

¿Qué podemos hacer los equipos de control de infección?

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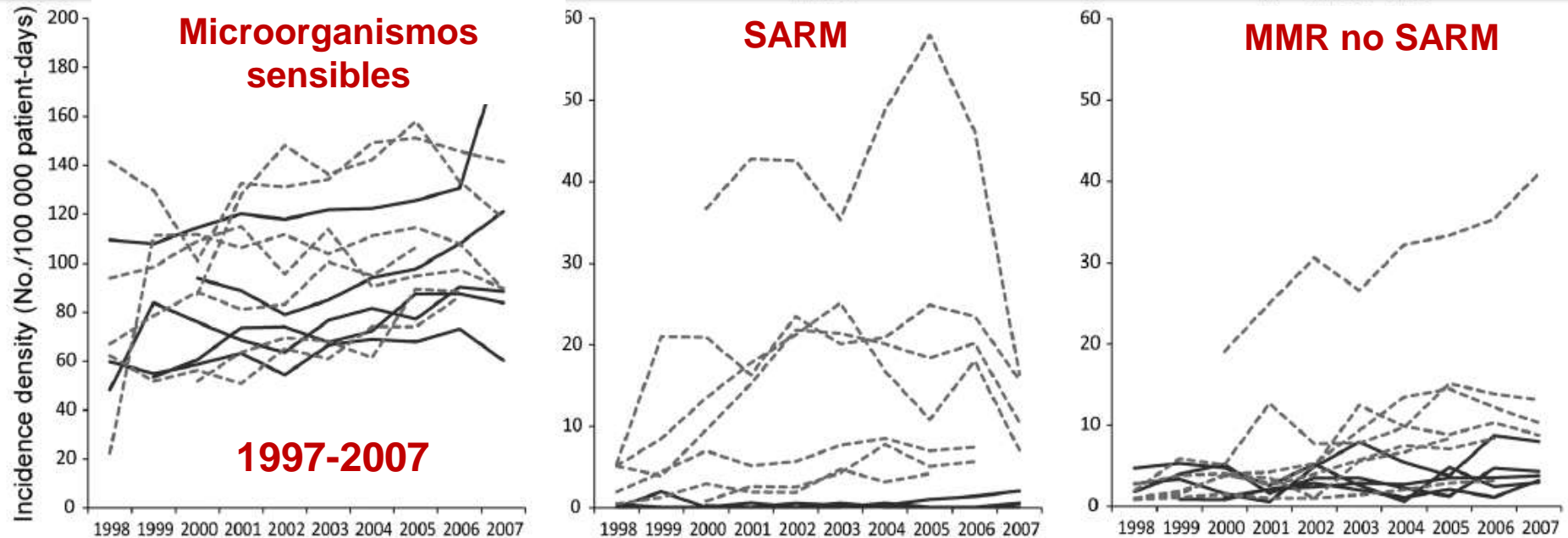
UNIVERSITAT DE BARCELONA



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- Pero, ¿podemos hacer algo?
- ¿Qué es lo que podemos hacer?
 - Detectar
 - Controlar
 - Estrategias verticales
 - Estrategias horizontales approach

Secular Trends in Nosocomial Bloodstream Infections: Antibiotic-Resistant Bacteria Increase the Total Burden of Infection



- 14 hospitales en Europa, Nord America y Sur America (9 países)
- 33.130 bacteriemias nosocomiales (**14%** causadas por MMR)
- Se clasificó a los hospitales como baja o alta prevalencias de SARM

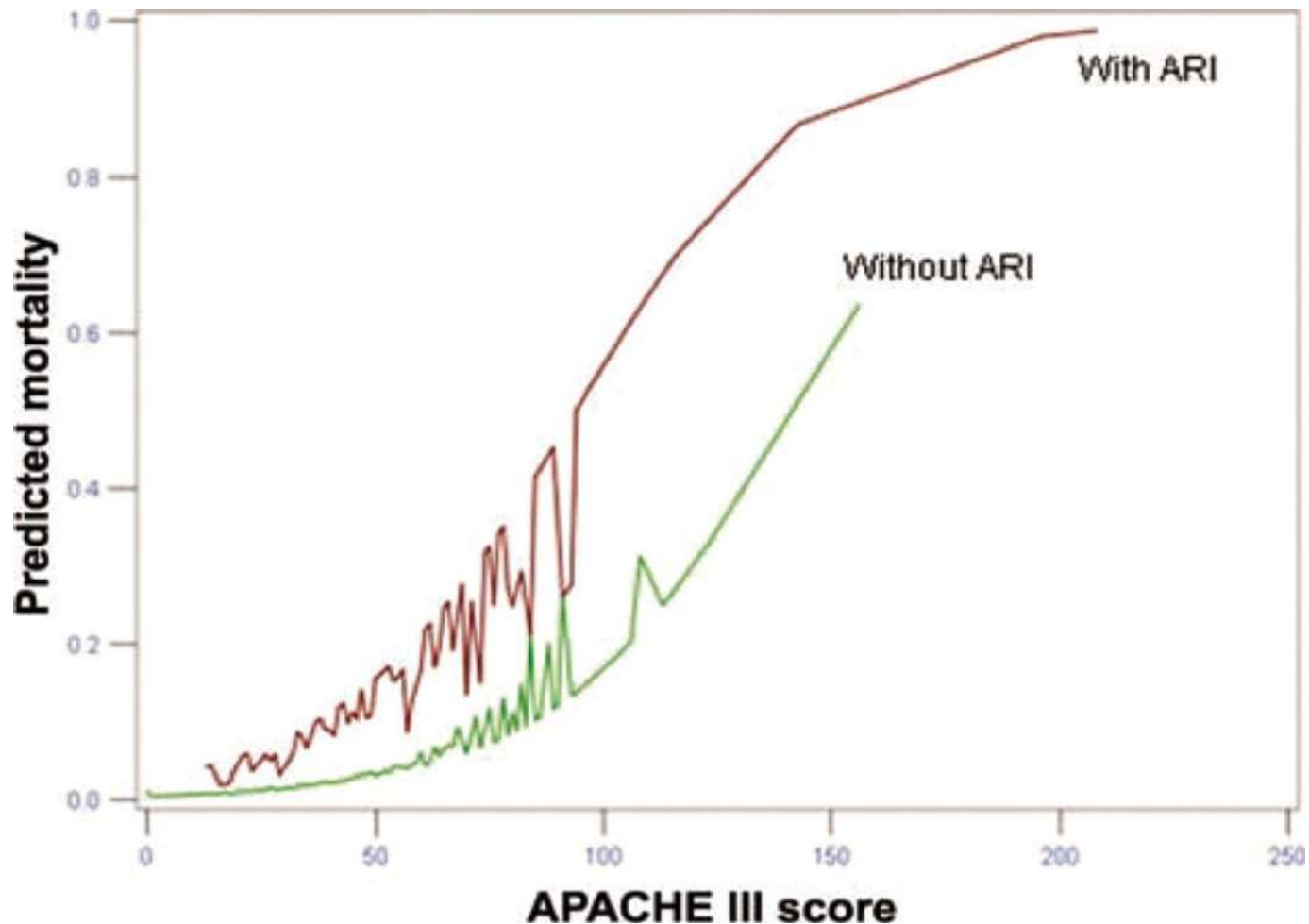
Hospital and Societal Costs of Antimicrobial-Resistant Infections in a Chicago Teaching Hospital: Implications for Antibiotic Stewardship

Characteristic	Random sample		
	All patients	Patients with ARI ^a	Patients without ARI
All patients	1253	50 (4.0)	1203 (96)
Age, years	54.4 ± 14	52.3 ± 15	54.5 ± 14
Male sex	721 (57.5)	34 (68.0)	687 (57.1)
APACHE III score ^a	40.4 ± 18	48.1 ± 17	40.1 ± 18
Duration of stay, days ^a	8.8 ± 10	26.4 ± 26	8.0 ± 7
HAI ^a	159 (12.7)	34 21%	125 79%

Hospital and Societal Costs of Antimicrobial-Resistant Infections in a Chicago Teaching Hospital: Implications for Antibiotic Stewardship

	Patients with ARI	Patients without ARI	Mean difference	<i>P</i>
Propensity score				
Propensity score 2 ^a				
No. of patients	169	169	...	
Total cost, US\$	53,863 ± 60,720	24,794 ± 23,231	29,069	<.001
Total length of stay, days	23.8 ± 20.3	12.8 ± 10.2	11.0	<.001

Hospital and Societal Costs of Antimicrobial-Resistant Infections in a Chicago Teaching Hospital: Implications for Antibiotic Stewardship



MMR: COMMUNITY ACQUIRED-HOSPITAL ONSET

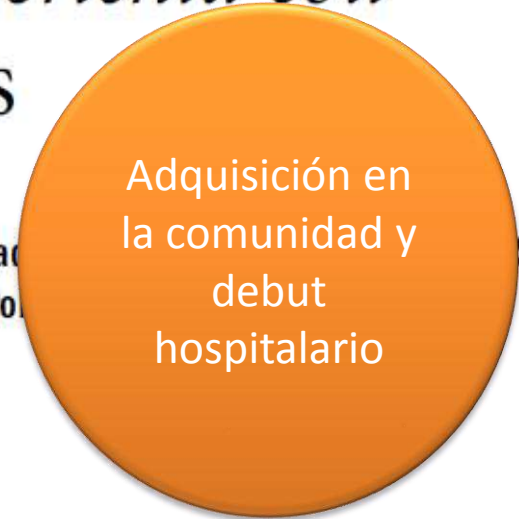
Community-Associated Extended-Spectrum
 β -Lactamase-Producing *Escherichia coli*
Infections in the United States

Yohei Doi,
James S. ...
Sandra S. H.



IRAS

...era,¹ Jennifer M. Adams-Had
... Laura E. Johnson,³ Bruce Po
... and David L. Paterson^{1,11}



Adquisición en
la comunidad y
debut
hospitalario

... Sordillo,^{4,5,6}

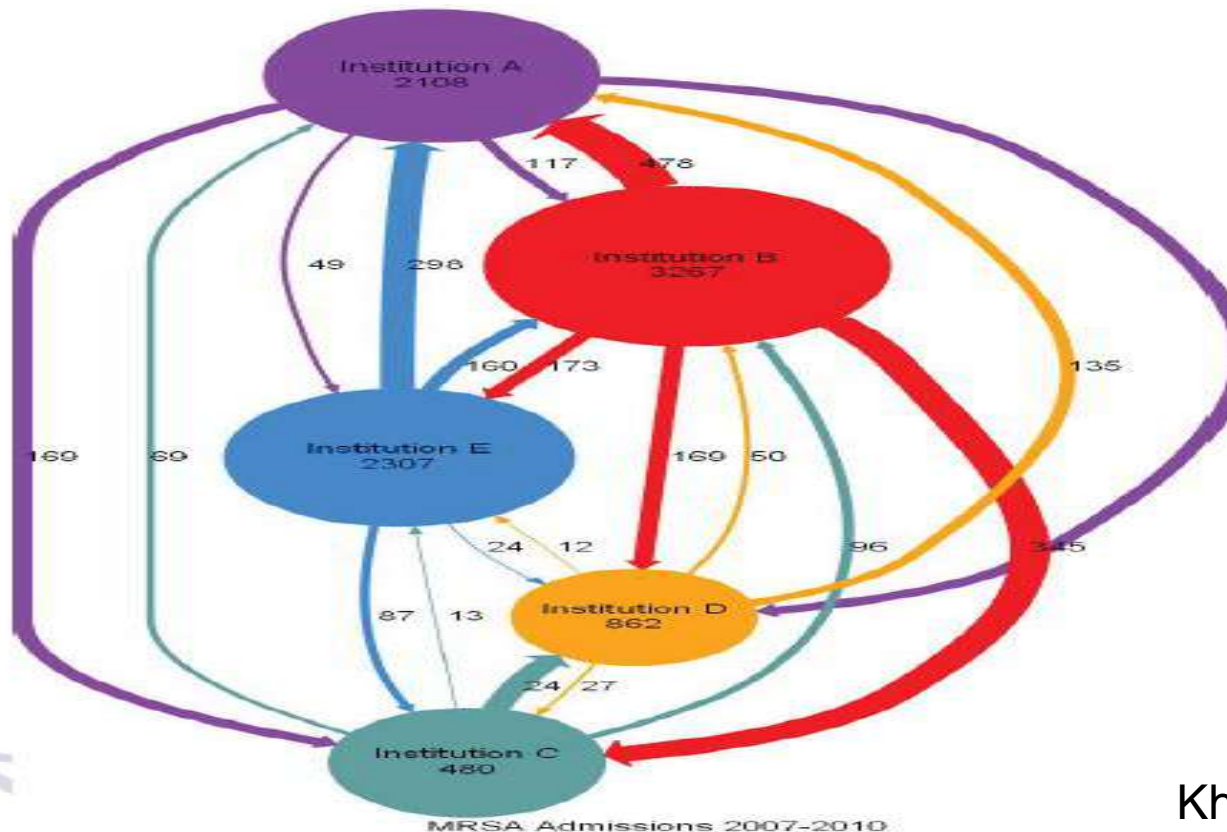
- Una tercera parte de las infecciones por E coli BLEE eran comunitarias verdaderas sin ninguno de los factores de riesgo conocidos

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LOCAL SURVEILLANCE REGIONAL INTERVENTION

A regional informatics platform for coordinated antibiotic resistant infection tracking, alerting and prevention



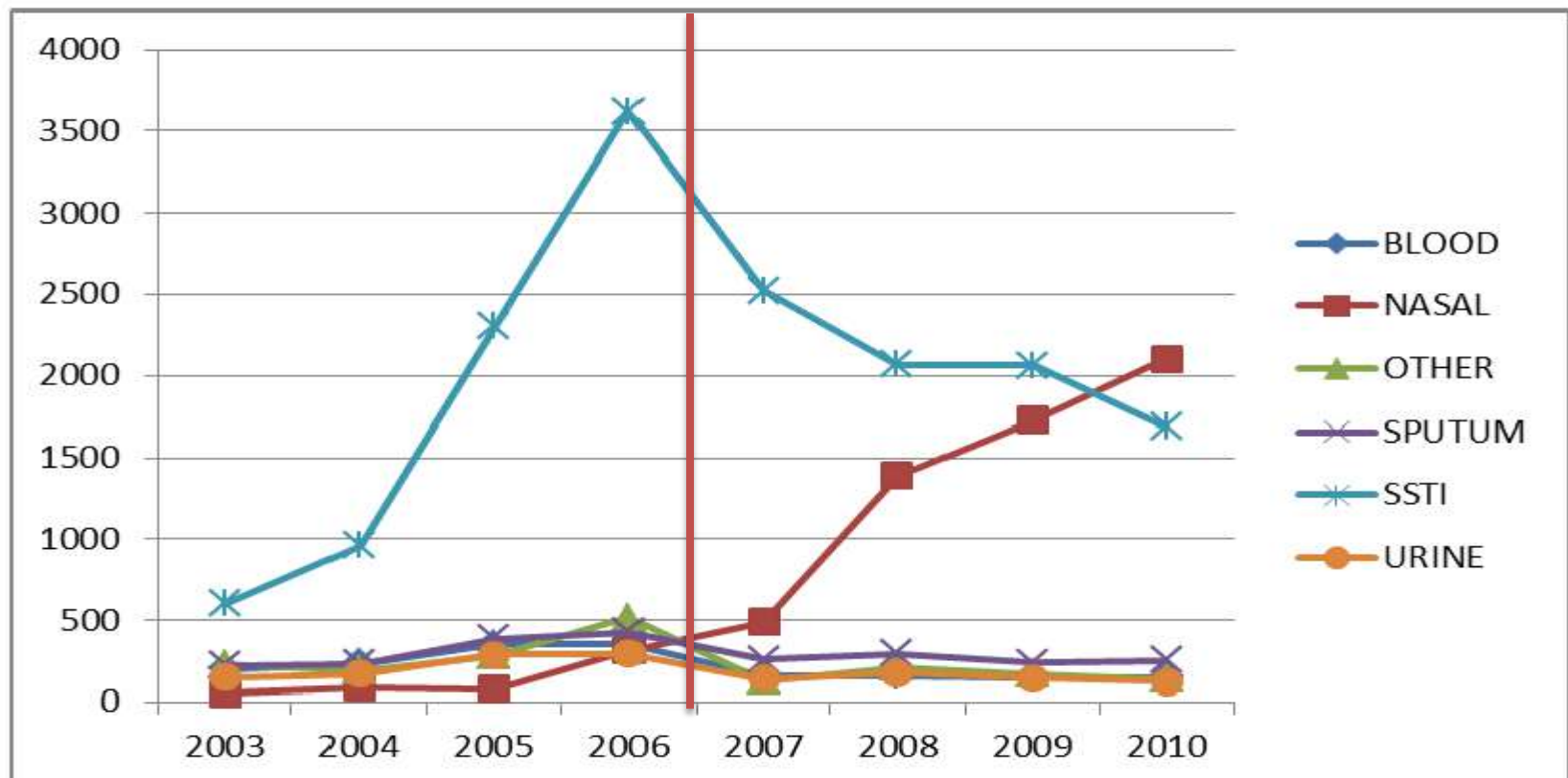
Registro regional

Notificación entre centros

El 20% de los ingresos fueron identificados gracias a la información proorcionada por otro centro

LOCAL SURVEILLANCE REGIONAL INTERVENTION

COUNTS OF POSITIVE MRSA CULTURES BY YEAR

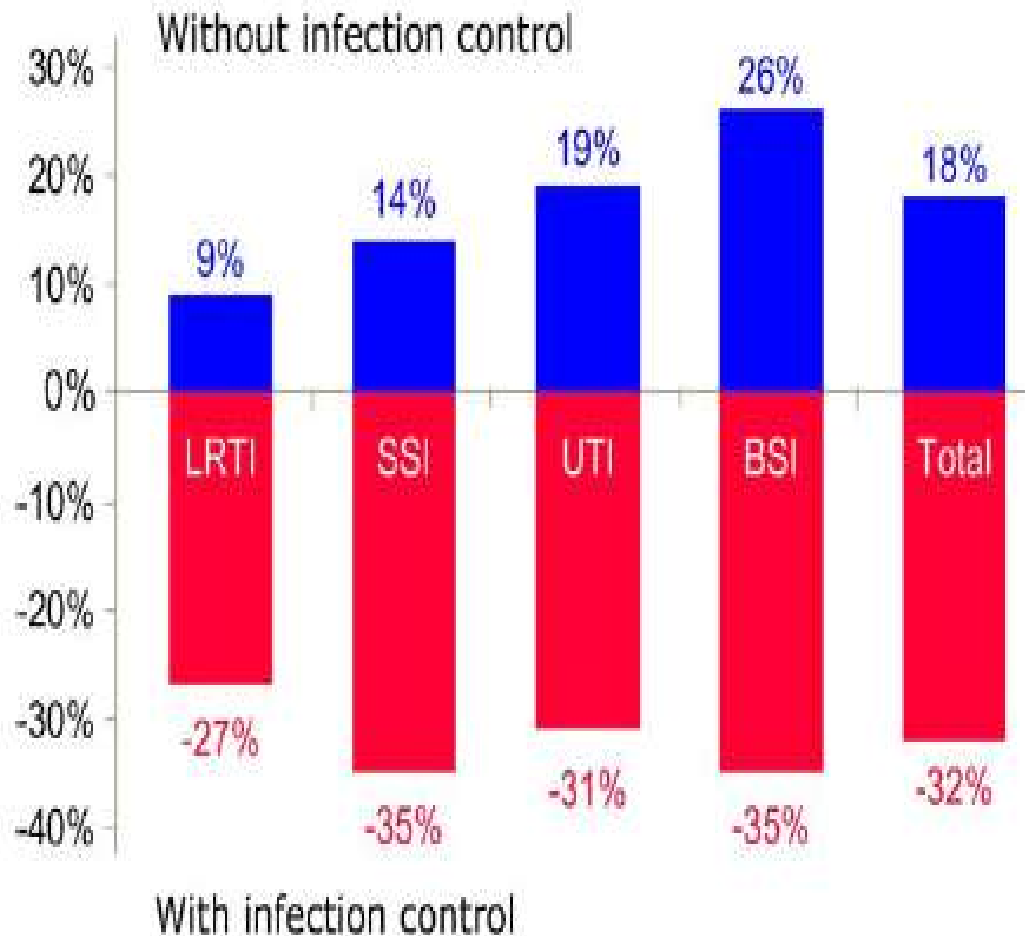


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INFECTION CONTROL PROGRAMS

Relative change in NI in a 5 year period (1970-1975)



SENIC study:

Componentes esenciales:

- Actividades organizadas de vigilancia y control
- Un médico entrenado en CI y una enfermera /250 camas
- Feedback

Relationship between the Prevalence of Methicillin-Resistant *Staphylococcus aureus* Infection and Indicators of Nosocomial Infection Control Measures: A Population-Based Study in French Hospitals

Infect Control Hosp Epidemiol 2009; 30:861-869

Leslie Grammatico-Guillon, MD; Jean-Michel Thiolet, MD; Pascale Bernillon, PhD; Bruno Coignard, MD;
Babak Khoshnood, MD, PhD; Jean-Claude Desenclos, MD, PhD

INFECTION CONTROL SCORE

1. Organization:

- **Integration of IC in the hospital.**
- **IC comitte board of management**
- **Tools of IC management**

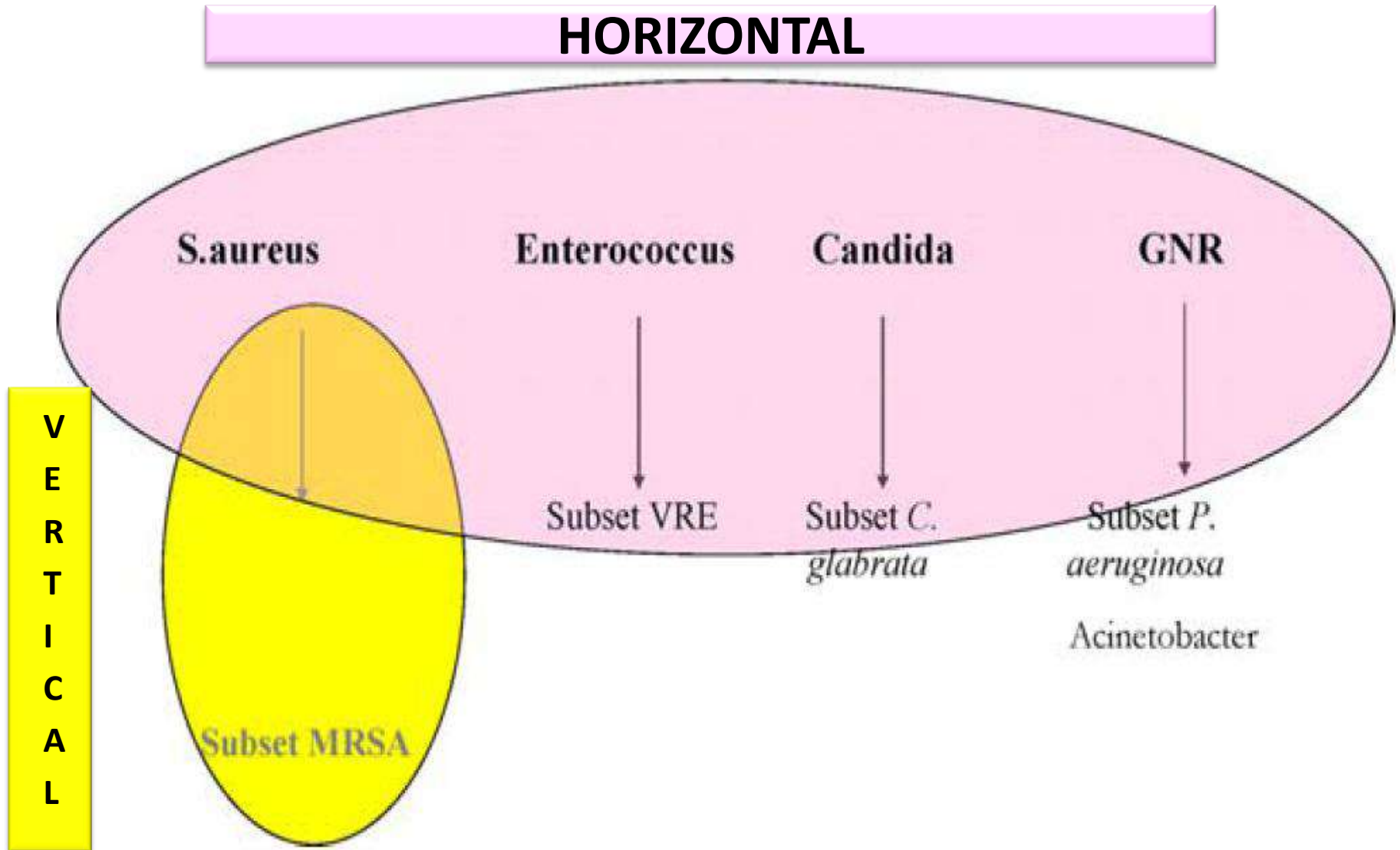
2. Resources

- **Staff**
- **Staff training**
- **Connecting staff**

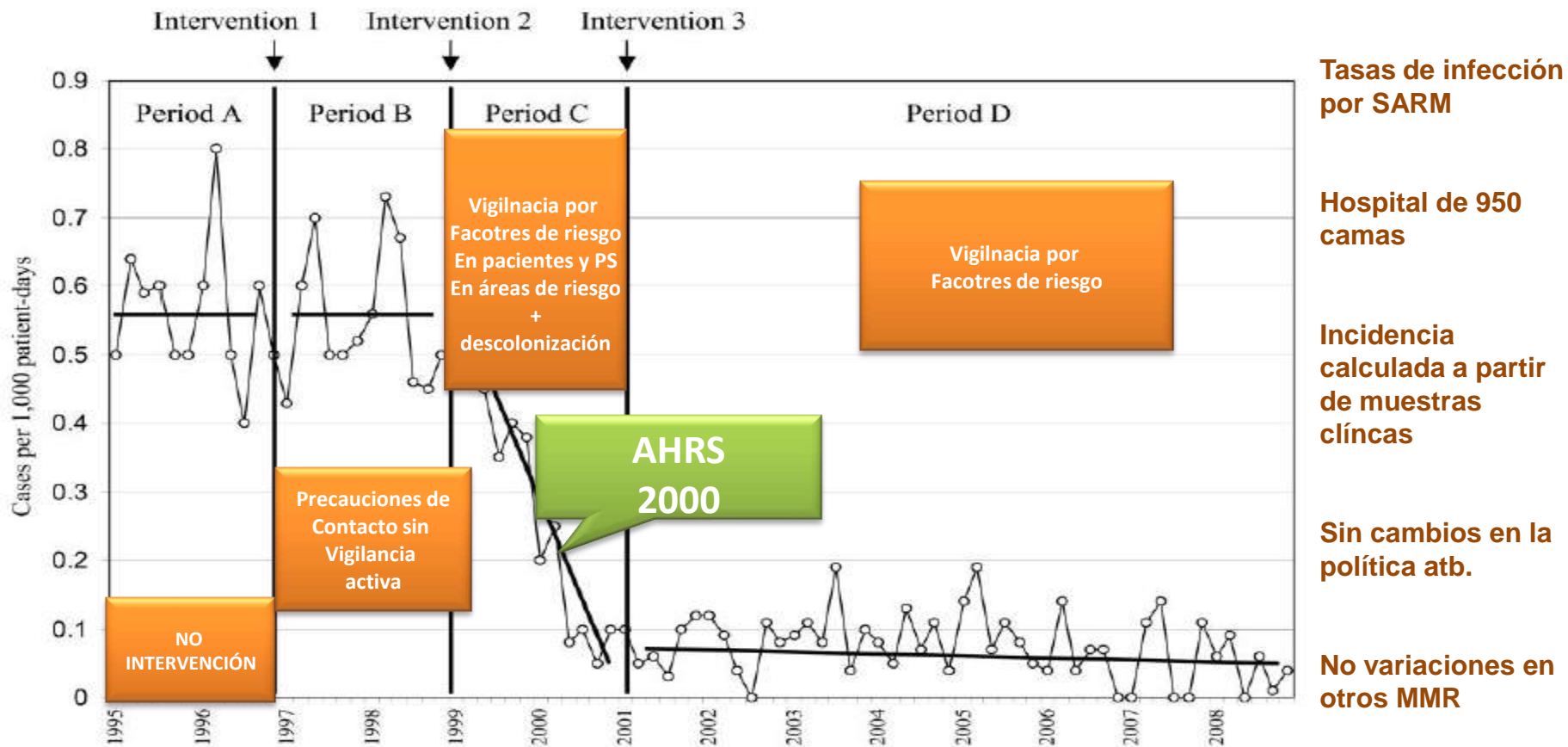
3. Actions

- **Prevention protocols**
- **Surveillance**
- **Audits of practices**

ESTRATEGIAS HORIZONTAL vs VERTICALES

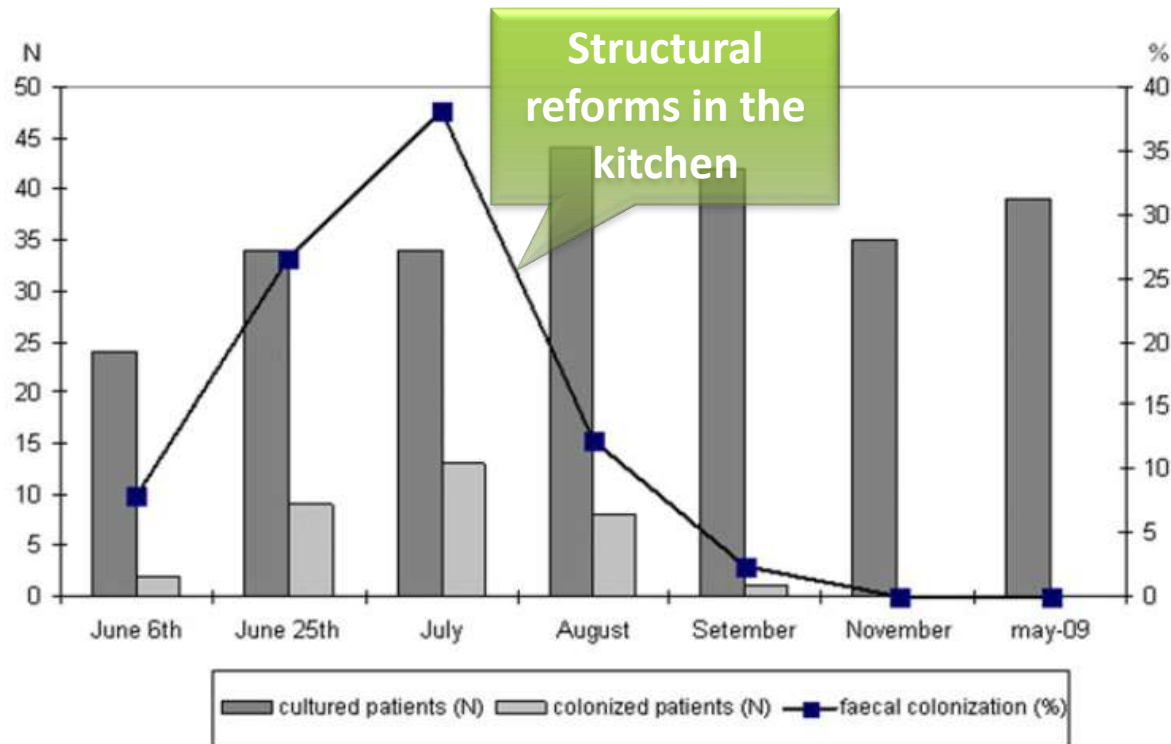


VERTICAL INTERVENTIONS IN ENDEMIC SETTINGS



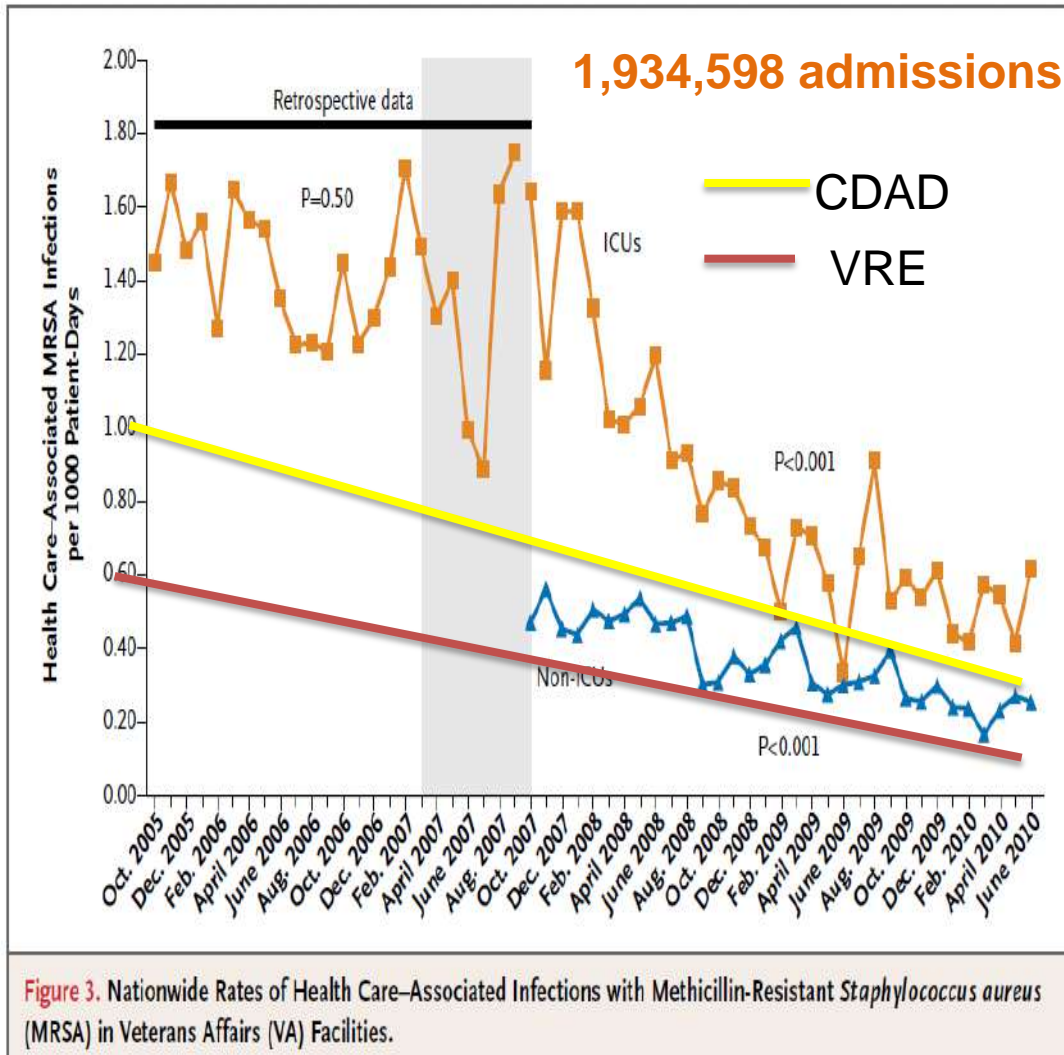
OUTBREAKS CONTROL: TRYING TO AVOID ENDEMICITY

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



- (1) Elevada prevalencia de colonización fecal
- (2) Rápida diseminación
- (3) Colonización precoz
- (4) 14% de los trabajadores de la cocina eran portadores asintomáticos

HORIZONTAL + VERTICAL APPROACH

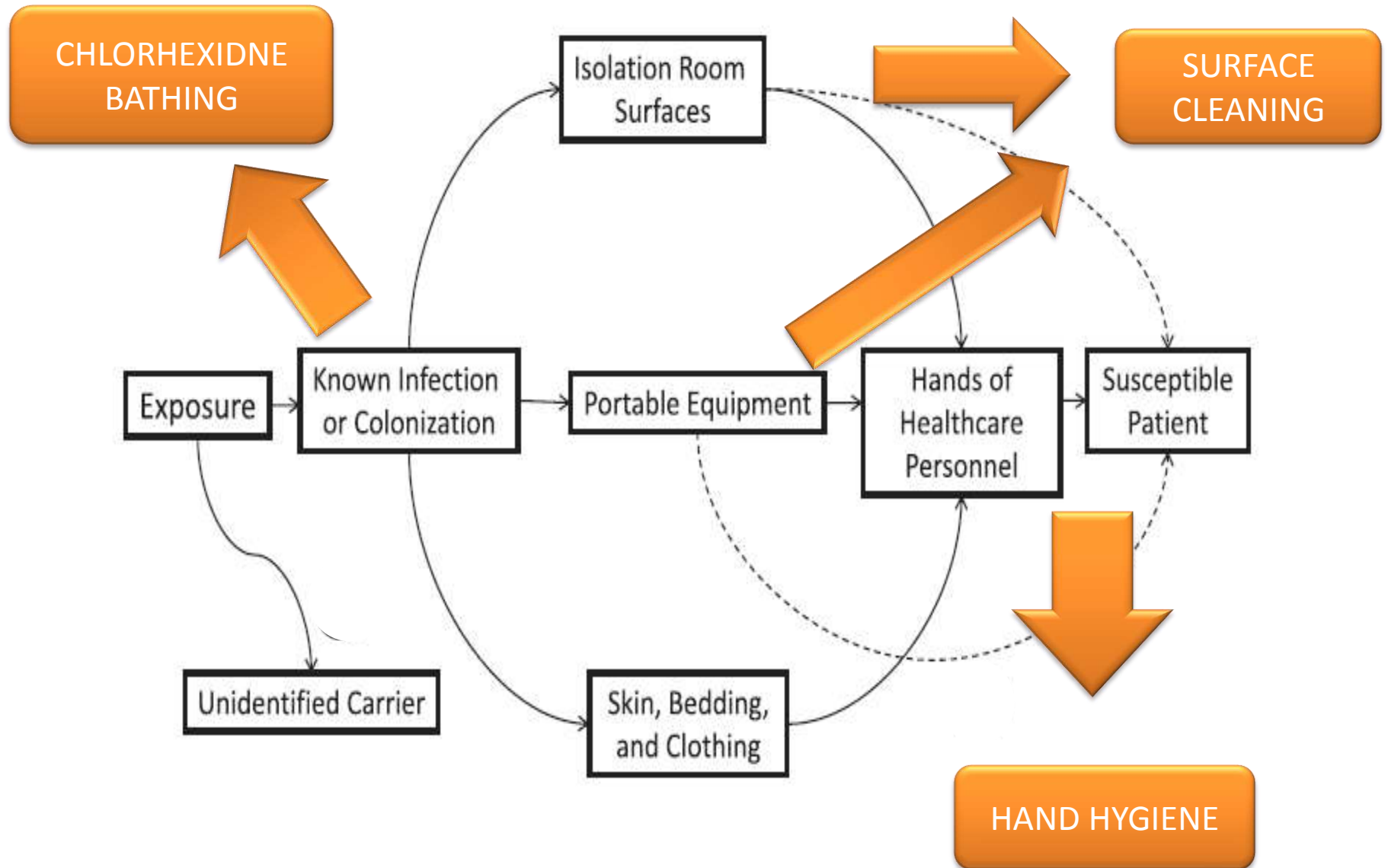


- Cribaje universal nasal de SARM
- Precauciones de contacto para los colonizados o infectados por SARM
- Higiene de manos
- Cambio en la cultura institucional

HORIZONTAL + VERTICAL APPROACH

- **ESTRATEGIA VERTICAL** → **DIRIGIDA A LA TRANSMISIÓN**
 - La incidencia de infección por SARM cayó más que la de colonización
 - La mayor parte de los colonizados lo estaban ya al ingreso
 - Es improbable que el cribaje y las precauciones de contacto puedan prevenir el riesgo de infección en los previamente colonizados
 - Por lo tanto los beneficios se deben atribuir a otras medidas:
- **ESTRATEGIA HORIZONTAL** → **DIRIGIDA A EVITAR INFECCIÓN**
 - HM y el cambio de cultura pueden explicar la caída en and culture
 - BR Catéter
 - CDAD
 - VRE

THE HORIZONTAL APPROACH



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.*

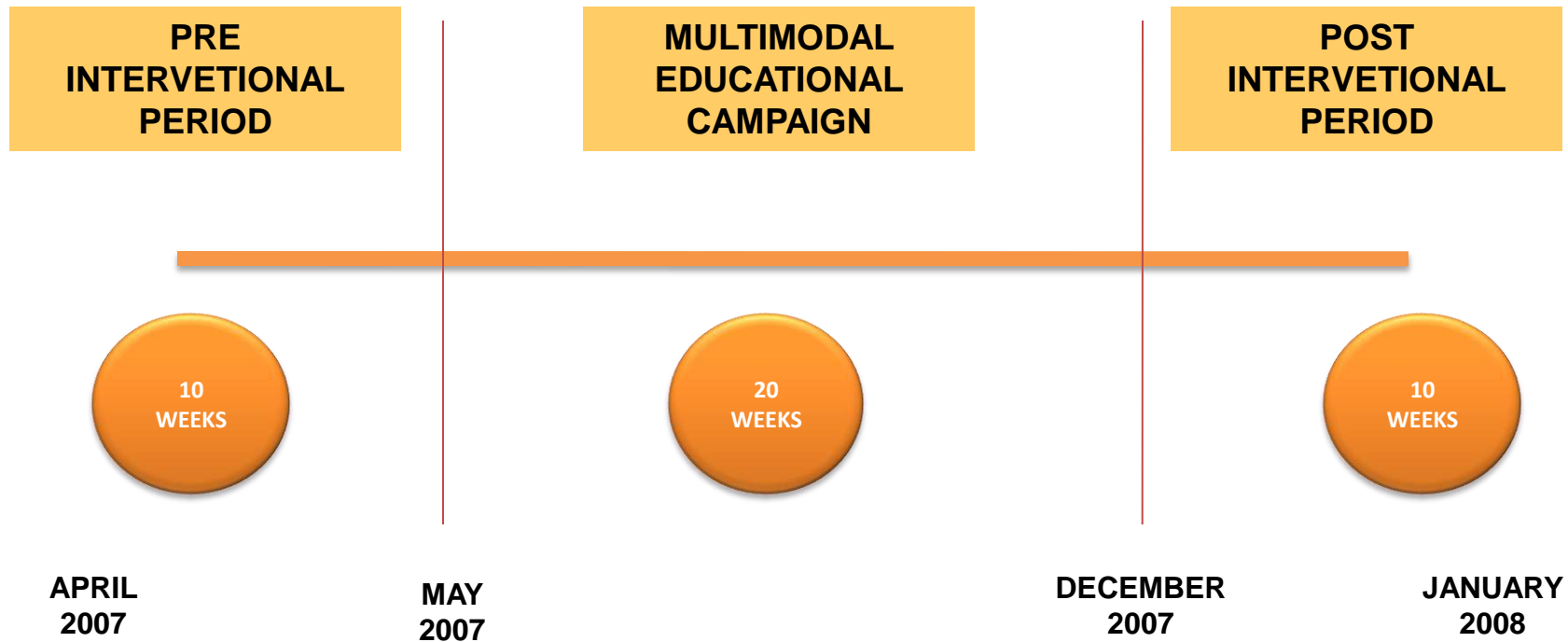
Variable	Intervention Period	Control Period	P Value
No. of admissions	3970	3842	0.32
Total days of care	24,902	24,983	0.85
Central-catheter use (days)	13,425	13,049	0.14
Mean length of stay (days)	6.4	6.4	0.53
MRSA prevalence (%)	13.8	12.8	0.14
VRE prevalence (%)	16.3	15.1	0.24
MDRO acquisition			
No. 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	

IMPROVING SURFACE CLEANING

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

Impact of a hand hygiene educational programme on hospital-acquired infections in medical wards

O. Monistrol, E. Calbo, M. Riera, C. Nicolás, R. Font, N. Freixas, J. Garau



1. HH compliance
2. Alcohol handrub consumption
3. Nosocomial infection incidence
4. MRSA hospital acquisition rate

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DENSITY INCIDENCE OF NOSOCOMIAL INFECTION

NI Focus	PRE	POST	P value
New hospital acquired MRSA colonization / admission days *1000	0.89	0.2	0.09
GLOBAL Urinary tract infection / admission days *1000	3.2	2	0.1
Catheter Urinary tract infection / urinary catheter days*1000	20.3	16.1	0.5
Pneumonia /admission day*1000	1.41	2.2	0.3
Aspiration pneumoniaNI / admission days *1000	1.03	0.86	0.7
Respiratory tract infection / admission days *1000	0.51	0.86	0.4
Clotidium difficile associated diarrhea / admission days *1000	-	0.61	-
Surgical-site infection/days / admission days *1000	0.13	-	-
UTI NI + new hospital acquired MRSA colonization / admission days *1000	4.1	2.34	0.05
TOTAL NI	6.8	6.7	0.9

CONCLUSIONES

- Globalmente hay un aumento en el número de infecciones causadas por MMR.
- Sin embargo, una buena organización de los equipos de control de infección se correlaciona con menor prevalencia.
- Sin despreciar las estrategias verticales, los programas horizontales son más eficaces en conseguir una reducción en las IRAS.

CONCLUSIONS

- What can we do?
 - Stewardship programs can prevent or delay the emergence of antimicrobial resistance by controlling how antimicrobial agents are used.
 - A good IC organization may lead to a lower prevalence of AMR bacteria. Without neglecting vertical approaches, horizontal programs are probably most effective in achieving a reduction in HAI rates