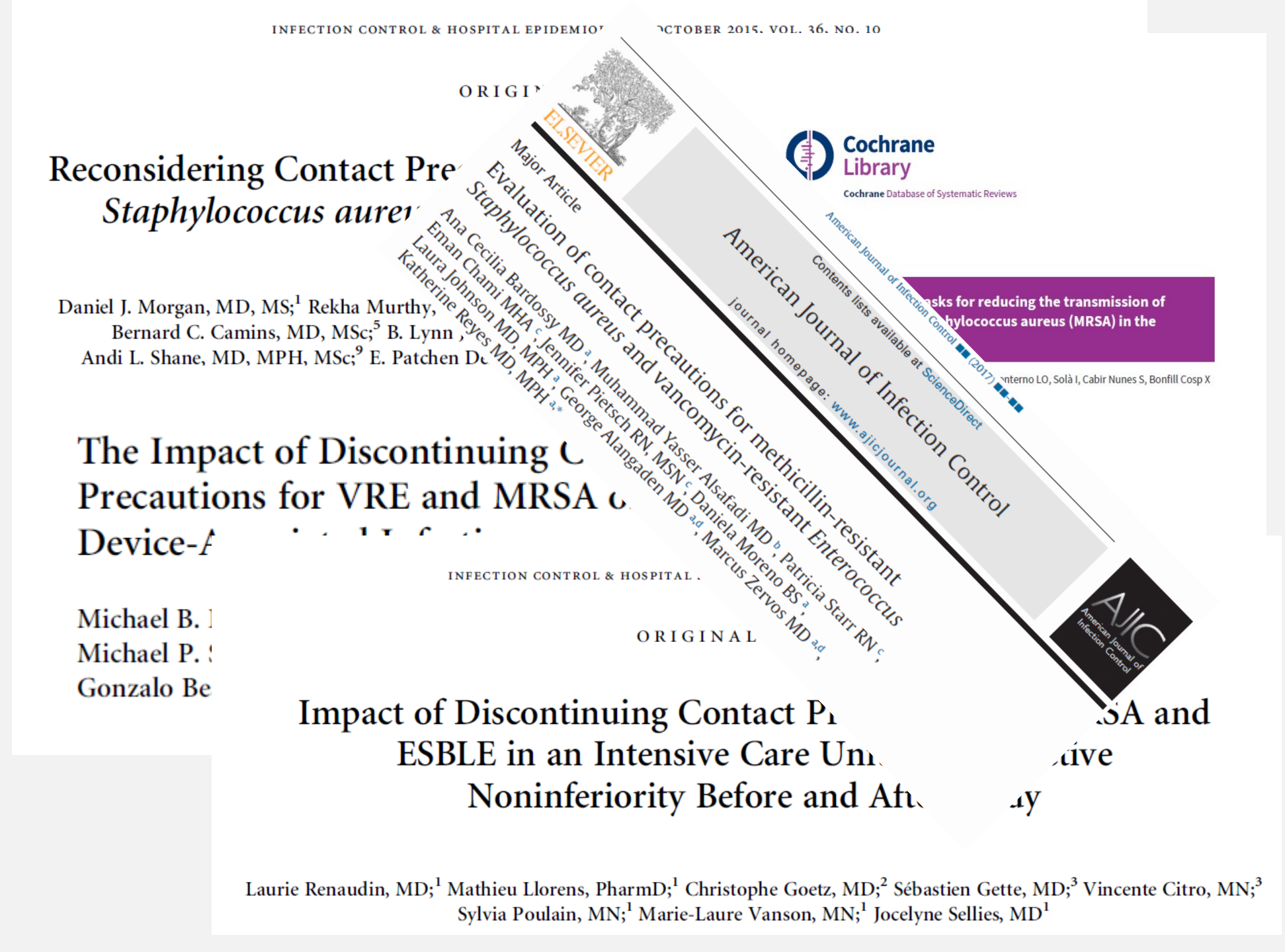
Climo et al. NEJM 2013

NETEJA AMBIENTAL

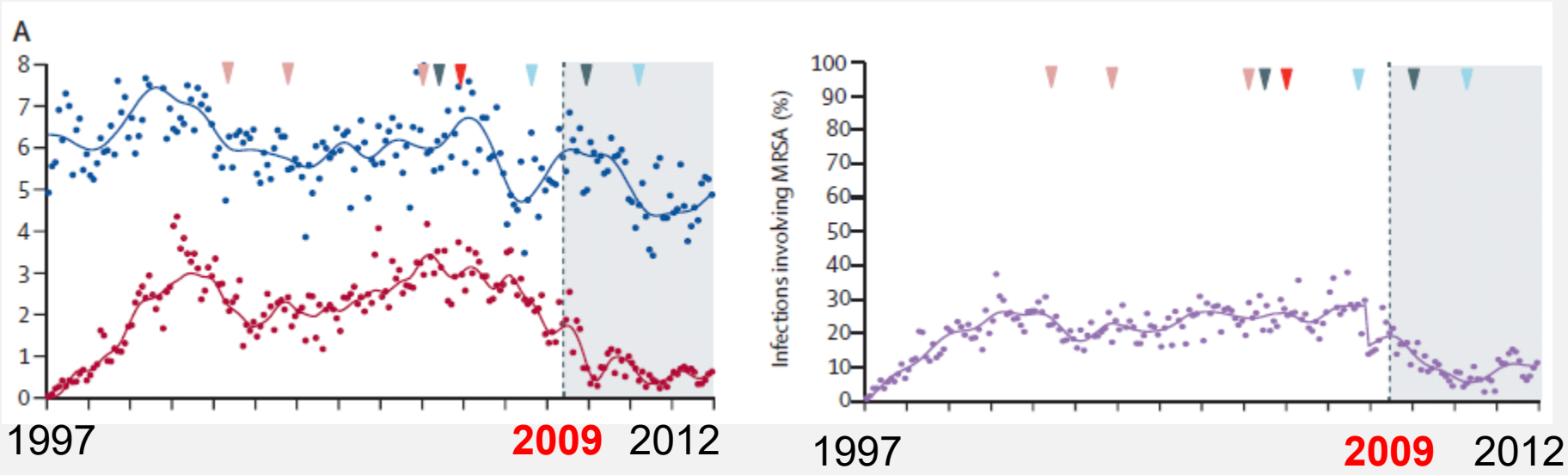
AUTHOR	INTERVENTION	OUTCOME
Falk ICHE 2000	Training of housekeepers Increased cleaning hours Check list	Outbreak ended
Hayden CID 2006	Training of housekeepers Monitoring Feedback	*Decreased VRE acquisition*
Rampling JHI 2001	Increased cleaning hours	*Decreased MRSA acquisition*
Dancer BMC Med 2009	One additional cleaner for high-touch surfaces	*Decreased MRSA acquisition*
Datta Arch Intern Med 2011	Feedback using fluorescent markers	*Decreased VRE acquisition*
Grabasch JHI 2012	Training of housekeepers Monitoring Feedback	*Decreased VRE acquisition and VRE bactereremia*

Donskey. Am J Infect Contr 2013

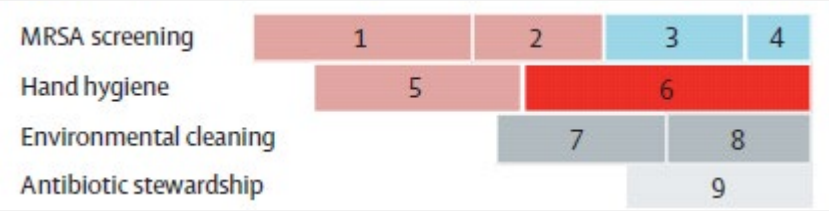
SARM


INFECTION CONTROL & HOSPITAL EPIDEMIO
OCTOBER 2015, VOL. 36, NO. 10
ORIGI
Reconsidering Contact Pre
Staphylococcus aure
Daniel J. Morgan, MD, MS;[1] Rekha Murthy,
Bernard C. Camins, MD, MSc;[5] B. Lynn
Andi L. Shane, MD, MPH, MSc;[9] E. Patchen De
The Impact of Discontinuing C
Precautions for VRE and MRSA
Device-A
Michael B.
Michael P.
Gonzalo Be
INFECTION CONTROL & HOSPITAL
ORIGINAL
Impact of Discontinuing Contact P SA and
ESBLE in an Intensive Care Un ive
Noninferiority Before and Af y
Laurie Renaudin, MD;[1] Mathieu Llorens, PharmD;[1] Christophe Goetz, MD;[2] Sébastien Gette, MD;[3] Vincente Citro, MN;[3]
Sylvia Poulain, MN;[1] Marie-Laure Vanson, MN;[1] Jocelyne Sellies, MD[1]
ELSEVIER
Major Article
Evaluation of contact precautions for methicillin-resistant
Staphylococcus aureus and vancomycin-resistant Enterococcus
Ana Cecilia Bardossy MD [a], Muhammad Yasser Alsafadi MD [b], Patricia Starr RN [c],
Eman Chami MHA [c], Jennifer Pietsch RN, MSN [c], Daniela Moreno BS [a],
Laura Johnson MD, MPH [a], George Alangaden MD [a,d], Marcus Zervos MD [a,d],
Katherine Reyes MD, MPH [a,*]
American Journal of Infection Control
Contents lists available at ScienceDirect
Journal homepage: www.ajicjournal.org
Cochrane Library
Cochrane Database of Systematic Reviews
American Journal of Infection Control (2017)
sks for reducing the transmission of
hylococcus aureus (MRSA) in the
nterno LO, Solà I, Cabir Nunes S, Bonfill Cosp X
AJIC
American Journal of Infection Control

SARM: PRECAUCIONS DE CONTACTE O PROA?



AZUL: Hospital terciari A
ROJO: Hospital terciari B
LILA: Hospital comunitario



- ❑ NW Sctoland
- ❑ 4C ASP 2009
- ❑ Caída del 47% del 4C als hospitals
- ❑ Caída del 50% de la incidencia

SARM. Coincidencia temporal

Lawes et al. Lancet Infect Dis 2015

REVISIONS SISTEMÁTIQUES

	N	A favor	En contra
Cohen JHI 2015	6 PC aisladas (4/6 miden cumplimiento 21-87%)	1/6 demuestra caídas en la transmisión (A. baumannii)	No se mojan: baja calidad, bajo cumplimiento
Morgan ICHE 2015	48, brotes, bundle 11 CP SARM (+AS) 5 CP VRE (+AS)	6/11 SARM resultado positivo 5/5 VRE resultado negativo	No hay evidencia suficiente en la literatura para sustentar las PC Aportan encuesta de hospitales, 30 no usan PC
Kullar AMJIC 2016	6 estudios, RCT, bundle	PC disminuyen la transmisión en brotes si hay alto cumplimiento No correlación con caída de la tasa de infecciones	No impacto en contexto de endemia Efectos adversos asociados

Contents lists available at ScienceDirect

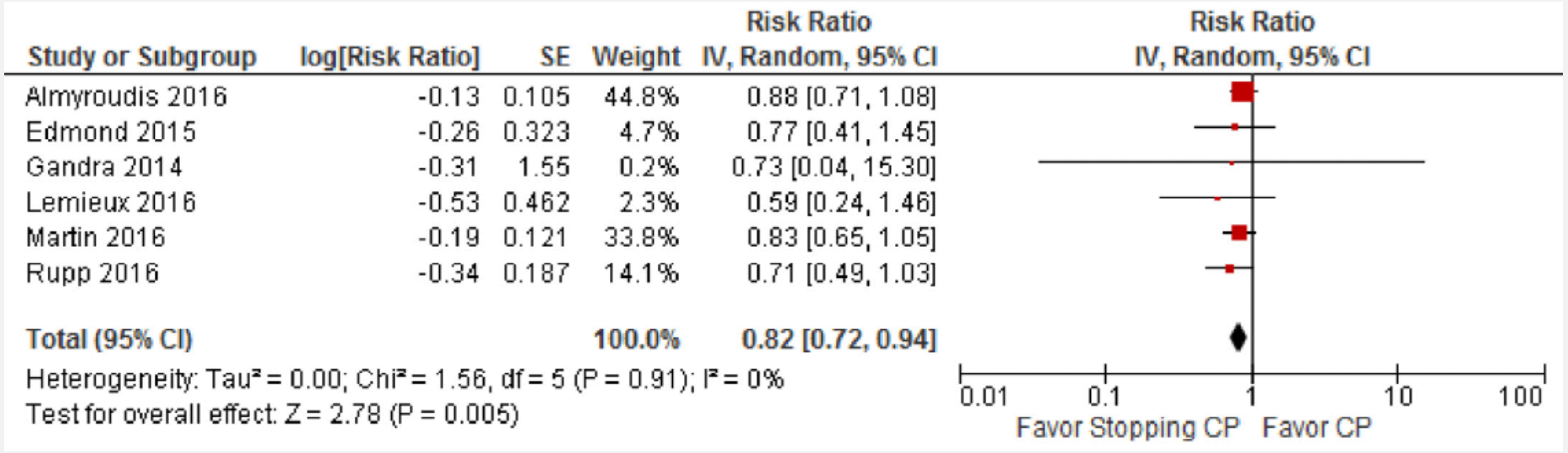
American Journal of Infection Control

journal homepage: www.ajicjournal.org

Major Article

Discontinuing contact precautions for multidrug-resistant organisms: A systematic literature review and meta-analysis

Alexandre R. Marra MD, MS [a,b,*], Michael B. Edmond MD, MPH, MPA [a,c], Marin L. Schweizer PhD [d,e], Grace W. Ryan MPH [f], Daniel J. Diekema MD, MS [a,c,g]



- Abandonar PC **no s'ha correlacionat** amb un augment de la incidència d'infecció per SARM o VRE

- Això pot ser degut a **baix compliment** o **baixa transmissibilitat**

Marra AMJIC 2017

ENTEROBACTERIS PRODUCTORS BLEE

Resultados

XXIII CONGRESO NACIONAL SOCIEDAD ESPAÑOLA DE ENFERMEDADES INFECCIOSAS Y MICROBIOLOGÍA CLÍNICA
seimc
MADRID PALACIO MUNICIPAL DE CONGRESOS
23-25 MAYO 2019

49 CI
pacientes colonizados/infectados por KpBLEE

554 días de exposición en PCO con una mediana de 4 (RIC 3-7).

56 episodios CI

109 PCO
expuestos a CI

6 PCO
excluidos por falta de cultivo al alta

103 (94,5%)PCO

Características	Casos Índice	PCO
Edad (años)	74,6 años (DE±15,69)	71,19 (DE±14,73)
Sexo	Mujeres 32,7% Hombres 67,3%	Mujeres 29,1% Hombres 70,9%
Días de ingreso (mediana)	15 (RIC 10-31,5)	9 (RIC 6-18)
Barthel (media)	59,11 (DE±39,01)	34,42 (DE±34,42)
Charlson (ajustado a la edad)	5,23 (DE±2,4)	4,2 (DE±2,45)
Tratamiento antibiótico	80,4%	69,9%

Hospital Universitari MútuaTerrassa

Resultados

XXIII CONGRESO NACIONAL SOCIEDAD ESPAÑOLA DE ENFERMEDADES INFECCIOSAS Y MICROBIOLOGÍA CLÍNICA — seimc MADRID PALACIO MUNICIPAL DE CONGRESOS — 23-25 MAYO 2019

Estudio molecular

80% NETEJA AMBIENTAL

CASOS ÍNDICE

Se estudiaron **52/56** episodios (92,9%)

Se identificaron **43** clones diferentes

36 clones únicos

7 clones coincidían con 3 pacientes sin relación tiempo-espacio

70% HM

PACIENTES CONTACTO

Se estudiaron **103/109** pacientes

Se detectó colonización por KpBLEE en **3** PCO (2,9%)

2 PCO (1,9%) fueron considerados caso secundario.

29 (28,2%) PCO estuvieron expuestos a una superficie contaminada por KpBLEE

1 caso secundario estuvo expuesto a KpBLEE ambiental pero de distinto clon

3,6 casos secundarios por 1000 días de exposición

Hospital Universitari MútuaTerrassa

Conclusiones

- La tasa de transmisibilidad de KpBLEE tras retirar las PC en un centro de agudos **fue baja** (en el contexto de un elevado cumplimiento de HM y una política de limpieza ambiental reforzada).

- La endemia policlonal así como la colonización ambiental nos lleva a replantear el riesgo beneficio de las PC.

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ENTEROBACTERIS PRODUCTORS DE BLEE

TRANSMISSIBILITAT SENSE PRECAUCIONS ESTÁNDARD

AUTOR	MICROORGANIMOS	TaXa de transmissió i comentaris
Hilty CID 2012	82 pacientes 92 contactos 87% *E coli* **12% *K pneumoniae***	4.5% para *E coli* 8,3% para *K pneumoniae* *22% de los familiares colonizados Ec* *25% de los familiares colonizados Kp* **4,3 /1000 días EC** **13,9/1000 días KP**
Tschudin CID 2012	133 casos índice 579 días exposición 73% *Ecoli* ***23% K pneumoniae*** 50% CTXM	1,5% (2 pacientes) Colonizaciones, **NO infecciones** **3,4 /1000 días** Diseminación comunitaria Bajo grado de transmisión
Tschudin EID 2016	211 casos índices 231 contactos 100% *E coli*	**4,8%** casos secundarios **90%** cumplimiento HM Estancias superiores a 5 días incrementan riesgo Bajo consumo de ATB Baja prevalencia.
López Sanchez SEIMC 2019	53 ***K pneumoniae*** 103 contactos	1,9% casos secundarios (2 pacientes) Colonizaciones **NO infecciones** **3,6 /1000 días** **70%** cumplimiento HM

FUTILITAT

2011

MAJOR ARTICLE

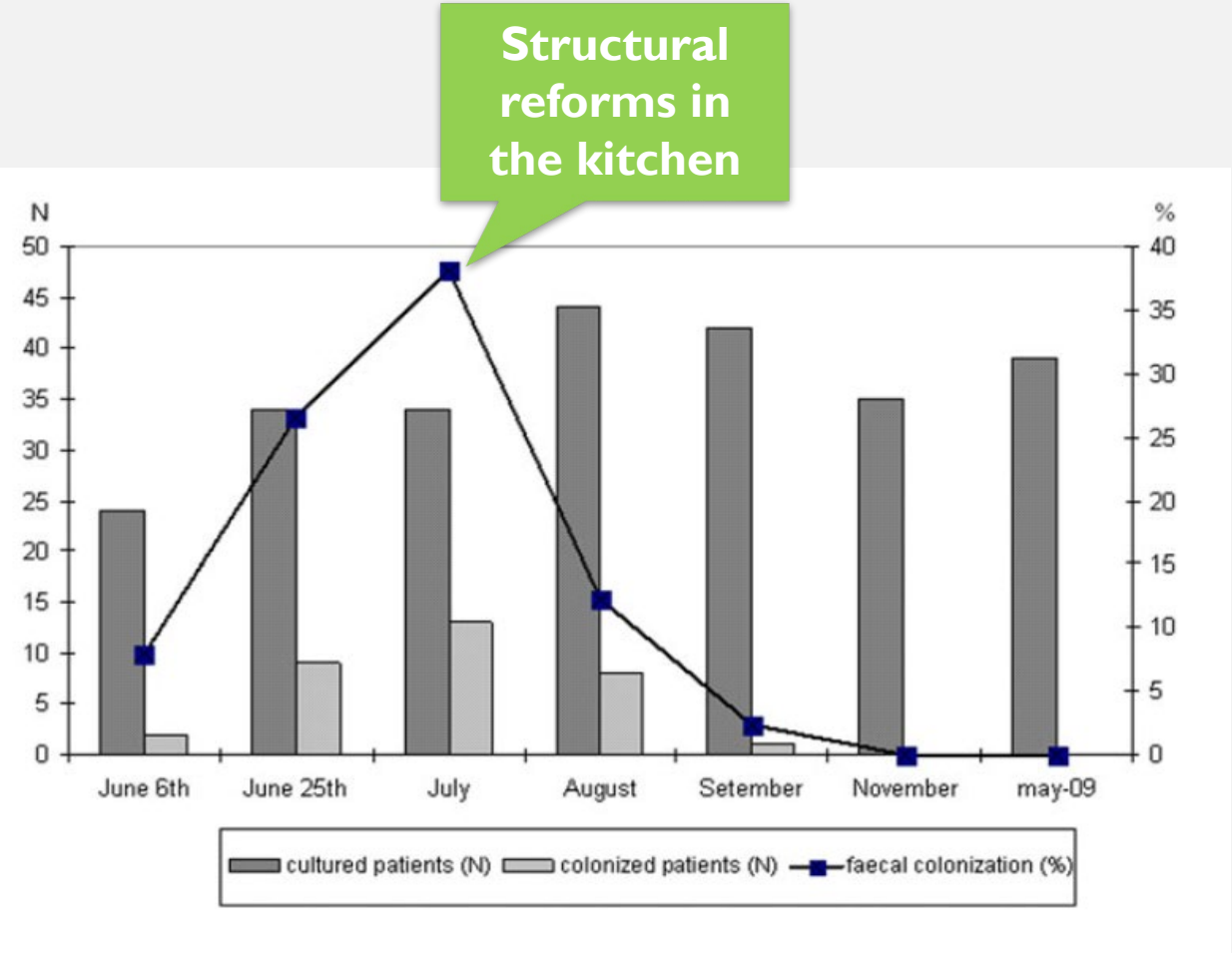
Foodborne Nosocomial Outbreak of SHV1 and CTX-M-15–producing *Klebsiella pneumoniae*: Epidemiology and Control

Esther Calbo,[1] Núria Freixas,[2] Mariona Xercavins,[3] Montserrat Riera,[2] Carmen Nicolás,[2] Olga Monistrol,[2] Maria del mar Solé,[4] M. Rosa Sala,[5] Jordi Vila,[4] and Javier Garau[1]

[1]Infectious Diseases Unit, Service of Internal Medicine, Hospital Universitari Mútua de Terrassa, [2]Infection Control Nurse, Hospital Universitari Mútua Terrassa, [3]Microbiology, Catlab, [4]Service of Microbiology, Hospital Clínic i Provinical, Barcelona, and [5]Unitat de Vigilància Epidemiològica Vallés Occidental i Vallés Oriental Health Department, Generalitat de Catalunya, Barcelona, Spain

Ambient com principal reservori

Foodborne Nosocomial Outbreak of SHV1 and CTX-M-15–producing *Klebsiella pneumoniae*: Epidemiology and Control



(1) Elevada prevalença de colonització fecal

(2) Ràpida disseminació

(3) Colonització precoç

(4) 14% dels treballadors de la cuina eren portadors asimptomàtics

Calbo et al. CID 2011

FUTILITAT

ORIGINAL ARTICLE EPIDEMIOLOGY

Wastewater drainage system as an occult reservoir in a protracted clonal outbreak due to metallo-β-lactamase-producing *Klebsiella oxytoca*

S. Vergara-López[1], M. C. Domínguez[2], M. C. Conejo[3], Á. Pascual[3,4] and J. Rodríguez-Baño[4,5]

1) *Internal Medicine Service, Hospital La Merced,* 2) *Laboratory of Microbiology, Hospital La Merced, Osuna, Seville,* 3) *Department of Microbiology, University of Seville,* 4) *Infectious Diseases and Clinical Microbiology Unit, University Hospital Virgen Macarena and* 5) *Department of Medicine, University of Seville, Seville, Spain*

Abstract

We describe the epidemiology of a protracted nosocomial clonal outbreak due to multidrug-resistant IMP-8 producing *Klebsiella oxytoca* (MDRKO) that was finally eradicated by removing an environmental reservoir. The outbreak occurred in the ICU of a Spanish hospital from March 2009 to November 2011 and evolved over four waves. Forty-two patients were affected. First basic (active surveillance, contact precautions and reinforcement of surface cleaning) and later additional control measures (nurse cohorting and establishment of a minimum patient/nurse ratio) were implemented. Screening of ICU staff was repeatedly negative. Initial environmental cultures, including dry surfaces, were also negative. The above measures temporarily controlled cross-transmission but failed to eradicate the epidemic MDRKO strain that reappeared two weeks after the last colonized patients in waves 2 and 3 had been discharged. Therefore, an occult environmental reservoir was suspected. Samples from the drainpipes and traps of a sink were positive; removal of the sink reduced the rate number but did not stop new cases that clustered in a cubicle whose horizontal drainage system was connected with the eliminated sink. The elimination of the horizontal drainage system finally eradicated the outbreak. In conclusion, damp environmental reservoirs (mainly sink drains, traps and the horizontal drainage system) could explain why standard cross-transmission control measures failed to control the outbreak; such reservoirs should be considered even when environmental cultures of surfaces are negative.

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FUTILITAT

2017

International Journal of Antimicrobial Agents 50 (2017) 197–202

Contents lists available at ScienceDirect

International Journal of Antimicrobial Agents

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

Emerging extended-spectrum β-lactamase-producing *Klebsiella pneumoniae* causing community-onset urinary tract infections: a case–control–control study

Lucía Boix-Palop [a,b,1,*], Mariona Xercavins [c], Cristina Badía [a], Meritxell Obradors [a], Montserrat Riera [d], Núria Freixas [d], Josefa Pérez [c], Mónica Rodríguez-Carballeira [a], Javier Garau [e], Esther Calbo [a,b,1,*]

[a] *Infectious Diseases Unit, Service of Internal Medicine, Hospital Universitari Mútua de Terrassa, Barcelona, Spain*
[b] *Universitat Internacional de Catalunya, Barcelona, Spain*
[c] *Microbiology Department, CatLab, Barcelona, Spain*
[d] *Hospital Universitari Mútua de Terrassa, Barcelona, Spain*
[e] *Service of Internal Medicine, Clínica Rotger, Palma de Mallorca, Spain*

Pacient com principal reservori

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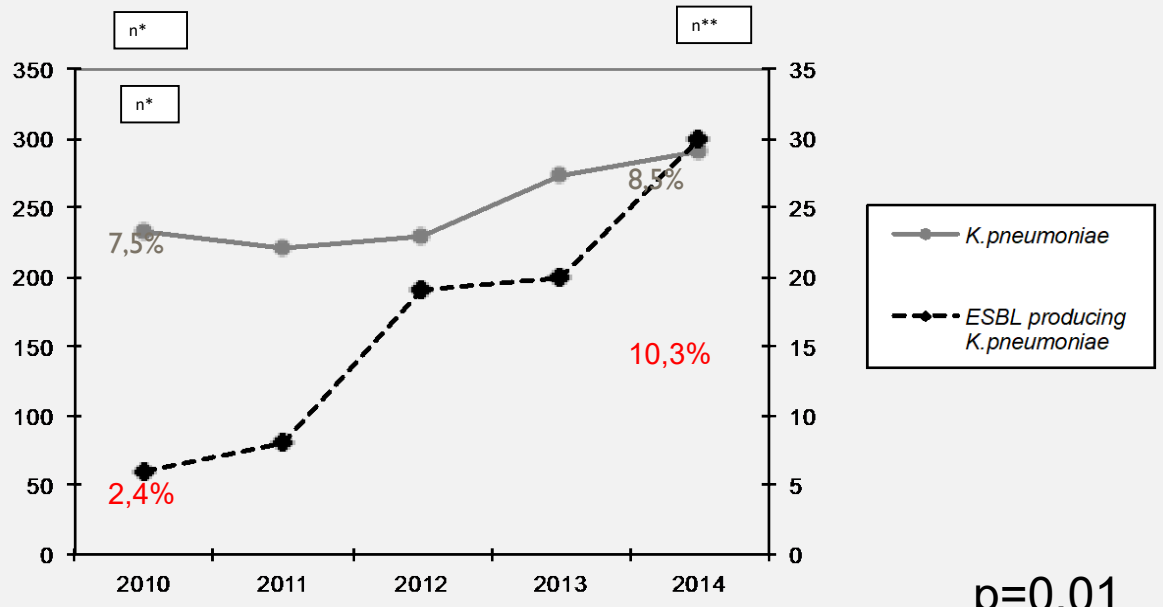
Casos anuales de ITU comunitarias por *K. pneumoniae*



p=0,01

Pacient com principal reservori

PREVALENÇA A LA COMUNITAT

Estudi, any	País	Tipus mostra	Nombre (n)	% KpBLEE	Tipus enzim
Prado et al, 2007	Brasil	Aguas residuales hospitalàries	20	100	No descrit
Kader et al, 2009	Aràbia Saudí	Portadors fecals comunitaris	716	4,4	No descrit
Randrianirina et al, 2009	Madagascar	Agua grifo	40	No descrit	CTX-M-15
Dolejska et al, 2011	República Txeca	Aigua residuales municipals	68	5,9	CTX-M-15
Calbo et al, 2011	Espanya	Portadors fecals i mostres clíniques	1.100	14,2	CTX-M-15
Isendhal et al, 2012	Guinea-Bissau	Portadors fecals nens >5 anys a urgències	408	22,3	CTX-M-1 grup
Poirel et al, 2013	França	Portadors fecals animals de companyia	110	13,6	CTX-M-15
Bonnedahl et al, 2014	Alaska	Mostres fecals gavines	55	63,6	CTX-M-15 SHV-12, SHV-102
Ewers et al, 2014	16 països europeus	Mostres clíniques animals de companyia i cavalls	1.519	8	CTX-M-15
Arana et al, 2017	Espanya	Urocultius comunitaris 2007-10 2011-14	30.778	 1,6 5,5	No descrit

M. Xercavins Tesis 2021

Contents lists available at ScienceDirect

Clinical Microbiology and Infection

journal homepage: www.clinicalmicrobiologyandinfection.com

Original article

Quantifying within-household transmission of extended-spectrum β-lactamase-producing bacteria

2017

M.R. Haverkate [1, *, 9], T.N. Platteel [2, 3, 9], A.C. Fluit [2], J.W. Cohen Stuart [4], M.A. Leverstein-van Hall [5, 6], S.F.T. Thijsen [7], J. Scharringa [2], R.C. Kloosterman [2], M.J.M. Bonten [1, 2], M.C.J. Bootsma [1, 8]

- 30% ja colonitzats al moment de l'ingrés (Font comú)
- 20% són *K. pneumoniae*
- El 50% dels familiars estan colonitzats en algun moment
- Càlcul del risc de transmissió a domicili molt superior a l'hospital.

Table 2
Culture results of index patients and household contacts

	During hospitalization of index patient (T0)	T3	T6	T12	T18
Included families	32	32	30	22	18
ESBL-positive index patients	32 (100%)	21[a] (67.7%)	18[b] (64.3%)	11 (50.0%)	7 (38.9%)
Included household contacts	53	53	48	36	32
ESBL-positive household contacts	16 [b] (31.4%)	16 [c] (32.0%)	10[a] (21.3%)	7 [c] (21.2%)	6 [d] (21.4%)
ESBLs related to index patient	13	13	8	5	6
Acquisitions of ESBLs related to index patient	0	5	4	1	1

Xercavins et al. Antimicrobial Resistance and Infection Control (2020) 9:5
https://doi.org/10.1186/s13756-019-0661-9

Antimicrobial Resistance and Infection Control

RESEARCH Open Access

High clonal diversity of ESBL-producing *Klebsiella pneumoniae* isolates from clinical samples in a non-outbreak situation. A cohort study

Mariona Xercavins[1,2], Elena Jiménez[1], Emma Padilla[1], Montserrat Riera[3], Núria Freixas[3], Lucia Boix-Palop[2,3], Josefa Pérez[1] and Esther Calbo[2,3*]

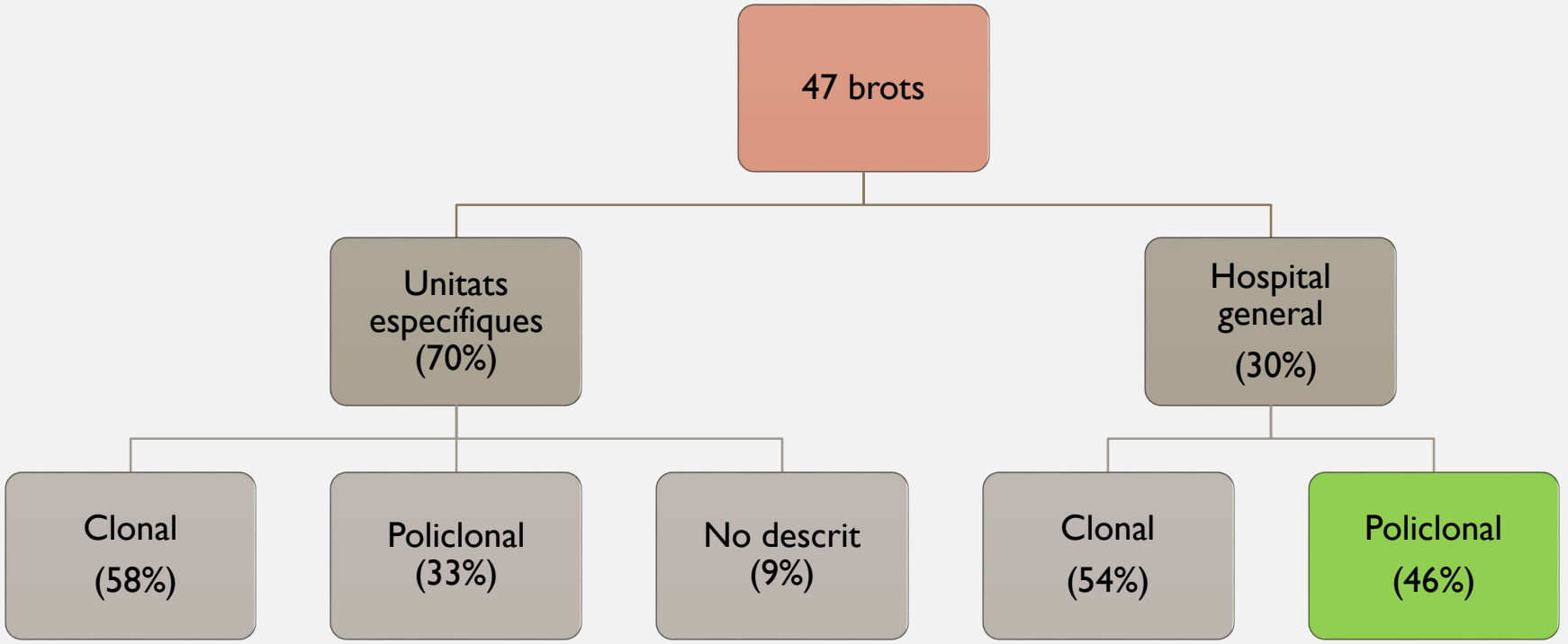
SOCIETAT CATALANOBALEAR DE MEDICINA INTERNA

DISTRIBUCIÓ KPBLEE NOSOCOMIAL PER UNITATS, MOSTRES CLÍNIQUES 2105

▲: COLONITZACIÓ, ■ : INFECCIÓ (AMB CLONA)

Plantas Hospit.	Gener	Febrer	Març	Abril	Maig	Juny	Juliol	Agost	Setembr	Octub	Novemb	decemb
15							■ 6	▲6 ■ 38				
12					■54 ■52		■ 37					
11			■ 56		▲39					■ 37		
10					■23	■ 39		■ 2				
9									▲52			
8									■ 52 ■ 41			
UFI/5												
semi					■23			■ 41 ▲6				
UCI					▲57				■ 39			
UCIES Nosocomial per ingrés anterior 4 setmanes								■pte	■ 36 ■ 50	■ 51 ■ 50 ■ 37		

PREVALENÇA A LA COMUNITAT



Sense transmissió horitzontal

M. Xercavins Tesis 2021

Contents lists available at ScienceDirect

American Journal of Infection Control

journal homepage: www.ajicjournal.org

Major Article

Incidence of health care–associated extended-spectrum β-lactamase-positive patients before and after discontinuation of contact precautions

Peggy Thompson RN, BSN, CIC, FAPIC *, Jonathan Teter MS, CIC, NREMT, Kimberly Atrubin MPH, CIC, CPHQ

- Pre post
- 26% *E. coli*, 23% *K. Pneumoniae*
- Sin cambios en las prácticas de control de infección
- 43% habitaciones semiprivadas.

Table 1
Rates of extended-spectrum β-lactamase organisms preintervention and postintervention period

	Preintervention			Postintervention			
	Number	Denom	Rate	Number	Denom	Rate	*P* value
Community prevalence rate	370	282145	13.114	516	299983	17.201	.001
HAI incidence rate (all organisms)	221	595336	3.712	166	553748	2.998	<.001
Incidence by organism							
Escherichia coli	124	595336	2.083	94	553748	1.698	.13
Klebsiella pneumoniae	51	595336	0.857	45	553748	0.813	.80
Enterobacter spp	31	595336	0.521	19	553748	0.343	.15
Other	15	595336	0.252	8	553748	0.144	.21
Incidence by infection type							
Colonization	106	595336	1.781	101	553748	1.824	.86
BSI	6	595336	0.101	3	553748	0.054	.40
UTI	50	595336	0.840	27	553748	0.488	.21
SST	14	595336	0.235	5	553748	0.090	.06
PNEU/LRI	27	595336	0.454	18	553748	0.325	.28

Community prevalence rate = community cases per 10,000 patient encounters (admissions and emergency department visits); HAI incidence rate = healthcare- associated extended-spectrum β-lactamase infections per 10,000 patient days.
BSI, bloodstream infection; *Denom*, denominator; *HAI*, health care–associated infection; *LRI*, lower respiratory infection; *PNEU*, pneumonia; *SST*, skin and soft tissue; *UTI*, urinary tract infection.

2020

CONCLUSIONS

CONCLUSIONS

- Sembla segur abandonar PC per a MOMR determinats en situacions de:
  - **endèmia estable**,
  - MOMR amb:
    - baixa taxa de transmisió
    - i/o **elevada taxa de transmissió comunitaria**
    - **o quan el pes reservori ambiental és elevat**
  - amb condicions estructurals adequades,
  - bon **compliment de la HM i de neteja ambiental,**
  - i **UN EQUIP CONTROL INFECCIÓ expert i atent**

- Focalitzar els esforços de l'ECI cap a **estratègies preventives horitzontals** (adreçades a síndromes) pot ser més eficaç.

- Estratègia **"vestit a mida"** tenint en compte l'epidemiologia local i atents als canvis vs **estratègia "cafè per a tothom".** PROPRECO (programa d'optimització de les precaucions de contacte)

SOCIETAT CATALANOBALEAR MEDICINA INTERNA

L'Acadèmia
FUNDACIÓ ACADÈMIA DE CIÈNCIES MÈDIQUES I DE LA SALUT DE CATALUNYA I DE BALEARS

GRÀCIES

vic bcn

Hospital Universitari MútuaTerrassa

ORIGINAL ARTICLE EPIDEMIOLOGY

Wastewater drainage system as an occult reservoir in a protracted clonal outbreak due to metallo-β-lactamase-producing *Klebsiella oxytoca*

S. Vergara-López[1], M. C. Domínguez[2], M. C. Conejo[3], Á. Pascual[3,4] and J. Rodríguez-Baño[4,5]

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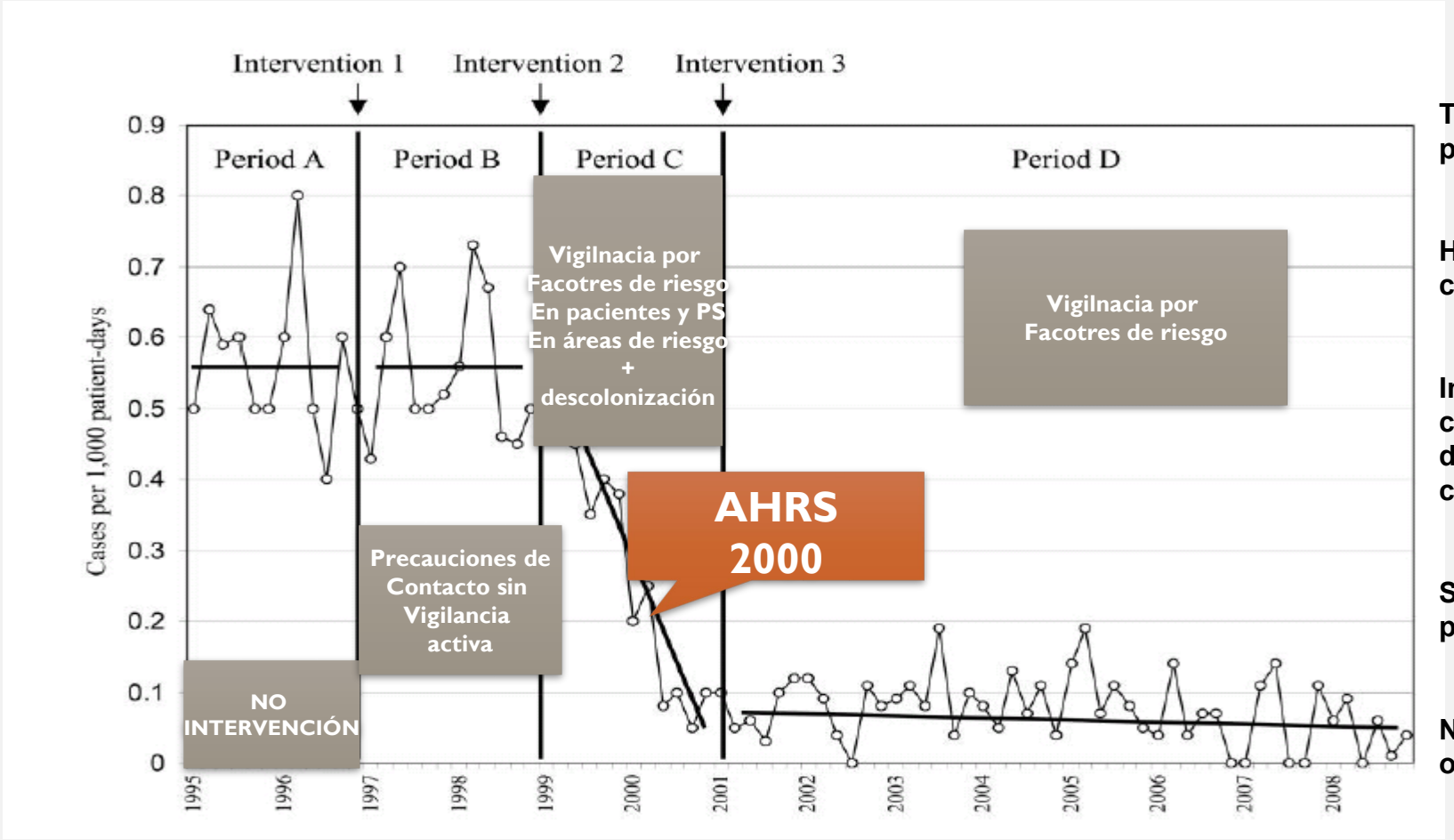
Ambient com principal reservori

VERTICAL INTERVENTIONS IN ENDEMIC SETTINGS



Tasas de infección por SARM

Hospital de 950 camas

Incidencia calculada a partir de muestras clíncas

Sin cambios en la política atb.

No variaciones en otros MMR

Rodriguez-Baño et al. ICHE 2010

Factors Leading to Transmission Risk of *Acinetobacter baumannii*

Kerri A. Thom, MD, MS[1]; Clare Rock, MD, MS[2]; Sarah S. Jackson, MPH[1]; J. Kristie Johnson, PhD[1]; Arjun Srinivasan, MD[3]; Laurence S. Magder, PhD[1]; Mary-Claire Roghmann, MD, MS[1,4]; Robert A. Bonomo, MD[5]; Anthony D. Harris, MD, MPH[1]

Observations of HCW-patient interactions				
Variable	**Transmission risk identified: *Acinetobacter baumannii* positive HCW cultures (*n* = 77; *n* [%])**	**No Transmission risk identified: *A. baumannii* negative HCW cultures (*n* = 177; *n* [%])**	**OR (95% CI)**	***p***
HCW interaction with environment (interactions with nonsignificant sites not shown [sink, bedside table, vital sign monitor, door handle, IV medication pump, ventilator, and floor])[a]				
Bedrail	39 (51)	62 (35)	2.83 (1.36–5.88)	< 0.01
Supply cart	34 (44)	44 (25)	2.57 (0.40–3.28)	< 0.01
HCW interaction with patient (interactions that were nonsignificant are not shown [obtaining vital signs, urinary catheter drainage, administering parenteral medications, IV medication pump])[a]				
Physical examination	32 (42)	53 (30)	1.89 (0.97, 3.67)	0.061
Wound dressing	13 (17)	6 (3)	8.81 (2.50, 31.05)	< 0.01
Bathing hygiene	9 (12)	10 (6)	3.78 (1.12, 12.78)	0.032
Endotracheal tube or tracheotomy site	25 (32)	24 (14)	4.40 (1.92, 10.08)	< 0.01

Crit Care Med 2017

Contact precautions in single-bed or multiple-bed rooms for patients with extended-spectrum β-lactamase-producing Enterobacteriaceae in Dutch hospitals: a cluster-randomised, crossover, non-inferiority study

*Marjolein F Q Kluytmans-van den Bergh, Patricia C J Bruijning-Verhagen, Christina M J E Vandenbroucke-Grauls, Els I G B de Brauwer, Anton G M Buiting, Bram M Diederen, Erika P M van Elzakker, Alex W Friedrich, Joost Hopman, Nashwan al Naiemi, John W A Rossen, Gijs J H M Ruijs, Paul H M Savelkoul, Carlo Verhulst, Margreet C Vos, Andreas Voss, Marc J M Bonten, Jan A J W Kluytmans, on behalf of the SoM Study Group**

- 13 hospitales
- No UCI, NO hematologicos
- Cluster randomized
- 75% *E coli,* 90% CTXM

- **Comparten baño**
- 616 casos índices, 12.800 wardmates
- Sin diferencias entre especies, ni entre habitación **o planta**
- **El 95%** de los colonizados NO sufrieron infección

	Contact precautions in a single-bed room	Contact precautions in a multiple-bed room	Risk difference (90% CI)	Risk difference (95% CI)	Relative risk (95% CI)
Transmission of ESBL-producing Enterobacteriaceae to wardmates					
All index patients: per-protocol population, crude	11/275 (4%)	14/188 (7%)	3·4% (−0·3 to 7·1)	3·4% (−1·0 to 7·9)	1·86 (0·86 to 4·01)
All index patients: per-protocol population, adjusted*	..	..	3·4% (−0·2 to 6·9)	3·4% (−0·8 to 7·6)	1·95 (0·91 to 4·18)
All index patients: intention-to-treat population, crude	15/312 (5%)	18/304 (6%)	1·1% (−1·9 to 4·1)	1·1% (−2·4 to 4·7)	1·23 (0·63 to 2·40)
All index patients: intention-to-treat population, adjusted*	..	..	1·6% (−1·1 to 4·3)	1·6% (−1·7 to 4·8)	1·33 (0·69 to 2·56)
Index patients without unprotected ward stay: per-protocol population	2/96 (2%)	3/78 (4%)	1·8% (−2·5 to 6·1)	1·8% (−3·4 to 6·9)	1·85 (0·32 to 10·77)
Index patients without unprotected ward stay: intention-to-treat population	3/109 (3%)	5/134 (4%)	1·0% (−2·7 to 4·7)	1·0% (−3·5 to 5·4)	1·36 (0·33 to 5·55)

Kluytmans Lancet 2019

METODOLOGIA

- **Mostres ambientals:**

- **Mètodes microbiològics:**
  - Identificacions i estudi de sensibilitat: sistema Vitek2® (bioMérieux).
  - Detecció de BLEE: sinèrgia amb doble disc.
  - Punts de tall CMIs: EUCAST
  - Caracterització BLEEs: Check-MDR CT103XL, Check-Points).
  - Relació genètica:
    - rep-PCR (Diversilab System, bioMérieux)
    - MLST

PRECAUCIONS DE CONTACTE

Table 1 Core elements of contact precautions (CP) recommended by recent ESCMID and HICPAC/CDC guidelines

	ESCMID 2014 (3)	HICPAC/CDC 2007 (2)
Indication for CP	Colonization or infection with MDRO	Colonization or infection with MDRO
Donning and wearing of gloves and gowns	Gown and gloves are donned upon entry to a room	Gown and gloves are donned upon room entry Gown and gloves are indicated for all interactions that may involve contact with the patient or potentially contaminated areas in the patient's environment.
Disposal of gowns and gloves	Not stated	Gown and gloves are discarded before exiting the patient room
Additional requirements & recommendations	Use of disposable single-use or patient-dedicated non-critical care equipment (e.g. blood pressure cuffs and stethoscopes).	Use of patient-dedicated or single-use disposable noncritical equipment
Placement of patients	Special isolation wards Nursing cohort with separate rooms on general wards Single room or cohort in same room without dedicated personnel Placement in a room with patients unaffected by MDROs but maintaining CP by use of gowns and gloves based on the patient's extent of MDRO carriage	Single patient room preferred Cohort patients with same MDRO Multi-bed rooms with non-infected/non-colonized patients: at least 3 ft spatial separation between beds

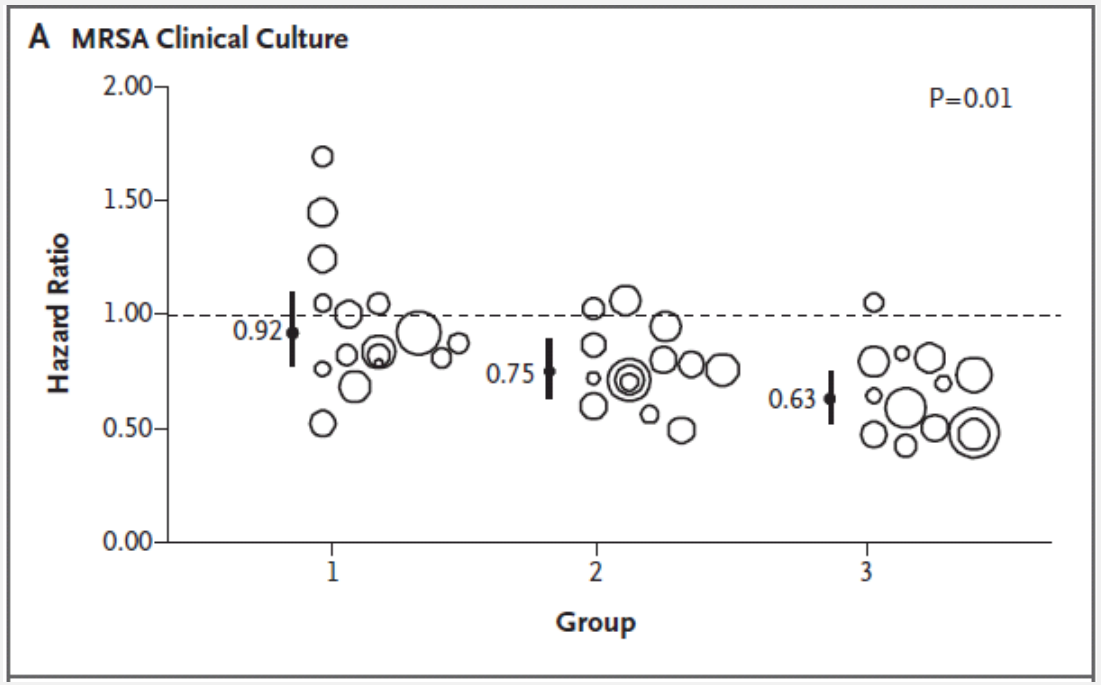
CDC centers for disease control and prevention, *CP* contact precaution, *ESCMID* european society of clinical microbiology and infectious diseases, *HICPAC* healthcare infection control practices advisory committee, *MDRO* multidrug resistant organism

Vuichard Gysin et al. Antimicrobial Resistance and Infection Control 2019

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 JUNE 13, 2013 VOL. 368 NO. 24

Targeted versus Universal Decolonization to Prevent ICU Infection



- 74 UCI
- 74.000 pacientes
- **10%** tenían hª de SARM previ

- **G1** screening + isolation
- **G2**: G1+decolinzación
- **G3** decolonización universal+ **PC**

- Redeixen el risc de bacteriemia per qualsevol MO, no per SARM

- Redueixen el risc de mostra clínica per SARM

Decolonitzar es más eficaç que aïllar selectivament

Huang NEJM 2013