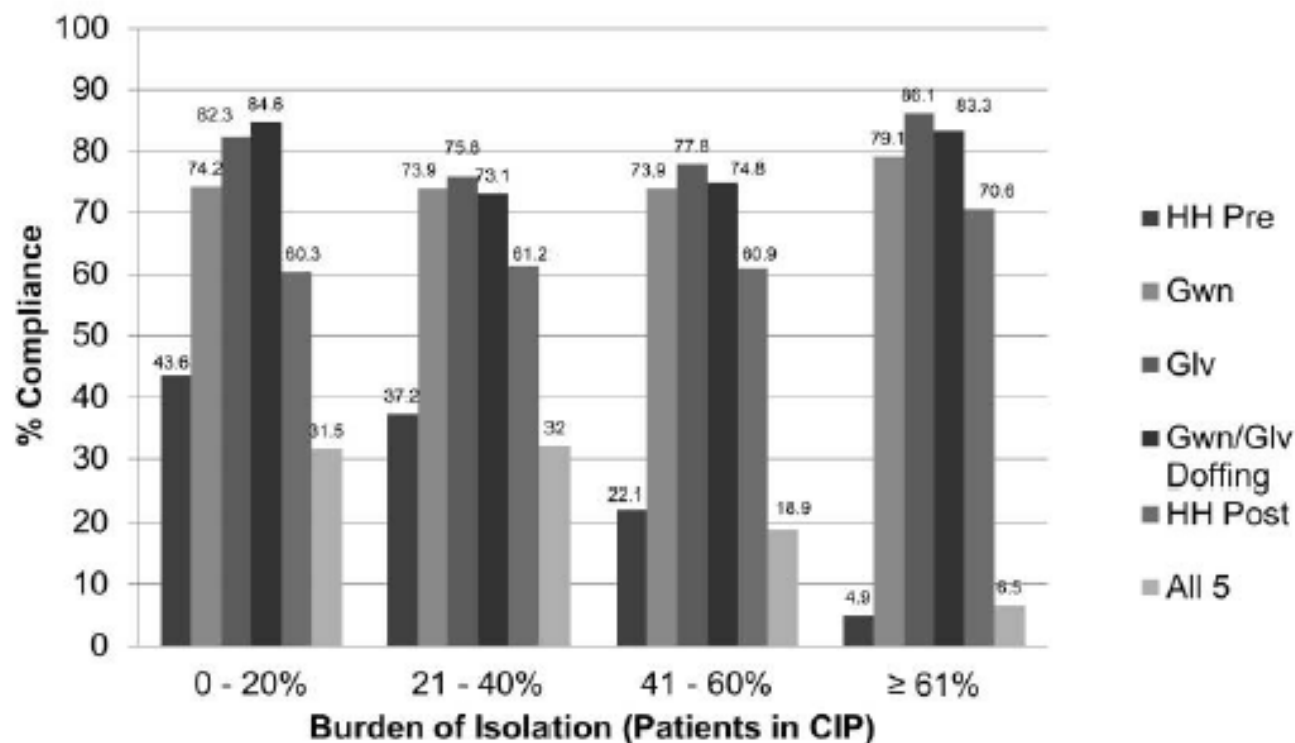


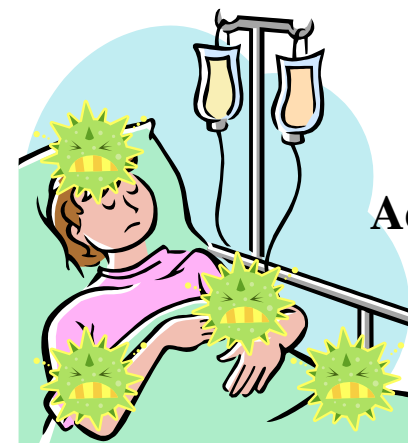
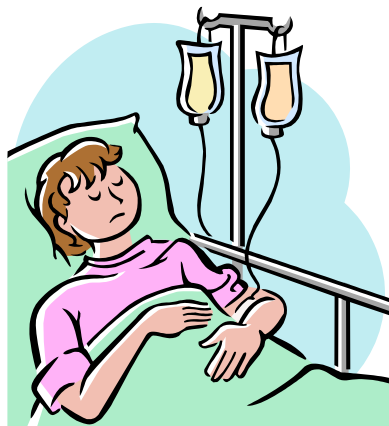
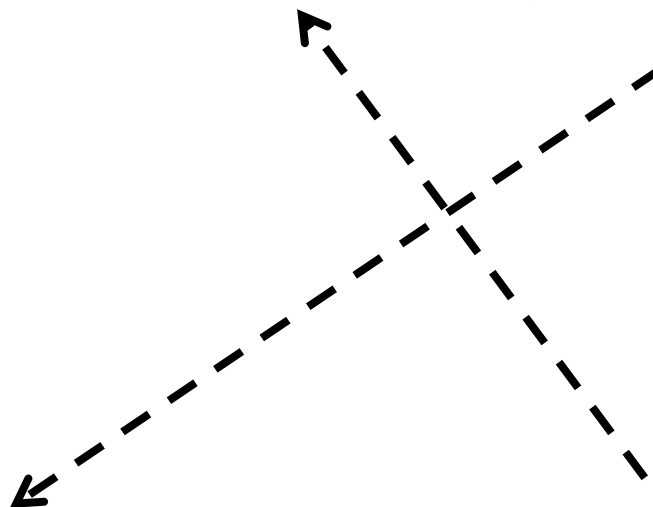
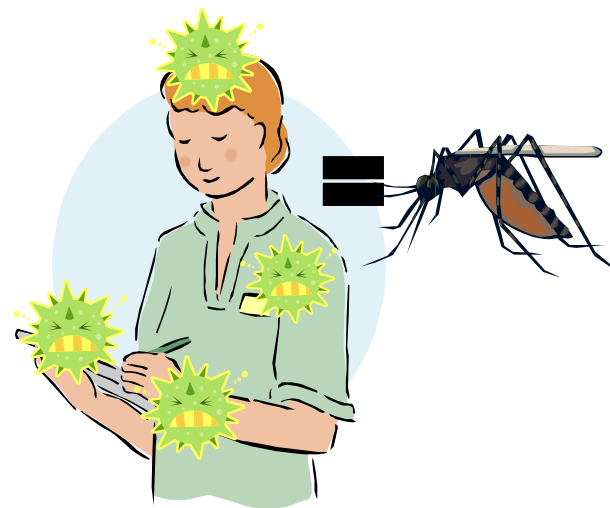
Afinal de contas, quem realmente  
precisa de isolamento?

Mirian de Freitas Dal Ben Corradi

# Contact Precautions: More Is Not Necessarily Better

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY MARCH 2014, VOL. 35, NO. 3





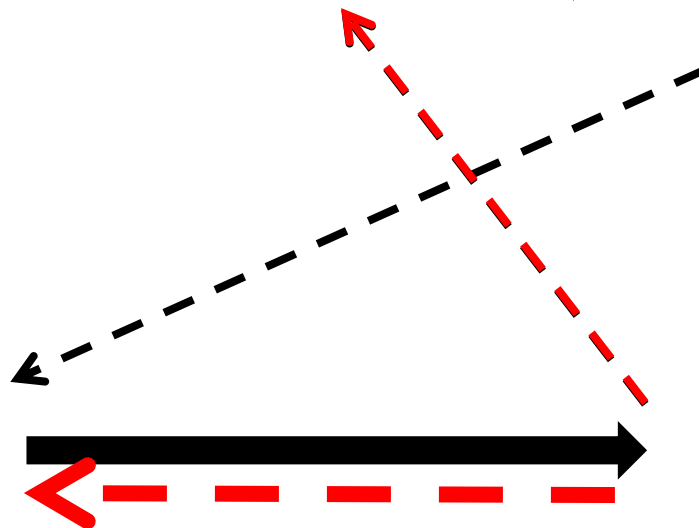
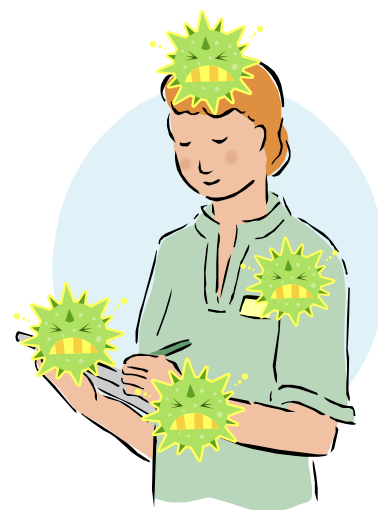
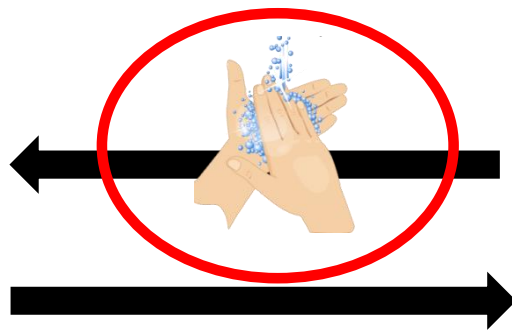
**Admissão**

**Alta**

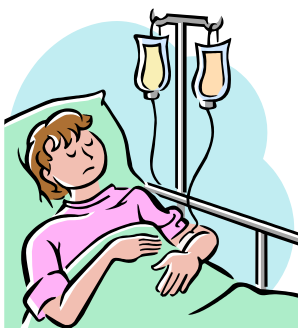
**Alta**

**Admissão**





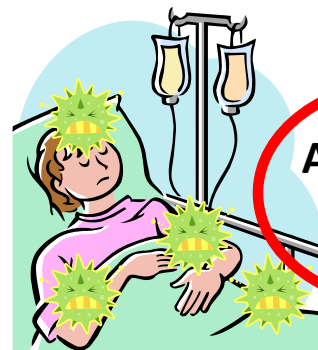
Admissão



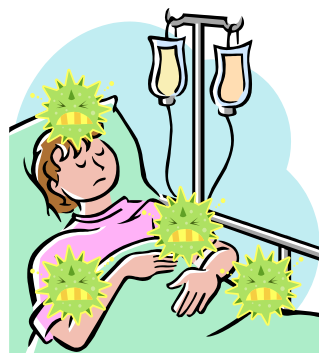
Alta



Admissão



Alta



COORTE

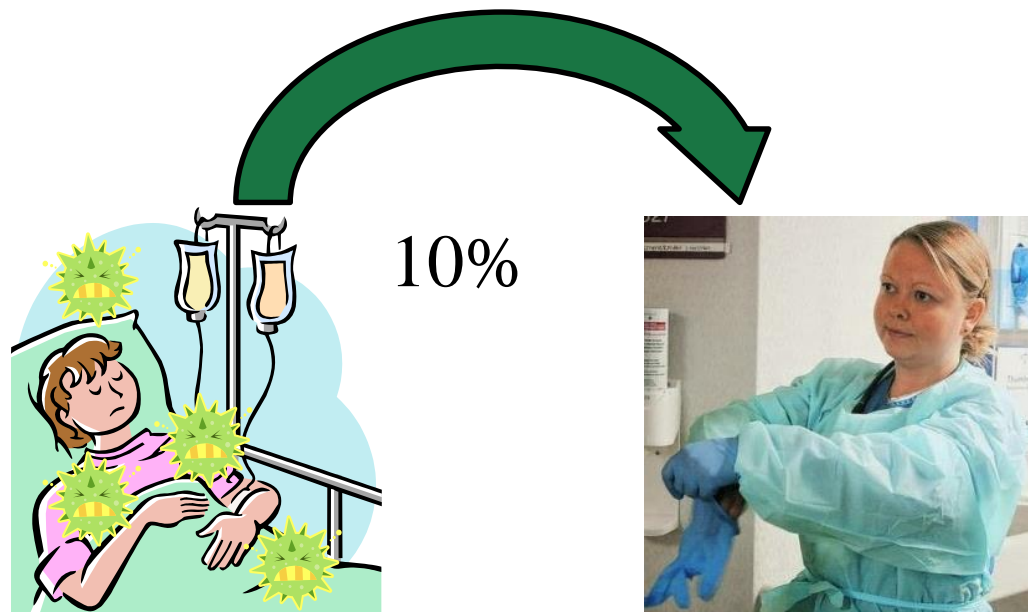
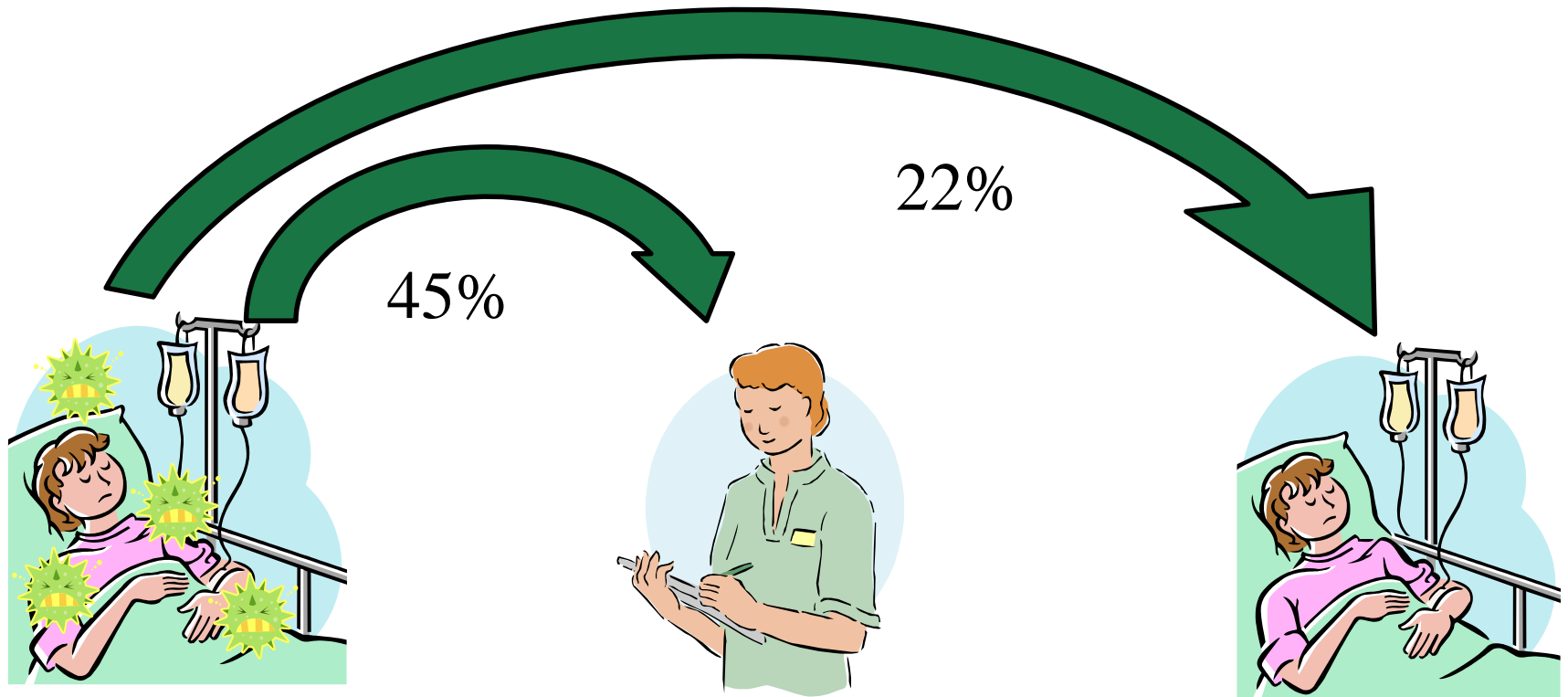
# Afinal de contas, quem realmente precisa de isolamento?

- Situação epidemiológica local  
(Prevalência de colonizados na instituição,  
Prevalência de colonizados à admissão)
- Epidemia X Endemia
- Agente
- Adesão à higiene das mãos
- Enfermaria X quarto exclusivo

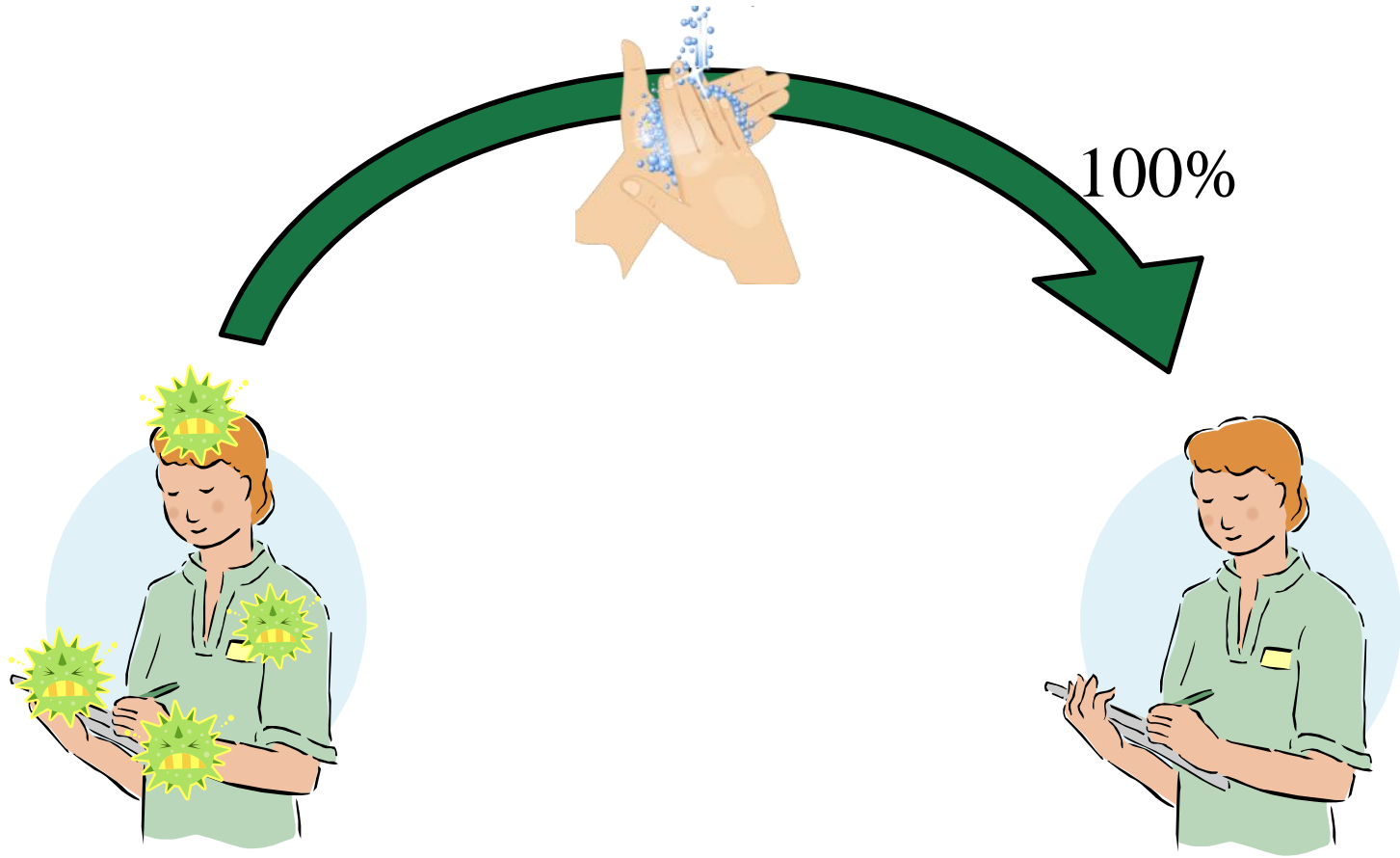
# GRAM NEGATIVOS

Não há estudo de intervenção que compare precauções de contato com precauções padrão na aquisição de gram negativos.

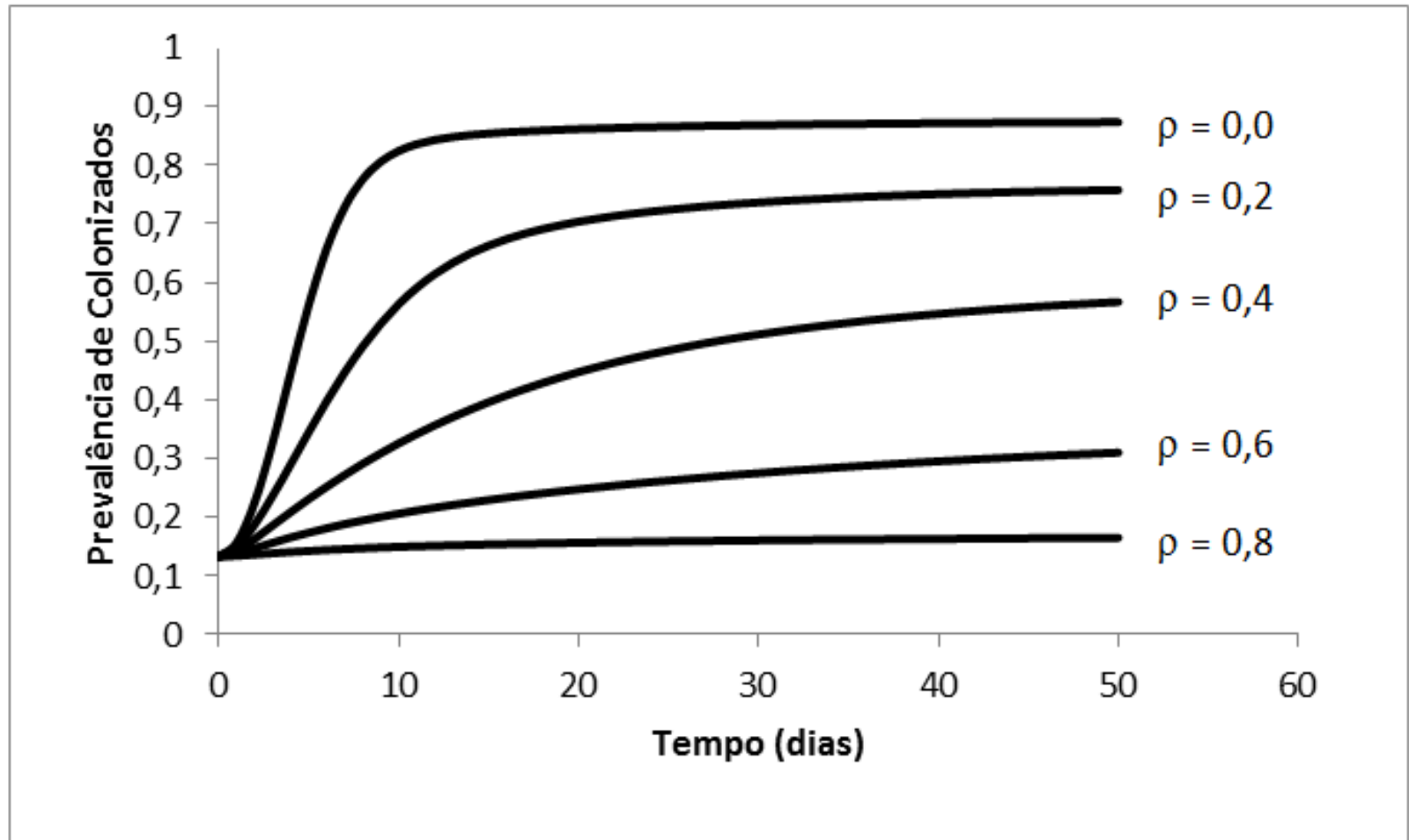




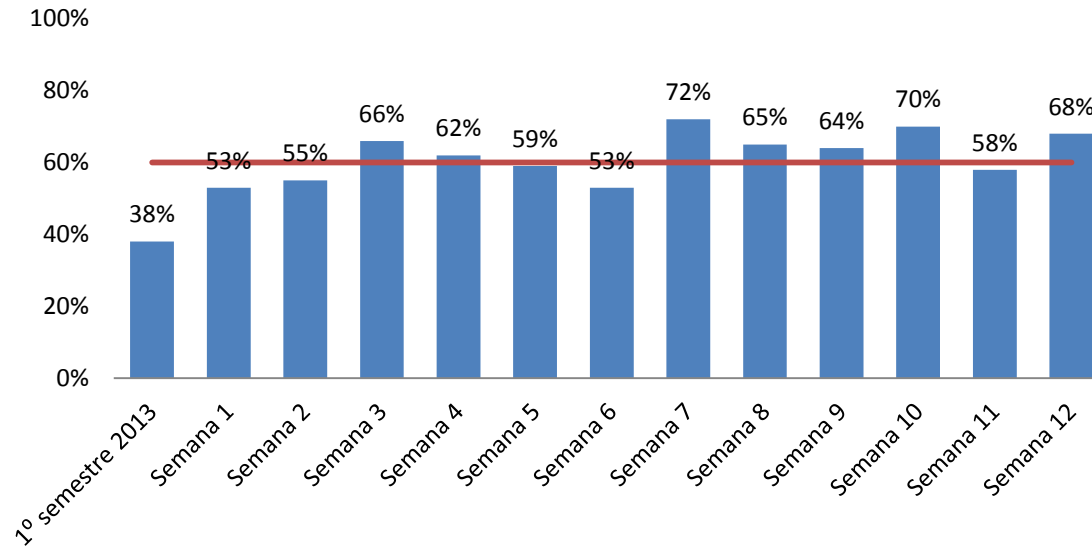




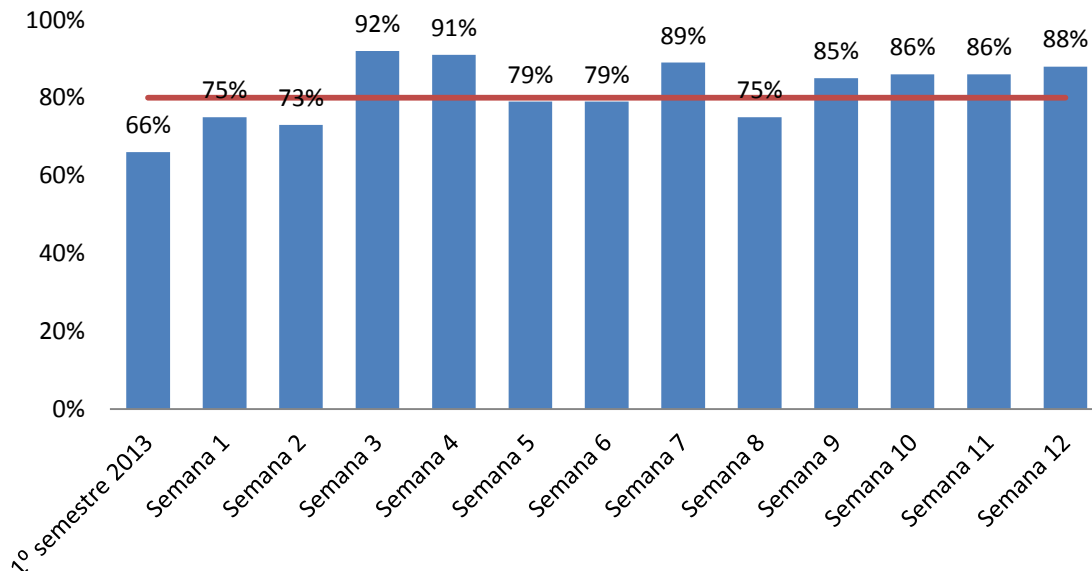
Tempo para o impacto da proporção de adoção da lavagem das mãos com 0.8 de adesão ao isolamento



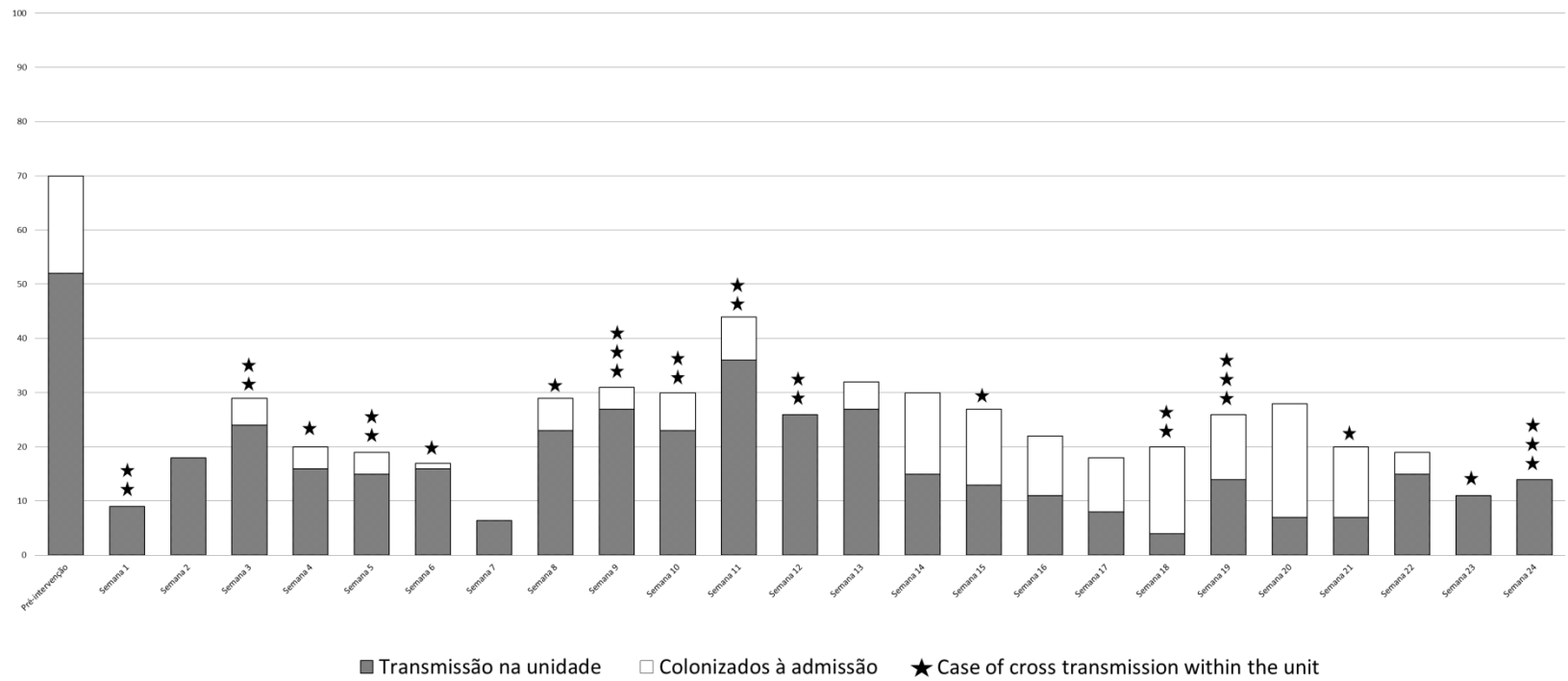
## Porcentagem de adesão de HIGIENE DAS MÃOS



## Porcentagem de adesão Isolamento de Contato



Prevalência de indivíduos colonizados na UPSM



# Rate of Transmission of Extended-Spectrum Beta-Lactamase–Producing Enterobacteriaceae Without Contact Isolation

**Clinical Infectious Diseases** 2012;55(11):1505–11

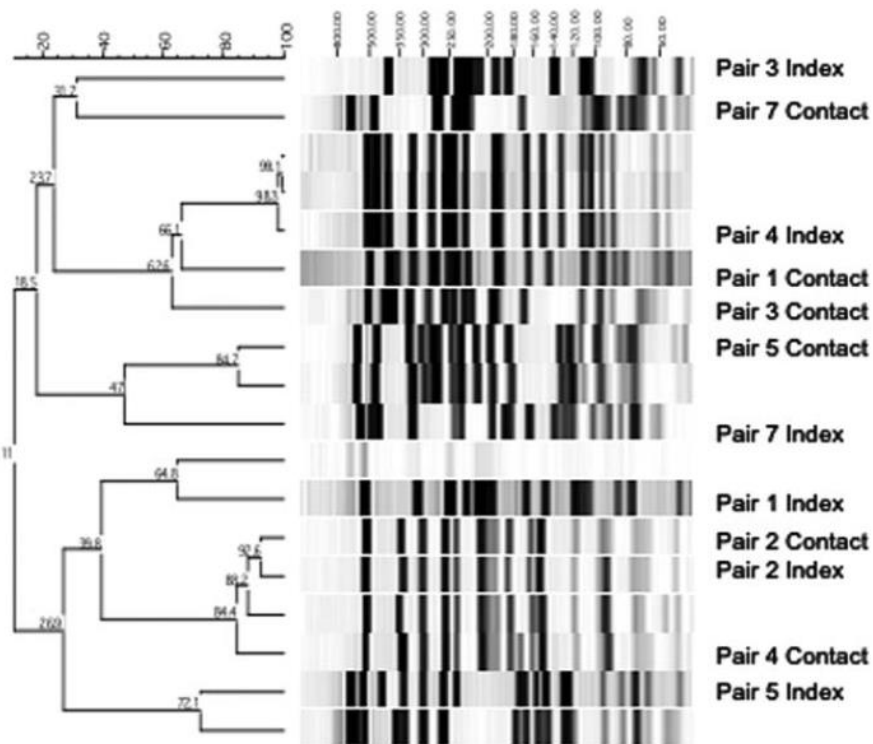
- 855 leitos
- Coorte de Junho de 1999 a Abril de 2011

- Isolamento de pacientes ESBL+

Retirados do isolamento quando 3 coletas de urocultura, swab retal, drenos, feridas e sítio onde foi isolado pela primeira vez negativos

Definição de contato: paciente internado no mesmo quarto que o caso índice antes que este fosse colocado em isolamento por >24h.

Tipagem molecular



- 324 pacientes com ESBL+  
73,1% *Escherichia coli*  
23,7% *Klebsiella pneumoniae*
- 220 contatos (133 tipagens)
- Média de 4,3 dias de contato

7 contatos tiveram a mesma espécie de ESBL+ isolada

2 casos tiveram a mesma cepa isolada

Uma unidade cirúrgica e uma unidade clínica

Caso índice e contato compartilhavam o mesmo banheiro

**1,5% dos  
contatos**

# Impact of barrier precautions and antibiotic consumption on the incidence rate of acquired cases of infection or colonization with *Acinetobacter baumannii*: A 10-year multi-department study

(*Am J Infect Control* 2011;39:891-4,

Annick Lefebvre, MD, MSc,<sup>a</sup> Houssein Gbaguidi-Haore, PharmD, PhD,<sup>a,b,c</sup> Xavier Bertrand, PharmD, PhD,<sup>a,b,c</sup>  
Michelle Thouverez, PhD,<sup>a,b,c</sup> and Daniel Talon, PharmD, PhD<sup>a,b,c</sup>  
Besançon, France

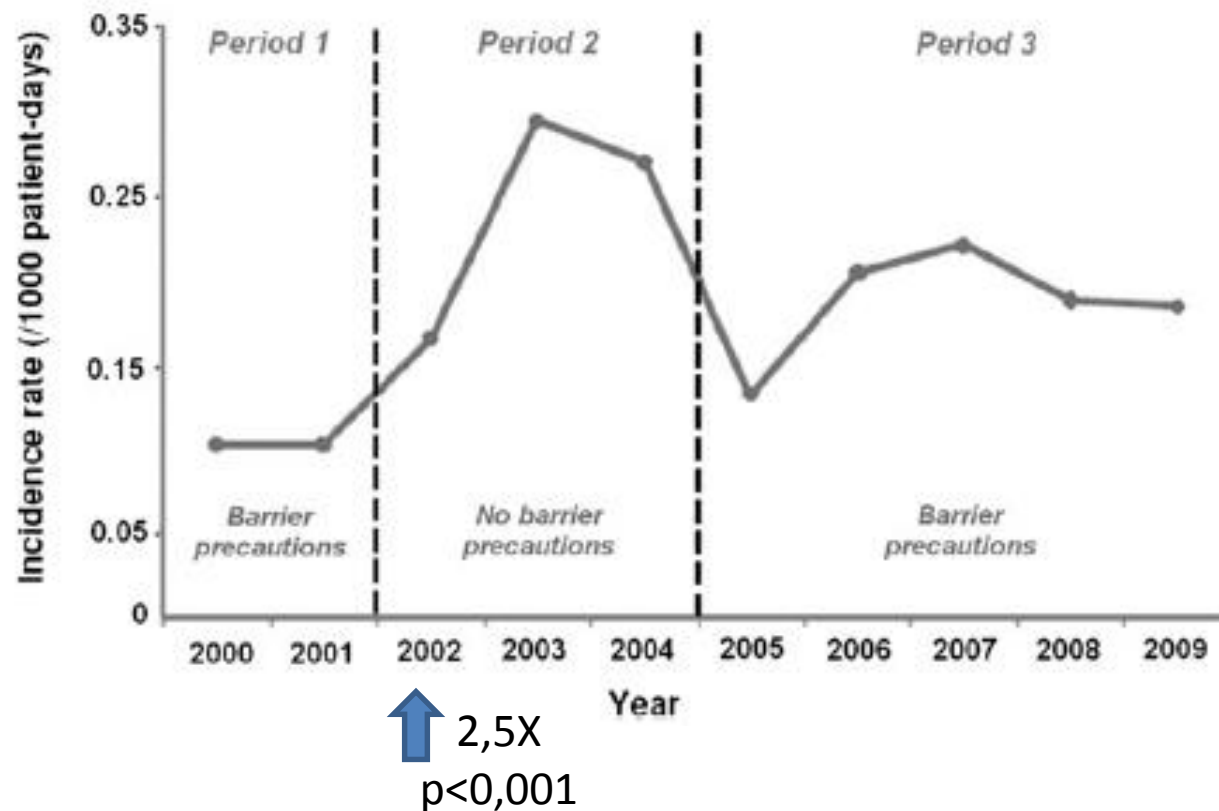


TABLE 2. Relative risk (RR) Estimates for Patients Colonized or Infected With *Acinetobacter baumannii*, Calculated Using Univariate and Multivariate Poisson Regression Models

| Variable                              | Univariate analysis |       | Multivariate analysis |       |
|---------------------------------------|---------------------|-------|-----------------------|-------|
|                                       | RR (95% CI)         | P     | RR (95% CI)           | P     |
| Age >60 years                         | 0.96 (0.81–1.14)    | .641  |                       |       |
| Male sex                              | 1.14 (0.95–1.36)    | .157  | 0.78 (0.59–1.03)      | .077  |
| McCabe score of 1 or 2                | 1.28 (1.07–1.54)    | .008  | 1.29 (0.99–1.70)      | .063  |
| Immunocompromised status              | 0.75 (0.64–0.89)    | .001  | 1.02 (0.80–1.31)      | .856  |
| Greater antibiotic selective pressure | 1.71 (1.40–2.09)    | <.001 | 0.86 (0.57–1.31)      | .489  |
| Isolation precautions implemented     | 0.59 (0.51–0.69)    | <.001 | 0.50 (0.40–0.64)      | <.001 |
| Year                                  | 1.10 (1.07–1.14)    | <.001 | 1.08 (0.99–1.17)      | .061  |

NOTE. RR estimates are reported for upper quartiles, using the lowest quartiles as the control group. CI, confidence interval; DDDs, defined daily doses.



# GRAM POSITIVOS

Não há estudo de intervenção que compare precauções de contato com precauções padrão na aquisição de MRSA ou VRE.

# Intervention to Reduce Transmission of Resistant Bacteria in Intensive Care

W. Charles Huskins, M.D., Charmaine M. Huckabee, M.S., Naomi P. O'Grady, M.D., Patrick Murray, Ph.D., Heather Kopetskie, M.S., Louise Zimmer, M.A., M.P.H., Mary Ellen Walker, M.S.N., Ronda L. Sinkowitz-Cochran, M.P.H., John A. Jernigan, M.D., Matthew Samore, M.D., Dennis Wallace, Ph.D., and Donald A. Goldmann, M.D., for the STAR\*ICU Trial Investigators\*

N Engl J Med 2011;364:1407-18.

- Estudo randomizado, controlado
- Culturas de vigilância para *S. aureus* e VRE à admissão, semanal e na alta

Isolamento de contato se cultura de vigilância positiva e se paciente colonizado no ano anterior.

Isolamento até a alta

+

Uso de luvas universal para os outros pacientes



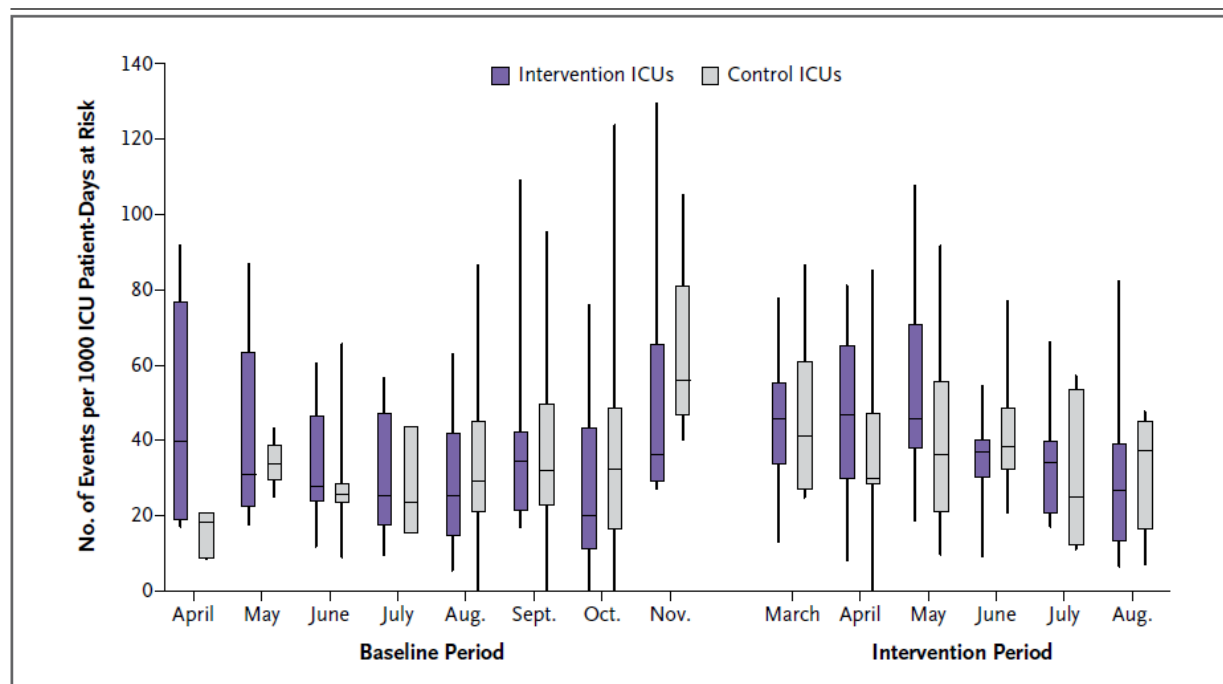
Equipe não ficava sabendo das culturas de vigilância

Isolamento de contato se cultura clínica positiva

+

Precauções padrão para outros pacientes

|                                       | Intervenção           | Controle              |
|---------------------------------------|-----------------------|-----------------------|
| Precauções de contato                 | 51% dos pacientes-dia | 38% dos pacientes-dia |
| Uso universal de luvas                | 43% dos pacientes-dia | -                     |
| Precauções de contato ou uso de luvas | 92% dos pacientes-dia | -                     |



A incidência de colonização/infecção por MRSA ou VRE não esteve associada a porcentagem de pacientes colocados em isolamento de contato ( $p=0,26$ )

# Whole-Genome Sequencing Shows That Patient-to-Patient Transmission Rarely Accounts for Acquisition of *Staphylococcus aureus* in an Intensive Care Unit

**Clinical Infectious Diseases** 2014;58(5):609–18

James R. Price,<sup>1</sup> Tanya Golubchik,<sup>2</sup> Kevin Cole,<sup>3</sup> Daniel J. Wilson,<sup>4,5</sup> Derrick W. Crook,<sup>4,6</sup> Guy E. Thwaites,<sup>7</sup> Rory Bowden,<sup>5</sup> A. Sarah Walker,<sup>4,6</sup> Timothy E. A. Peto,<sup>4,6</sup> John Paul,<sup>1,3</sup> and Martin J. Llewelyn<sup>1,8</sup>

- 1 ano de estudo
- Cultura de vigilância à admissão e semanal para *S. aureus*
- Banho com clorexidina para todos e mupirocina para os colonizados por MRSA
- Desfechos:
  - Aquisição de *S. aureus*
  - Transmissão paciente-paciente de *S. aureus* (sequenciamento do genoma todo)

ICU patient stays during the study period  
n = 1181

No screen performed  
n = 45 (3.8%)

Screened at least once for *S. aureus*  
n = 1136 (96.2%)

First screen performed  $\leq 24$  hours  
n = 1109 (97.6%)

First screen performed  $> 24$  hours  
n = 27 (2.4%)

*S. aureus* positive  
n = 185<sup>\*</sup> (16.7%)  
MRSA 59 (5.3%)

*S. aureus* negative  
n = 924 (83.3%)

*S. aureus* positive  
n = 8<sup>†</sup> (29.6%)  
MRSA 2 (7.4%)

*S. aureus* negative  
n = 19 (70.4%)

Screened at least twice  
n = 97 (52.4%)

Screened at least twice  
n = 571 (61.8%)

Screened at least twice  
n = 5 (62.5%)

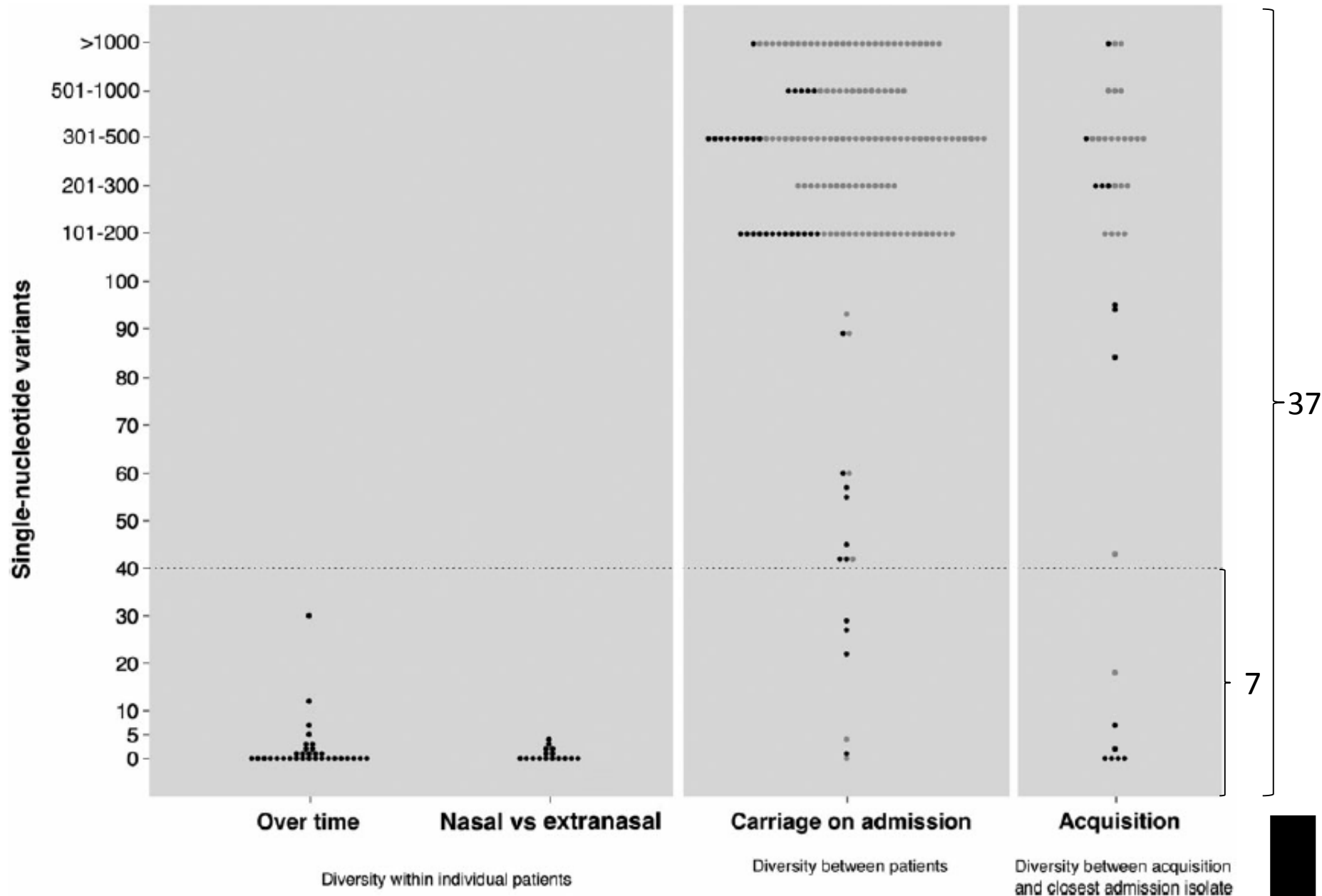
Screened at least twice  
n = 7 (36.8%)

*S. aureus* positive  
n = 47<sup>‡</sup>  
9 acquisitions<sup>§</sup>

*S. aureus* positive  
n = 32<sup>‡</sup>  
34 acquisitions<sup>¶</sup>

*S. aureus* positive  
n = 3<sup>‡</sup>  
No acquisitions

*S. aureus* positive  
n = 1<sup>‡</sup>  
1 acquisition



# Evaluation of Vancomycin-Resistant Enterococci (VRE)–Associated Morbidity Following Relaxation of VRE Screening and Isolation Precautions in a Tertiary Care Hospital

Kristin Y. Popiel, MD;<sup>1</sup> Mark A. Miller, MD, FRCPC<sup>2</sup>

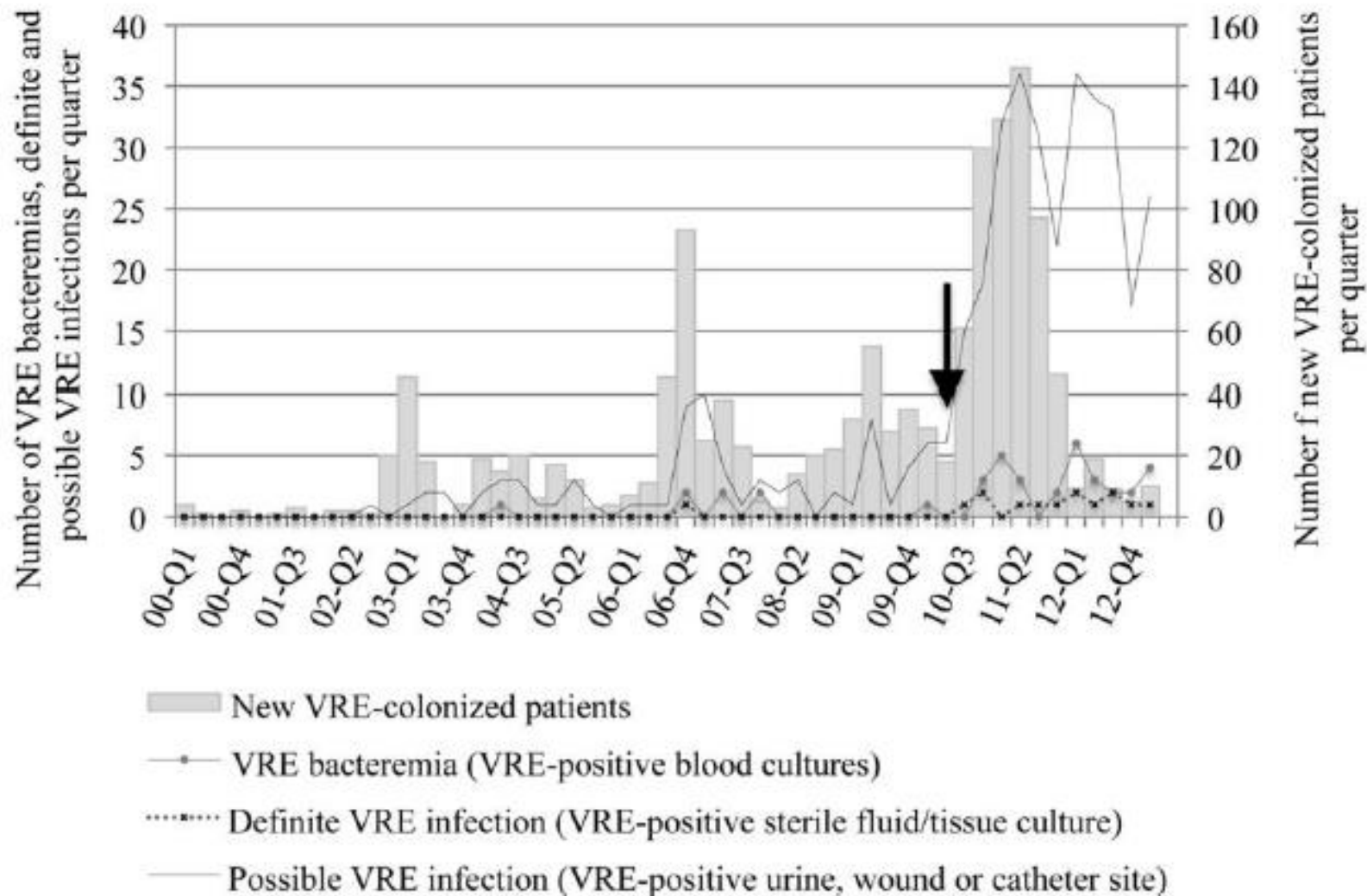
INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY JULY 2014, VOL. 35, NO. 7

TABLE 1. Comparison of Pre- and Postrelaxation Vancomycin-Resistant Enterococcus (VRE) Screening Policies<sup>41</sup>

|                                     | Prerelaxation, 2000 to May 2010                                   | Postrelaxation, May 2010 to present   |
|-------------------------------------|---|---|
| Admissions screening                | All admissions  | Only admissions from endemic <sup>a</sup> hospitals or admitted to high-risk <sup>b</sup> wards                 |
| Contact tracing after positive case | Roommates: twice, 5–7 days apart; all patients on ward every week | Roommates only, 1 time only   |
| Destination of VRE+ patients        | VRE cohort unit   | Anywhere (with VRE contact precautions); avoid admissions to high-risk <sup>b</sup> wards if medically possible |
| Regular VRE surveillance            | Every 2 weeks for all patients on any ward with a recent case     | None  |
| Discharge screening                 | All transfers to long-term care or rehabilitation facilities      | All transfers to long-term care or rehabilitation facilities  |

<sup>a</sup> Endemic refers to any hospital with a public health notification disclosing the presence of VRE.

<sup>b</sup> High-risk wards refer to the hematology/oncology ward, intensive care unit, and neonatal intensive care unit.





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

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

<sup>1</sup> University of Maryland School of Medicine, Baltimore, MD

*JAMA*. 2013 October 16; 310(15): 1571–1580.

- Trial randomizado com 20 UTIs
- Setembro de 2011 a Outubro de 2012
- Inclusão: pacientes com cultura de vigilância negativa para MRSA e VRE à admissão

Precauções de contato  
universais (avental e  
luvas para todos os  
pacientes)



Precauções de contato  
para pacientes  
colonizados por  
bactérias MR

## Desfechos avaliados:

- Aquisição de MRSA e VRE
- Incidência de IRAS: ICS, ITU relacionada a SVD e PAV
- Eventos adversos
- Frequência de visitas pelo profissional da área da saúde, adesão à higiene de mãos e adesão ao isolamento de contato.

Table 2. Rates at Risk of Acquisition of Antibiotic-Resistant Bacteria per 1000 Patient-Days

|                         | Intensive Care Units |                      |                                 |                     |                      |                                 | Difference (95% CI) <sup>b</sup> | <i>P</i> Value <sup>c</sup> |
|-------------------------|----------------------|----------------------|---------------------------------|---------------------|----------------------|---------------------------------|----------------------------------|-----------------------------|
|                         | Intervention         |                      |                                 | Control             |                      |                                 |                                  |                             |
|                         | No. of Acquisitions  | Patient-Days at Risk | Mean Rate (95% CI) <sup>a</sup> | No. of Acquisitions | Patient-Days at Risk | Mean Rate (95% CI) <sup>a</sup> |                                  |                             |
| 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                  | 8684.0               | 21.35 (17.57 to 25.94)          | 176                 | 9804.5               | 19.02 (14.20 to 25.49)          |                                  |                             |
| Change <sup>d</sup>     |                      |                      | −4.47 (−9.34 to 0.45)           |                     |                      | −2.74 (−6.98 to 1.51)           | −1.71 (−6.15 to 2.73)            | .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                  | 7691.5               | 15.18 (10.50 to 21.95)          | 122                 | 8818.0               | 14.37 (10.31 to 20.02)          |                                  |                             |
| Change <sup>d</sup>     |                      |                      | −1.60 (−7.18 to 3.98)           |                     |                      | −2.48 (−5.53 to 0.56)           | 0.89 (−4.27 to 6.04)             | .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                   | 7841.0               | 10.03 (8.05 to 12.50)           | 59                  | 9182.0               | 6.98 (4.50 to 10.83)            |                                  |                             |
| Change <sup>d</sup>     |                      |                      | −4.03 (−6.50 to −1.56)          |                     |                      | −1.04 (−3.37 to 1.28)           | −2.98 (−5.58 to −0.38)           | .046                        |

Abbreviations: MRSA, methicillin-resistant *Staphylococcus aureus*; VRE, vancomycin-resistant *Enterococcus*.

Table 3. Average Hand-Hygiene Compliance and Health Care Worker Visits per Hour

|                               | Intensive Care Units |                                     |                               |                  |                                     |                                  | Mean Difference<br>(95% CI), % <sup>c</sup> | <i>P</i><br>Value <sup>d</sup> |
|-------------------------------|----------------------|-------------------------------------|-------------------------------|------------------|-------------------------------------|----------------------------------|---|--------------------------------|
|                               | Intervention         |                                     |                               | Control          |                                     |                                  |   |                                |
|                               | No. of<br>Events     | No. of<br>Observations <sup>a</sup> | Mean (95% CI), % <sup>b</sup> | No. of<br>Events | No. of<br>Observations <sup>a</sup> | Mean (95% CI), % <sup>b</sup>    |   |                                |
| Hand-hygiene<br>compliance, % |                      |                                     |                               |                  |                                     |                                  |   |                                |
| Room entry                    | 1563                 | 2828                                | 56.1 (47.2 to 66.7)           | 1644             | 3231                                | 50.2 (41.4 to 60.9)              | 5.91 (−6.91 to 18.7)                        | .42                            |
| Room exit                     | 2027                 | 2649                                | 78.3 (72.1 to 85.0)           | 2080             | 3266                                | 62.9 (54.4 to 72.8)              | 15.4 (8.99 to 21.8)                         | .02                            |
| Health care-worker<br>visits  | 3213                 | 756.5                               | 4.28 (3.95 to 4.64)           | 3775             | 716.5                               | 5.24 (4.46 to 6.16) <sup>e</sup> | −0.96 (−1.71 to −0.21)                      | .02                            |

Table 4. Rates per 1000 Patient-Days at Risk of Hospital-Acquired Infections, Mortality, and Adverse Events

|                              | Intensive Care Units |                                   |                                 |                     |                                   |                                 | Difference (95% CI) <sup>c</sup> | <i>P</i> Value <sup>d</sup> |
|------------------------------|----------------------|-----------------------------------|---------------------------------|---------------------|-----------------------------------|---------------------------------|----------------------------------|-----------------------------|
|                              | Intervention         |                                   |                                 | Control             |                                   |                                 |                                  |                             |
|                              | No. of Acquisitions  | Patient-Days at Risk <sup>a</sup> | Mean Rate (95% CI) <sup>b</sup> | No. of Acquisitions | Patient-Days at Risk <sup>a</sup> | Mean Rate (95% CI) <sup>b</sup> |                                  |                             |
| Hospital-Acquired Infections |                      |                                   |                                 |                     |                                   |                                 |                                  |                             |
| CLABSI                       |                      |                                   |                                 |                     |                                   |                                 |                                  |                             |
| Study period                 | 39                   | 26 347                            | 1.20 (0.46 to 1.93)             | 37                  | 22 039                            | 1.46 (0.94 to 1.98)             |                                  |                             |
| Baseline                     | 16                   | 9423                              | 1.22 (0.51 to 1.93)             | 15                  | 7358                              | 1.16 (0.18 to 2.14)             |                                  |                             |
| Change <sup>e</sup>          |                      |                                   | −0.02 (−0.76 to 0.71)           |                     |                                   | 0.30 (−0.85 to 1.46)            | −0.32 (−1.61 to 0.96)            | .63                         |
| VAP                          |                      |                                   |                                 |                     |                                   |                                 |                                  |                             |
| Study period                 | 34                   | 19 216                            | 1.00 (0.24 to 1.75)             | 55                  | 19 960                            | 1.36 (0.44 to 2.28)             |                                  |                             |
| Baseline                     | 14                   | 7047                              | 0.74 (0.27 to 2.03)             | 20                  | 6470                              | 0.84 (0.23 to 3.10)             |                                  |                             |
| Change <sup>e</sup>          |                      |                                   | 0.26 (−0.58 to 1.10)            |                     |                                   | 0.51 (−0.44 to 1.46)            | −0.25 (−1.44 to 0.93)            | .68                         |
| CAUTI                        |                      |                                   |                                 |                     |                                   |                                 |                                  |                             |
| Study period                 | 97                   | 28 641                            | 2.59 (1.33 to 3.86)             | 155                 | 32 181                            | 4.03 (2.99 to 5.07)             |                                  |                             |
| Baseline                     | 34                   | 9096                              | 1.88 (0.36 to 3.42)             | 38                  | 10 674                            | 2.36 (0.99 to 3.73)             |                                  |                             |
| Change <sup>e</sup>          |                      |                                   | 0.71 (−0.38 to 1.80)            |                     |                                   | 1.67 (0.57 to 2.76)             | −0.96 (−2.13 to 0.22)            | .14                         |
| Adverse events               |                      |                                   |                                 |                     |                                   |                                 |                                  |                             |
| All                          | 266                  | 4585                              | 58.7 (45.8 to 75.2)             | 369                 | 4846                              | 74.4 (57.9 to 95.6)             | −15.7 (−40.7 to 9.2)             | .24                         |
| Preventable                  | 134                  | 4585                              | 29.0 (20.0 to 42.1)             | 156                 | 4846                              | 30.4 (21.7 to 42.7)             | −1.4 (−19.4 to 16.6)             | .88                         |
| Nonpreventable               | 132                  | 4585                              | 33.0 (24.3 to 45.0)             | 213                 | 4846                              | 43.3 (31.0 to 60.4)             | −10.3 (−27.3 to 6.8)             | .40                         |
| Severe                       | 163                  | 4585                              | 36.5 (25.2 to 52.8)             | 245                 | 4846                              | 48.1 (35.7 to 64.6)             | −11.6 (−32.4 to 9.2)             | .31                         |
| Not severe                   | 103                  | 4585                              | 23.6 (15.7 to 35.5)             | 124                 | 4846                              | 25.0 (18.9 to 33.2)             | −1.4 (−13.1 to 10.3)             | .82                         |
| ICU mortality                | 881                  | 41 190                            | 21.2 (16.4 to 27.5)             | 811                 | 40 532                            | 19.9 (13.7 to 28.8)             | 1.3 (−9.3 to 12.0)               | .81                         |

**VIEWPOINT**

# Reconsidering Isolation Precautions for Endemic Methicillin-Resistant *Staphylococcus aureus* and Vancomycin-Resistant *Enterococcus*

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Colocar o paciente em isolamento até a cultura de vigilância sair ou esperar a cultura sair e colocar em isolamento?

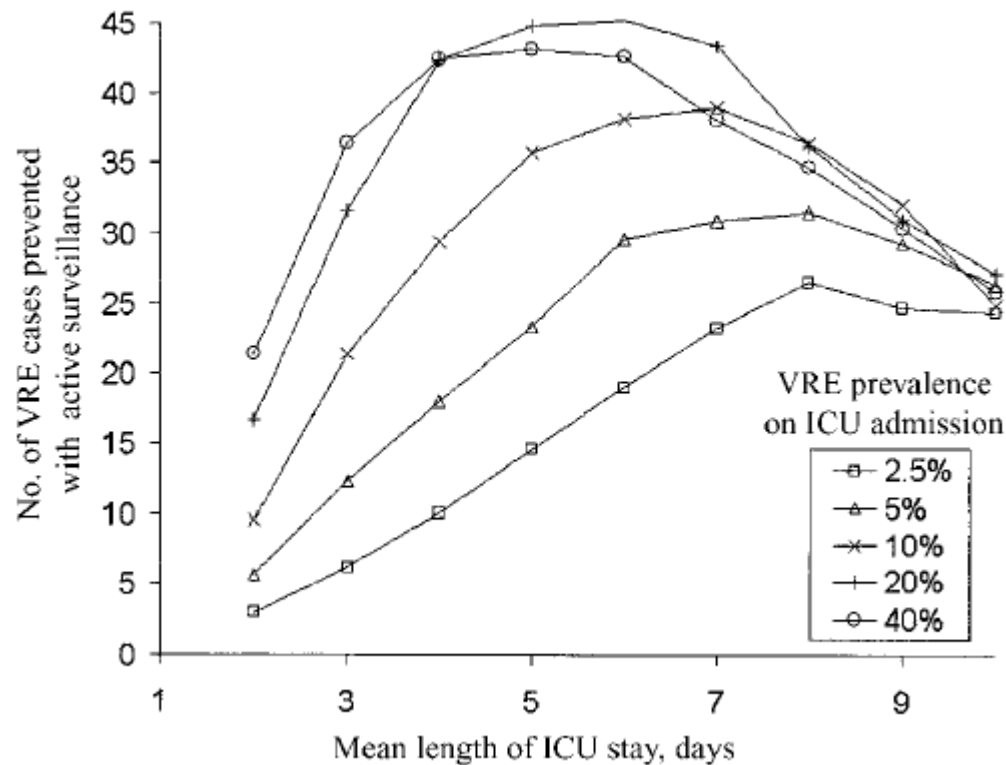
# Projected Benefits of Active Surveillance for Vancomycin-Resistant Enterococci in Intensive Care Units

**Table 2.** Estimated number of incident vancomycin-resistant enterococci (VRE) acquisitions and absolute number and proportion of cases prevented in 1 year with 3 competing infection-control strategies, after 1000 model simulations.

| Infection control strategy   | Average no. of incident VRE acquisitions | Estimated no. of incident cases of VRE colonization/infection prevented, compared with no surveillance strategy | Reduction of cases of VRE colonization/infection, compared with no surveillance strategy, % |
|--|--|---|---|
| No surveillance  | 118                                      | ...   | ...   |
| Passive surveillance only  | 113                                      | 5   | 4.2   |
| Active surveillance  |  |   |   |
| Patients isolated after culture results are determined to be positive                          | 72.2                                     | 45.8  | 39  |
| Immediate isolation and removal of patient after culture results are determined to be negative | 41.1                                     | 76.9  | 65  |

**NOTE.** Each strategy is compared with a setting where no surveillance is in place.





PNAS | July 6, 2004 | vol. 101 | no. 27 | 10223–10228

5620–5625 | PNAS | April 4, 2006 | vol. 103 | no. 14

CID 2004;38 (15 April)

**AVALIAR SITUAÇÃO EPIDEMIOLÓGICA LOCAL**

**DIRECIONAR CULTURAS DE VIGILÂNCIA PARA  
SUBGRUPOS DE RISCO**

Risk factors for positive admission surveillance cultures for methicillin-resistant *Staphylococcus aureus* and vancomycin-resistant enterococci in a neurocritical care unit\*

Crit Care Med 2011 Vol. 39, No. 10

**Clinical prediction rule for identifying patients with vancomycin-resistant enterococci (VRE) at the time of admission to the intensive care unit in a low VRE prevalence setting**

*J Antimicrob Chemother* 2012; **67**: 2963–2969



- Maternidade de 60 leitos
- Prevalência de pacientes-dia isolados: 2%

ESBL: 1%

MRSA: 1%



- Hospital terciário de 540 leitos, alta complexidade
- Prevalência de pacientes-dia isolados: 30%

ESBL: 11%

ERC: 7%

Acinetobacter/Pseudomonas: 6%

MRSA: 5%

VRE: 1%

Porcentagens de uroculturas positivas com ESBL no PA: 18%

**ISOLAR OS MESMOS AGENTES?**

# Afinal de contas, quem realmente precisa de isolamento?

- Situação epidemiológica local  
(Prevalência de colonizados na instituição,  
Prevalência de colonizados à admissão)
- Epidemia X Endemia
- Agente
- Adesão à higiene das mãos
- Enfermaria X quarto exclusivo

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