

O que eu deveria ter lido...

IRAS

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Infecção de corrente sanguínea

Effects of Decontamination of the Oropharynx and Intestinal Tract on Antibiotic Resistance in ICUs

A Randomized Clinical Trial

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JAMA October 8, 2014 Volume 312, Number 14

- Estudo randomizado
- 16 UTIs
- 24 meses de seguimento
- 8 UTIs: SOD por 12 meses e depois SDD por 12 meses
- 8 UTIs: SDD por 12 meses e depois SOD por 12 meses
- 5881 pacientes no grupo SOD
- 6116 pacientes no grupo SDD
- Culturas de vigilância (swabs retais, orais) e aspirado traqueal mensais
- Avaliados colonização por MR, mortalidade (28 dias), permanência na UTI e incidência de bacteremia

SOD

- Aplicação oral de pasta de tobramicina, colistina e anfotericina (2%) a cada 6 horas

SDD

- Aplicação oral de pasta de tobramicina, colistina e anfotericina (2%) a cada 6 horas
- Administração via sonda de solução com colistina (100mg), tobramicina (80mg), anfotericina (500mg) a cada 6 horas.
- Ceftriaxone ou Cefotaxime EV nos 4 primeiros dias de UTI

Table 2. Prevalence of Colonization With Resistant Bacteria During SOD and SDD

	SOD			SDD			P Value for Difference	
	Patients Colonized, No.(%) [95% CI]	Trend in Time ^a		Patients Colonized, No. (%) [95% CI]	Trend in Time ^a			
		% (95% CI)	P Value		% (95% CI)	P Value	Proportion Colonized	Slope
Rectal Samples								
Total patients cultured	n=1871 (mean per month, 156 [IQR, 150-164])	↑ de 3%/mês		n=1928 (mean per month, 161 [IQR, 153-168])	↑ de 5%/mês			
HRMO	237 (12.7) [11.2-14.2] ^b	1.03 (1.00-1.07)	.09	140 (7.3) [6.1-8.4]	1.05 (1.00-1.10)	.05	.008	.60
ESBL	144 (7.7) [6.5-8.9] ^b	1.03 (0.98-1.08)	.20	85 (4.4) [3.5-5.3]	1.06 (0.99-1.12)	.09	.02	.54
Aminoglycosides ^c	220 (11.8) [10.3-13.2] ^b	1.04 (1.00-1.08) ^b	.05	109 (5.6) [4.6-6.7]	1.07 (1.01-1.13)	.02	<.001	.40
Ciprofloxacin	193 (10.3) [8.9-11.7] ^b	↑ de 4%/mês		108 (5.6) [4.6-6.6]	↑ de 7%/mês			
Carbapenems ^d	52 (2.8) [2.0-3.5] ^b			30(1.6) [1.0-2.1]			.04	
Colistin ^e	13 (0.7) [0.3-1.1]			23 (1.1) [0.7-1.]			.11	
VRE	4 (0.2) [0-0.4]			11 (0.6) [0.2-0.9]				

Sem diferenças na colonização do trato respiratório.
Sem diferenças na mortalidade no hospital e em 28 dias.

Table 5. Incidence of ICU-Acquired Bacteremia for Patients With a Length of ICU Stay More Than 2 Days

	Regimen		OR, SDD vs SOD (95% CI)	P Value
	SOD (n = 5442)	SDD (n = 5549)		
Any positive blood culture, No. (%)	319 (5.9)	253 (4.6)	0.77 (0.64-0.93)	.002
Enterobacteriaceae, No. (%)	97 (1.8)	41 (0.7)	0.42 (0.29-0.60)	<.001
<i>Escherichia coli</i>	39 (0.7)	13 (0.2)	0.33 (0.18-0.62)	<.001
<i>Klebsiella</i> spp	22 (0.4)	12 (0.2)	0.54 (0.27-1.05)	.09
<i>Enterobacter</i> spp	10 (0.2)	7 (0.1)	0.70 (0.27-1.83)	.47
Other Enterobacteriaceae	29 (0.5)	9 (0.2)	0.31 (0.15-0.65)	.001
Resistant GNB, No. (%) ^b				
HRMO	31 (0.6)	23 (0.4)	0.74 (0.43-1.27)	.27
ESBL	8 (0.1)	5 (0.1)	0.62 (0.20-1.91)	.40
Aminoglycosides ^c	33 (0.6)	18 (0.3)	0.54 (0.31-0.97)	.04
Colistin ^d	0	4 (0.1)	0.54 (0.00-10.00)	.13

Tempo para desenvolver a bacteremia foi igual
NNT com SDD pra prevenir uma bacteremia = 77

Banho com clorexidina e descolonização universal diminuindo as ICS.

Staphylococcus coagulase negativo?



N ENGL J MED 368;6 NEJM.ORG FEBRUARY 7, 2013

N ENGL J MED 368;24 NEJM.ORG JUNE 13, 2013

Redução na incidência de bacteremia por enterobactérias e resistentes a aminoglicosídeos sem impacto na mortalidade X Resistência

Pneumonia

Effectiveness of a Dental Care Intervention in the Prevention of Lower Respiratory Tract Nosocomial Infections among Intensive Care Patients: A Randomized Clinical Trial



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INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY NOVEMBER 2014, VOL. 35, NO. 11

- Estudo randomizado, cego para o observador (CCIH)
- Janeiro de 2011 a Agosto de 2013
- UTI geral
- Inclusão: perspectiva de ficar > 2 dias
- Exclusão: discrasia sanguínea ou gestação

Grupo experimental

Higiene oral rotineira como grupo controle

+

Avaliação e tratamento por cirurgião dentista 4-5 vezes por semana da admissão à alta da UTI:

Escovação vigorosa, limpeza da língua, remoção de placas e tártaro, tratamento de cáries, extração dentária, aplicação de clorexidina

Grupo controle

Higiene oral rotineira pela enfermagem, 3 vezes por dia, com limpeza mecânica com espátula e gaze e aplicação de clorexidina 2% para pacientes inconscientes e 0,12% para pacientes conscientes.

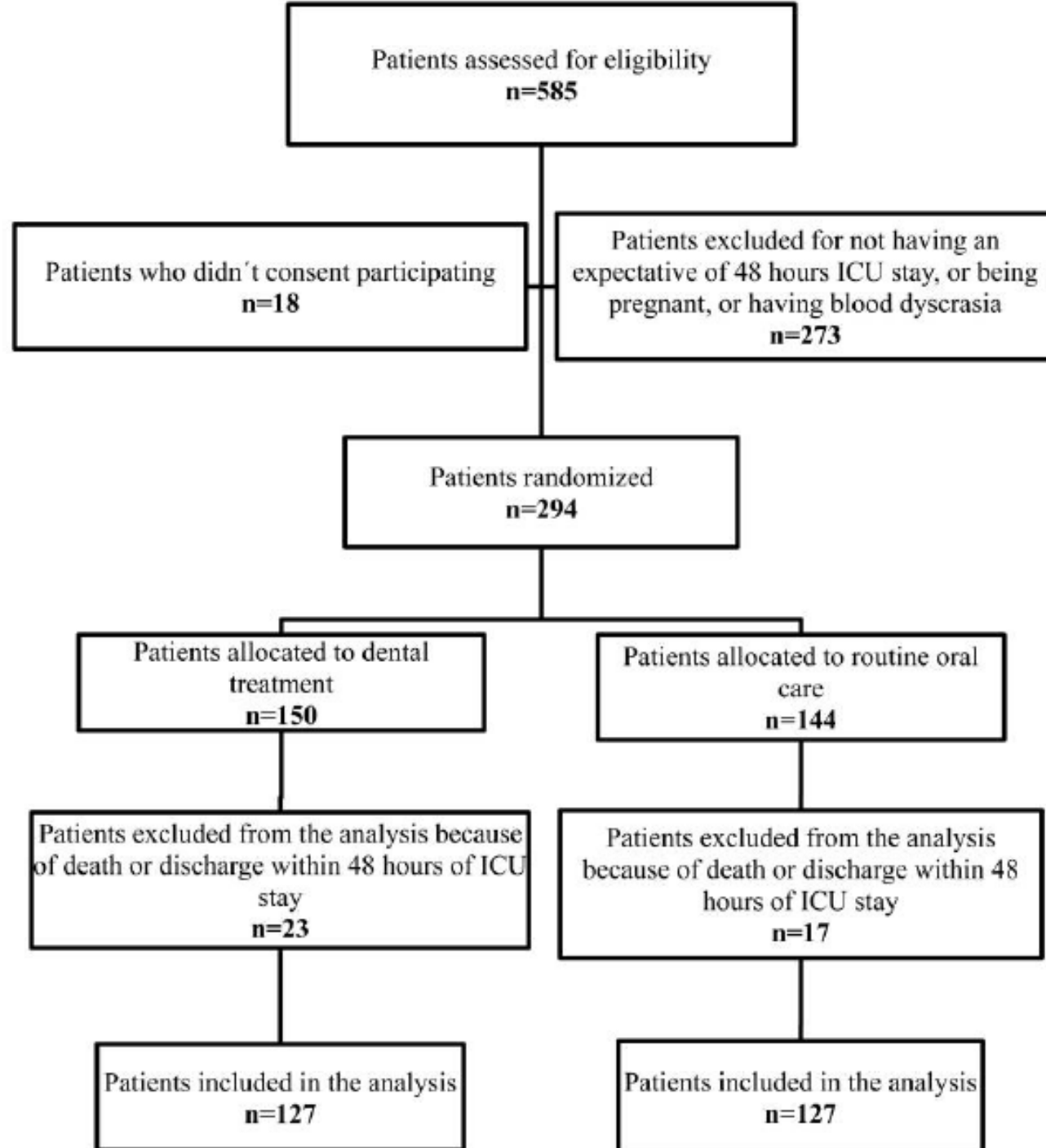


TABLE 1. Baseline Clinical and Demographic Characteristics of Patients Submitted to Routine Oral Care or Dental Treatment at Intensive Care Unit (ICU) Admission

Baseline characteristic	Routine oral care (<i>n</i> = 127)	Dental treatment (<i>n</i> = 127)
Demographic		
Sex, male	66 (52.0)	67 (52.8)
Age, mean \pm SD, years	60.1 \pm 17.5	53.4 \pm 18.3
Clinical		
LOS prior to ICU admission, mean \pm SD, days	11.7 \pm 13.3	13.2 \pm 17.5
Diabetes mellitus	33 (26.0)	42 (33.0)
Hypertension	68 (53.5)	57 (45.0)
Renal failure	67 (52.8)	53 (41.7)
Hepatic failure	15 (11.8)	15 (11.8)
Heart failure	20 (15.7)	21 (16.5)
Cerebral vascular disease	14 (11.0)	14 (11.0)
Pulmonary thromboembolism	6 (4.7)	5 (3.9)
Respiratory infections	38 (29.9)	46 (36.2)
HIV/AIDS	5 (3.9)	3 (2.4)
Malignancy	44 (34.6)	38 (29.9)
Coronary disease	15 (11.8)	10 (7.9)
COPD	20 (15.7)	20 (15.7)
Autoimmune disease	19 (15.0)	18 (14.2)
Neuromuscular disease	1 (0.8)	6 (4.7)
Obesity	36 (28.3)	90 (70.9)
Malnutrition	26 (20.5)	15 (11.8)
APACHE II score, mean \pm SD	23.3 \pm 7.7	21.7 \pm 8.0
Estimated risk of death, mean \pm SD	47.3 \pm 26.1	44.4 \pm 26.1
Reason for ICU admission		
Respiratory failure	91 (71.6)	101 (79.5)
Shock	72 (56.7)	66 (51.2)
Compromised mental status	44 (34.6)	37 (29.1)
Major surgery, postoperative	26 (20.5)	23 (18.1)

TABLE 2. Oral Health Status of Patients Submitted to Routine Oral Care Protocol or Dental Treatment at Intensive Care Unit Admission

Characteristic	Routine oral care (<i>n</i> = 127)	Dental treatment (<i>n</i> = 127)	
Edentulism	57 (44.9)	40 (31.5)	←
Caries	38 (29.9)	36 (28.3)	
Residual tooth roots	25 (19.7)	18 (14.2)	
Gingival inflammation	65 (51.2)	74 (58.3)	
Periodontal pockets	44 (34.6)	30 (23.6)	←
Intraoral abscess	2 (1.6)	0 (0)	
Mucositis	8 (6.3)	8 (6.3)	
Intraoral candidiasis	3 (2.4)	1 (0.8)	
OHI-S, mean ± SD	2.33 ± 0.9	1.96 ± 0.8	

NOTE. Data are no. (%) of patients, unless otherwise indicated. OHI-S, simplified oral hygiene index; SD, standard deviation.

TABLE 3. Distribution of Risk Factors for Lower Respiratory Tract Infections among Patients Submitted to Routine Oral Care Protocol or Dental Treatment during Intensive Care Unit Stay

Risk factors	Routine oral care (<i>n</i> = 127)	Dental treatment (<i>n</i> = 127)
Mechanical ventilation	96 (75.6)	98 (77.2)
Tracheostomy	48 (37.8)	44 (34.6)
Nasogastric tube	109 (85.8)	107 (84.2)
Use of corticosteroids	76 (59.8)	71 (55.9)
Use of other immunosuppressive drugs	13 (10.2)	17 (13.4)
Vomiting	28 (22.0)	40 (31.5)
Thoracic or abdominal surgery	45 (35.4)	45 (35.4)
Use of a proton pump inhibitor	119 (93.7)	116 (91.3)
Nonrespiratory nosocomial infections	24 (18.9)	28 (22.0)
Use of antimicrobial drugs	110 (86.6)	113 (89.0)

NOTE. Data are no. (%) of patients.

TABLE 4. Primary and Secondary Outcomes of Patients Submitted to Routine Oral Care Protocol or Dental Treatment during Intensive Care Unit (ICU) Stay

Outcome	Routine oral care (<i>n</i> = 127)	Dental treatment (<i>n</i> = 127)	Crude RR (95% CI)	<i>P</i> ^a	Adjusted RR (95% CI)	Adjusted <i>P</i> ^b
LRTI						
Tracheobronchitis	5 (3.9)	5 (3.9)	1.00 (0.28–3.54)	1.000	0.98 (0.27–3.62)	.979
Pneumonia in nonventilated patients	1 (0.8)	0 (0)	...	1.000	...	1.000
Ventilator-associated pneumonia	18 (18.7)	8 (8.2)	0.38 (0.16–0.93)	.030	0.42 (0.17–1.04)	.062
All LRTIs	23 (18.1)	11 (8.7)	0.43 (0.20–0.92)	.027	0.44 (0.20–0.96)	.040
Temporal data, mean ± SD, days						
LRTI-free survival	9.0 ± 6.7	9.0 ± 8.2	...	.460	Redução de 56%	...
Mechanical ventilation	11.3 ± 9.0	10.7 ± 10.6	...	.225	...	...
Antimicrobial use	8.7 ± 8.0	8.2 ± 8.5	...	.442	NNT 10,6	...
Length of stay in ICU	10.9 ± 8.7	10.4 ± 9.8	...	.318	...	...
Mortality						
Discharge	87 (68.5)	90 (70.9)	1.11 (0.65–1.91)	.682	0.93 (0.52–1.65)	.796
Death related to LRTI infection	8 (6.3)	5 (3.9)	0.61 (0.19–1.92)	.393	0.75 (0.23–2.42)	.633
Death not related to LRTI infection	32 (25.2)	32 (25.2)	1.00 (0.57–1.76)	1.000	1.17 (0.64–2.15)	.603

NOTE. Data are no. (%) of patients, unless otherwise indicated. CI, confidence interval; LRTI, lower respiratory tract infection; RR, relative risk; SD, standard deviation.

^a Pearson corrected χ^2 or 2-tailed Fisher exact test, as appropriate, for categorical variables; Wilcoxon test for unpaired samples for continuous variables.

^b Logistic regression adjusted for sex, age, acute physiology and chronic health evaluation II score, and length of stay prior to ICU admission.

- Efeitos adversos: 13.4% vs 6.3%; *p* .058

Irritação de mucosa e sangramento gengival leve

86,5% dos episódios de LRTI microbiologicamente confirmados

TABLE 5. Distribution of Etiologic Agents Isolated from Patients with Lower Respiratory Tract Infection and Their Source, according to Allocation to Routine Oral Care Protocol or Dental Treatment during Intensive Care Unit Stay

Microbiological data	Routine oral care (<i>n</i> = 23)	Dental treatment (<i>n</i> = 11)	<i>P</i> ^a
Etiologic agent classification			
Gram-positive cocci	3 (13.0)	3 (27.3)	.363
Nonfermentative gram-negative bacilli	15 (65.2)	10 (90.9)	.214
Enterobacteriaceae	1 (4.3)	0 (0)	1.000
Yeasts	1 (4.3)	0 (0)	1.000
All cultures negative	4 (17.4)	1 (9.1)	1.000
Source of positive cultures			
Blood culture	1 (4.3)	2 (18.2)	.239
Bronchoalveolar lavage	1 (4.3)	0 (0)	1.000
Tracheal aspirate	17 (73.9)	10 (90.9)	.384
Lung biopsy	1 (4.3)	0 (0)	1.000

NOTE. Data are no. (%) of patients. Some patients had more than 1 bacteria isolated, and some patients had bacteria isolated from different sources.

^a Two-tailed Fisher exact test.



Ter um odontologista avaliando e tratando os pacientes na UTI reduz a incidência de pneumonias e traqueobronquites hospitalares

Infecção de sítio cirúrgico

Preventing Surgical Site Infections: A Randomized, Open-Label Trial of Nasal Mupirocin Ointment and Nasal Povidone-Iodine Solution

Michael Phillips, MD;^{1,2} Andrew Rosenberg, MD;^{1,2} Bo Shopsin, MD, PhD;^{1,2} Germaine Cuff, RN, PhD;²
Faith Skeete, RN;¹ Alycia Foti, BA;¹ Kandy Kraemer, RN;¹ Kenneth Inglis, MS;¹
Robert Press, MD, PhD;^{1,2} Joseph Bosco, MD^{1,2}

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

- Artroplastias e cirurgias de coluna
- Protocolo padrão para quaisquer pacientes :
Banho com lenços de clorexidina na noite anterior e na manhã da cirurgia + Mupirocina nasal nos cinco dias que antecedem a cirurgia, 2x/dia
- Adesão à mupirocina: 86%
- Adesão a clorexidina: 94%

Mupirocina nos 5 dias que antecedem a cirurgia, 2X/dia

+

Banho com lenços de clorexidina 2% na noite anterior e manhã da cirurgia

PVPI solução 5% 2 horas antes da cirurgia (4 aplicações)

+

Banho com lenços de clorexidina 2% na noite anterior e manhã da cirurgia

Cultura pré operatória para *S.aureus* para pesquisa de carreador nasal (7-31 dias)

Cultura nasal pós operatória para *S.aureus* para os previamente colonizados

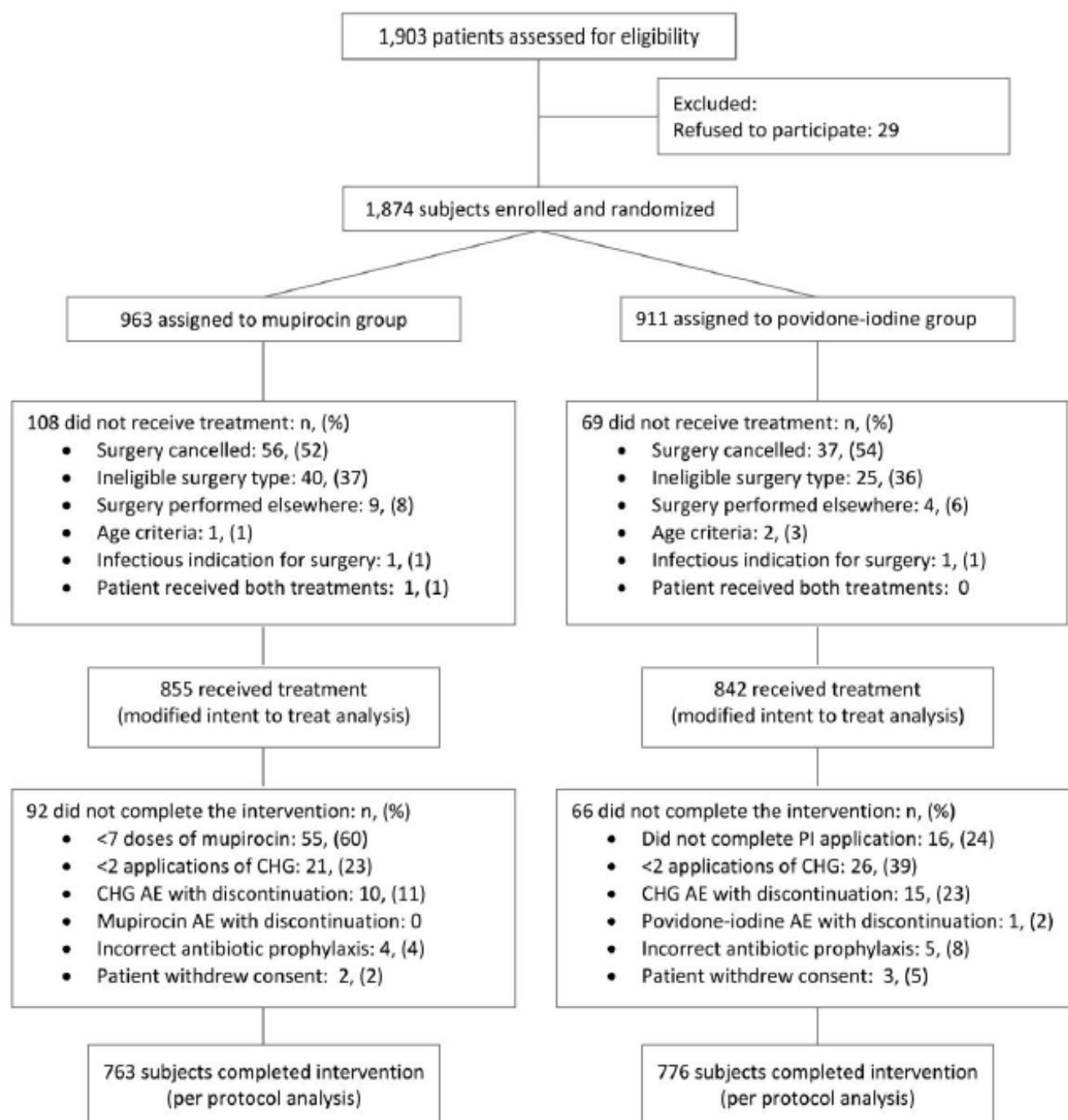


TABLE 1. Demographic and Clinical Characteristics of Subjects in the Modified Intention-to-Treat Analysis

Characteristic	Mupirocin group (n = 855)	Povidone-iodine group (n = 842)
Age, years		
Median	62.4	61.8
Range	19.2–93.2	19.1–92.4
Female sex	523 (61)	499 (59)
Race		
White	677 (79)	670 (80)
Black	138 (16)	145 (17)
Asian	23 (2.7)	21 (2.5)
Other ^a	22 (2.6)	7 (0.8)
Ethnic group		
Hispanic	97 (11)	88 (10)
Non-Hispanic	746 (87)	749 (89)
BMI		
Median	29.5	29.5
Range	14.9–58.9	12.0–57.3
Current smoking	104 (12)	114 (13)
Medical comorbidity		
Diabetes mellitus	110 (13)	104 (12)
Rheumatoid arthritis	36 (4.2)	36 (4.3)
Preoperative <i>Staphylococcus aureus</i> colonization		
MSSA		135 (16)
MRSA		24 (2.9)
130 (15)		21 (2.5)
Postoperative course		
ASA score		
1	35 (4.5)	39 (5.0)
2	486 (62)	524 (68)
3	254 (32)	206 (27) ^b
4	9 (1.1)	4 (0.5)
Receipt of blood products	179 (21)	158 (19)
Postoperative day 1 glucose level ≥ 180 mg/dL	40 (4.7)	46 (5.5)
Procedure		
Spine fusion	148 (17)	145 (17)
Spine fusion, revision	12 (1.4)	10 (1.2)
Arthroplasty surgery		
Knee	299 (35)	297 (35)
Knee, revision	24 (2.8)	24 (2.8)
Hip	298 (35)	293 (35)
Hip, revision	35 (4.1)	29 (3.4)
Shoulder	33 (3.9)	42 (5.0)
Shoulder, revision	7 (0.8)	1 (0.1)
Bilateral arthroplasty	49 (6.2)	73 (9.3) ^b
Median operative time, minutes		
Spine fusion	202	205
Spine fusion, revision	256	299
Arthroplasty surgery, unilateral		
Knee	93	87
Knee, revision	137	128
Hip	94	93
Hip, revision	138	123
Shoulder	106	109
Shoulder, revision	122	119

NOTE. Data are no. (%) of patients, unless otherwise indicated. ASA, American Society of Anesthesiologists; BMI, body mass index, calculated as the weight in kilograms divided by the square of height in meters; MRSA, methicillin-resistant *S. aureus*; MSSA, methicillin-susceptible *S. aureus*.

^a Other includes Native Hawaiian/Pacific Islander, American Indian/Alaska native, and no race declared.

^b $P < .05$ by χ^2 test.

TABLE 2. Number of Subjects with Deep Surgical Site Infection (SSI) and SSI Rates

Analysis	No. of subjects	Overall			<i>Staphylococcus aureus</i> infection		
		No. of cases	Rate, cases per 100 subjects	<i>P</i> ^a	No. of cases	Rate, cases per 100 subjects	<i>P</i> ^a
Intent to treat							
Mupirocin	855	14	1.6	.1	5	0.6	.2
Povidone-iodine	842	6	0.7		1	0.1	
Per protocol							
Mupirocin	763	13	1.7	.06	5	0.7	.03
Povidone-iodine	776	5	0.6		0	0	

^a By χ^2 test.

Dentre os colonizados por *S. aureus*:

1,8% de resistência a mupirocina, mas em nenhum caso de ISC

92% dos colonizados tiveram pesquisa negativa para *S. aureus* após a mupirocina



54% dos colonizados tiveram pesquisa negativa para *S. aureus* após a solução de PVPI

$p=0,03$



Opção para os nossos hospitais que não tem um ambulatório pré cirúrgico estruturado para orientar os pacientes e pesquisar colonização por *S. aureus*?

A solução de PVPI custa 3-6 vezes menos

Transmissão de agentes

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,¹ Tanya Golubchik,² Kevin Cole,³ Daniel J. Wilson,^{4,5} Derrick W. Crook,^{4,6} Guy E. Thwaites,⁷ Rory Bowden,⁵ A. Sarah Walker,^{4,6} Timothy E. A. Peto,^{4,6} John Paul,^{1,3} and Martin J. Llewelyn^{1,8}

- 14 meses de estudo em uma UTI na Inglaterra
- Cultura de vigilância à admissão e semanal para *S. aureus* (nasal e perineal)
- 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)

Diferenças > 40 SNV excluíam transmissão

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 ≤ 24 hours
n = 1109 (97.6%)

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

S. aureus positive
n = 185^{*} (16.7%)
MRSA 59 (5.3%)

S. aureus negative
n = 924 (83.3%)

S. aureus positive
n = 8[†] (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%)

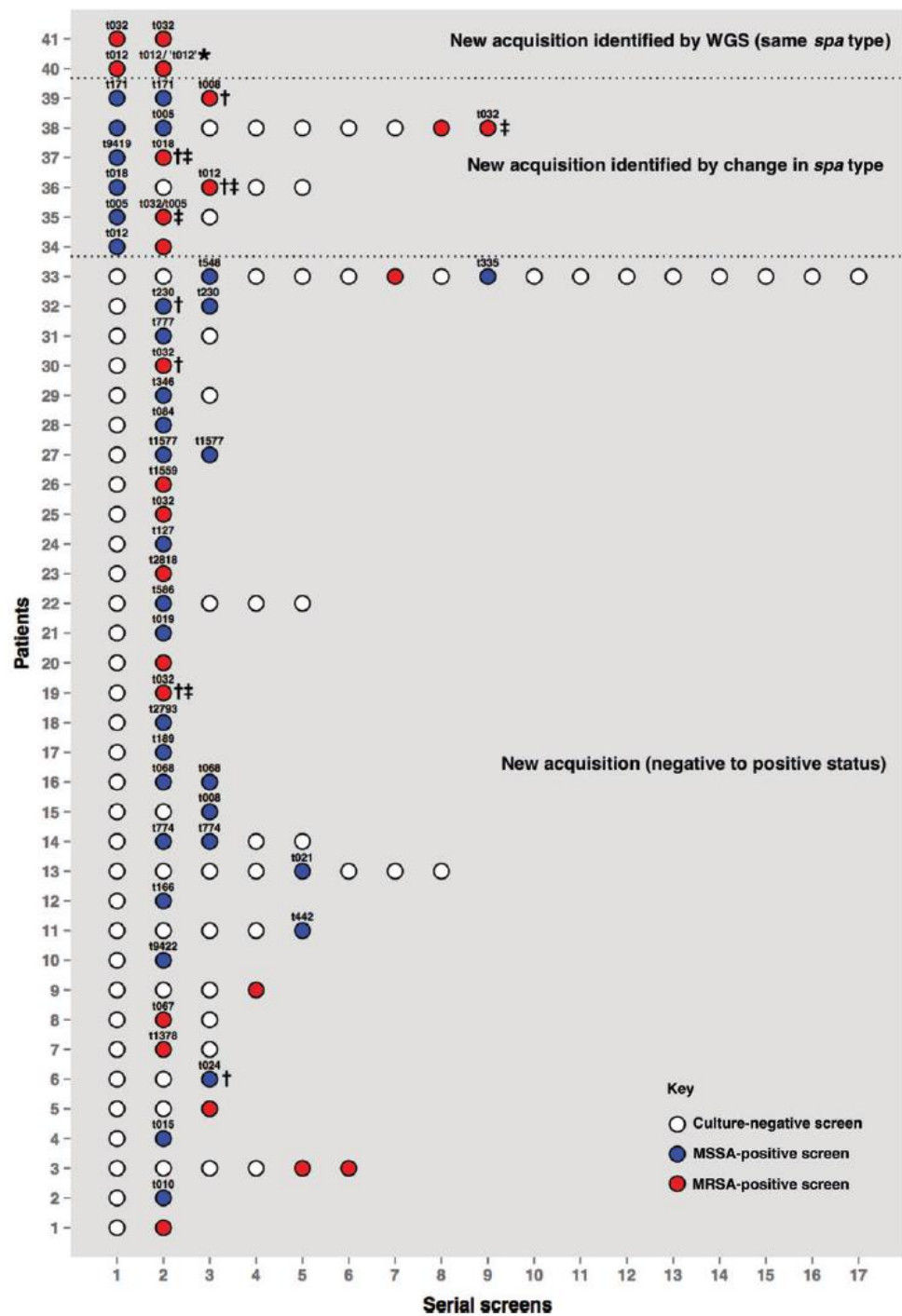
Screened at least twice
n = 7 (36.8%)

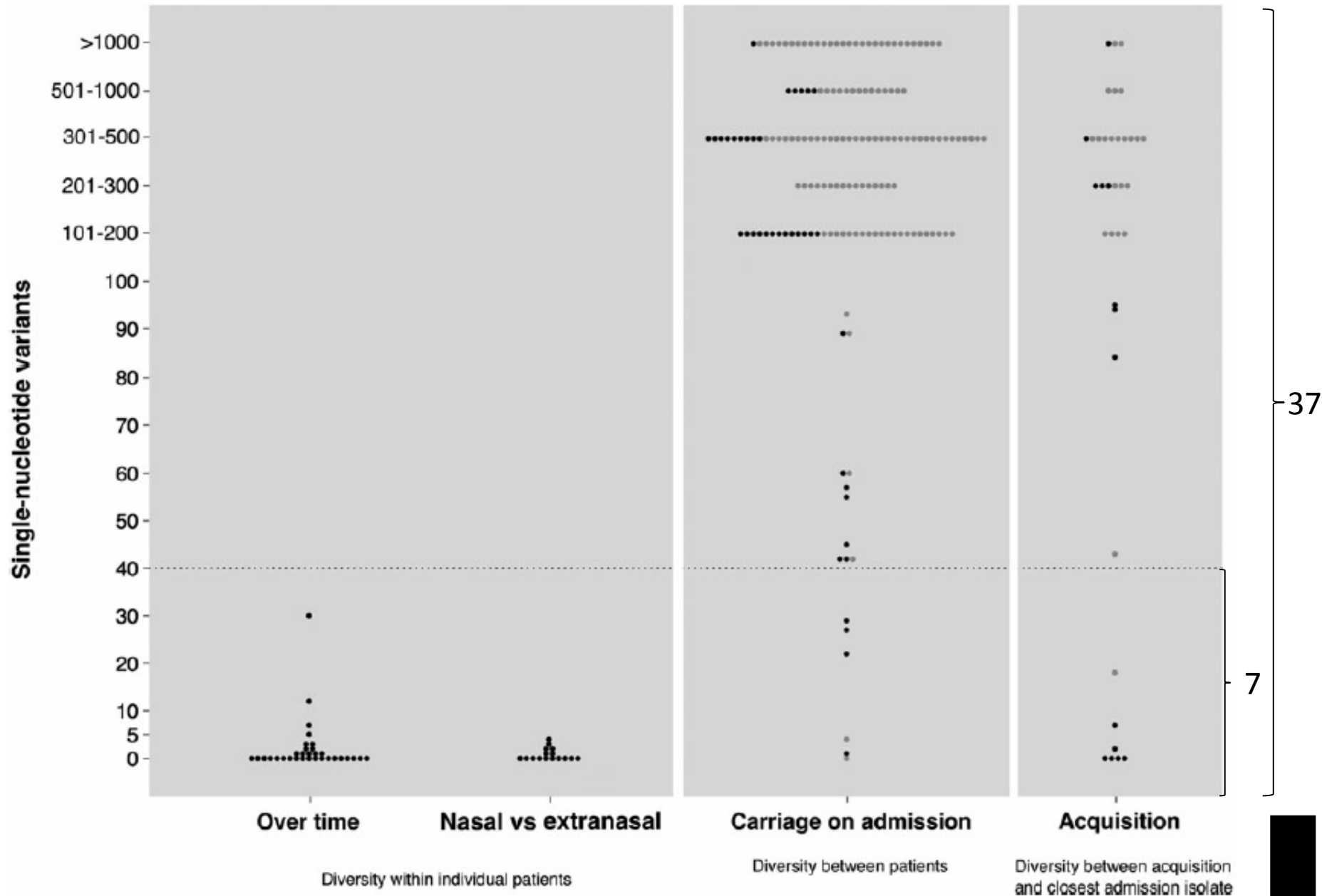
S. aureus positive
n = 47[‡]
9 acquisitions[§]

S. aureus positive
n = 32[‡]
34 acquisitions[¶]

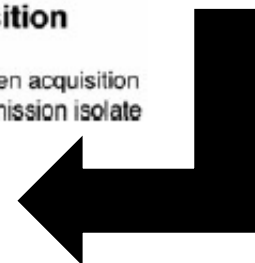
S. aureus positive
n = 3[‡]
No acquisitions

S. aureus positive
n = 1[‡]
1 acquisition





18,9%



Na admissão:

16,7% (185) colonizados por *S. aureus*

5,3% (59) MRSA

Das aquisições:

50% MRSA

5 das 7 transmissões paciente-paciente MRSA



Após implementação do banho com clorexidina e descolonização nasal, sem importância a transmissão paciente-paciente? Isolamento de contato?

Higiene de mãos

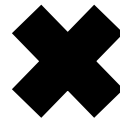
Comparison of human and electronic observation for the measurement of compliance with hand hygiene

Miguel Almeida O. Filho RN^a, Alexandre R. Marra MD^{b,*},
Thyago Pereira Magnus RN^a, Rodrigo Dias Rodrigues RN^a, Marcelo Prado BE^c,
Tales Roberto de Souza Santini BE^c, Elivane da Silva Victor PhD^a, Eder Issao Ishibe BE^c,
Oscar Fernando Pavão dos Santos MD^d, Michael B. Edmond MD, MPH, MPA^e

American Journal of Infection Control 42 (2014) 1188-92

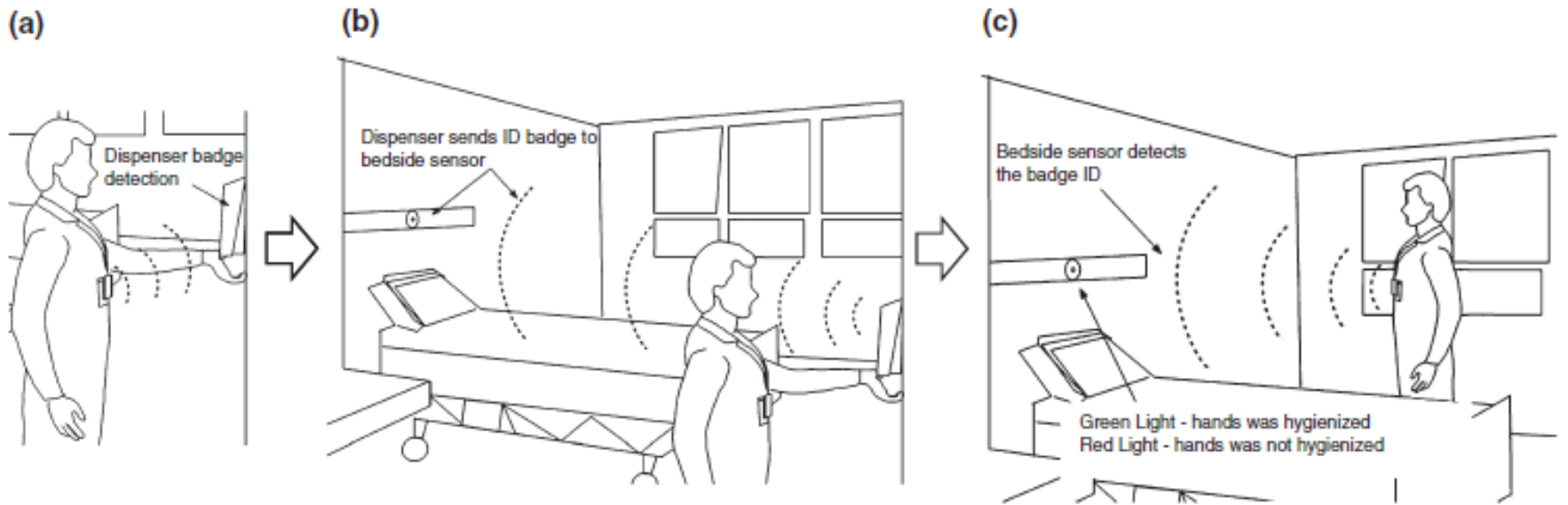
- 14 semanas

Observação direta
3 observadores
20 minutos por dia



TECNOLOGIA

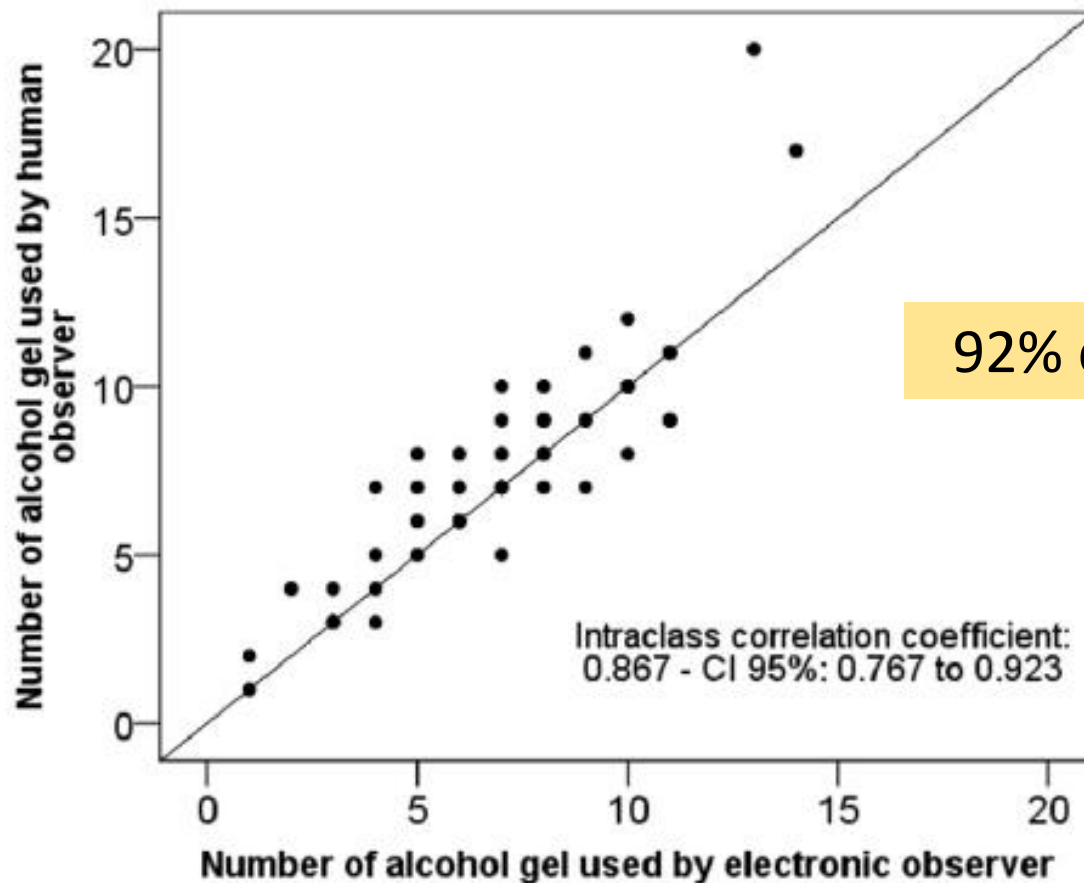
(dispensadores, crachá com sistema wireless, sensor com painel na cabeceira da cama)
1 hora depois, durante e 1 hora após a observação direta



- Período de observação simultânea

414 episódios de higiene de mãos pela Tecnologia

448 episódios pela observação direta



92% de correlação

- Observação direta:

659 oportunidades

85,1% de adesão

97% das vezes com álcool gel

- Tecnologia

114620 episódios de higiene das mãos

62,3% com profissionais com crachá (77 crachás)

67 episódios de higiene das mãos por paciente-dia

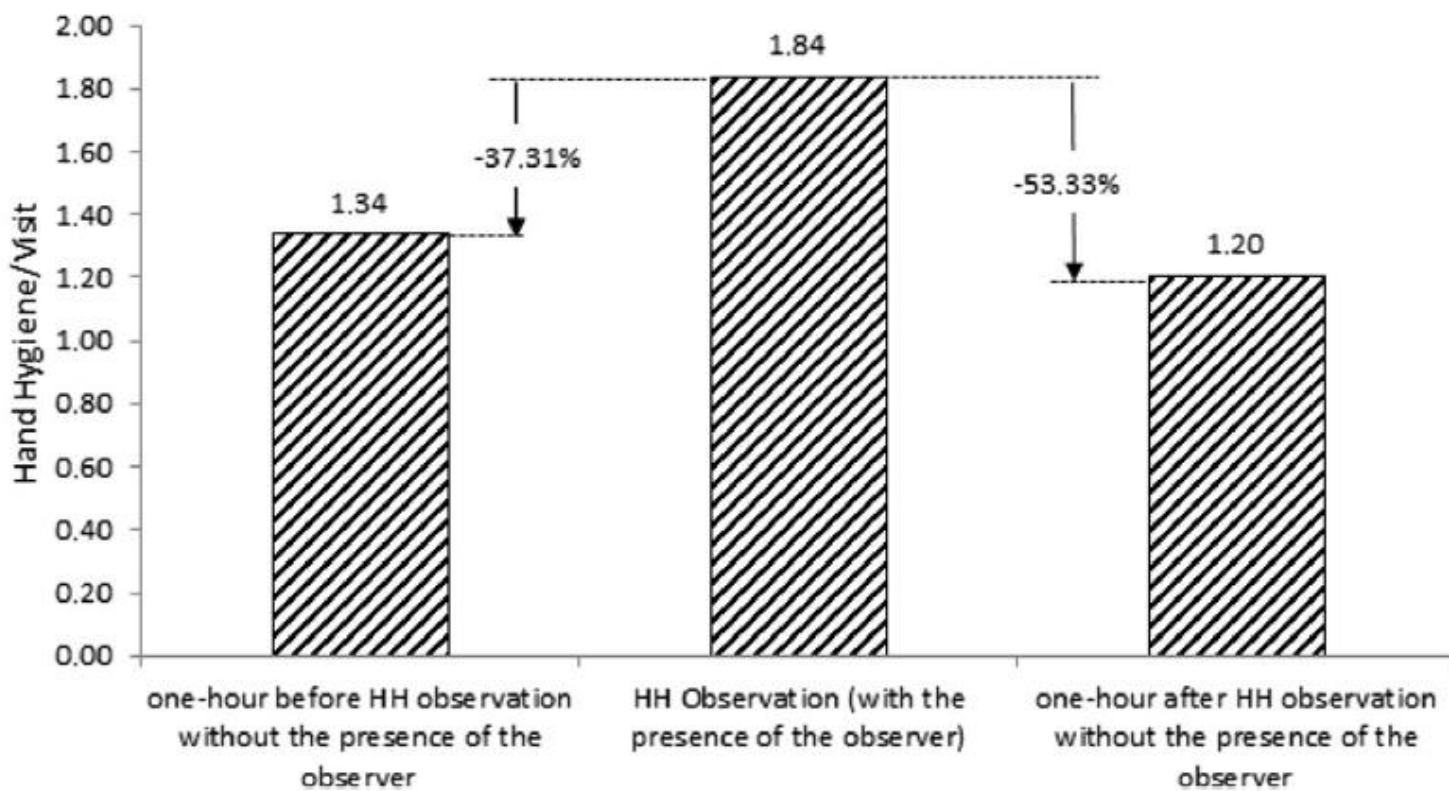


Fig 2. Demonstration of the Hawthorne effect during HH observation. *HH*, hand hygiene.



Vantagens:

- Facilidade
- Feedback imediato

Desvantagens:

- Custo (\$50000 para 20 leitos)
- Não avalia momento 2 e técnica
- Privacidade

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