PRECAUÇÕES E ISOLAMENTO EM SERVIÇOS DE SAÚDE

Dia 16/09 – 10h

Dra Mirian de Freitas Dal Ben Corradi – Infectologista (SP)

Link de acesso ao Webinar:
https://bit.ly/2WFqlur

2021

GOV.BR/ ANVISA

Precauções e isolamento

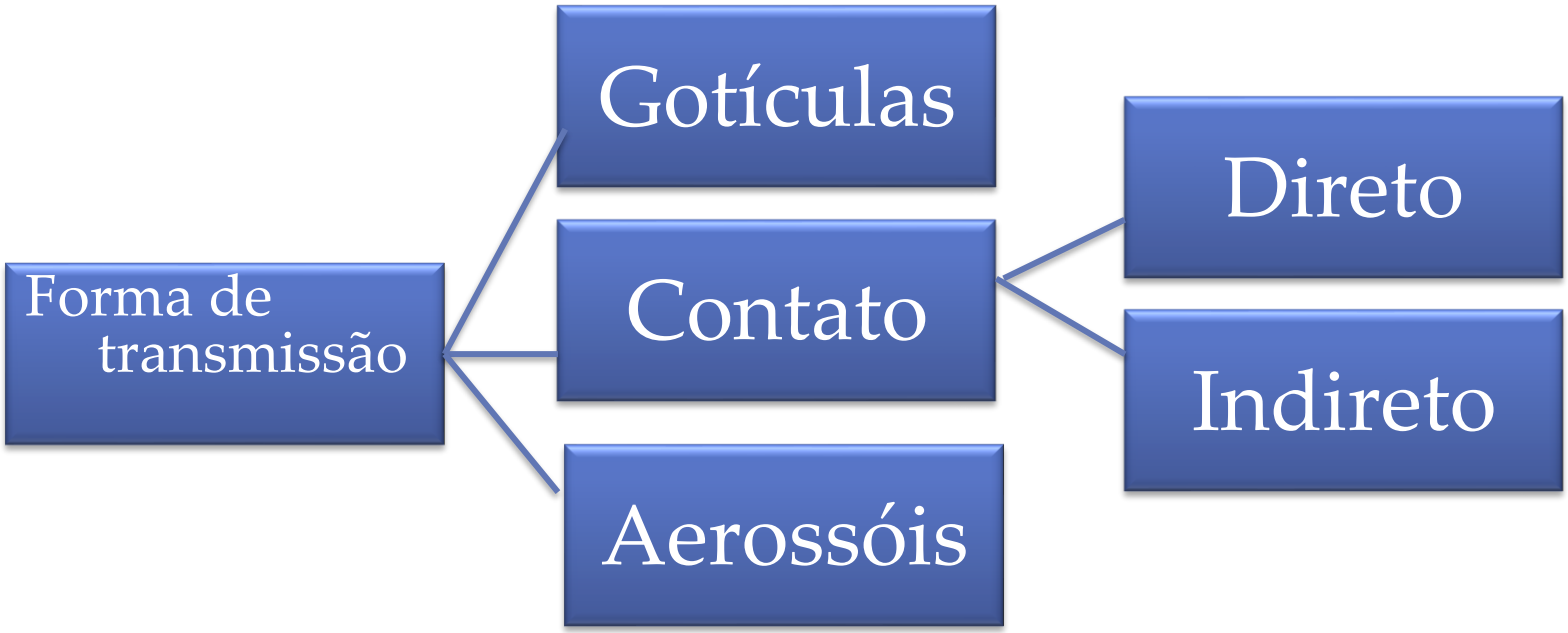
Mirian de F. Dal Ben

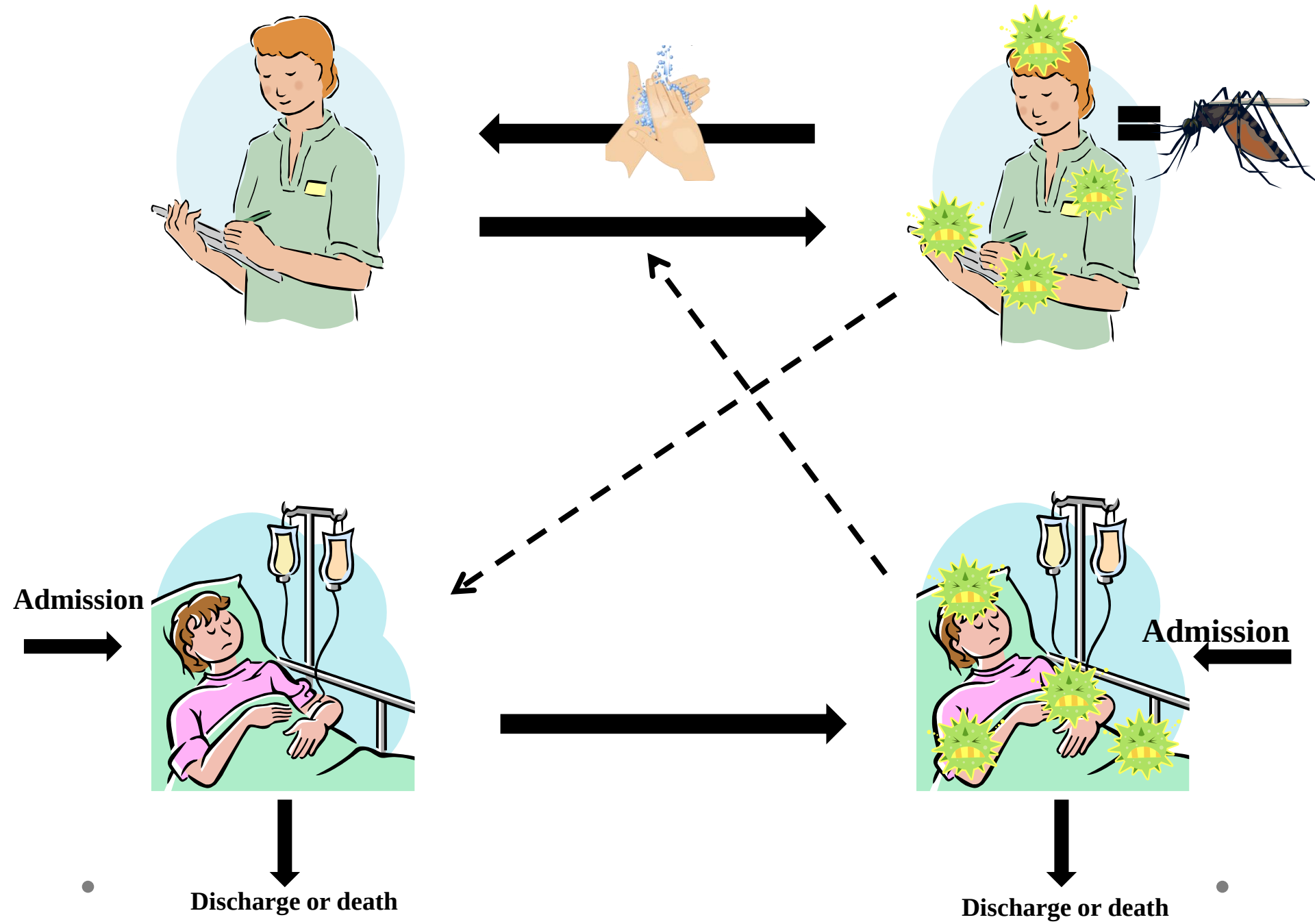
- Sem conflitos de interesse

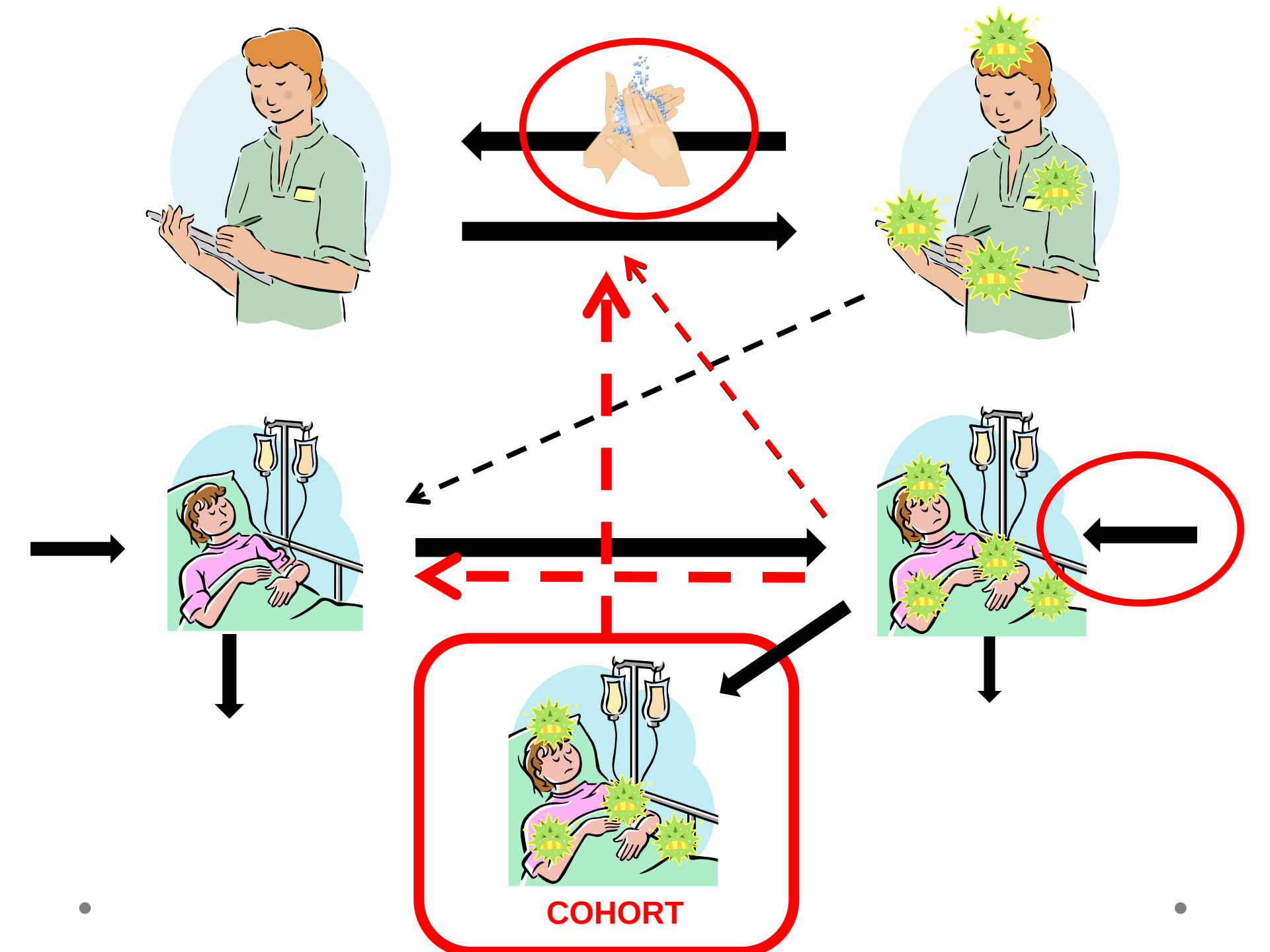
Precauções

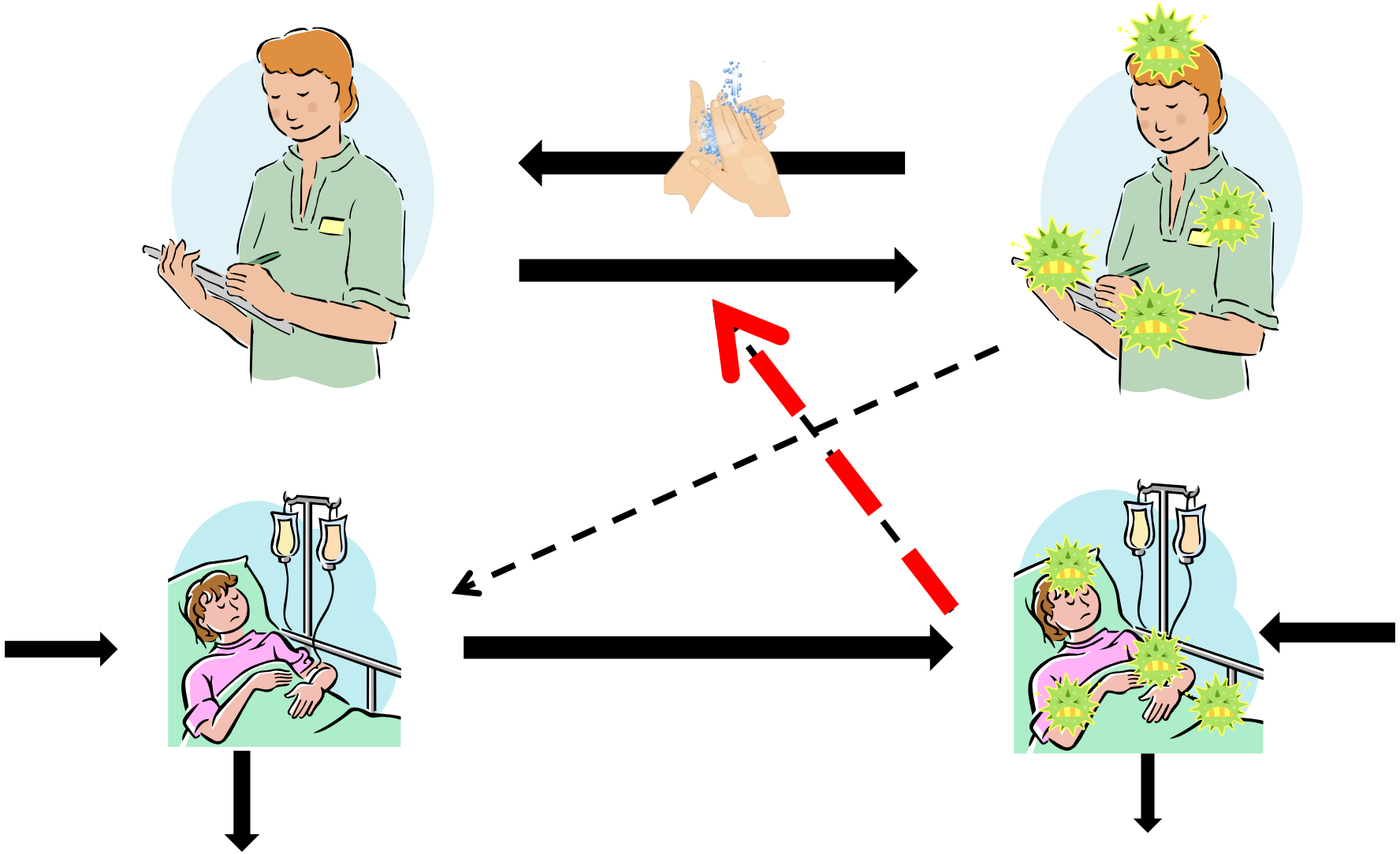
Forma de transmissão

Forma pelo qual o agente infeccioso atinge um hospedeiro susceptível




Admission
Discharge or death
Admission
Discharge or death


COHORT



- Culturas clinicas detectam 1/3 dos indivíduos colonizados

Eur J Clin Microbiol Infect Dis (2012) 31:1811–1817

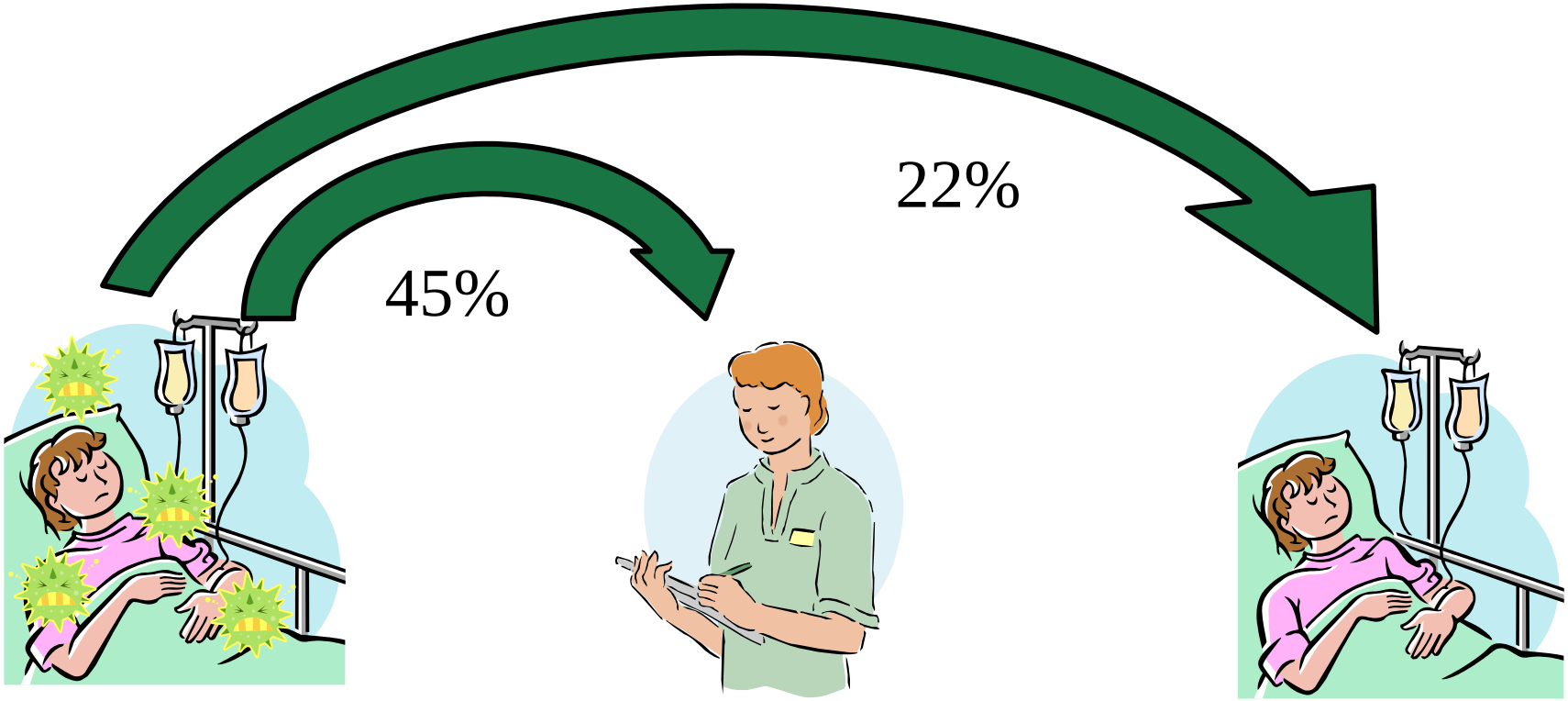
- Qual seria o papel da higiene das mãos e do isolamento de contato na transmissão cruzada?

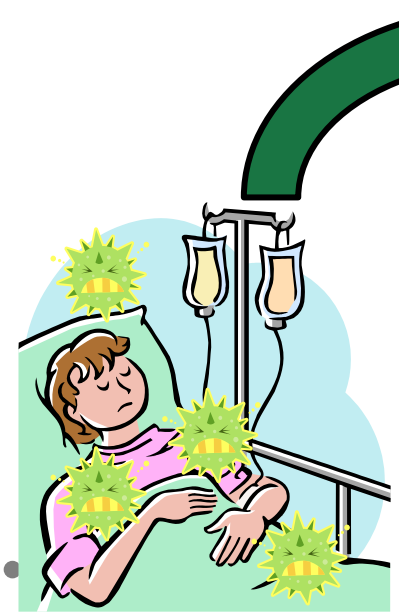
JOURNAL OF CLINICAL MICROBIOLOGY, Sept. 1980, p. 355-360
0095-1137/80/09-0355/06$02.00/0

Vol. 12, No. 3

Analysis of Three Variables in Sampling Solutions Used to Assay Bacteria of Hands: Type of Solution, Use of Antiseptic Neutralizers, and Solution Temperature

ELAINE L. LARSON,[1]* MARK S. STROM,[2] AND CHARLES A. EVANS[2]





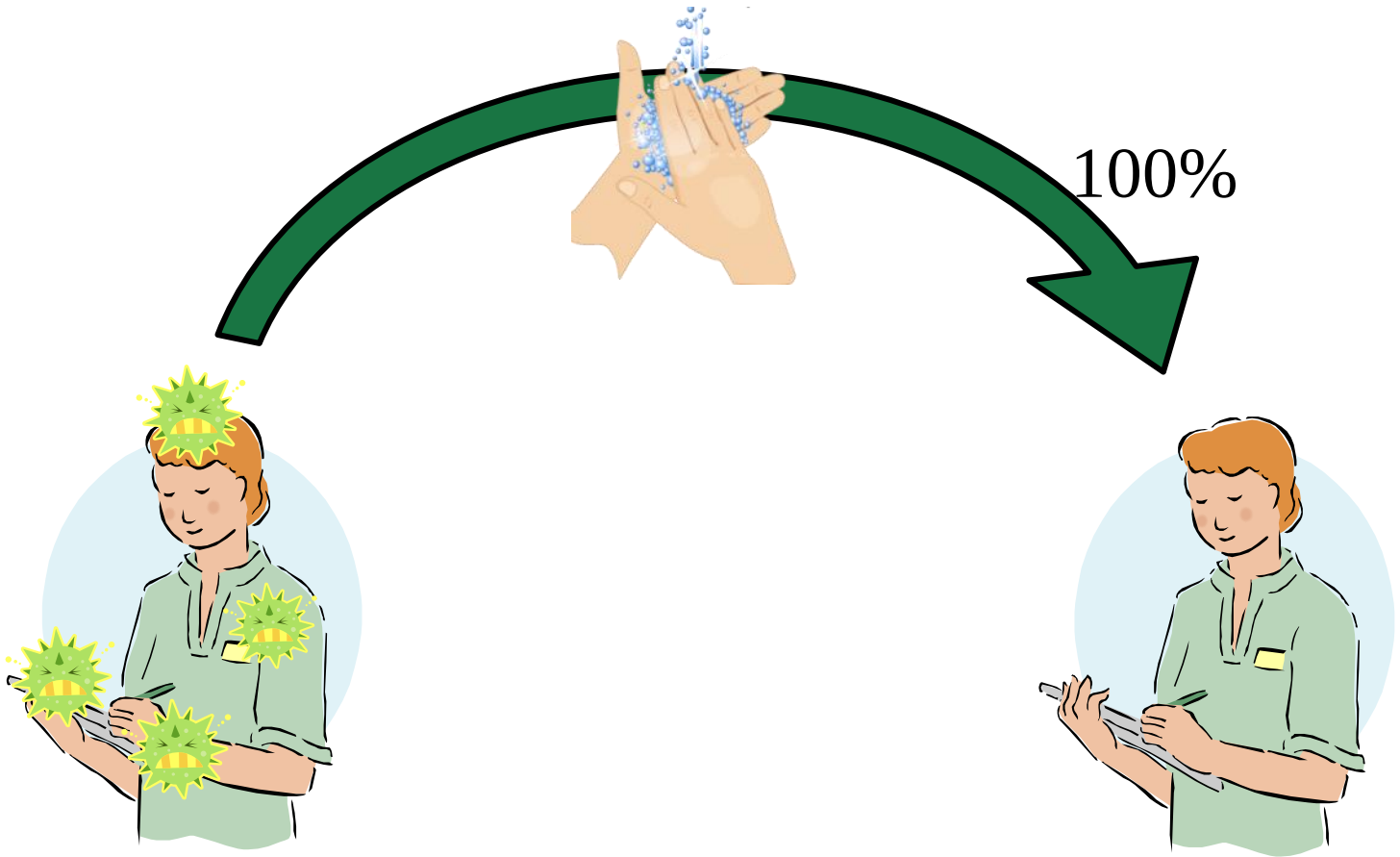
4.5 vezes

Infect Control Hosp Epidemiol 2016;37:1315–1322

INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY NOVEMBER 2016, VOL. 37, NO. 11

ORIGINAL ARTICLE

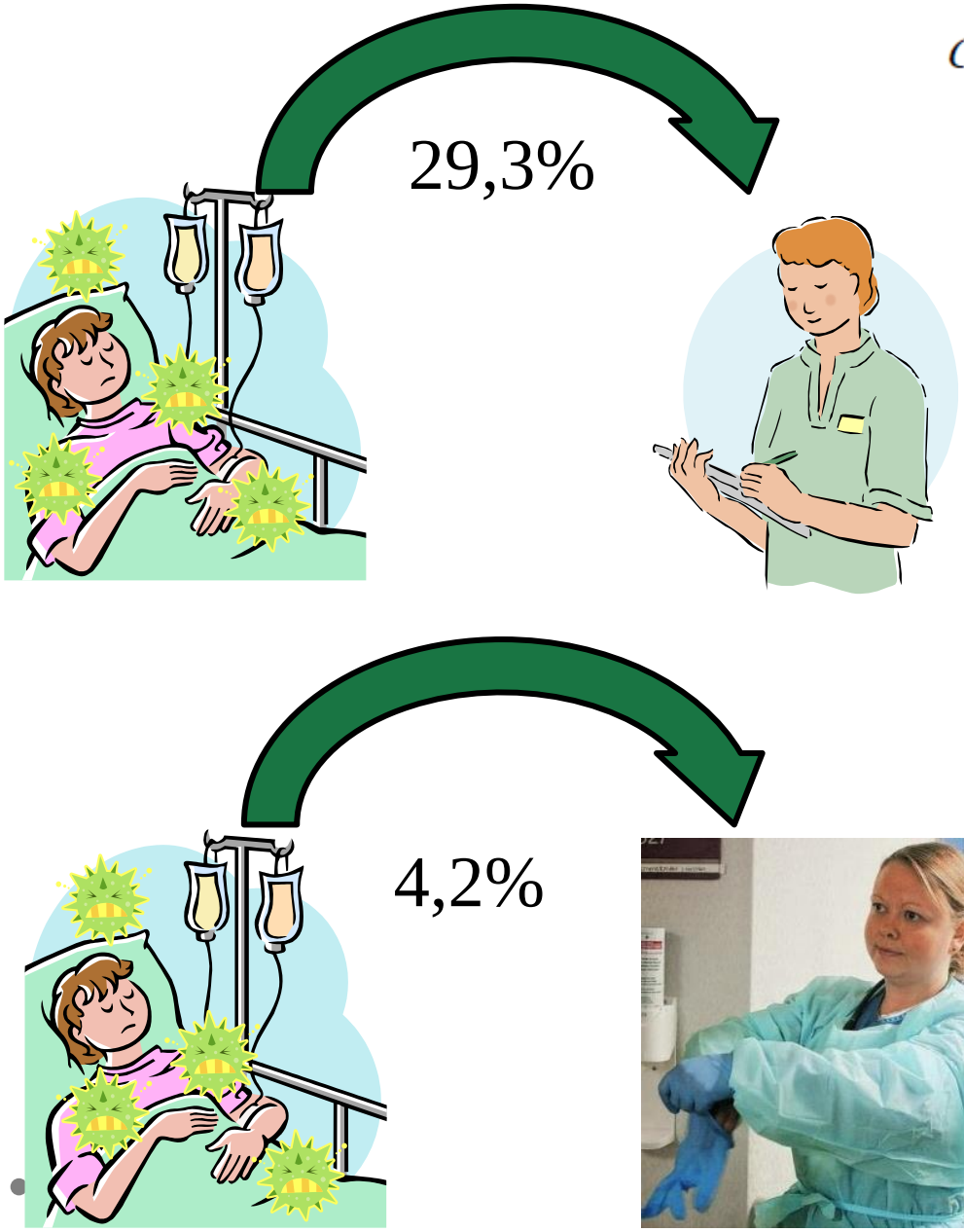
A Model-Based Strategy to Control the Spread of Carbapenem-Resistant Enterobacteriaceae: Simulate and Implement



Infect Control Hosp Epidemiol 2016;37:1315–1322

Acinetobacter spp. MR

Crit Care Med. 2012 April ; 40(4): 1045–1051

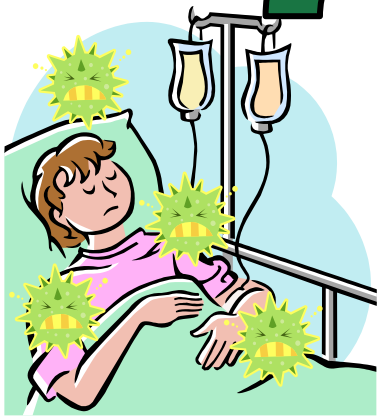


7 vezes

Pseudomonas aeruginosa spp. MR

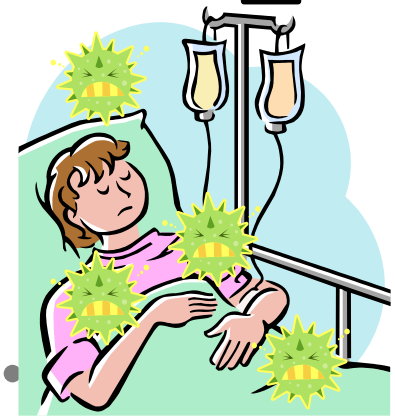
Crit Care Med. 2012 April ; 40(4): 1045–1051

17,4%



5 vezes

3,5%



Nursing and physician attire as possible source of nosocomial infections

Yonit Wiener-Well, MD,[a] Margalit Galuty, RN, MSc,[a,b] Bernard Rudensky, PhD,[c] Yechiel Schlesinger, MD,[a] Denise Attias, BSc,[c] and Amos M. Yinnon, MD[a]
Jerusalem, Israel

Am J Infect Control 2011;39:555-9.

- 135 enfermeiros e médicos e 4 controles
- Médicos: jaleco
- Enfermeiros: "2-piece Uniform"
- Centro cirúrgico: 2-piece scrub
- 100% microorganismos de pele
- 63% com patógenos(*Pseudomonas*, *Acinetobacter*, MRSA and *Enterobacteriaceae*):

  79% um patógeno

  18% 2 patógenos

  3% 3 patógenos

  11% MDRO

Frequent Multidrug-Resistant *Acinetobacter baumannii* Contamination of Gloves, Gowns, and Hands of Healthcare Workers

Infect Control Hosp Epidemiol. 2010 July ; 31(7): 716–721.

Frequency of Contamination of Gowns, Gloves, and Hands of Healthcare Workers (HCWs) after Caring for Patients Colonized or Infected with Specified Bacteria

	No. (% [95% CI]) of observations	
Source of culture-positive sample	Patients with MDR *Acinetobacter baumannii* carriage (n = 199)	Patients with MDR *Pseudomonas aeruginosa* carriage (n = 134)
Gloves	72 (36.2 [29.5–42.9])	9 (6.7 [2.5–11.0])
Gown	22 (11.1 [6.7–15.4])	6 (4.5 [1.0–8.0])
Gloves and/or gown	77 (38.7 [31.9–45.5])	11 (8.2 [3.6–12.9])
Hands[a]	9 (4.5 [1.6–7.4])	1 (0.7 [0–2.2])

NOTE. CI, confidence interval; MDR, multidrug-resistant.

[a] After removal of gloves and gown and before hand hygiene.

- O acompanhante precisa usar avental e luvas?

- Conseguiria eliminar isolamento de contato a partir de uma taxa de adesão à higiene das mãos?

SCCIH
ICHC-FMUSP

Precaução Padrão

+

Proteção
das mãos

Proteção de
olhos, nariz e boca

Proteção
de pele e vestes

Prevenção
de acidentes

Health-care facility recommendations for standard precautions

KEY ELEMENTS AT A GLANCE

1. Hand hygiene[1]

Summary technique:

- Hand washing (40–60 sec): wet hands and apply soap; rub all surfaces; rinse hands and dry thoroughly with a single use towel; use towel to turn off faucet.
- Hand rubbing (20–30 sec): apply enough product to cover all areas of the hands; rub hands until dry.

Summary indications:

- Before and after any direct patient contact and between patients, whether or not gloves are worn.
- Immediately after gloves are removed.
- Before handling an invasive device.
- After touching blood, body fluids, secretions, excretions, non-intact skin, and contaminated items, even if gloves are worn.
- During patient care, when moving from a contaminated to a clean body site of the patient.
- After contact with inanimate objects in the immediate vicinity of the patient.

2. Gloves

- Wear when touching blood, body fluids, secretions, excretions, mucous membranes, nonintact skin.
- Change between tasks and procedures on the same patient after contact with potentially infectious material.
- Remove after use, before touching non-contaminated items and surfaces, and before going to another patient. Perform hand hygiene immediately after removal.

3. Facial protection (eyes, nose, and mouth)

- Wear (1) a surgical or procedure mask and eye protection (eye visor, goggles) or (2) a face shield to protect mucous membranes of the eyes, nose, and mouth during activities that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions.

4. Gown

- Wear to protect skin and prevent soiling of clothing during activities that are likely to generate splashes or sprays of blood, body fluids, secretions, or excretions.
- Remove soiled gown as soon as possible, and perform hand hygiene.

5. Prevention of needle stick and injuries from other sharp instruments[2]

Use care when:

- Handling needles, scalpels, and other sharp instruments or devices.
- Cleaning used instruments.
- Disposing of used needles and other sharp instruments.

6. Respiratory hygiene and cough etiquette

Persons with respiratory symptoms should apply source control measures:

- Cover their nose and mouth when coughing/sneezing with tissue or mask, dispose of used tissues and masks, and perform hand hygiene after contact with respiratory secretions.

Health-care facilities should:

- Place acute febrile respiratory symptomatic patients at least 1 metre (3 feet) away from others in common waiting areas, if possible.
- Post visual alerts at the entrance to health-care facilities instructing persons with respiratory symptoms to practise respiratory hygiene/cough etiquette.
- Consider making hand hygiene resources, tissues and masks available in common areas and areas used for the evaluation of patients with respiratory illnesses.

7. Environmental cleaning

- Use adequate procedures for the routine cleaning and disinfection of environmental and other frequently touched surfaces.

8. Linens

Handle, transport, and process used linen in a manner which:

- Prevents skin and mucous membrane exposures and contamination of clothing.
- Avoids transfer of pathogens to other patients and or the environment.

9. Waste disposal

- Ensure safe waste management.
- Treat waste contaminated with blood, body fluids, secretions and excretions as clinical waste, in accordance with local regulations.
- Human tissues and laboratory waste that is directly associated with specimen processing should also be treated as clinical waste.
- Discard single use items properly.

10. Patient care equipment

- Handle equipment soiled with blood, body fluids, secretions, and excretions in a manner that prevents skin and mucous membrane exposures, contamination of clothing, and transfer of pathogens to other patients or the environment.
- Clean, disinfect, and reprocess reusable equipment appropriately before use with another patient.

[1] For more details, see: WHO Guidelines on Hand Hygiene in Health Care (Advanced draft), at: http://www.who.int/patientsafety/information_centre/ghhad_download/en/index.html.
[2] The SIGN Alliance at: http://www.who.int/injection_safety/sign/en/

World Health Organization • CH-1211 Geneva-27 • Switzerland • www.who.int/csr

World Health Organization

EPIDEMIC AND PANDEMIC ALERT AND RESPONSE

Modelo de Ross-Macdonald

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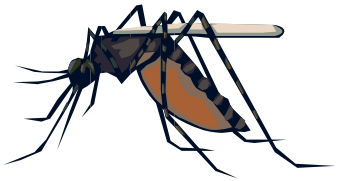


R_0

$R_0>1$ ⬆

$R_0<1$ ⬇

O modelo presume:

- Apenas duas populações.

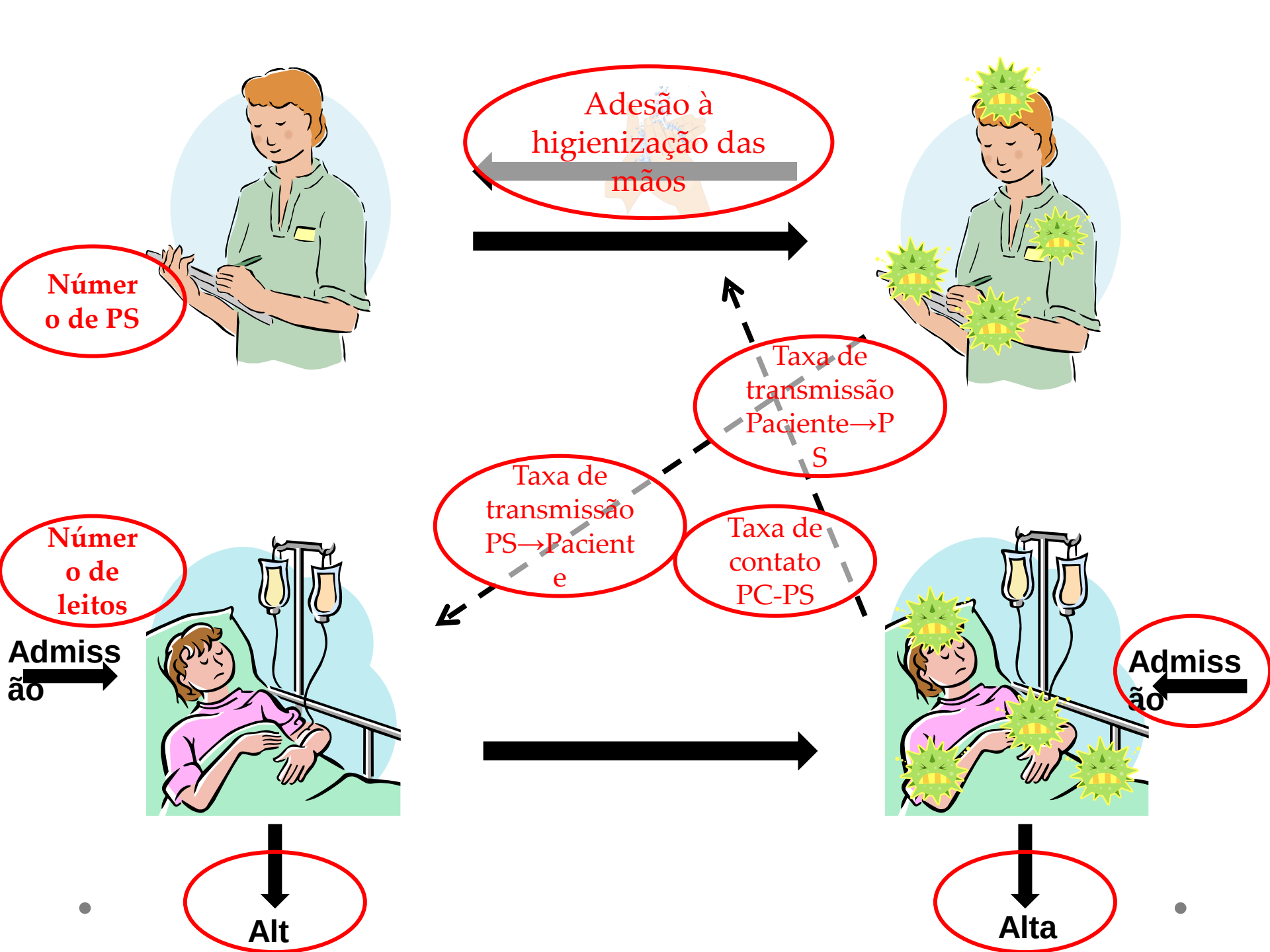
A população de PS é considerada constante.

- Ocupação = 100%
- .

Probabilidade de transmissão pelo infectado = Probabilidade de transmissão pelo colonizado

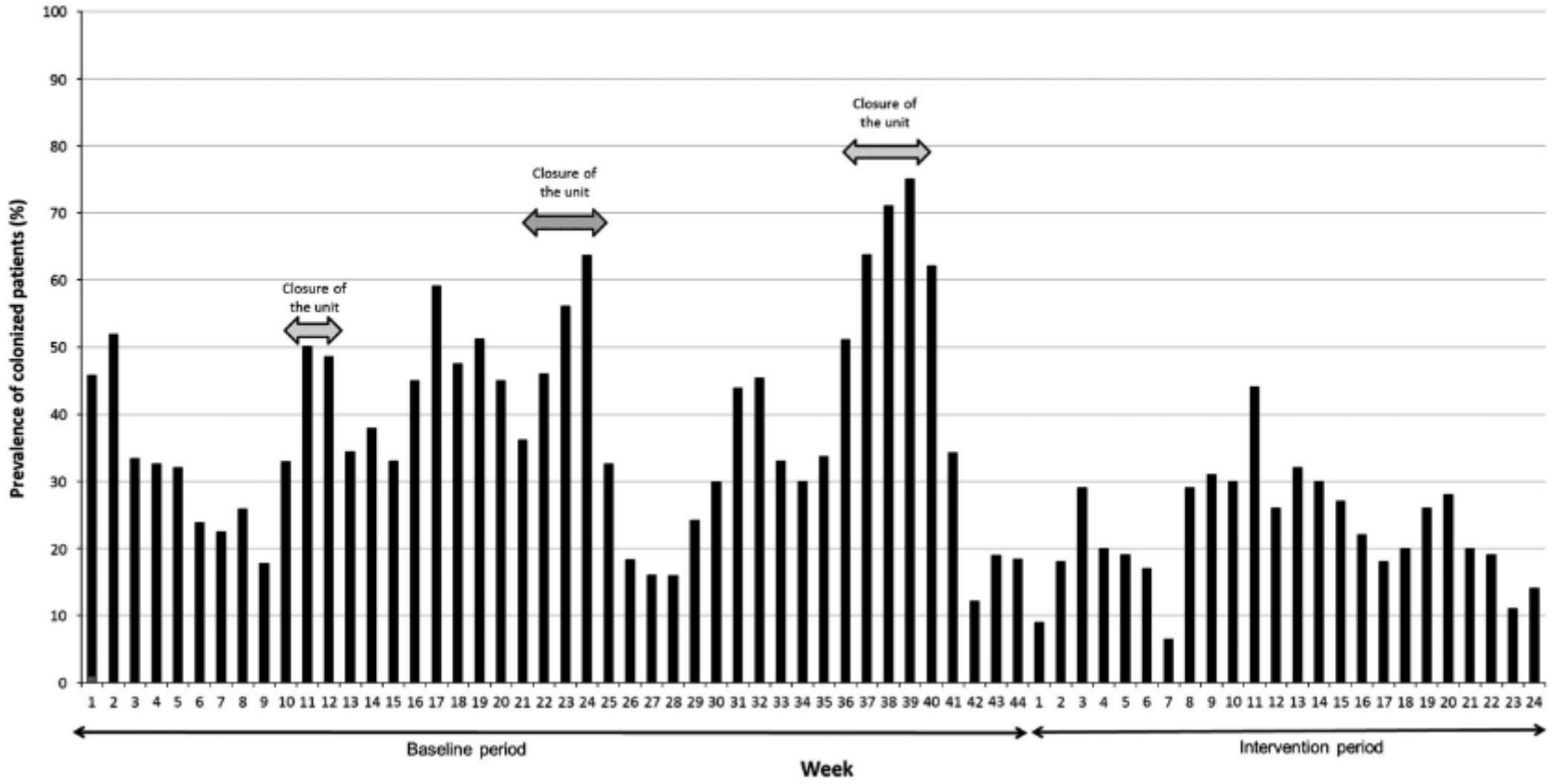
- Transmissão paciente-paciente, PS-PS é desconsiderada
- Na ausência de dados sobre transmissão PS→PC, está é considerada igual a transmissão PC→PS
- Colonização persistente de PS é considerada rara para maioria dos multirresistentes.
- Higienização das mãos é considerada efetiva na maioria das vezes.
- População de pacientes é considerada homogênea.
- População de PS é considerada homogênea.
-

Journal of Hospital Infection (1999) **43**: 131–147


Adesão à higienização das mãos
Número de PS
Taxa de transmissão Paciente→PS
Taxa de transmissão PS→Paciente
Taxa de contato PC-PS
Número de leitos
Admissão
Admissão
Alt
Alta

ORIGINAL ARTICLE

A Model-Based Strategy to Control the Spread of Carbapenem-Resistant Enterobacteriaceae: Simulate and Implement



Prevalence= 34% (12-75%)
R = 11

Prevalence= 21% (10-45%)
R = 0,42 (0-2,1)

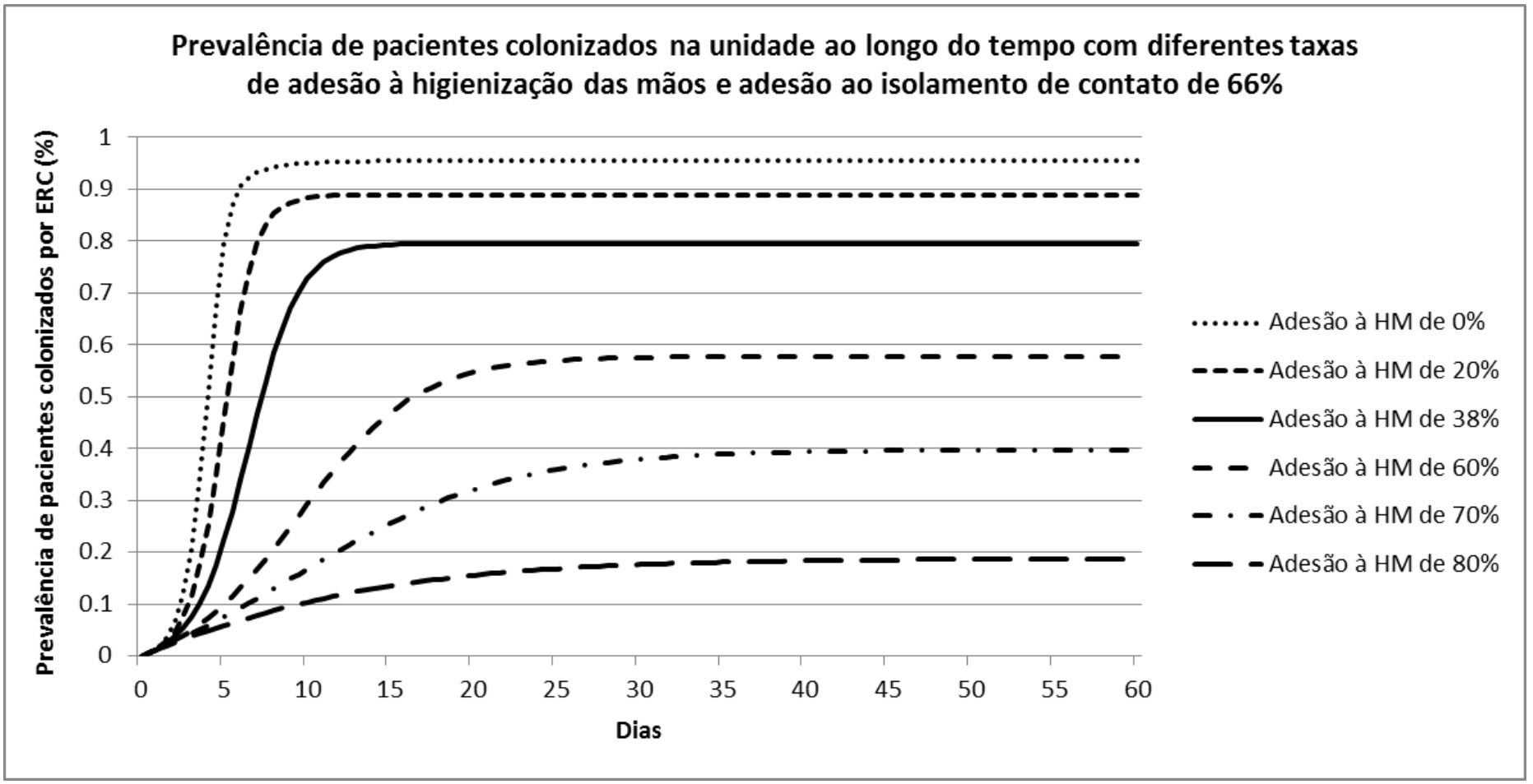

Prevalência de pacientes colonizados na unidade ao longo do tempo com diferentes taxas de adesão à higienização das mãos e adesão ao isolamento de contato de 66%
Prevalência de pacientes colonizados por ERC (%)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
5
10
15
20
25
30
35
40
45
50
55
60
Dias
Adesão à HM de 0%
Adesão à HM de 20%
Adesão à HM de 38%
Adesão à HM de 60%
Adesão à HM de 70%
Adesão à HM de 80%

Figure 4: Prevalência de pacientes colonizados por ERC após 60 dias de abertura da unidade com diferentes adesões à higienização das mãos e com uma adesão ao isolamento de contato de 66%

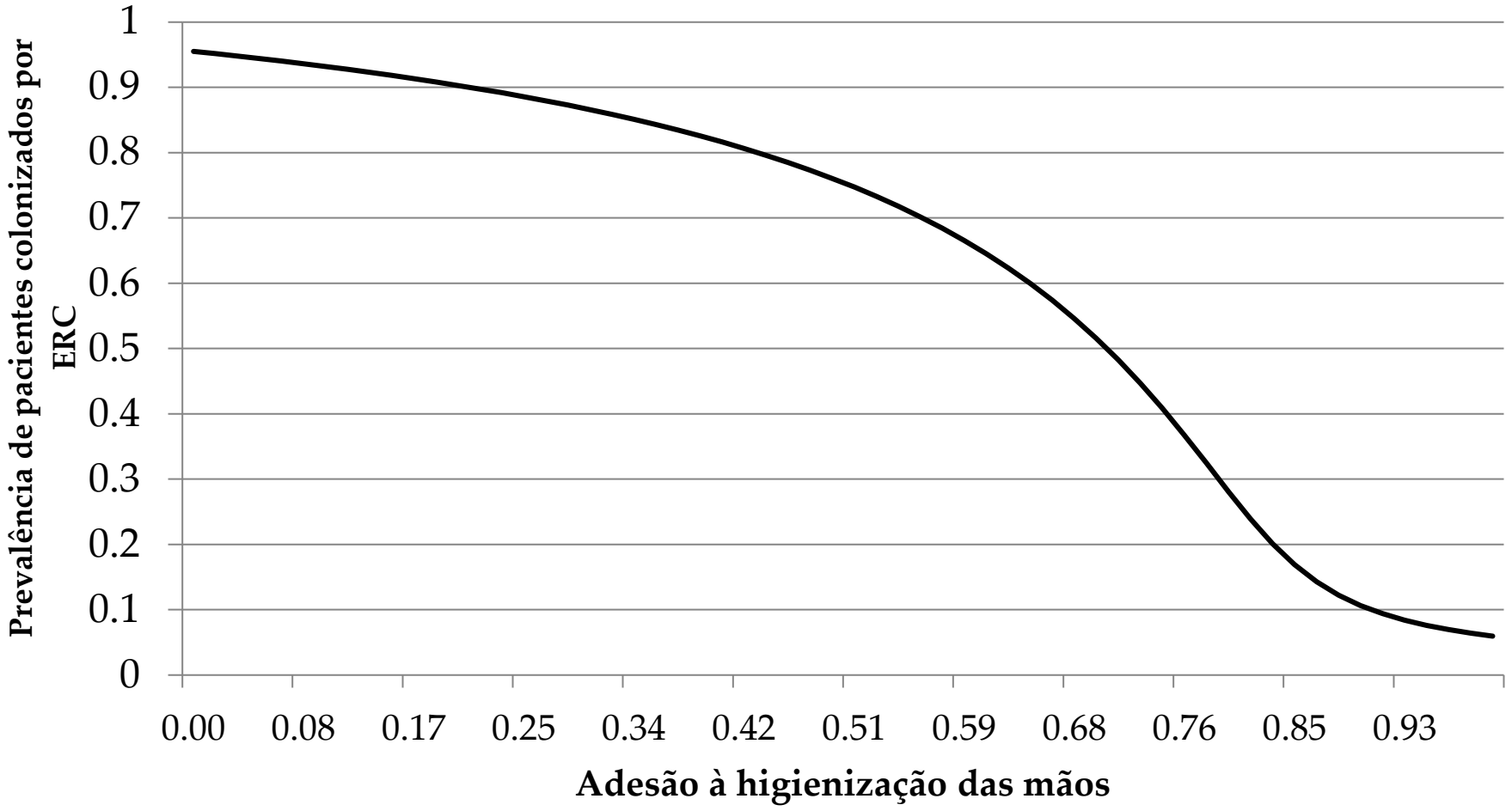
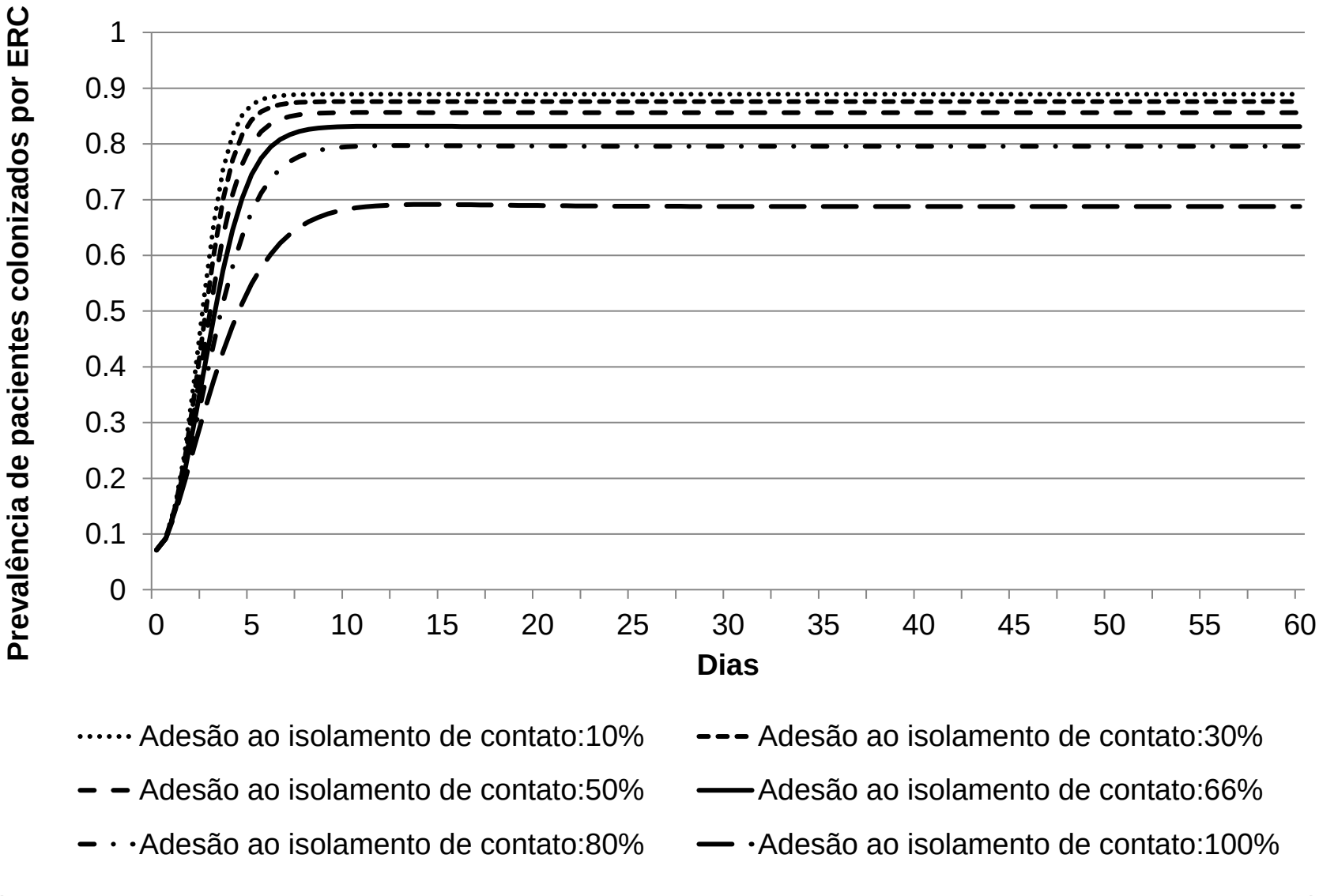
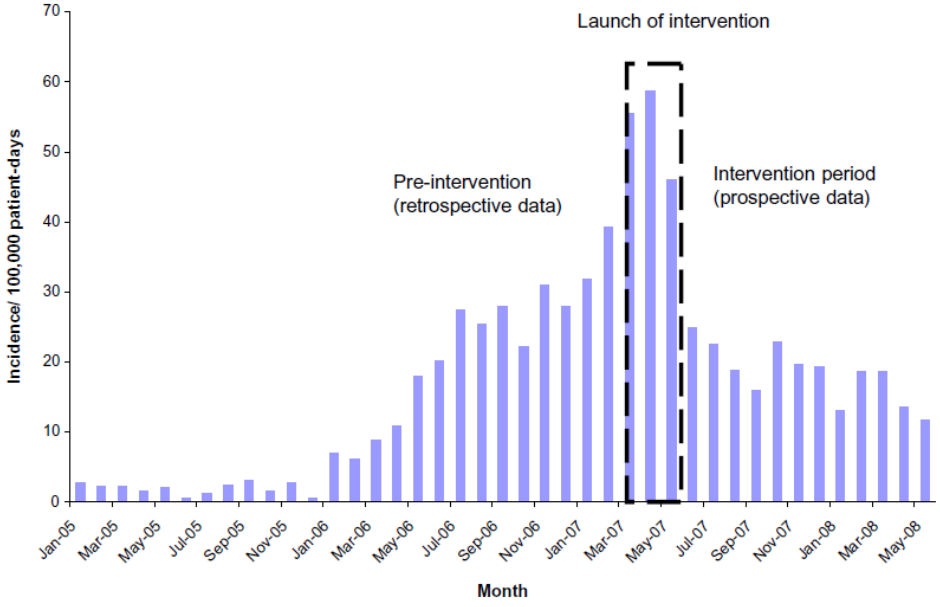


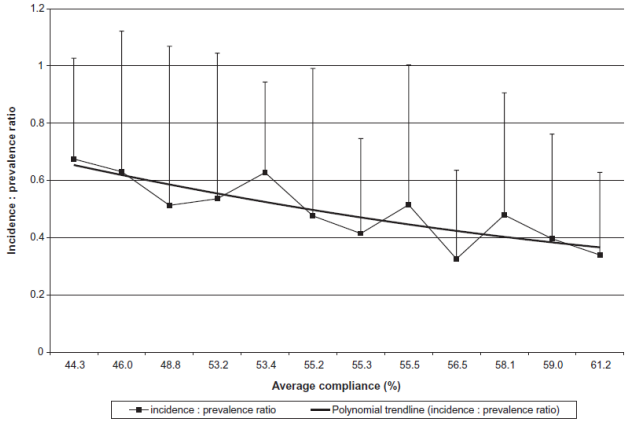
Figura 5: Prevalência de pacientes colonizados na unidade ao longo do tempo com diferentes taxas de adesão ao isolamento de contato. Foi considerada uma taxa fixa de adesão à higienização das mãos de 38%.



Eficácia : reduz a transmissão e infecção ?

Containment of a Country-wide Outbreak of Carbapenem-Resistant *Klebsiella pneumoniae* in Israeli Hospitals via a Nationally Implemented Intervention



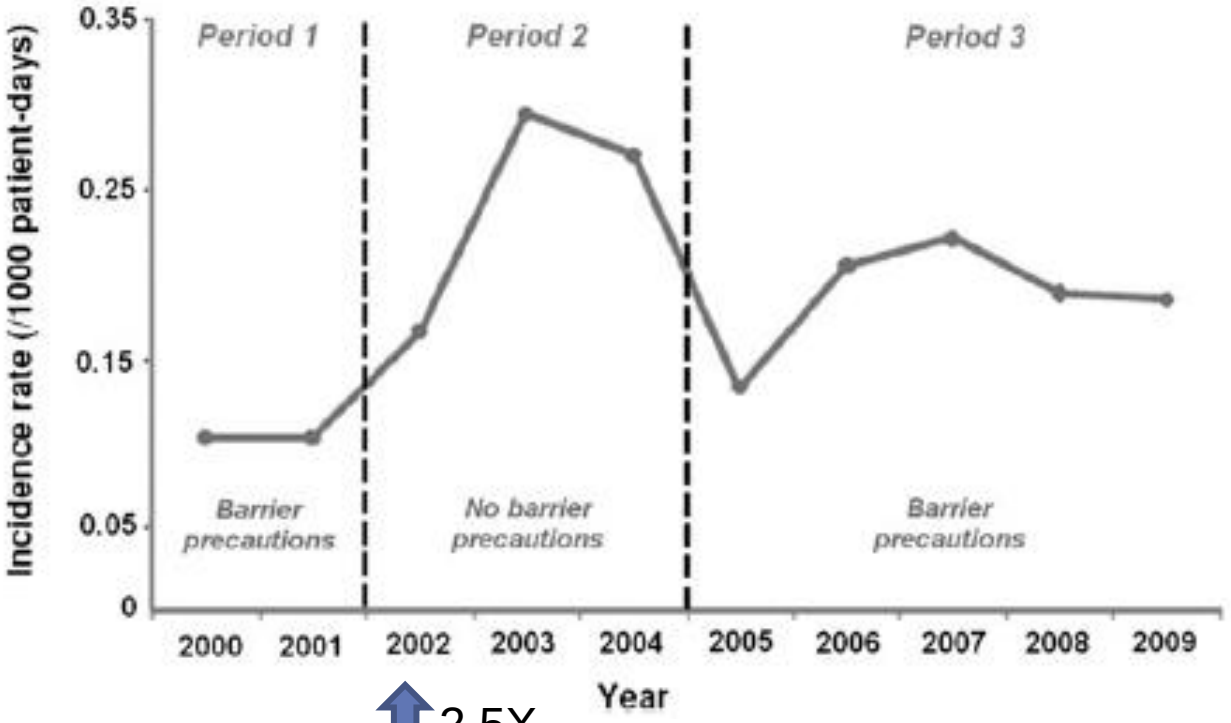


Clinical Infectious Diseases 2011;52(7):1–8

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,[a] Houssein Gbaguidi-Haore, PharmD, PhD,[a,b,c] Xavier Bertrand, PharmD, PhD,[a,b,c] Michelle Thouverez, PhD,[a,b,c] and Daniel Talon, PharmD, PhD[a,b,c]
Besançon, France



2,5X
p<0,001

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

	Univariate analysis		Multivariate analysis	
Variable	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

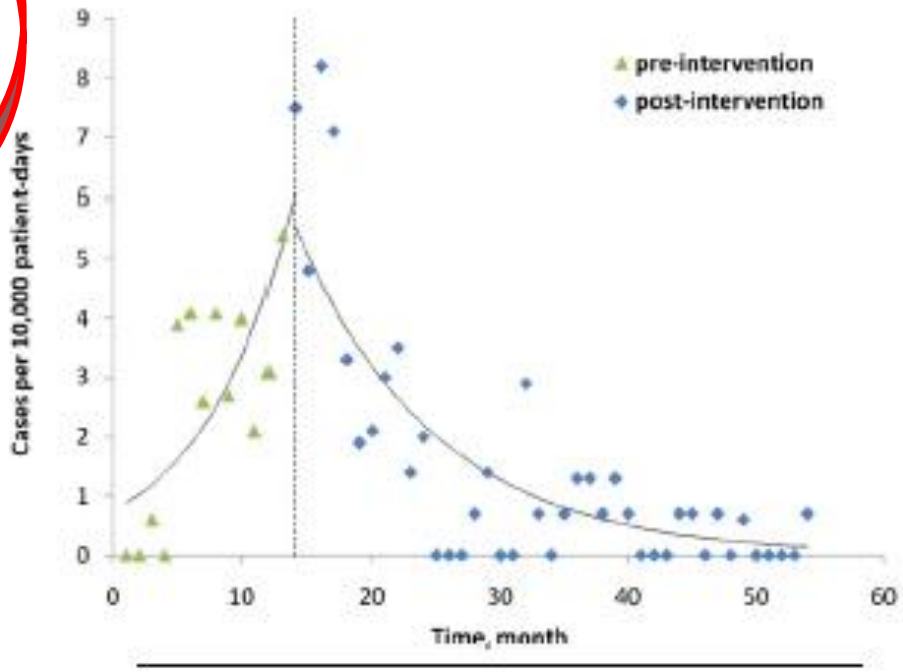
NOTE. RR estimates are reported for upper quartiles, using the lowest quartiles as the control group. CI, confidence interval; DDDs, defined daily doses.

An effective intervention to limit the spread of an epidemic carbapenem-resistant *Klebsiella pneumoniae* strain in an acute care setting: From theory to practice

Am J Infect Control 2011;39:671-7.

- Screening dos pacientes no mesmo quarto de um novo caso de CRKP e de pacientes de alto risco para colonização
- Intervenção: "Strict contact precaution", educação (escrita, verbal, feedback)

personnel. Consultant staff and assistant staff (ie, the "nondedicated" house staff that treated CRKP cases/carriers) were considered possible mediators of CRKP transmission, and thus their contact precautions had to be approved by the dedicated nurse before their entrance into the separate area. Detailed instructions for



TECHNICAL REPORT

Systematic review of the effectiveness of infection control measures to prevent the transmission of carbapenemase-producing Enterobacteriaceae through cross-border transfer of patients

www.ecdc.europa.eu

Table 2: Summary of components included in studies of multi-faceted interventions

Study reference (first author, year)	Active screening on admission to hospital	Active screening on admission to specific ward/unit	Pre-emptive isolation of patients on admission	Contact tracing	Active surveillance during the outbreak	Patient cohorting	Patient isolation	Nursing (or staff) cohorting	Dedicated nursing or other types of dedicated care by staff members	Bathing in anti-septic	Contact pre-caudions	Hand hygiene	Ward closure	Hospital closure	Patient record flagging	Other[2]	Further details
Borer 2011	✓	✓	✓	✓	✓	✓	✓	x	✓	x	✓	✓	x	x	✓	✓	
Chitnis 2012 [96] (Staged four-phase intervention)	✓	✓	x	x	✓	x	x	x	x	x	✓	✓	x	x	x	✓	Other infection control measures: urine and sputum surveillance.
	✓	✓	x	x	✓	✓	x	✓	x	x	✓	✓	x	x	x	✓	
	✓	✓	x	x	✓	✓	x	✓	✓	x	✓	✓	x	x	x	✓	
	✓	✓	x	x	✓	✓	x	✓	✓	x	✓	✓	x	x	x	✓	
Ciobotaro 2011 [97]	✓	✓	x	x	✓	✓	✓	x	✓	x	✓	✓	x	x	✓	✓	
Cohen 2011 [98] (Staged four-phase intervention)	x	x	x	x	x	x	✓	x	x	x	✓	x	x	x	x	x	Mar 2006: Single-room isolation and contact precautions
	x	x	x	✓	✓	✓	✓	✓	✓	x	✓	✓	x	x	✓	✓	Mar 2007: Cohorting of patients and staff; 'snow ball' active surveillance sampling[1]
	x	✓	x	✓	✓	✓	✓	✓	✓	x	✓	✓	x	x	✓	✓	Aug 2008: Weekly active surveillance of ICU
	x	✓	x	✓	✓	✓	✓	✓	✓	x	✓	✓	x	x	✓	✓	Mar 2009: Active surveillance of patients on admission to ER
Poulou 2012 [99] (Staged three-phase intervention)	x	x	x	x	x	x	x	x	x	x	✓	✓	x	x	✓	✓	Phase 1 (2009–)
	x	x	x	x	x	✓	✓	x	x	x	✓	✓	x	x	✓	✓	Phase 2 (Jan 2010–)
	x	x	x	x	x	✓	✓	✓	✓	x	✓	✓	x	x	✓	✓	Phase 3 (2011–)
Schwaber 2014 [50,100] and 2014 [100]	x	x	X	x	X	✓	✓	✓	✓	x	✓	✓	x	x	✓	✓	

Contact Precautions: More Is Not Necessarily Better

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

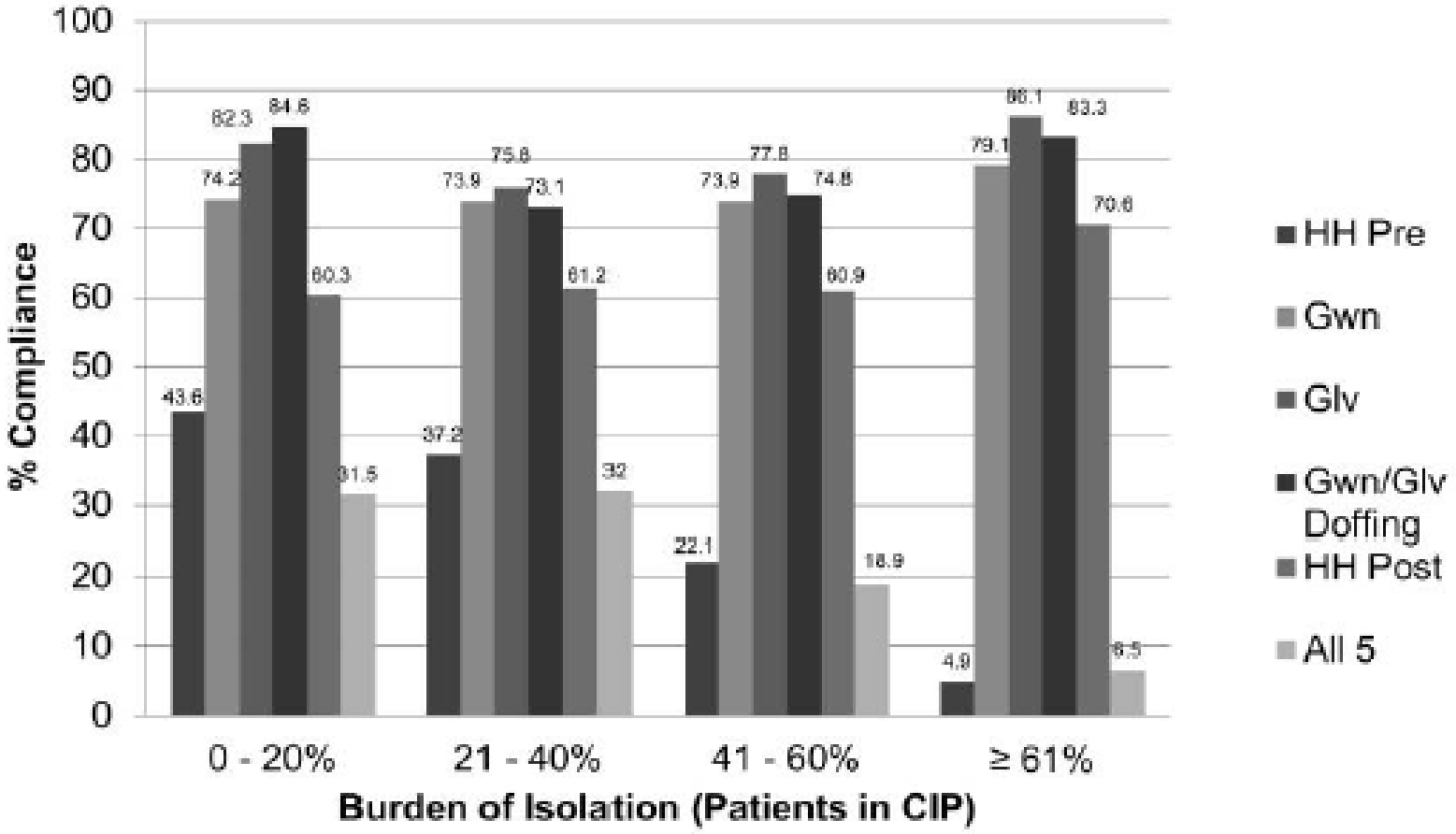
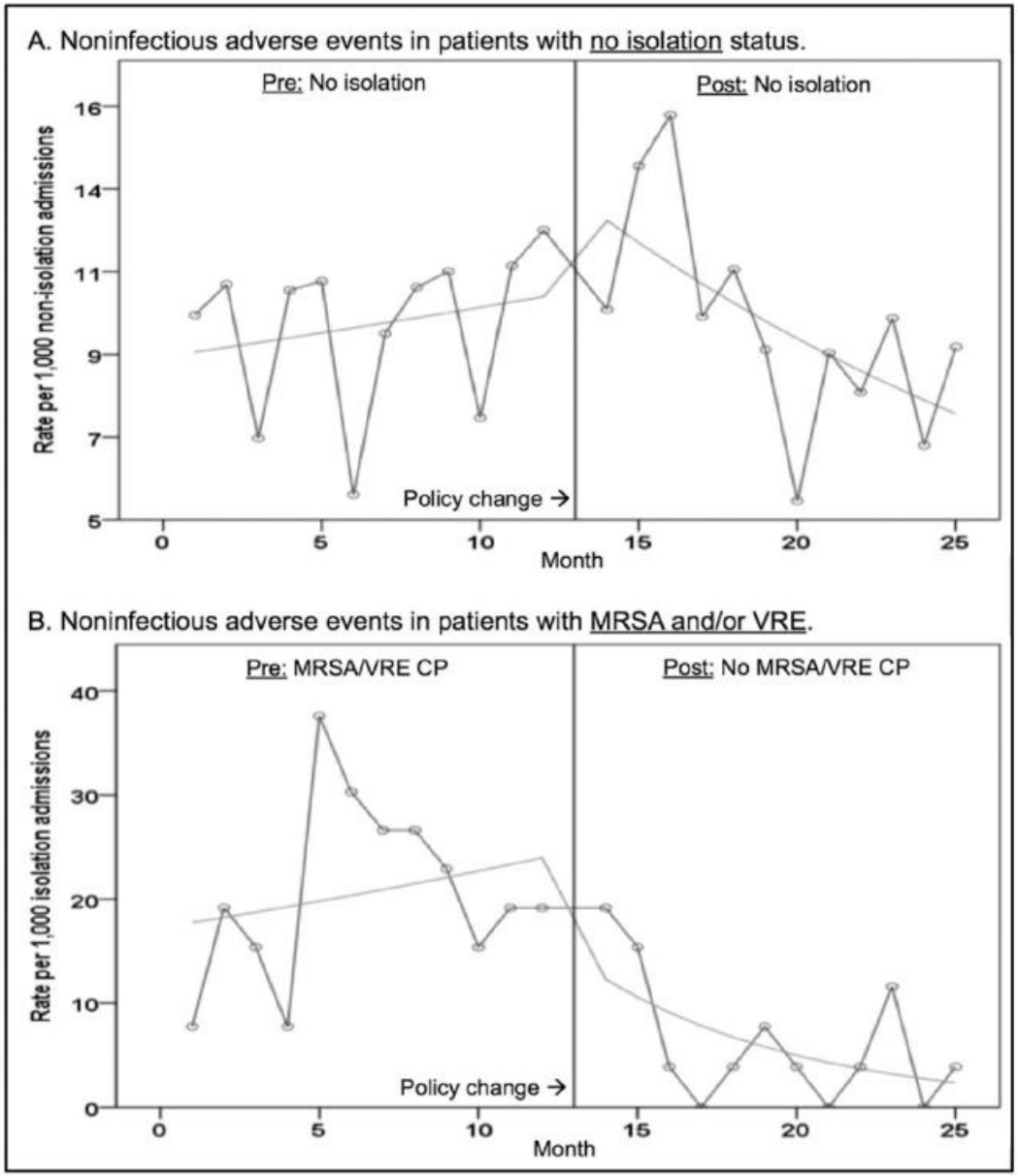


Table II
Summary of study methodology and outcomes

Study	Methodology	Psychometric tools	Main outcome	Time of assessment	Results
Catalano *et al.*[10]	Psychometric tools	Hamilton Depression Rating Scale (HAM-D), Hamilton Anxiety Rating Scale (HAM-A)	Psychological impact	At day 7 and day 14	HAM-D and HAM-A scores were higher for cases than controls ($P<0.0001$)
Cohen *et al.*[26]	Direct observation by a single worker not part of the healthcare team during morning rounds. Questionnaire	Pediatric Family Satisfaction Questionnaire (PFSQ)	Time spent in direct patient care. Quality of care	At 48 h	No difference in either direct patient care or quality of care
Evans *et al.*[1]	Direct observation by a healthcare worker. Questionnaire	16 item questionnaire	Time spent in direct patient care	2 h daily for 5 weeks	No. of encounters/h and contact time/h was higher for non-isolated than for isolated ($P<0.001$, and $P=0.0078$)
Gammon[27]	Multiple psychometric tools	Hospital Anxiety and Depression Scale (HADS), Health Illness Questionnaire (HIQ), Self-Esteem Scale (SES)	Psychological impact	At day 7	Mean Anxiety and Depression scores higher in isolated patients ($P<0.001$, and $P<0.001$). Mean self-esteem scores lower in isolated patients ($P<0.005$)
Gasink *et al.*[28]	Questionnaire	Consumer Assessment of Healthcare Providers and Systems (CAHPS)	Patient care satisfaction	At day 3	No difference in patient care satisfaction
Kennedy and Hamilton[31]	Multiple psychometric tools	Beck Depression Inventory (BDI), State Anxiety Inventory (STAI—Form), Profile of Mood States (POMS)	Psychological impact	In isolation for at least 2 weeks	Isolated patients with higher POMS Anger–Hostility scores
Klein *et al.*[32]	Direct observation by investigator	–	Incidence of nosocomial infection	For 1 h on days 1, 3 and 7	Isolation reduced nosocomial infection rates. Patient care was not compromised, and isolation was well-tolerated
Kirkland and Weinstein[5]	Direct observation (not specified by whom)	–	Frequency of patient encounters	35 observation periods lasting 1 h each, over 7 months	Patients in isolation: fewer room entries/h ($P=0.06$), contacts/h ($P=0.03$). No difference in duration of interaction ($P=0.6$)
Maunder *et al.*[34]	Interview of patients with and without SARS by mental health professionals and consultation–liaison psychiatrists	–	Psychological impact	4 weeks	Isolated patients reported fear, loneliness, anxiety, depression
Newton *et al.*[36]	Interview by infection control nurse	–	Psychological impact	During isolation	Mixed patient experiences during isolation
Rees *et al.*[37,42]	Psychometric tools	HADS	Psychological impact and patient satisfaction	During isolation	12/21 had depression, based on HADS. Satisfaction was related to information/education
Saint *et al.*[4]	Direct observation by study investigator	–	Time spent in direct patient care	On several days/month for 6 months, during morning rounds	Attending physicians spent less time examining patients in isolation (RR = 0.49, $P<0.001$)
Stelfox *et al.*[39]	Medical chart review	–	Patient adverse events, described as injuries caused by medical management	During isolation	Cases had fewer vital sign recordings ($P=0.02$), less nursing narrative ($P<0.001$) and physician notes ($P<0.001$) in the chart, and were twice as likely to experience adverse events (20 vs 3/1000 days, $P<0.001$). Cases had more complaints and were less satisfied with their care (30 vs 8, $P<0.001$)
Tarzi *et al.*[40]	Multiple psychometric tools	Abbreviated Mental Test Score (AMTS), Barthel Index (BI), Geriatric Depression Scale (GDS), POMS	Psychological impact	–	GDS scores were higher in isolated patients ($P<0.01$)
Wilkins *et al.*[9]	Psychometric tools	Crown–Crisp Experiential Index (CCEI)	Psychological impact	On admission	Admission scores for hysteria, anxiety and total scores were increased for patients in isolation

Published in final edited form as:
Infect Control Hosp Epidemiol. 2018 July ; 39(7): 788–796. doi:10.1017/ice.2018.93.

Noninfectious Hospital Adverse Events Decline After Elimination of Contact Precautions for MRSA and VRE



19%

72%

Infection control: the case for horizontal rather than vertical interventional programs

Richard P. Wenzel *, Michael B. Edmond

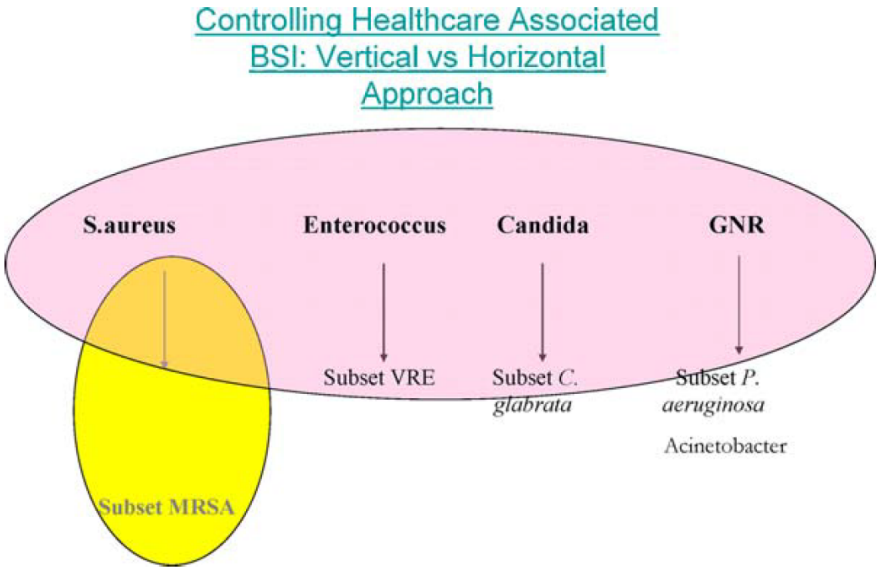


Figure 2. A conceptual image of a vertical program such as one focusing on *Staphylococcus aureus* or MRSA vs. one focusing on all organisms causing healthcare-associated infections including all *S. aureus*, all enterococci, all *Candida* species, and all Gram-negative rods. The yellow area focusing on MRSA represents a vertical program. The pink area encompassing all pathogens represents a horizontal program. (MRSA = methicillin-resistant *S. aureus*; VRE = vancomycin-resistant enterococci; GNR = Gram-negative rods.).

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*

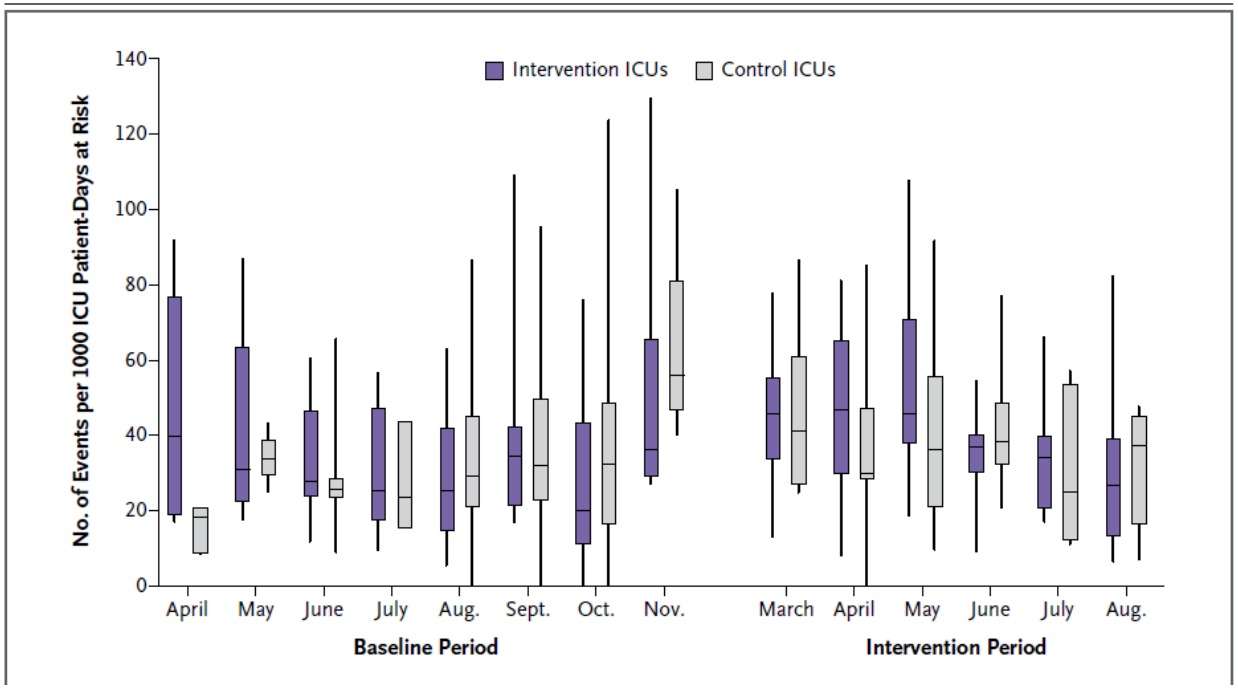
N Engl J Med 2011;364:1407-18.

- 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	-



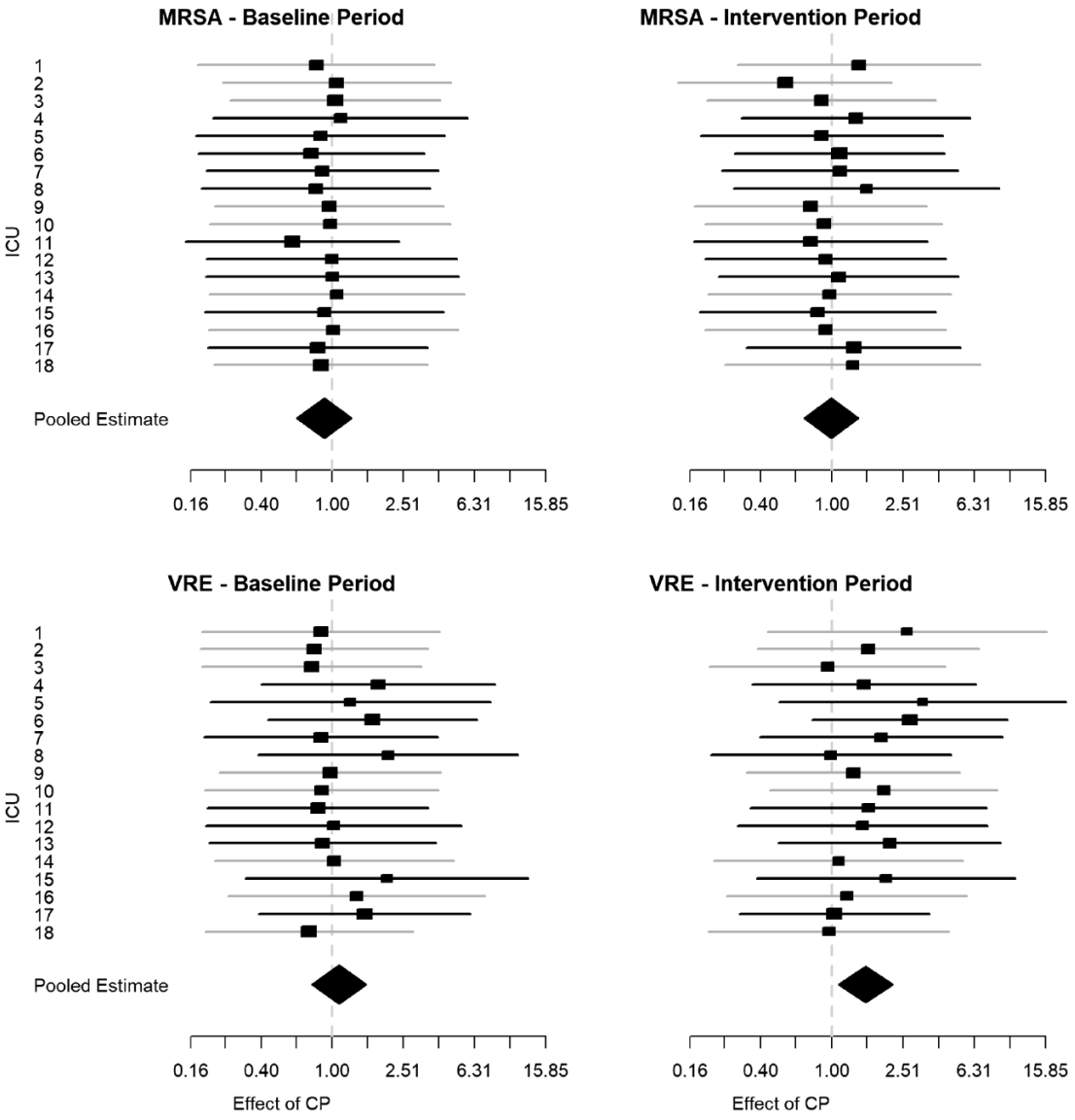
A incidência de colonização/infecção por MRSA ou VRE não esteve associada a porcentagem de pacientes colocados em isolamento de contato (p=0,26)

Clinical Infectious Diseases
SUPPLEMENT ARTICLE

Effectiveness of Contact Precautions to Prevent Transmission of Methicillin-Resistant *Staphylococcus aureus* and Vancomycin-Resistant Enterococci in Intensive Care Units

Karim Khader,[1,2] Alun Thomas,[1] W. Charles Huskins,[3] Vanessa Stevens,[1,2] Lindsay T. Keegan,[1,2] Lindsay Visnovsky,[1,2] and Matthew H. Samore[1,2]; for the Centers for Disease Control and Prevention (CDC) Prevention Epicenter Program and for the CDC Modeling Infectious Diseases in Healthcare Program

[1]Informatics, Decision-Enhancement, and Analytical Sciences Center of Innovation, VA Salt Lake City Health Care System, Salt Lake City, Utah, USA; [2]Division of Epidemiology, University of Utah School of Medicine, Salt Lake City, Utah, USA; and [3]Division of Pediatric Infectious Diseases, Mayo Clinic, Rochester, Minnesota, USA



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

[1] 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							
	Intervention			Control				
	No. of Acquisitions	Patient-Days at Risk	Mean Rate (95% CI)[a]	No. of 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	8684.0	21.35 (17.57 to 25.94)	176	9804.5	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)	.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[d]			−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[d]			−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							
	Intervention			Control				
	No. of Events	No. of Observations[a]	Mean (95% CI), %[b]	No. of Events	No. of Observations[a]	Mean (95% CI), %[b]	Mean Difference (95% CI), %[c]	*P* Value[d]
Hand-hygiene 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 visits	3213	756.5	4.28 (3.95 to 4.64)	3775	716.5	5.24 (4.46 to 6.16)[e]	−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							
	Intervention			Control				
	No. of Acquisitions	Patient-Days at Risk[a]	Mean Rate (95% CI)[b]	No. of Acquisitions	Patient-Days at Risk[a]	Mean Rate (95% CI)[b]	Difference (95% CI)[c]	*P* Value[d]
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[e]			−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[e]			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[e]			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*

JAMA October 8, 2014 Volume 312, Number 14

Opinion

VIEWPOINT

The Importance of Contact Precautions for Endemic Methicillin-Resistant *Staphylococcus aureus* and Vancomycin-Resistant Enterococci

JAMA Published online February 12, 2018

American Journal of Infection Control ■■ (2017) ■■-■■

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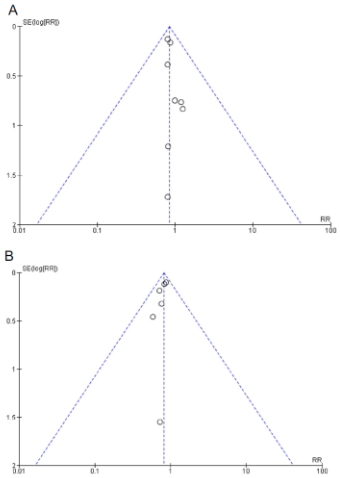
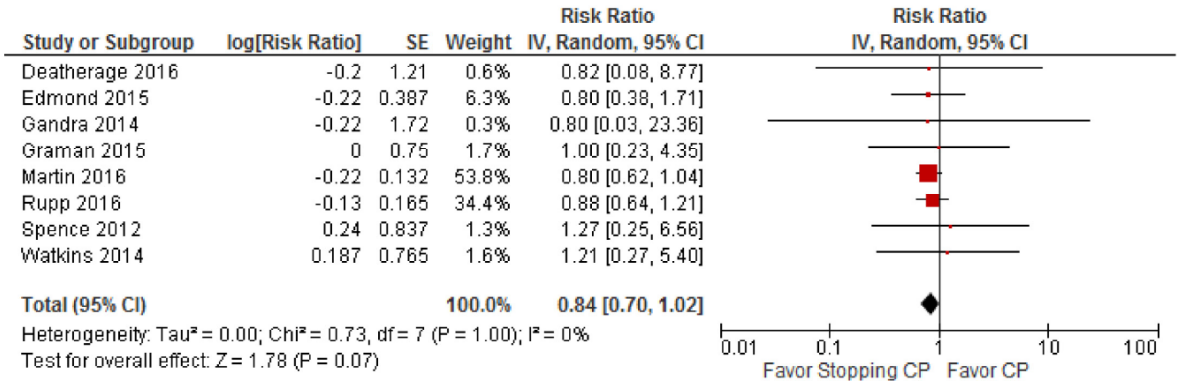
Major Article

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]



trating the association between discontinuing contact precautions and (A) methicillin-resistant *Staphylococcus aureus* or (B) vancomycin-ins. *RR*, risk ratio; *SE*, SEM.



B

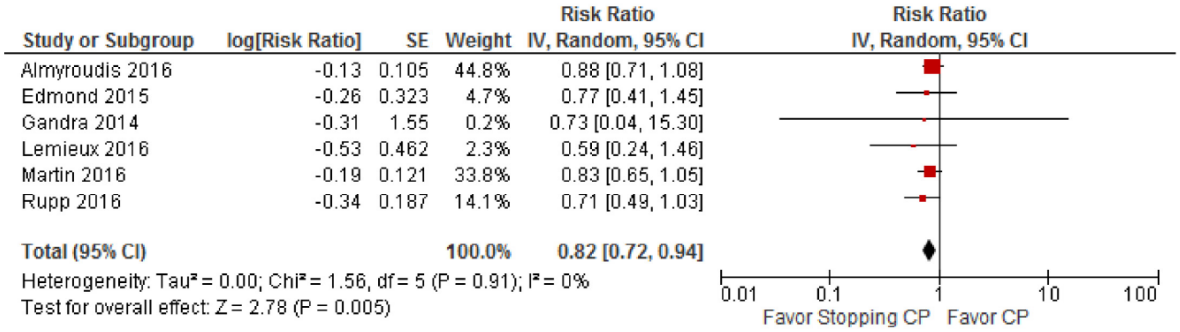


Fig 2. Forest plots of the associations between discontinuing CPs and (A) methicillin-resistant *Staphylococcus aureus* or (B) vancomycin-resistant enterococci infections. *CI*, confidence interval; *CP*, contact precautions; *IV*, inverse variance weighting; *SE*, SEM.

Impact of Discontinuing Contact Precautions for Methicillin-Resistant *Staphylococcus aureus* and Vancomycin-Resistant *Enterococcus*: An Interrupted Time Series Analysis

Infect Control Hosp Epidemiol 2018;1–7

Gonzalo Bearman, MD, MPH;[1,2] Salma Abbas, MBBS;[1] Nadia Masroor, MPH;[2] Kakotan Sanogo, MS;[2] Ginger Vanhoozer, [illegible][1,2] Kaila Cooper, MSN;[2] Michelle Doll, MD, MPH;[1,2] Michael P. Stevens, MD, MPH;[1,2] Michael B. Edmond, MD, MPH

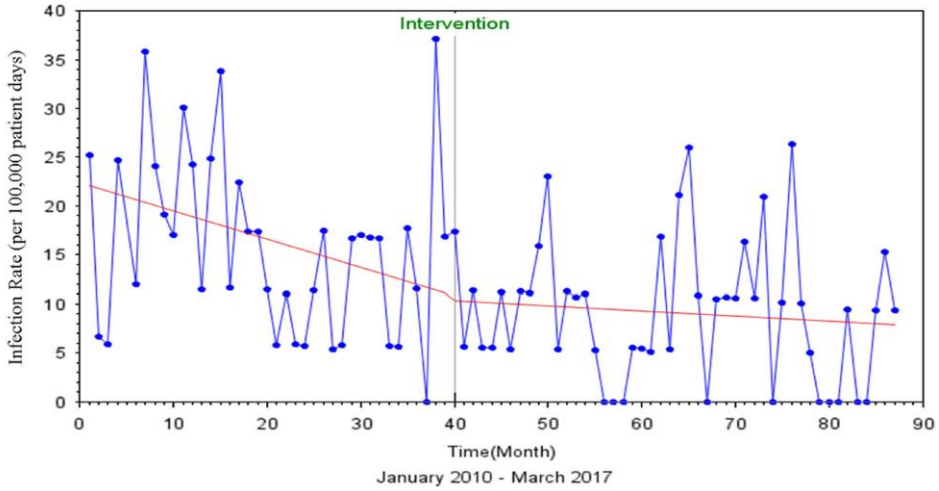
TABLE 1. Infection Prevention Process of Care Measures

Process of Care Measure	Date of Implementation	% Compliance in ICUs (Observations in Compliance/ Total Observations)	% Compliance Hospital-wide (Observations in Compliance/ Total Observations)
Contact precautions[a]	Since inception of facility	97 (1,607/1,661)	94 (2,525/2,688)
Daily CHG bathing in ICUs[b]	2007	74 (20,481/27,867)	N/A
Central-line checklist[b]	2008	92 (1,700/1,838)	N/A
Bare below the elbows[a]	2009	66 (15,750/23,797)	63 (26,926/42,507)
Hand hygiene monitoring[a]	2010	92 (22,087/32,886)	89 (39,490/44,298)
Daily urinary catheter reviews[c]	2011	96 (721/752)	N/A
Disinfecting caps for IV lines[c]	2016	95 (2,868/3,029)	91 (8,852/9,728)

NOTE. ICU, intensive care unit; CHG, chlorhexidine gluconate; N/A, not available.

nitors, recorded using iScrub app on iPod.

on preventionist and bedside nurses.



Interrupted Time Series Analysis of MRSA and VRE HAIs, Pre and Post Discontinuation of Contact Precautions

TABLE 2. The 2-Sample Z Test Comparing MRSA, VRE, and All Device-Associated Infection Rates Before and After Discontinuation of Contact Precautions

Variable	Before Discontinuation of CP (January 2010– March 2013	After Discontinuation of CP (April 2013– March 2017)	*P* Value
MRSA device associated infection rate per 100,000 patient days	5.19	2.88	.026
VRE device associated infection rate per 100,000 patient days	9.82	5.62	.003
Cumulative MRSA and VRE device associated infection rate per 100,000 patient days	15.01	8.50	<.001
All pathogen device associated infection rate per 1,000 patient days	1.20	0.89	<.001

NOTE. CP, contact precautions; MRSA, methicillin-resistant *Staphylococcus aureus*; VRE, vancomycin-resistant *Enterococcus*.

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

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

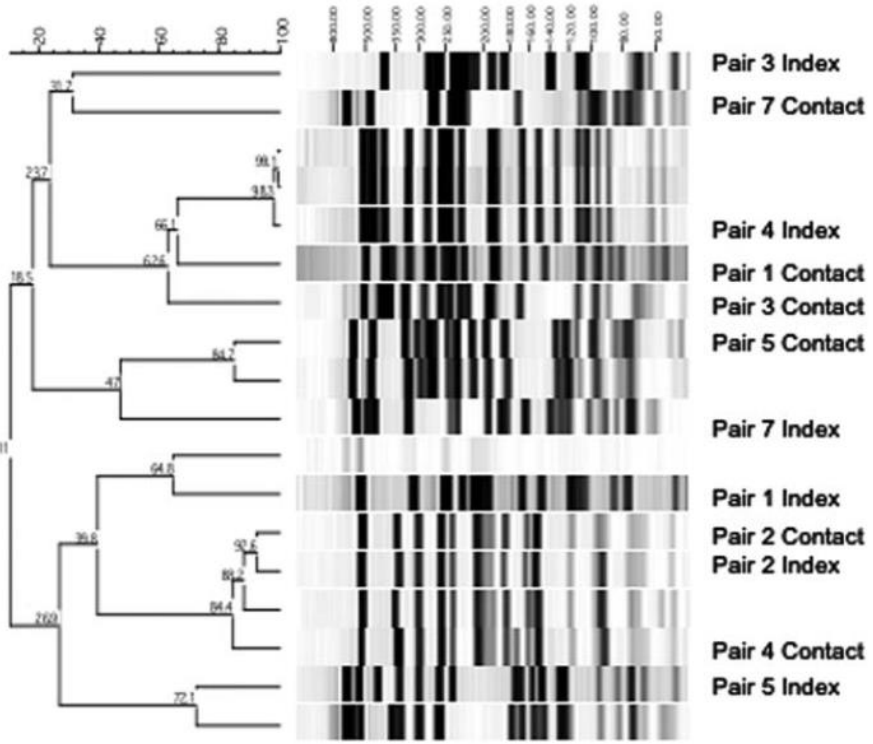
- 855 leitos
- Coorte de Junho de 1999 a Abril de 2011

- 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

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*

Lancet Infect Dis 2019; 19: 1069–79

	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)
Rectal carriage of ESBL-producing Enterobacteriaceae in wardmates					
All wardmates: per-protocol population, crude	322/4174 (8%)	256/2919 (9%)	..	1·1% (–0·3 to 2·4)	1·14 (0·97 to 1·33)
All wardmates: per-protocol population, adjusted†	..	..	..	1·0% (–0·3 to 2·3)	1·16 (0·99 to 1·35)
All wardmates: intention-to-treat population, crude	377/4790 (8%)	400/4578 (9%)	..	0·9% (–0·3 to 2·0)	1·11 (0·97 to 1·27)
All wardmates: intention-to-treat population, adjusted†	..	..	..	0·9% (–0·2 to 2·0)	1·14 (1·00 to 1·30)
Wardmates of index patients with unprotected ward stay: per-protocol population	117/1448 (8%)	94/1206 (8%)	..	–0·1% (–2·1 to 2·0)	0·99 (0·76 to 1·29)
Wardmates of index patients with unprotected ward stay: intention-to-treat population	130/1665 (8%)	173/2046 (9%)	..	0·6% (–1·1 to 2·4)	1·08 (0·87 to 1·35)
Length of hospital stay in wardmates (days)					
Per-protocol population	11 (6–21)	11 (6–22)	..	0·3 (–0·8 to 1·5)	1·02 (0·96 to 1·08)
Intention-to-treat population	11 (6–22)	11 (5–22)	..	0·1 (–0·9 to 1·1)	1·01 (0·96 to 1·06)
30-day mortality in wardmates					
Per-protocol population‡	155/4133 (4%)	123/2890 (4%)	..	0·5% (–0·4 to 1·4)	1·14 (0·90 to 1·43)
Intention-to-treat population§	174/4742 (4%)	180/4525 (4%)	..	0·3% (–0·5 to 1·1)	1·08 (0·88 to 1·33)

Data are n/N (%) or median (IQR), unless otherwise stated. ESBL=extended-spectrum β-lactamase. *Analyses were adjusted for unprotected ward days of the index patient. †Analyses were adjusted for unprotected exposure days to the index patient. ‡30-day mortality data were missing for 70 wardmates. §30-day mortality data were missing for 101 wardmates.

Table 3: Effect of isolation strategy on patient-level outcomes

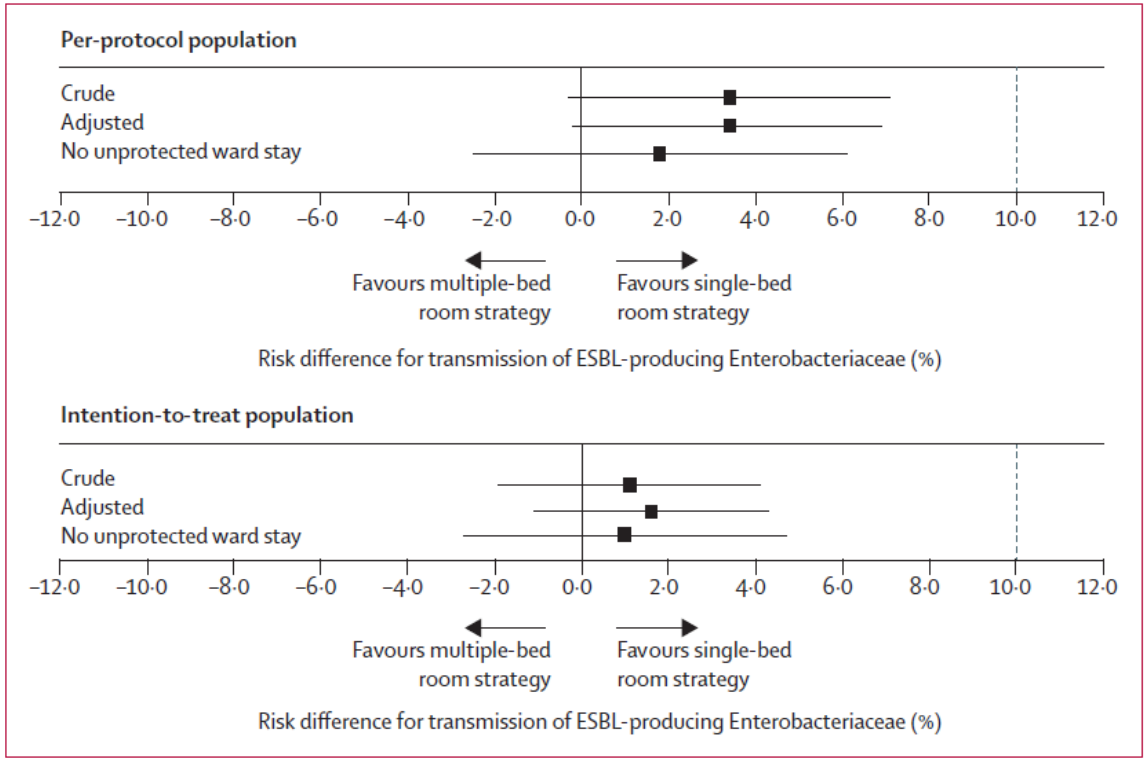
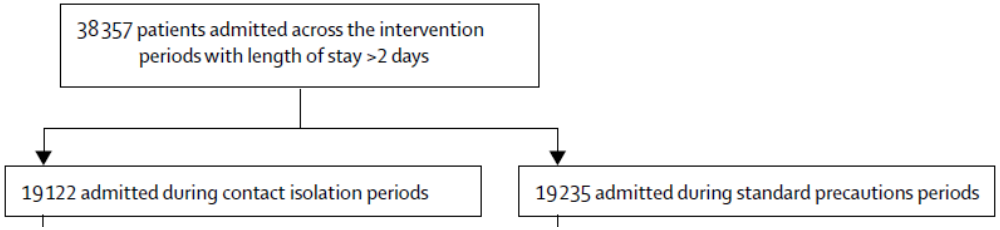


Figure 2: Non-inferiority plots for the primary outcome

Contact isolation versus standard precautions to decrease acquisition of extended-spectrum β-lactamase-producing Enterobacterales in non-critical care wards: a cluster-randomised crossover trial

Lancet Infect Dis 2020; 20: 575–84



	Contact isolation (n=5706)	Standard precautions (n=5662)	Unadjusted estimate* (95% CI)	p value
All ESBL-E carriers				
Total number	1036 (18·2%)	1065 (18·8%)	..	..
Positive on admission	581 (56·1%)	601 (56·4%)	..	..
Admission prevalence per 100 cases†	12·0 (11·1–13·0)	12·4 (11·5–13·4)	0·96 (0·87–1·08)	0·5506
Ward-acquired cases of ESBL-E	368	369	..	..
Incidence of ward-acquired ESBL-E cases per 100 cases	6·5 (5·8–7·1)	6·5 (5·9–7·2)	0·99 (0·86–1·14)	0·8833
Incidence density of ward-acquired ESBL-E cases per 1000 patient-days at risk‡	6·0 (5·4–6·7)	6·1 (5·5–6·7)	1·00 (0·90–1·11)	0·9710
Incidence density of ward-acquired ESBL-E cases per 1000 patient days	4·0 (3·6–4·4)	3·9 (3·5–4·4)	1·01 (0·91–1·12)	0·8651
ESBL-E infections				
Ward-acquired ESBL-E infections	15	25	..	..
Incidence of ward-acquired ESBL-E infections per 100 cases	0·26 (0·15–0·44)	0·44 (0·30–0·65)	0·60 (0·32–1·13)	0·1078
Incidence density of ward-acquired ESBL-E infections per 1000 patient days	0·16 (0·09–0·27)	0·27 (0·17–0·39)	0·61 (0·32–1·12)	0·1288

Quais são os agentes epidemiologicamente importantes na minha instituição?

Qual a adesão à higienização das mãos na minha instituição?

Leitos únicos? Enfermaria?

Quantos dos MR que eu tenho são admissionais e quantos são por transmissão cruzada no meu serviço?

INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY FEBRUARY 2018, VOL. 39, NO. 2

SHEA EXPERT GUIDANCE

Duration of Contact Precautions for Acute-Care Settings

David B. Banach, MD, MPH;[1,a] Gonzalo Bearman, MD, MPH;[2,a] Marsha Barnden, RNC, MSN, CIC;[3] Jennifer A. Hanrahan, DO, MSc;[4] Surbhi Leekha, MBBS, MPH;[5] Daniel J. Morgan, MD, MS;[5] Rekha Murthy, MD;[6] L. Silvia Munoz-Price, MD, PhD;[7] Kaede V. Sullivan, MD, MSc;[8] Kyle J. Popovich, MD, MS;[9] Timothy L. Wiemken, PhD[10]

Contact precaution Barbie

- Tempo
- ATB
- Número de culturas de vigilância
- Sítio e metodologia
- Situação epidemiológica

Discontinuation of Contact Precautions for Methicillin-Resistant *Staphylococcus aureus*: A Randomized Controlled Trial Comparing Passive and Active Screening With Culture and Polymerase Chain Reaction

Clinical Infectious Diseases 2013;57(2):176–84

Table 3. First Polymerase Chain Reaction Test Performance Compared to 3 Sequential Chromogenic Agar Cultures in Intervention Arm Population

Study Population	Sensitivity % (95% CI)	Specificity % (95% CI)	PPV % (95% CI)	NPV % (95% CI)
All subjects, series of 3 swabs completed (n = 191)	93.9 (85.4–97.6)	92.0 (85.9–95.6)	86.1 (75.9–93.1)	96.6 (91.6–99.1)

Infect Control Hosp Epidemiol. 2010 May;31(5):541-3. doi: 10.1086/652455.

Discontinuation of contact precautions for patients no longer colonized with methicillin-resistant Staphylococcus aureus.

- Sem culturas positivas para MRSA nos últimos 6 meses
- Narina, axila, períneo e ferida
- 21% apenas com 3 sets negativos consecutivos

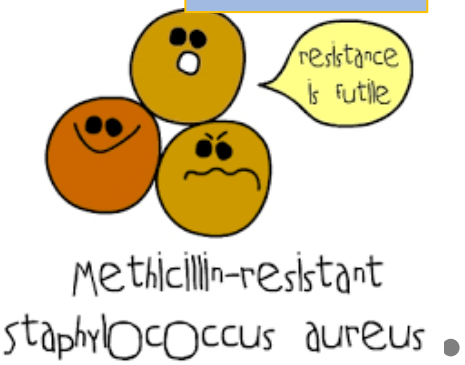
Tempo
3 culturas
4 sitios

Clinical, patient experience and cost impacts of performing active surveillance on known methicillin-resistant *Staphylococcus aureus* positive patients admitted to medical-surgical units

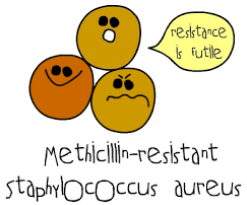
American Journal of Infection Control 42 (2014) 1039-43

- MRSA isolado há > 1 ano e sem uso de ATB
- Narina
- 80% com 2 sets negativos consecutivos

Tempo
2 culturas
ATB
1 sitio



- Colonização persistente, intermitente, rara
- Mediana de tempo de colonização: 7-9 meses



Marschall J, Mühlemann K. Duration of methicillin-resistant *Staphylococcus aureus* carriage, according to risk factors for acquisition. *Infect Control Hosp Epidemiol* 2006;27:1206–1212.

Scanvic A, Denic L, Gaillon S, Giry P, Andremont A, Lucet JC. Duration of colonization by methicillin-resistant *Staphylococcus aureus* after hospital discharge and risk factors for prolonged carriage. *Clin Infect Dis* 2001;32:1393–1398.

- Carreadores persistentes >1-3 anos...

Fatores de risco: Lesão de pele, idade avançada, Colonização de membros da família, dispositivos invasivos, dependência, internação previa em UTI, internação longa em hospital, casa de apoio, colonização em mais de um sítio.

A maior parte dos hospitais espera 3 meses após a última cultura positiva

Sugestão: 3 culturas consecutivas negativas semanais.

Narina é o sítio mais sensível.

Screenning em outros sítios aumenta em 33% a detecção.

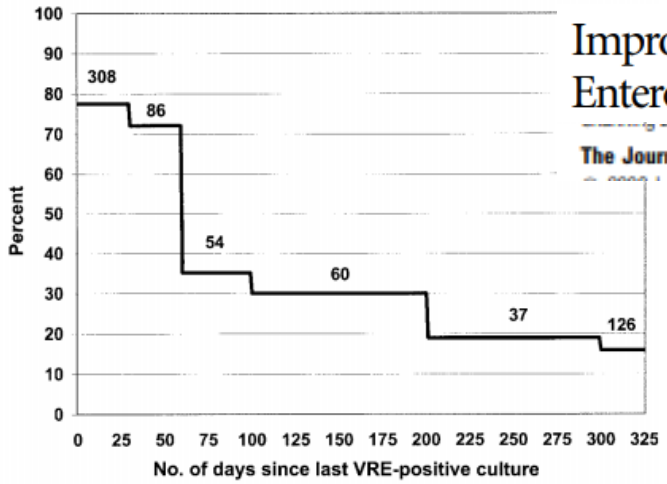
Enterococcus resistente a vancomicina

- Guideline anterior: 3 culturas consecutivas semanais negativas, sem secreção respiratória, drenos, surto.

  Recolonização em 24%... *Clin Infect Dis* 2001;33:1654–1660.

  Recolonização em 62% se exposto a antibióticos... *Liver Transpl* 2001;7:27–31.

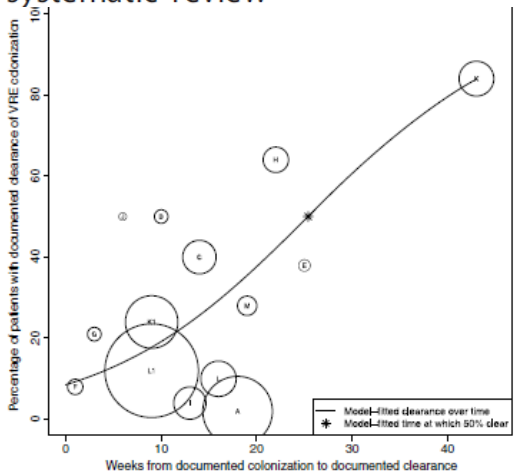
- Duração da colonização:



Improving the Assessment of Vancomycin-Resistant Enterococci by Routine Screening

The Journal of Infectious Diseases 2007;195:339–46

Natural history of colonization with methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin-resistant *Enterococcus* (VRE): a systematic review



50% deixam de estar colonizados com 25 semanas de colonização

Shenoy *et al. BMC Infectious Diseases* 2014, **14**:177

- Fatores de risco para colonização persistente: uso de antibióticos, idade, imunossupressão.

High Rate of False-Negative Results of the Rectal Swab Culture Method in Detection of Gastrointestinal Colonization with Vancomycin-Resistant Enterococci

Clinical Infectious Diseases 2002;34:167–72

Table 3. Sensitivity of the rectal swab culture method for the detection of vancomycin-resistant *Enterococcus faecium* (VRE) at increasing stool densities.

VRE stool density, $\log_{10}$ cfu/g of stool	Rectal swab culture			Skin culture	
	No. of samples	VRE not detected, no.	Sensitivity (95% CI)	No. of samples	VRE detected, no. (%)
≥2.5	26	11	58 (37–77)	28	15 (54)
≥3.5	19	4	79 (54–94)	20	15 (75)
≥4.5	18	3	83 (56–96)	18	14 (78)
≥5.5	15	1	93 (68–100)	16	13 (81)
≥6.5	13	1	92 (64–100)	15	12 (80)
≥7.5	6	0	100 (54–100)	7	6 (86)

58% de sensibilidade

Vancomycin-Resistant Enterococci (VRE)

Recommendations.

1. If a hospital uses CP when caring for patients colonized or infected with VRE, we recommend establishing a policy for discontinuation of CP for VRE.
2. We recommend that following treatment of VRE infection, the hospital use negative stool or rectal swab cultures to guide decisions about the discontinuation of CP. The optimal number of negative cultures needed is unclear, though 1–3 negative cultures, each at least 1 week apart if multiple cultures are obtained, are often used.
3. Hospitals should consider extending CP prior to assessing for CP discontinuation in VRE infected patients who are (1) highly immunosuppressed, (2) receiving broad spectrum systemic antimicrobial therapy without VRE activity, (3) receiving care in protected environments (eg, burn units, bone marrow transplant units, or settings with neutropenic patients), or (4) receiving care at institutions with high rates of VRE infection.
4. Outside an outbreak setting and if facility endemic rates of VRE infection are low, the hospital may consider the alternative approach of using CP for patients with active VRE infection for the duration of the index admission and discontinuation of CP on hospital discharge. In adopting this approach, hospitals should monitor VRE infection rates, maximize and consider monitoring use of standard precautions, and minimize patient cohorting to avoid intrafacility transmission. If institutional VRE infection rates increase, the hospital should transition to a screening-culture–based approach for discontinuation of CP.

1-3 culturas consecutivas negativas semanais.

Estender em imunossuprimidos, uso de ATB, unidades especificas, alta PC de VRE.

Isolar infecção
X
Colonização.

Enterobactérias MR

ongoing transmission of the MDRO within the facility." The CDC CRE Tool Kit 2015 update states that "Currently, there is not enough evidence to make a firm recommendation about when to discontinue use of CP for infected or colonized patients; however, CRE colonization can be prolonged (>6 months). If surveillance cultures are used to decide if a patient remains colonized, >1 culture should be collected to improve sensitivity. Regardless of whether surveillance cultures are performed, the presence of risk factors for ongoing carriage or ongoing CRE exposure should be considered in the decision about discontinuing CP."[75]

ESBL

Surveillance of extended-spectrum β-lactamase-producing bacteria and routine use of contact isolation: experience from a three-year period

6,8% deixaram de ser colonizados

Journal of Hospital Infection (2007) 66, 46–51

Screening for Extended-Spectrum β-Lactamase–Producing Enterobacteriaceae among High-Risk Patients and Rates of Subsequent Bacteremia

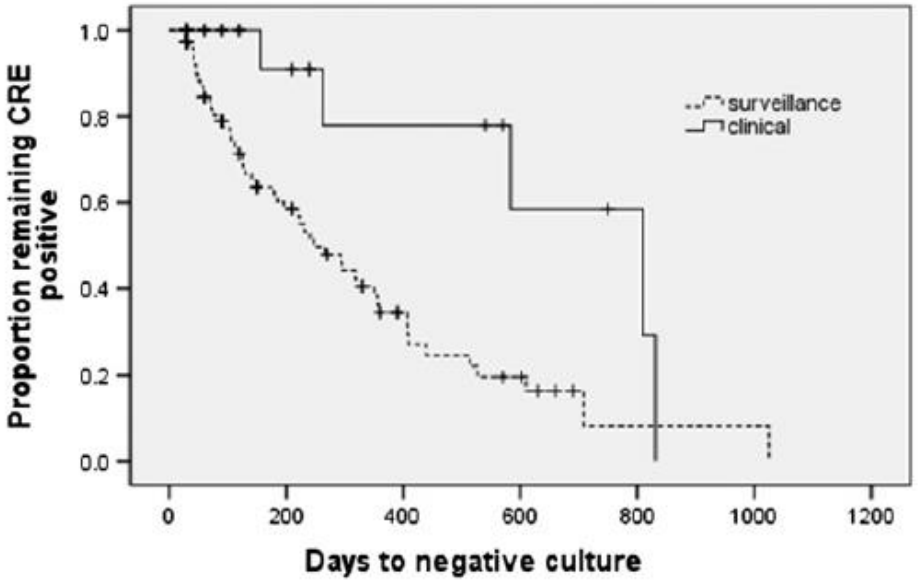
74% dos pacientes foram readmitidos

- No primeiro ano: 37,5% colonizados
- Após 1 ano: 14,3%

Clinical Infectious Diseases 2007; 45:846–52

Duration of carriage of carbapenem-resistant Enterobacteriaceae following hospital discharge

American Journal of Infection Control 41 (2013) 190-4



3 meses: 78% positivos

6 meses: 65% positivos

9 meses: 51% positivos

1 ano: 39% positivos

Média de tempo de colonização
641 dias – Culturas clínicas
337 – Swabs retais

Anatomic Sites of Patient Colonization and Environmental Contamination with *Klebsiella pneumoniae* Carbapenemase–Producing Enterobacteriaceae at Long-Term Acute Care Hospitals

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY JANUARY 2013, VOL. 34, NO. 1

TABLE 2. Sensitivity of Culture of Different Anatomic Sites for *Klebsiella pneumoniae* Carbapenemase–Producing Enterobacteriaceae

	No. of positive cultures (N = 24)	Sensitivity, % (95% CI)
Skin sites		
Inguinal	19	79 (58–93)
Axillary	18	75 (53–90)
Upper back	6	25 (10–47)
Antecubital fossae	6	25 (10–47)
Nonskin sites		
Rectal[a]	21	88 (68–97)
Urine (N = 19)[b]	10	53 (29–76)
Oropharyngeal/tracheal secretions	10	42 (22–63)
Combined sites		
Rectal and inguinal	24	100 (86–100)
Rectal and axillary	23	96 (79–100)
Axillary and inguinal	22	92 (73–99)

The Inguinal Skin: An Important Site of Colonization with Extended-Spectrum β-Lactamase–Producing Enterobacteriaceae

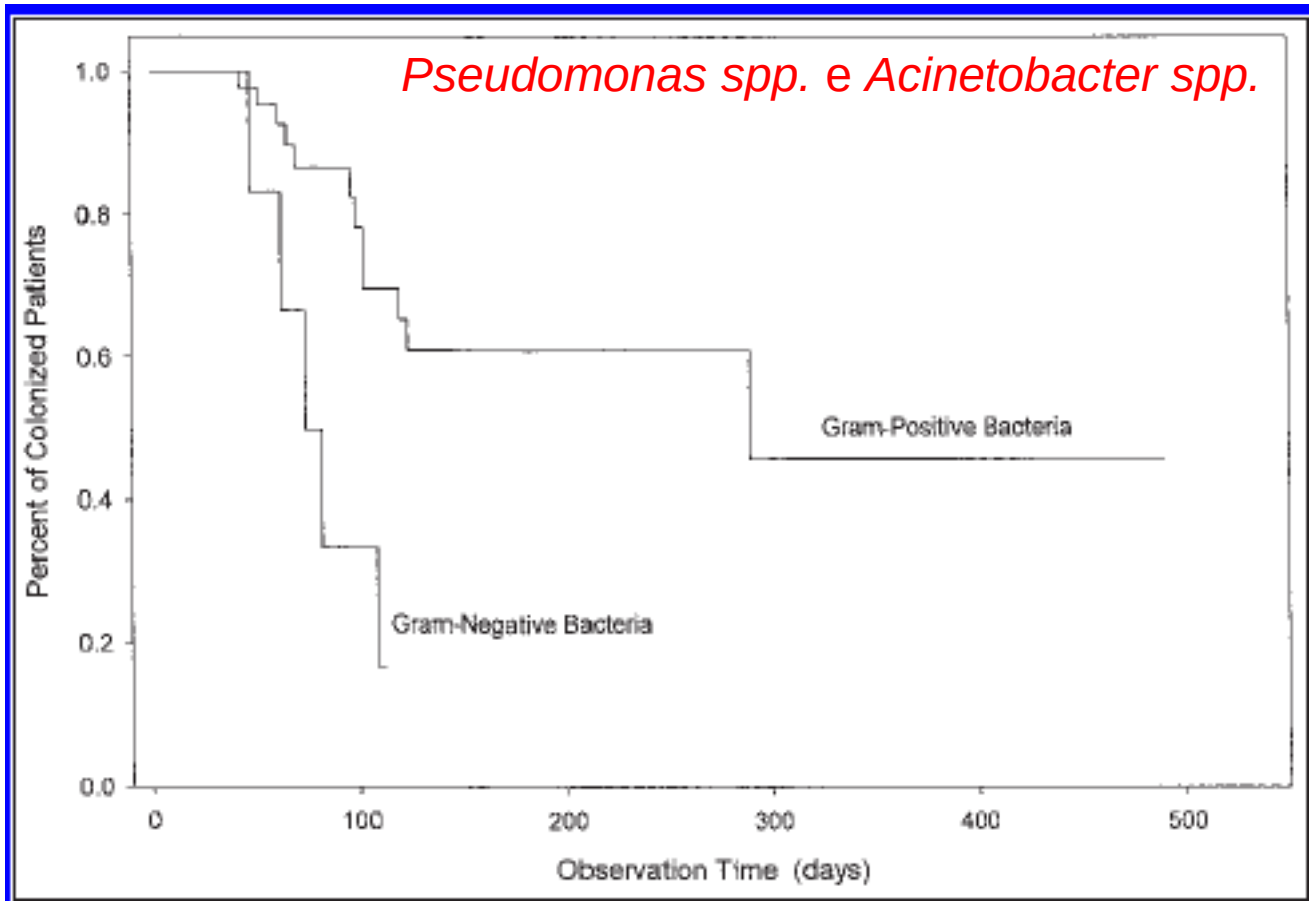
TABLE 1. Results from Screening Perianal, Inguinal, and Urine Samples for Extended-Spectrum β-Lactamase (ESBL)–Producing Enterobacteriaceae

Site and colonization status	No. (%) of patients
Perianal, positive ($n = 60$)	42 (70)
Inguinal, positive ($n = 57$)	36 (63)
Urine, positive ($n = 65$)	47 (72)
Inguinal, positive; perianal, negative ($n = 56$)	7 (12)
Inguinal, positive; urine, negative ($n = 51$)	10 (20)
Inguinal, negative; urine, positive ($n = 51$)	13 (25)

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY APRIL 2010, VOL. 31, NO. 4

3,7% swab oral

Natural History of Colonization With Vancomycin-Resistant Enterococci, Methicillin-Resistant *Staphylococcus aureus*, and Resistant Gram-Negative Bacilli Among Long-Term–Care Facility Residents



(*Infect Control Hosp Epidemiol* 2003;24:246-250)

Swab cultures across three different body sites among carriers of carbapenem-resistant *P. aeruginosa* and *Acinetobacter* species: a poor surveillance strategy

Table I Positivity rate of surveillance cultures from different sites for *Acinetobacter* spp. and carbapenem-resistant *P. aeruginosa* among colonised patients (carriers)

Surveillance site	No. of positive cultures	Positivity rate	95% CI
Acinetobacter spp.[a]			
Oropharynx	48	47%	37–56
Rectum	40	39%	29–48
Axillae	28	27%	19–36
Pseudomonas aeruginosa[b]			
Oropharynx	12	38%	21–54
Axillae	11	34%	18–51
Rectum	15	47%	30–64

CI, confidence interval.
[a] 103 sets collected from carriers.
[b] 32 sets cultured from carriers.

- 1070 coletas

- Acinetobacter

Sem orofaringe: 37% perda
Sem retal: 27% perda
Sem axilar: 19% perda

- Pseudomonas

Sem orofaringe: 22% perda
Sem retal: 37% perda
Sem axilar: 22% perda

Journal of Hospital Infection (2010) 74, 395–411

Recommendations.

1. If a hospital uses CP for patients infected or colonized with MDR-E (ESBL-E and/or CRE), we recommend establishing a policy for discontinuation of CP for MDR-E that includes the following:

   a. Maintaining CP for ESBL-E and CRE for the duration of the index hospital stay when infection or colonization with these bacteria is first detected.
   b. Considering discontinuation of CP on a case-by-case basis, taking into account the following criteria: (1) at least 6 months have elapsed since the last positive culture; (2) presence of a clinical infection and ongoing antibiotic use, where discontinuation of CP should be discouraged in the setting of suspected or known infection with ESBL-E or CRE, and concurrent broad-spectrum antibiotic use that may select for these organisms; and (3) procurement of an adequate number of screening samples, with at least 2 consecutive negative rectal swab samples obtained at least 1 week apart to consider an individual negative for ESBL-E or CRE colonization.

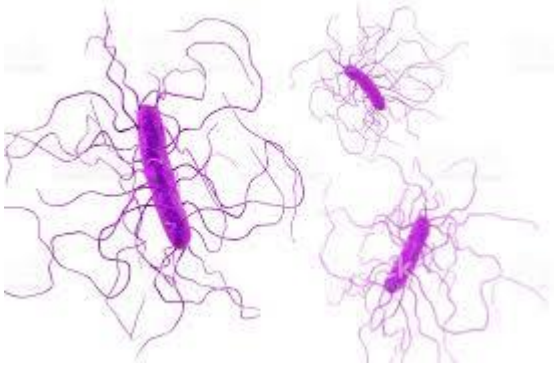
2. We recommend that for extensively drug-resistant *Enterobacteriaceae*, such as carbapenemase-producing CRE, or *Enterobacteriaceae* with very limited treatment options (susceptible to ≤2 antibiotic classes used to treat that organism), hospitals should maintain CP indefinitely.

Manter pela duração da internação em que foi isolado pela primeira vez.

Discontinuar se > 6 meses, sem infecção, sem ATB, com 2 culturas consecutivas negativas semanais.

Para XDR, manter isolamento indefinidamente.

Clostridium difficile



Persistence of Skin Contamination and Environmental Shedding of *Clostridium difficile* during and after Treatment of C. *difficile* Infection

Volume 31, Issue 1 January 2010 , pp. 21-27

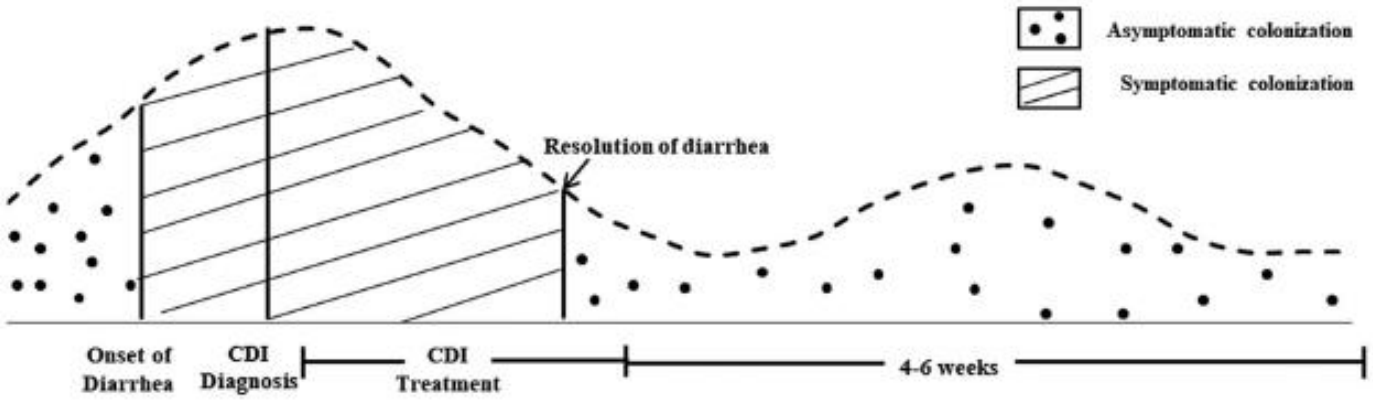


FIGURE 1. Frequency of Skin Contamination and Environmental Shedding[116]

Potential for Transmission of *Clostridium difficile* by Asymptomatic Acute Care Patients and Long-Term Care Facility Residents with Prior *C. difficile* Infection

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY JUNE 2012, VOL. 33, NO. 6

	Ativa	1mes após tto	>1 mes após tto
• Fezes	100%	63%	51%
• Pele	50%	46%	29%
• Ambiente	18%	5%	5%

Acquisition of *Clostridium difficile* on Hands of Healthcare Personnel Caring for Patients with Resolved *C. difficile* Infection

INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY APRIL 2016, VOL. 37, NO. 4

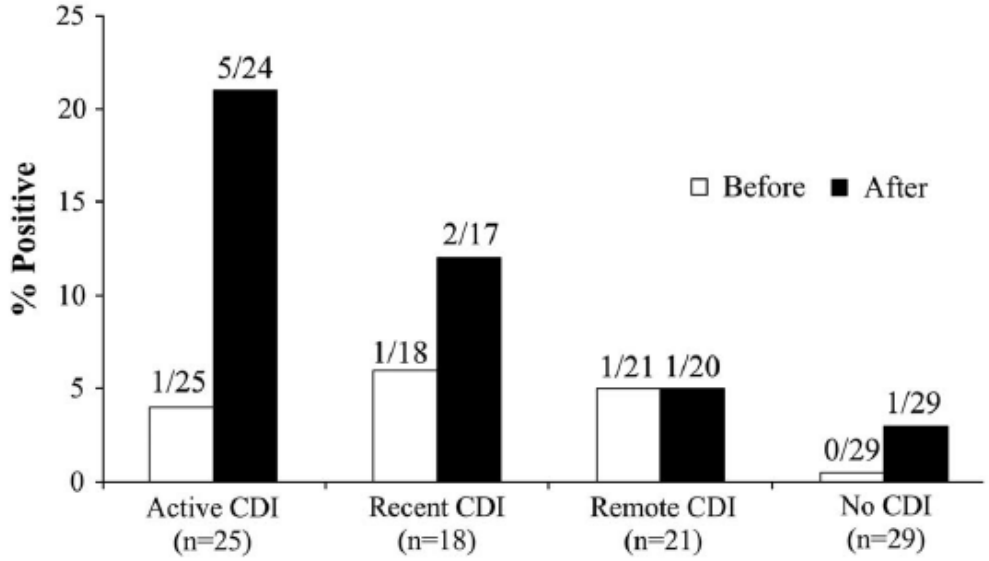


FIGURE 1. Acquisition of *Clostridium difficile* on hands of healthcare workers caring for patients with current, recent, or remote *C. difficile* infection (CDI) or with no history of CDI. Current CDI included patients on treatment for laboratory-confirmed CDI and under contact precautions. Recent CDI included patients from 2 days to 6 weeks after the end of CDI treatment with no recurrent CDI symptoms. Remote CDI included patients from 6 to 24 weeks after completion of CDI treatment. Control patients had no history of CDI and were on wards with no patients with current CDI or a diagnosis

Recommendations.

1. We recommend that patients with *C. difficile* infection (CDI) receive care with CP for at least 48 hours after resolution of diarrhea.

2. Hospitals should consider extending CP through the duration of hospitalization if elevated rates of CDI are present despite appropriate infection prevention and control measures.
3. At this time, insufficient evidence exists to make a formal recommendation as to whether patients with CDI should be placed on CP if they are readmitted to the hospital.

TABLE 2. Potential Components for Inclusion in a Policy for Duration of Contact Precautions With Examples

Components	Examples
Inclusion criteria	Elapsed time since last infection with organism until consideration for discontinuation of CP (ie, 3, 6, 12 months)
Exclusion criteria	Concomitant antibiotic use within a specified period (ie, 24–48 hours prior to sampling), active infection, hospitalization in an outbreak, or hyperendemic period at the facility
No. of surveillance samples	1–3
Surveillance sample source	Nares (MRSA), perirectal (VRE, MDR-E), stool (VRE, MDR-GNR)
Surveillance sample frequency	Daily, weekly, biweekly
Testing methodology	Bacterial culture, molecular testing (eg, PCR)
Final arbiter for discontinuation of CP	Healthcare epidemiologist, infection preventionist, other hospital/ID leadership
Policy implementation strategy	Clinical staff with assistance from the Infection Prevention and Control Program vs active monitoring and implementation led by the Infection Control and Prevention Program

NOTE. CP, contact precautions; MRSA, methicillin-resistant *Staphylococcus aureus*; VRE, vancomycin-resistant enterococci (VRE); PCR, polymerase chain reaction; ID, infectious diseases; MDR-GNR, multidrug-resistant Gram-negative rods; CRE, carbapenem-resistant *Enterobacteriaceae*; ESBL, extended-spectrum β-lactamase

Tempo

ATB

Número de culturas de vigilância

Sítio e metodologia

Situação epidemiológica

Conclusão:
Isolamento de contato

Reduzem a probabilidade de transmissão quando não há a higienização das mãos

Em excesso, são banalizados

Talvez não sejam necessários para VRE, MRSA e E. coli ESBL em situações endêmicas.

Duração da colonização é prolongada

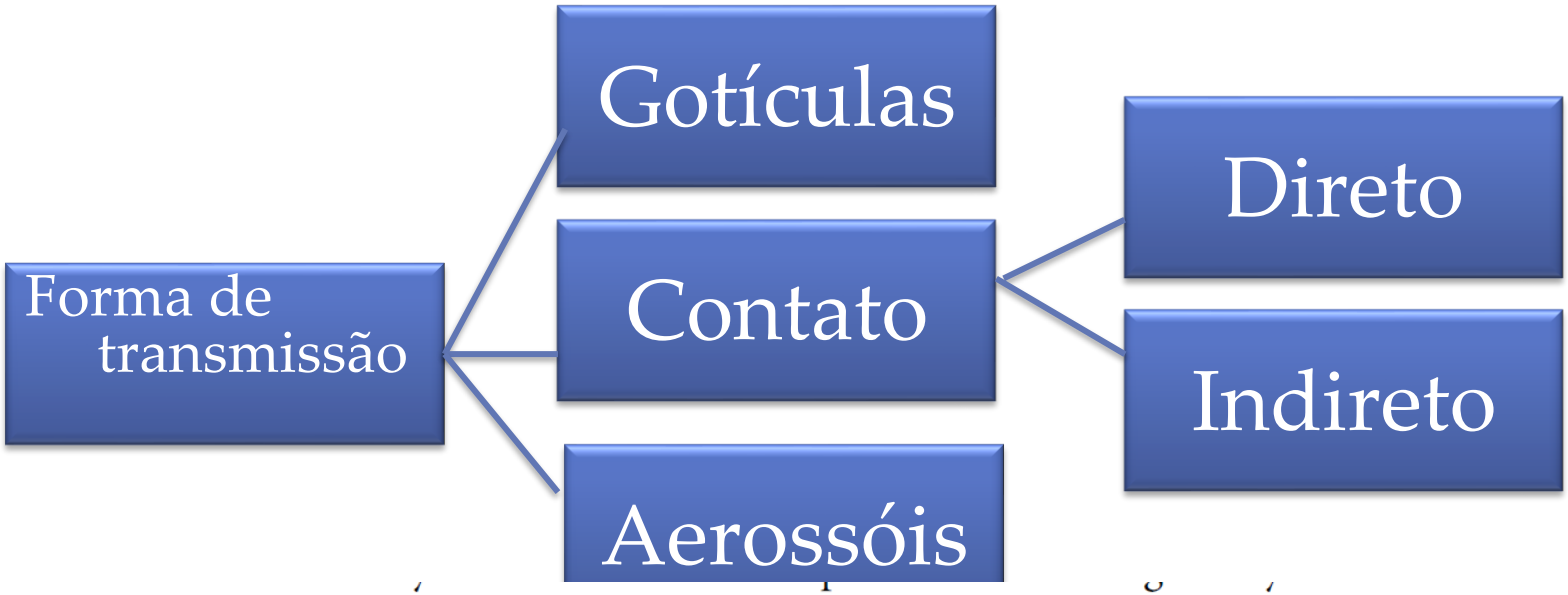
Protocolos para suspensão devem incluir critérios como uso de antibióticos, número de culturas de vigilância, data do isolamento da última cultura, situação epidemiológica local, sítio e metodologia de coleta da cultura de vigilância

Isolamento de síndromes respiratórias virais, gotículas, aerossóis e contato

Precauções

Forma de transmissão

Forma pelo qual o agente infeccioso atinge um hospedeiro susceptível

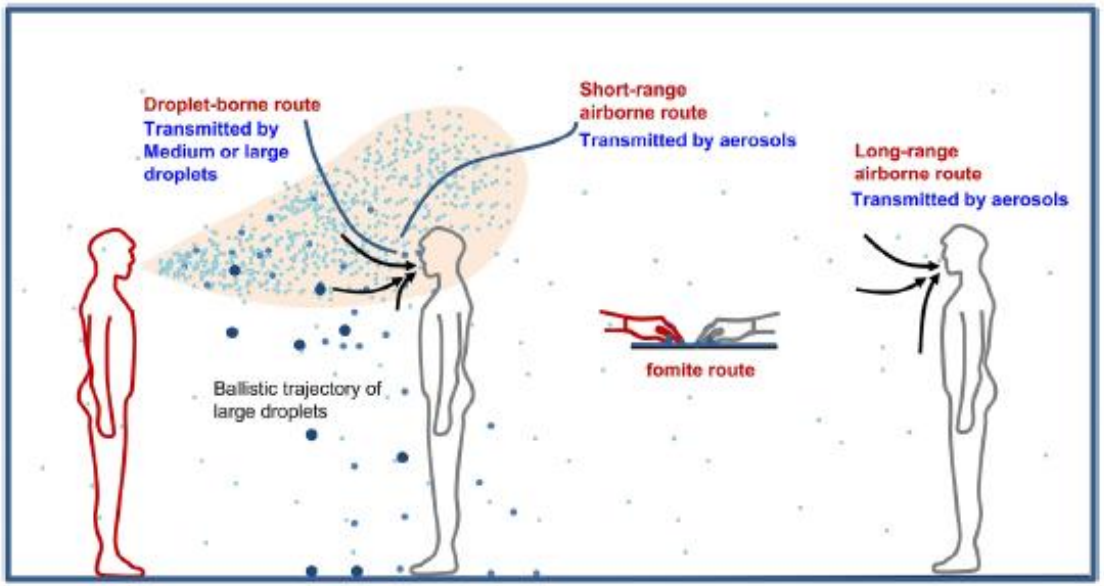


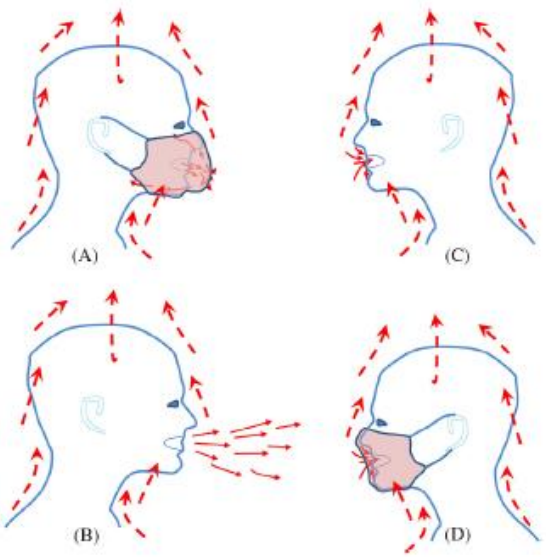
size in the range 0.5–10 µm. Although debatable from an aerosol physics point of view, a cutoff diameter between 5 and 10 µm is normally used in medicine for classification of aerosol versus droplet route of transmission.

AEROSOL SCIENCE AND TECHNOLOGY
2020, VOL. 54, NO. 11, 1245–1248

Airborne spread of infectious agents in the indoor environment

American Journal of Infection Control 44 (2016) S102-S108





- Large droplets (>100 µm) : Fast deposition due to the domination of gravitational force
- Medium droplets between 5 and 100 µm
- Small droplets or droplet nuclei, or aerosols (< 5 µm): Responsible for airborne transmission

The Size Distribution of Droplets in the Exhaled Breath of Healthy Human Subjects

JOURNAL OF AEROSOL MEDICINE
Volume 10, Number 2, 1997

RAO S. PAPINENI and FRANK S. ROSENTHAL

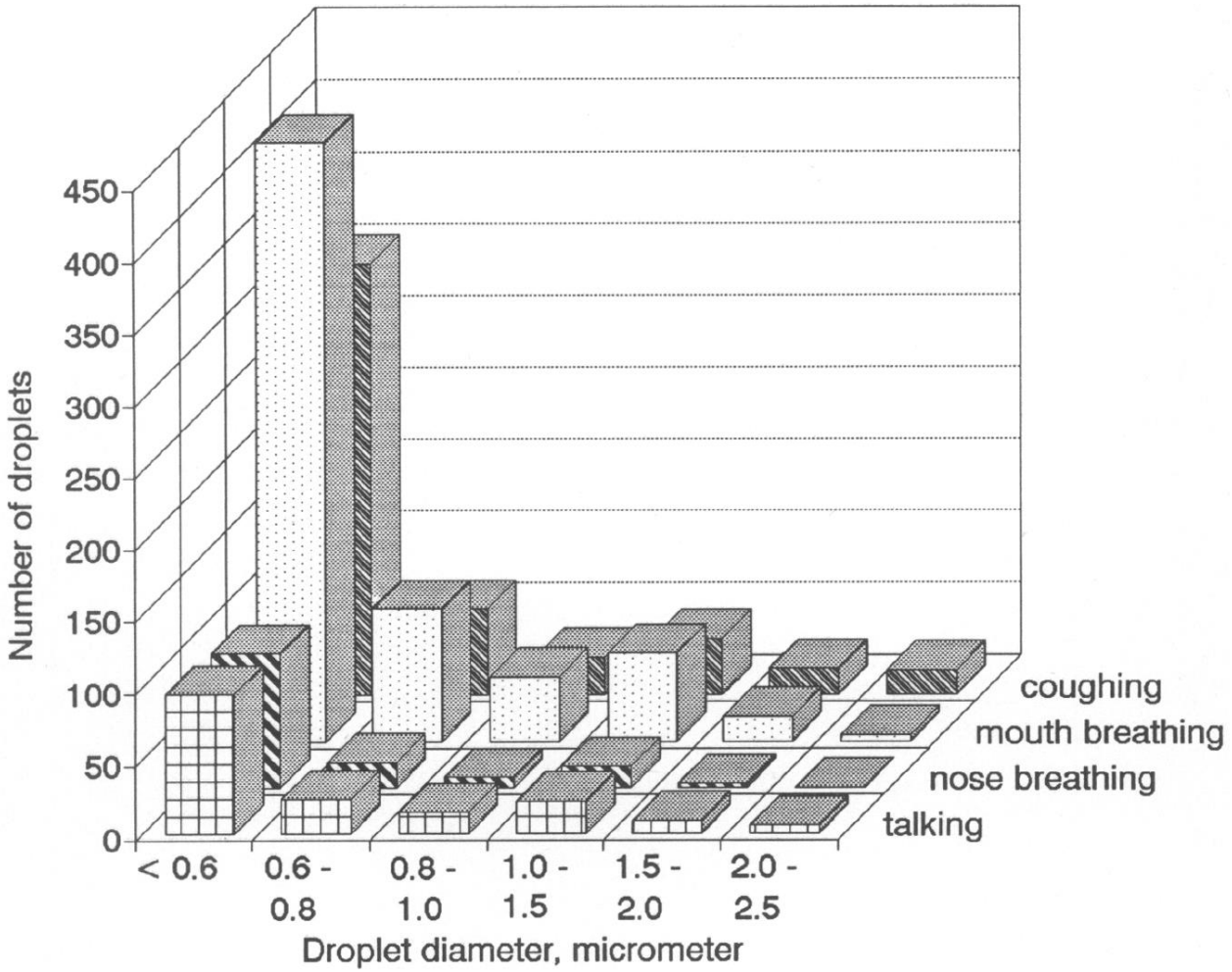


FIG. 5. Particle size spectra versus respiratory mode for subject 5.

TABLE 2. MEAN DROPLET CONCENTRATIONS IN EXHALED BREATH FOR FIVE SUBJECTS AND FOUR MODES OF RESPIRATORY ACTION

Mode	*Mean droplet concentration (droplets/L) (droplet diameter ≤1 μ)*				
	Subj 1	*Subj 2*	*Subj 3*	*Subj 4*	*Subj 5*
Coughing	38.5	21.3	77.6	96.2	182.3
Mouth breathing	27.2	7.9	2.5	4.8	20.1
Nose breathing	10.9	6.2	1.1	1.0	4.3
Talking	21.5	31.5	17.9	20.3	4.9

Mode	*Mean droplet concentration (droplets/L) (droplet diameter >1 μ)*				
	Subj 1	*Subj 2*	*Subj 3*	*Subj 4*	*Subj 5*
Coughing	4.3	2.2	14.0	10.9	35.4
Mouth breathing	5.5	0.4	0.2	0.3	3.0
Nose breathing	1.6	1.2	0.2	0.0	0.6
Talking	3.3	4.0	4.4	3.4	1.4

Viable influenza A virus in airborne particles expelled during coughs versus exhalations

DOI:10.1111/irv.12390
www.influenzajournal.com

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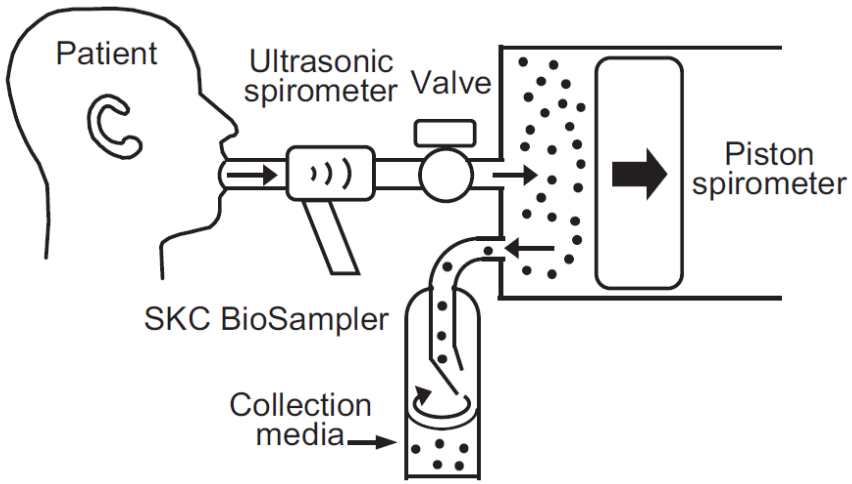

Influenza A viável foi mais detectado após tosse que expiração, mas não foi estatisticamente significativo.

“ Because individuals breathe much more often than they cough, these results suggest that breathing may generate more airborne infectious material than coughing over time”

Exhaled respiratory particles during singing and talking

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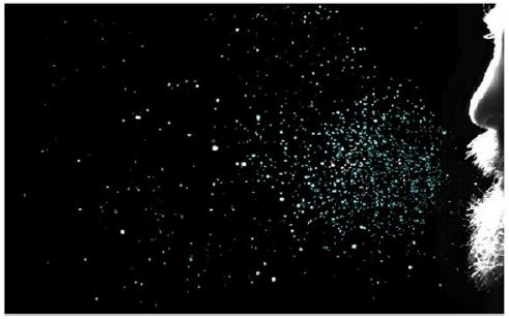


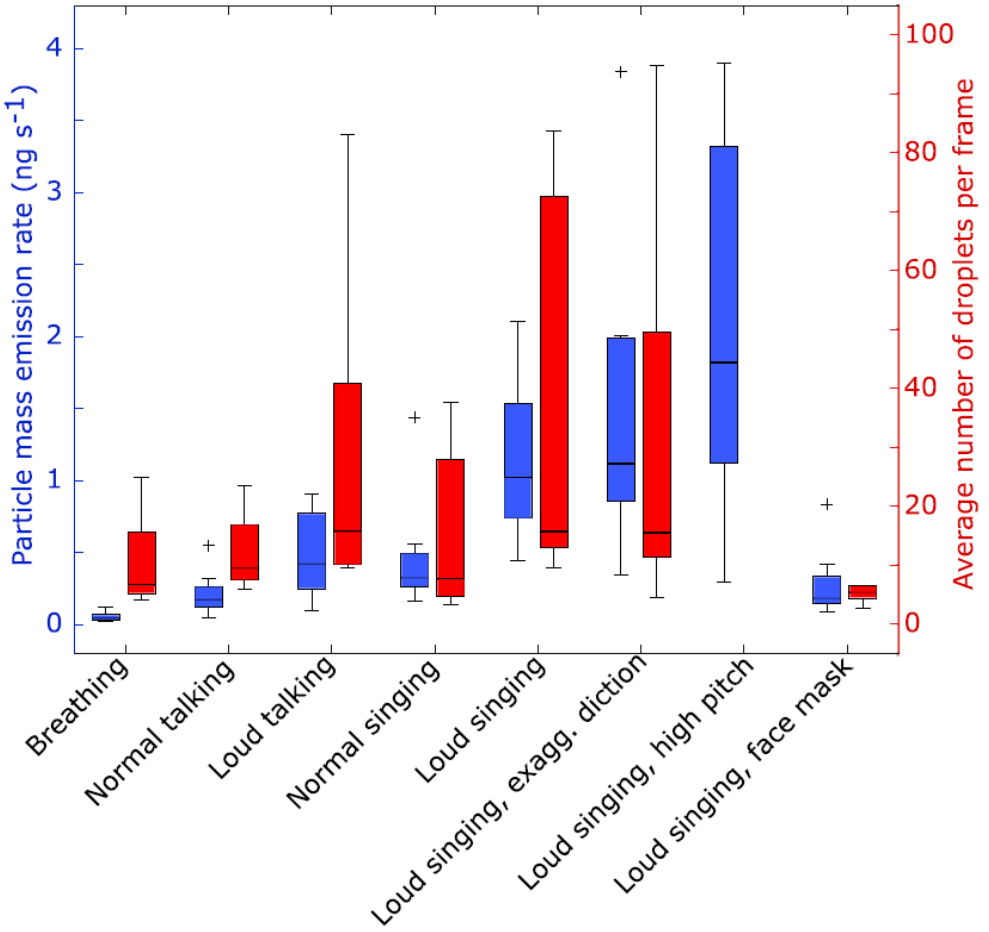


Figure 1. Aerosol particle mass emission rates during different exercises (dark blue, left y-axis), and the average number of droplets per frame (from image analysis, see Figure 3) in the exhaled air during the same exercises (red, right y-axis). Particle mass was measured in the range 0.5–10 μm. Each blue box represent data for 12 singers for aerosol particles and 5 singers for droplets. Two high values for loud singing not shown.

OPEN

Aerosol emission and superemission during human speech increase with voice loudness

(2019) 9:2348 | https://doi.org/10.1038/s41598-019-38808-z

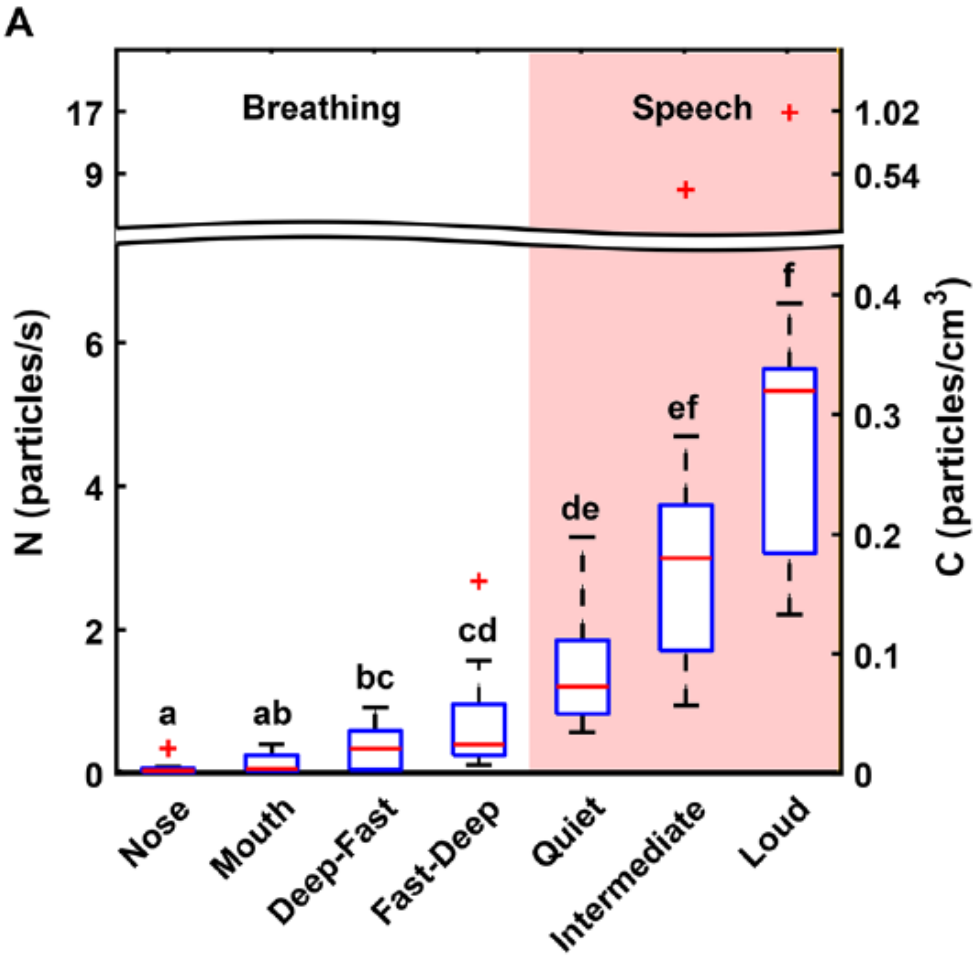


Figure 5. Comparison of (A) emission rate/concentration a

Clinical Infectious Diseases
MAJOR ARTICLE
IDSA Infectious Diseases Society of America hivma hiv medicine association OXFORD
Clinical Infectious Diseases® 2017;65(8):1342–8

Characterization of Aerosols Generated During Patient Care Activities

Caroline A. O'Neil,[1] Jiayu Li,[2] Anna Leavey,[2] Yang Wang,[2] Matthew Hink,[1] Meghan Wallace,[3] Pratim Biswas,[2] Carey-Ann D. Burnham,[3] and Hilary M. Babcock[1]; for the Centers for Disease Control and Prevention Epicenters Program

[1]School of Medicine, Infectious Diseases Division, [2]School of Engineering and Applied Science, Department of Energy, Environmental, and Chemical Engineering, Aerosol and Air Quality Research Laboratory, and [3]School of Medicine, Department of Pathology and Immunology, Washington University, St Louis, Missouri

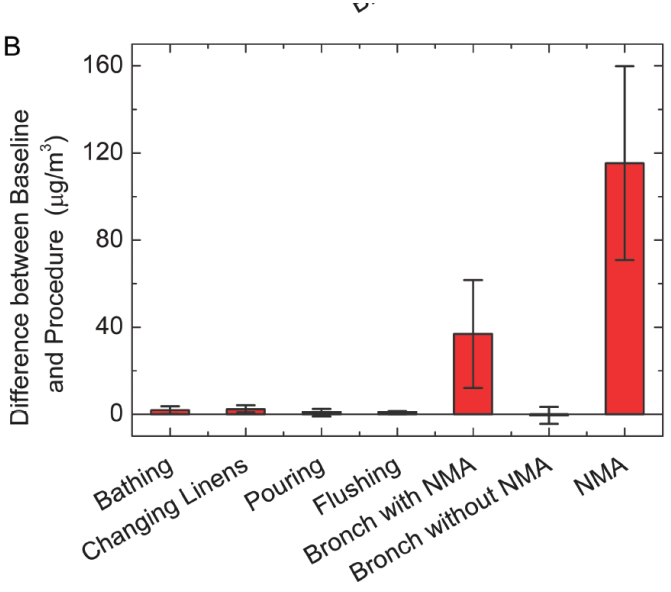
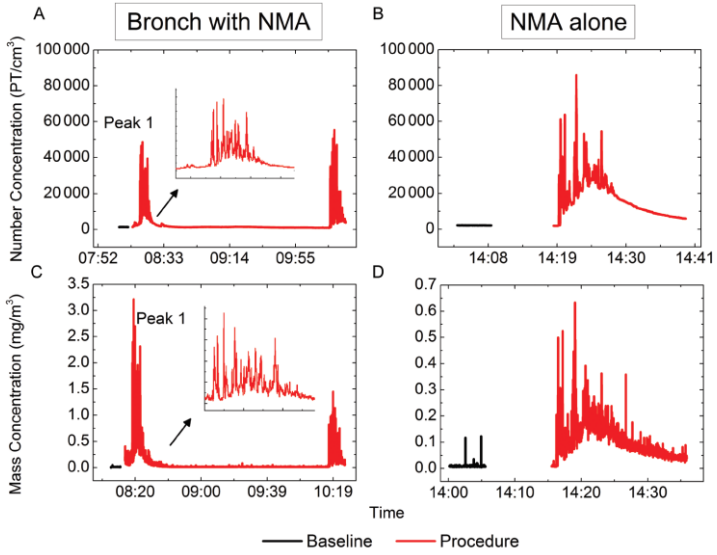


Figure 1. Change from preprocedure baseline in particle number (*A*) and mass (*B*) concentrations during the sampled procedures. Mechanical ventilation and noninvasive ventilation are not included in this figure because no baseline samples could be collected for these procedures. Error bars = standard deviation. Abbreviations: Bronch, bronchoscopy; NMA, nebulized medication administration; PT, particle.



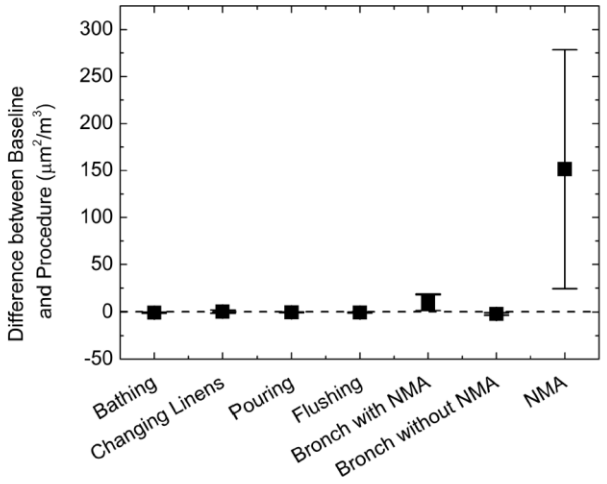
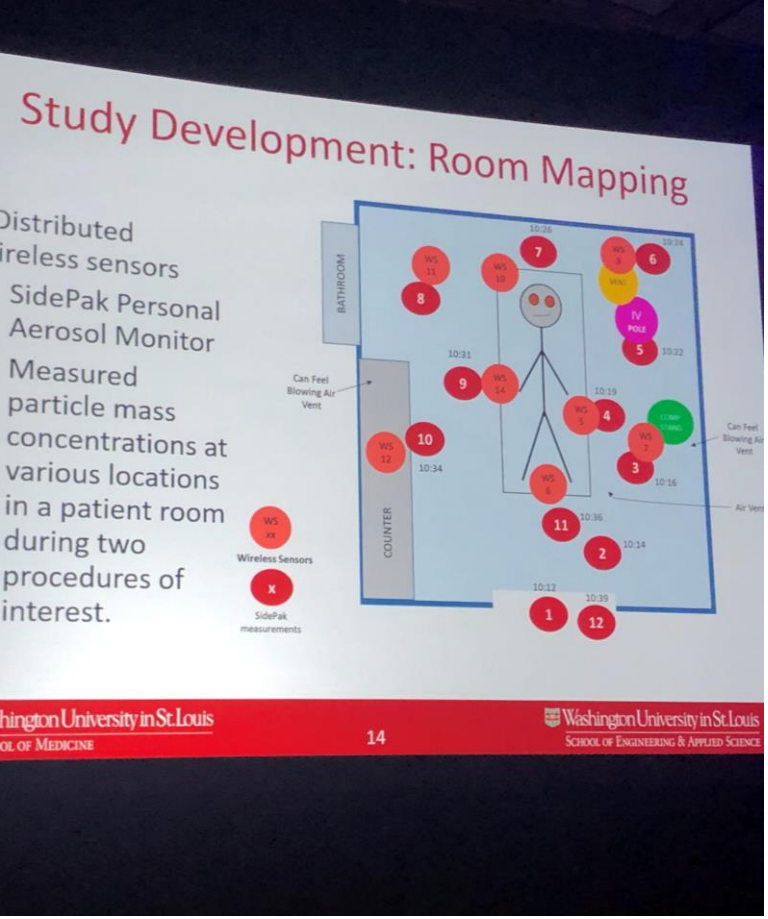
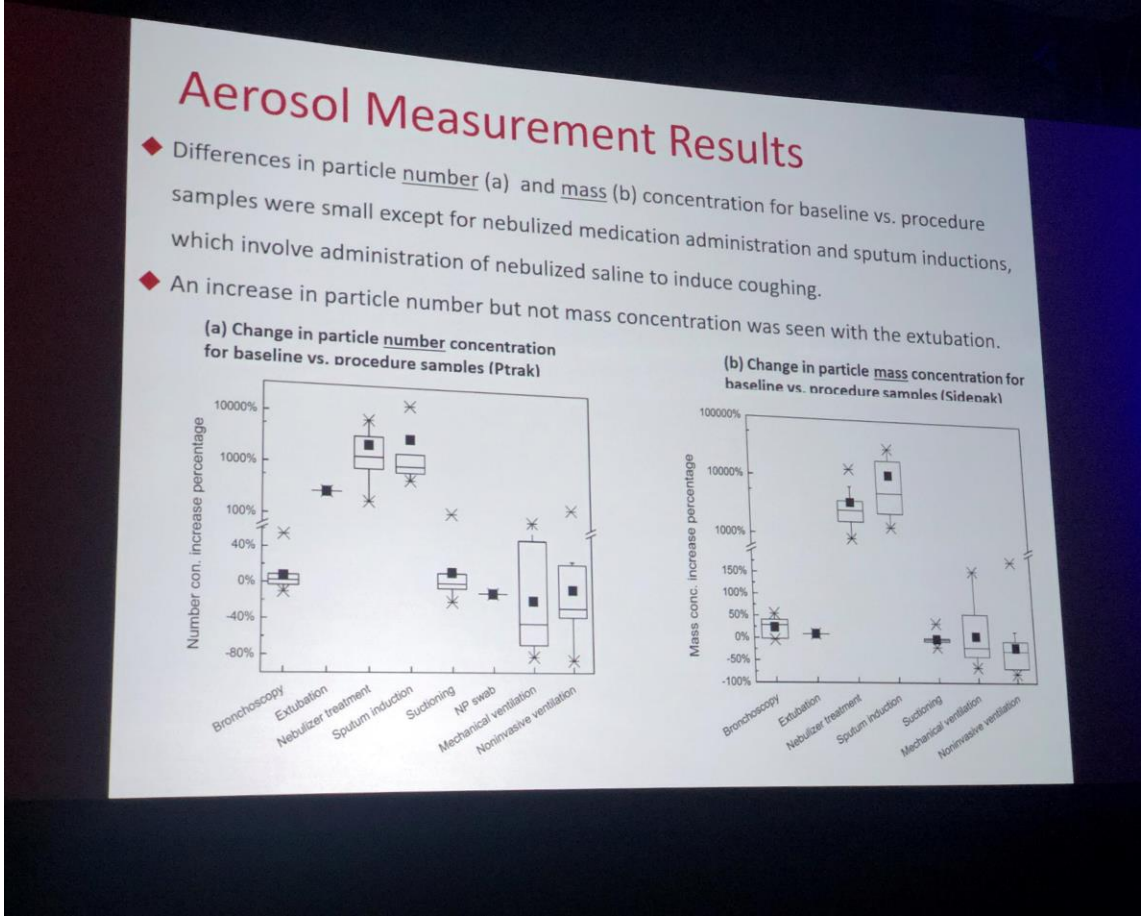
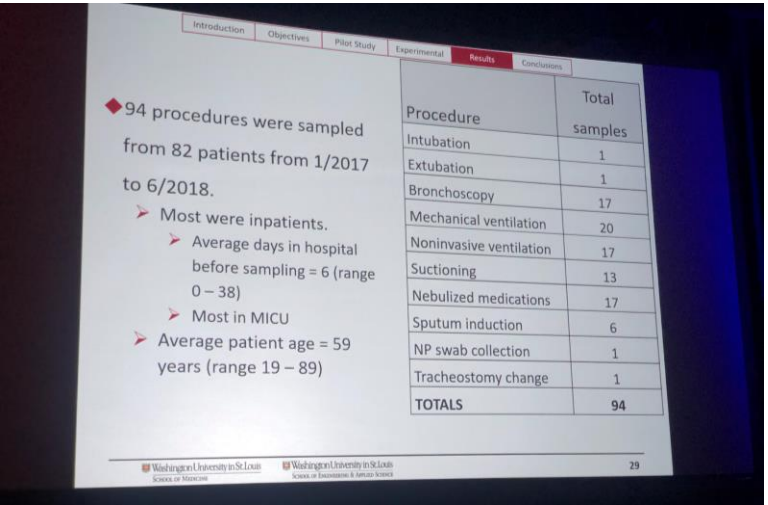


Figure 4. Change from preprocedure baseline in lung-deposited surface area concentrations (alveolar region) during the sampled procedures. Mechanical ventilation and noninvasive ventilation are not included in this figure because no baseline samples could be collected for these procedures. Error bars = standard deviation. Abbreviations: Bronch, bronchoscopy; NMA, nebulized medication administration.







Outros procedimentos

Hilary Babcock

SHEA Spring Conference 2019

AN EXPERIMENTAL STUDY OF THE EFFICACY OF GAUZE FACE MASKS.

W. H. KELLOGG, M. D.,
Secretary and Executive Officer, California State Board of Health,
AND
MISS GRACE MACMILLAN,
Bacteriologist in the State Hygienic Laboratory.

FIGURE 1.

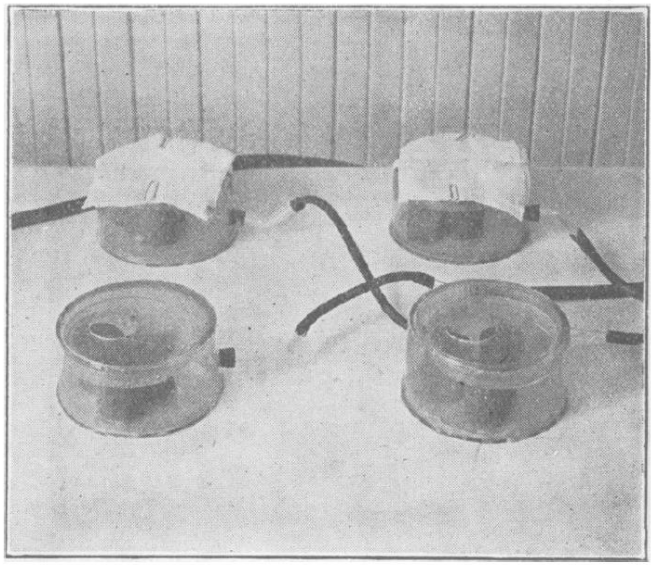
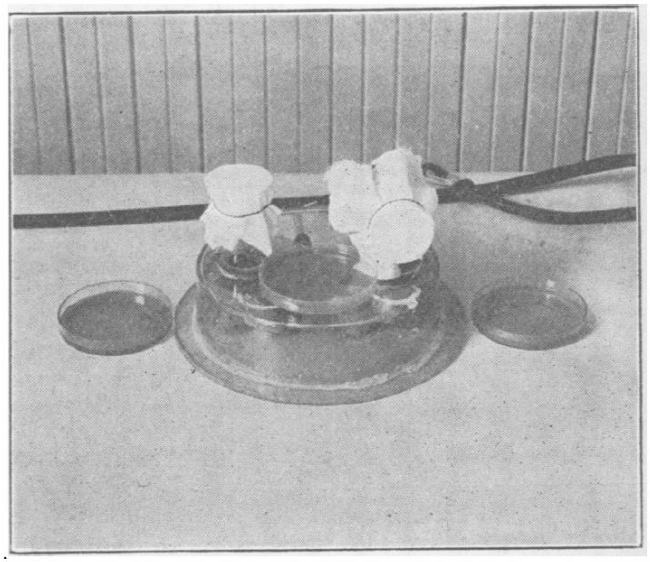


FIGURE 2.



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* Joseph A. Capps, The Face Mask in Control of Contagious Diseases. Jour. A. M. A., March 30, 1918.

† David A. Haller and Raymond C. Caldwell, The Protective Quality of Gauze Face Masks. Jour. A. M. A., Oct. 12, 1918.

EXPERIMENT NO. V.

Same as Experiment No. IV, but with gauze having a mesh of 24 by 18 threads to the square inch over the inlet to the jars.

Number of layers—6.

Distance from atomizer—5 feet.

	Colonies
Control plates outside of suction jars	4,764
Control plates inside jars, no gauze	2,468
2 layers of gauze	1,830
3 layers of gauze	1,280
4 layers of gauze	544
5 layers of gauze	674
6 layers of gauze	369
7 layers of gauze	454
8 layers of gauze	63
9 layers of gauze	42

TABLE I

EXPERIMENT No. XI.

	A	B	
	Masked nose	Unmasked nose	Per cent of Efficiency
Set 1—Gauze 60 x 72 threads to square			
9 layers of gauze	0	10	100
8 layers of gauze	1	56	98
7 layers of gauze	37	160	77
6 layers of gauze	35	154	77
5 layers of gauze	127	300	57
Set 2—Gauze 24 x 28 threads to square			
10 layers of gauze	39	654	94
9 layers of gauze	42	790	94
8 layers of gauze	patches		
8 layers of gauze	296	681	56
7 layers of gauze	450	1,980	77
6 layers of gauze	666	1,089	38

DROPLET INFECTION AND ITS PREVENTION BY THE FACE MASK

GEORGE H. WEAVER

From the John McCormick Institute for Infectious Diseases, Chicago.

Received for publication Oct. 22, 1918.

TABLE 1

COLONIES AFTER VARIOUS EXPIRATORY EFFORTS

Showing number of colonies of Streptococcus viridans developing on blood-agar plates exposed at a distance of 1 foot during various expiratory efforts. The figures are the average of several experiments made with the same person as was employed in the experiments shown in the following tables.

Expiratory Efforts Employed	Number of Colonies
Talking (15 seconds)	1
Coughing with lips widely open (twice)	1
Whistling (15 seconds)	2
Whispering faintly (15 seconds)	4
Whispering loudly (15 seconds)	5
Blowing (twice)	50
Stuttering in a whisper (15 seconds)	55
Hawking (once)	100
Stuttering loudly (15 seconds)	100
Coughing with lips slightly parted (twice)	200
Sneezing (once)	300
Lips forced slightly apart with a puff (twice)	670

TABLE 2

FUCHSIN EXPERIMENTS

Showing percentage of fuchsin passing through gauze placed 3 inches from plate when sprayed as carbolfuchsin, using 2 compressions of the bulb.
The upper figures in the squares represent percentage of fuchsin as compared with the unobstructed plate at 6 inches.
The lower figures in the squares represent percentages of fuchsin as compared with the unobstructed plate at the same distance.

Distance from Spray to Plate	No Gauze	Mesh of Gauze																			
		20 × 14				24 × 20				28 × 24				32 × 28				44 × 40			
		Layers				Layers				Layers				Layers				Layers			
		1	2	4	8	1	2	4	8	1	2	4	8	1	2	4	8	1	2	4	8
6 inches	100	40 40	30 30	5 5	0.3 0.3	40 40	10 10	2 2	0 0	30 30	5 5	0.5 0.5	0 0	30 30	3 3	0.2 0.2	0 0	10 10	1 1	0 0	0 0
1 foot	40	10 25	3 7.5	0.5 1.25	0 0	5 12.5	2 5	0.3 0.75	0 0	3 7.5	1 2.5	0 0	0 0	3 7.5	0.3 0.75	0 0	0 0	0.5 1.25	0 0	0 0	0 0
2 feet	5	0.5 10	0 0	0 0	0 0	0.3 6	0 0	0 0	0 0	0 0				0 0				0 0			
3 feet	0.5	0 0				0 0															
4 feet	0.1																				
5 feet	0.0																				

Directions for making the Durand Hospital Mask. Devised by Miss Charlotte Johnson, Supt.

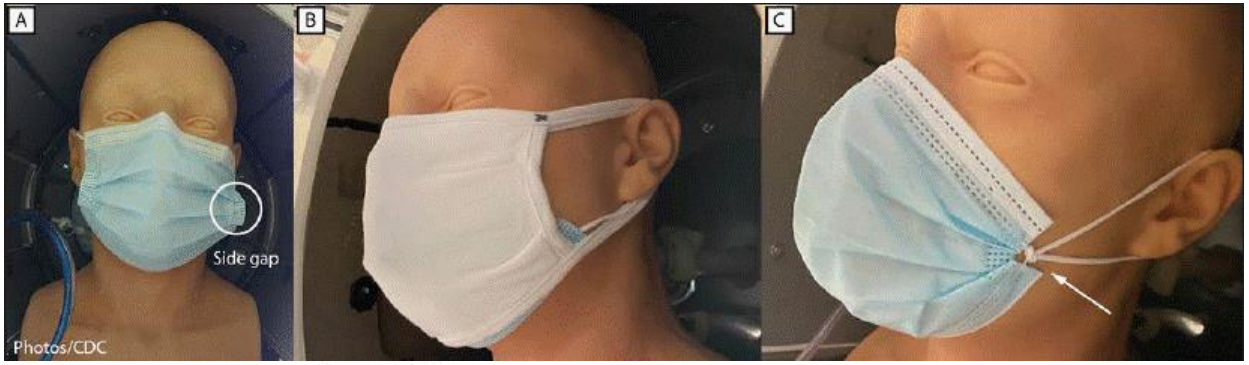
1. Cut (44 by 40 mesh) gauze 8 inches wide and 23 inches long.
2. Turn down sides and one end ¼ inch. Fold twice, unturned end first, making 7½ inch square.
3. Cut off opposite diagonal corners 1 inch and turn in raw edge ½ inch. Stitch firmly all around.
4. Take up a 1 inch dart 1½ inches long at middle of each side of mask. Sew 14 inch tape on opposite uncut corners.

This mask has the advantage of covering the nose and mouth and in making the traction on the chin and not drawing on the nose and lips.

Morbidity and Mortality Weekly Report (*MMWR*)

Maximizing Fit for Cloth and Medical Procedure Masks to Improve Performance and Reduce SARS-CoV-2 Transmission and Exposure, 2021

Weekly / February 19, 2021 / 70(7);254–257



SCCIH
ICHC-FMUSP

Precaução Padrão

+

Proteção
das mãos

Proteção de
olhos, nariz e boca

Proteção
de pele e vestes

Prevenção
de acidentes

Health-care facility recommendations for standard precautions

KEY ELEMENTS AT A GLANCE

1. Hand hygiene[1]

Summary technique:

- Hand washing (40–60 sec): wet hands and apply soap; rub all surfaces; rinse hands and dry thoroughly with a single use towel; use towel to turn off faucet.
- Hand rubbing (20–30 sec): apply enough product to cover all areas of the hands; rub hands until dry.

Summary indications:

- Before and after any direct patient contact and between patients, whether or not gloves are worn.
- Immediately after gloves are removed.
- Before handling an invasive device.
- After touching blood, body fluids, secretions, excretions, non-intact skin, and contaminated items, even if gloves are worn.
- During patient care, when moving from a contaminated to a clean body site of the patient.
- After contact with inanimate objects in the immediate vicinity of the patient.

2. Gloves

- Wear when touching blood, body fluids, secretions, excretions, mucous membranes, nonintact skin.
- Change between tasks and procedures on the same patient after contact with potentially infectious material.
- Remove after use, before touching non-contaminated items and surfaces, and before going to another patient. Perform hand hygiene immediately after removal.

3. Facial protection (eyes, nose, and mouth)

- Wear (1) a surgical or procedure mask and eye protection (eye visor, goggles) or (2) a face shield to protect mucous membranes of the eyes, nose, and mouth during activities that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions.

4. Gown

- Wear to protect skin and prevent soiling of clothing during activities that are likely to generate splashes or sprays of blood, body fluids, secretions, or excretions.
- Remove soiled gown as soon as possible, and perform hand hygiene.

5. Prevention of needle stick and injuries from other sharp instruments[2]

Use care when:

- Handling needles, scalpels, and other sharp instruments or devices.
- Cleaning used instruments.
- Disposing of used needles and other sharp instruments.

6. Respiratory hygiene and cough etiquette

Persons with respiratory symptoms should apply source control measures:

- Cover their nose and mouth when coughing/sneezing with tissue or mask, dispose of used tissues and masks, and perform hand hygiene after contact with respiratory secretions.

Health-care facilities should:

- Place acute febrile respiratory symptomatic patients at least 1 metre (3 feet) away from others in common waiting areas, if possible.
- Post visual alerts at the entrance to health-care facilities instructing persons with respiratory symptoms to practise respiratory hygiene/cough etiquette.
- Consider making hand hygiene resources, tissues and masks available in common areas and areas used for the evaluation of patients with respiratory illnesses.

7. Environmental cleaning

- Use adequate procedures for the routine cleaning and disinfection of environmental and other frequently touched surfaces.

8. Linens

Handle, transport, and process used linen in a manner which:

- Prevents skin and mucous membrane exposures and contamination of clothing.
- Avoids transfer of pathogens to other patients and or the environment.

9. Waste disposal

- Ensure safe waste management.
- Treat waste contaminated with blood, body fluids, secretions and excretions as clinical waste, in accordance with local regulations.
- Human tissues and laboratory waste that is directly associated with specimen processing should also be treated as clinical waste.
- Discard single use items properly.

10. Patient care equipment

- Handle equipment soiled with blood, body fluids, secretions, and excretions in a manner that prevents skin and mucous membrane exposures, contamination of clothing, and transfer of pathogens to other patients or the environment.
- Clean, disinfect, and reprocess reusable equipment appropriately before use with another patient.

[1] For more details, see: WHO Guidelines on Hand Hygiene in Health Care (Advanced draft), at: http://www.who.int/patientsafety/information_centre/ghhad_download/en/index.html.
[2] The SIGN Alliance at: http://www.who.int/injection_safety/sign/en/

World Health Organization • CH-1211 Geneva-27 • Switzerland • www.who.int/csr

World Health Organization

EPIDEMIC AND PANDEMIC ALERT AND RESPONSE

Estudo de prevalência identificou que, em unidades de pediatria, as infecções virais de via aérea representam 10% das IRAS.

Rutledge-Taylor K, Matlow A, Gravel D, et al. A point prevalence survey of health care associated infections in Canadian pediatric inpatients. Am J Infect Control 2012;40:491–496.

Isolar diminui a transmissão dos vírus respiratórios?

Reduction in Rate of Nosocomial Respiratory Virus Infections in a Children's Hospital Associated With Enhanced Isolation Precautions

Lorry G. Rubin, MD;[1,2,3] Nina Kohn, MBA, MA;[4] Susan Nullet, RN;[3] Margaret Hill, RN[3]

- Hospital de 171 leitos com TMO, onco, UTI pediátrica e UTI neonatal.
- Human metapneumovirus, influenza A and B viruses, parainfluenza viruses types 1, 2, 3, and 4, respiratory syncytial virus (RSV), and rhinovirus/enterovirus
- Desfecho: quadros nosocomiais de infecção respiratória viral

Ano 1 e 2

Isolamento de contato + gotícula para síndrome gripal até resultado de exame disponivel

Precauções de contato: human metapneumovirus, parainfluenza viruses, RSV, and R/E (Nov a Mar)

Precauções padrão: R/E de Abril a Out

Gotícula: influenza

Ano 3

Precauções de contato e gotículas para todos os vírus com exceção Influenza (gotícula)

Ano 4

Precauções de contato e gotículas para todos os vírus

Isolamento mantido pela duração dos sintomas para todos os pacientes com exceção dos imunocomprometidos nos quais era mantido por 7 dias após a resolução dos sintomas.

TABLE 2. Burden of Hospitalizations with Respiratory Viral Infection (Number of Cases per year) by Virus and Year

	Hospital Admissions with Respiratory Virus Infection, No.				
	Prior to Enhanced Isolation Precautions		Enhanced Isolation Precautions		
Respiratory Virus	Year 1	Year 2	Year 3	Year 4	Percent Increase, (Decrease) years 3–4 vs years 1–2
All viruses	1,196	1,354	1,670	1,792	35.8
hMPV	89	135	106	103	6.7
Influenza A and B[a]	135	121	91	183	7.0
PIV	124	135	172	130	16.6
RSV	290	346	385	429	28.0
Rhinovirus/enterovirus	558	617	916	947	58.6

NOTE. hMPV, human metapneumovirus; PIV, parainfluenza virus; RSV, respiratory syncytial virus.
[a]For influenza, the period prior to enhanced isolation precautions was years 1–3 and the period of enhanced precautions (contact and droplet) was year 4 only.

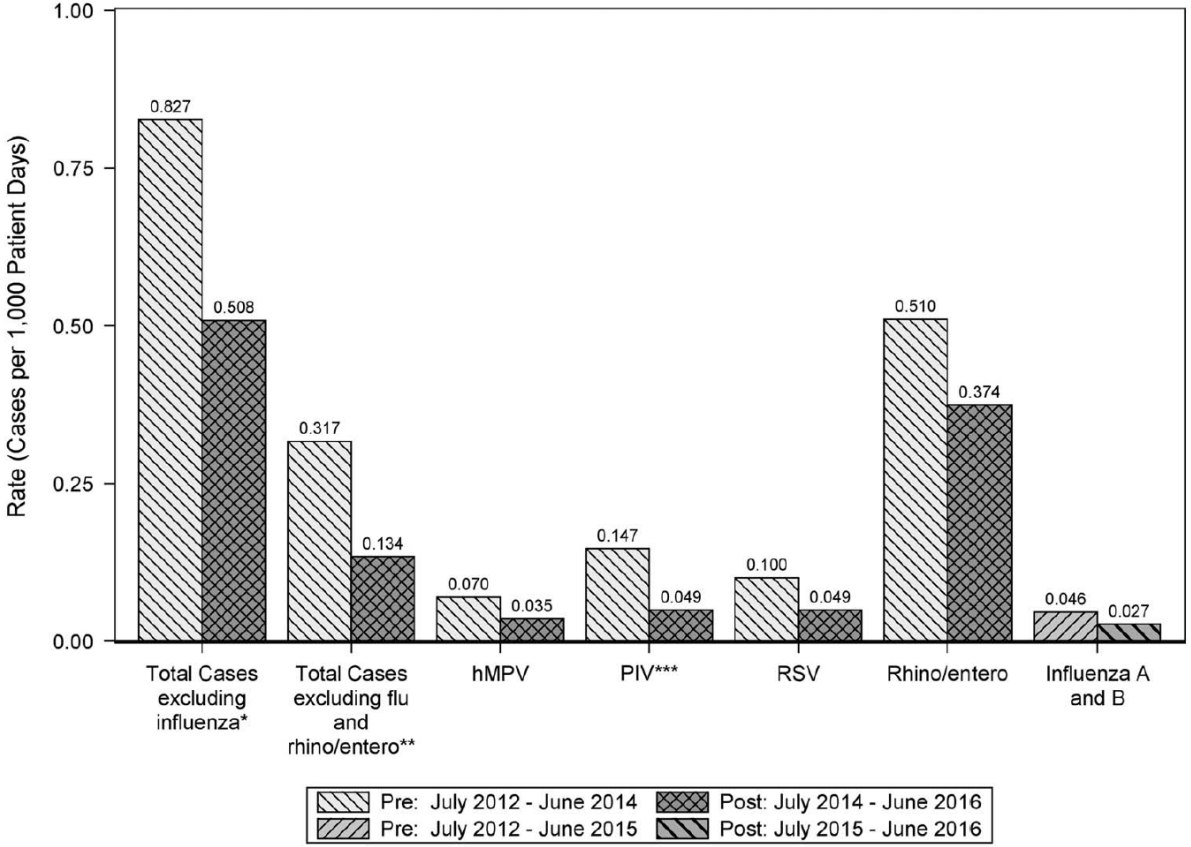
TABLE 1. Nosocomial Respiratory Virus Infection Cases and Rate by Virus and Year

	No. of Prior to Enhanced Isolation Precautions		No. of Enhanced Isolation Precautions	
	Year 1	Year 2	Year 3	Year 4
Patient days	61,322	68,106	66,982	74,703
Total cases	52	59	32	47
Total cases excluding rhinovirus/enterovirus	19	26	12	14
hMPV	5	4	3	2
PIV	10	9	2	5
Influenza A and B[a]	1	3	5	2
RSV	3	10	2	5
Rhinovirus/Enterovirus	33	33	20	33

NOTE. hMPV, human metapneumovirus; PIV, parainfluenza virus; RSV, respiratory syncytial virus.

[a]For influenza, the period prior to enhanced isolation precauti years 1–3 and the period of enhanced precautions (contact and droplet) period is year 4 only.

the rates decreased 58% from 0.317 per 1,000 hospital days to 0.134 per 1,000 hospital days during enhanced precautions (P<.0014)



Virus Sincicial Respiratório

- R_0= 5 a 25
- Sobrevive na superfície por até 6 horas e nas mãos por até 25 minutos

Ther Adv Infect Dis
(2016) 3(2) 63–71

2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings http://www.cdc.gov/ncidod/dhqp/pdf/isolation2007.pdf

Respiratory syncytial virus infection, in infants, young children and immunocompromised adults	C	DI	Wear mask according to Standard Precautions [24] CB [116, 117]. In immunocompromised patients, extend the duration of Contact Precautions due to prolonged shedding [928]). Reliability of antigen testing to determine when to remove patients with prolonged hospitalizations from Contact Precautions uncertain.

- Voluntários submetidos a 3 formas de contato com crianças infectadas
  1) Contato próximo por 2-4 horas, sem luva ou máscara, apenas avental (Cuddlers)
  2) Contato sem luva com superfícies que tiveram contato com secreção e depois tocaram nariz e olhos (Touchers)
  3) Distância >1,8m da criança infectada, com luva e avental, sem máscara por 3 horas (Sitters)

Apenas Cuddlers e Touchers se infectaram→ contato direto/próximo com secreções infectadas são a principal forma de transmissão

Table. The proportion of 31 volunteers infected with respiratory syncytial virus according to method of exposure to an infected infant, and the resulting type of illness and incubation period

Volunteers	*Cuddlers**	*Touchers†*	*Sitters‡*
No. exposed	7	10	14
No infected	5	4	0
Afebrile URI§	3	3	–
Febrile URI	2	0	–
Asymptomatic	0	1	–
Incubation	4 days	5.5 days	

*Volunteers exposed by close contact with infected infants.
†Volunteers exposed by self-inoculation after touching surfaces contaminated by infected infant's secretions.
‡Volunteers exposed only by sitting at a distance of over 6 feet from an infected infant.
§Upper respiratory tract infection.

Infectivity of Respiratory Syncytial Virus by Various Routes of Inoculation

INFECTION AND IMMUNITY, Sept. 1981, p. 779–783

- Voluntários submetidos à administração de VSR:
- Gotas nasais
- Gota ocular
- Gota na boca

Isolados por 10 dias.

TABLE 1. *Comparative rate of infection in volunteers inoculated with RSV by various routes and doses*

Inoculation route	Dose (Log_{10} $TCID_{50}$)	No. of subjects:				
		Inoculated	Shedding RSV	With seroresponse		
				CF[a]	NT[b]	ELISA[c]
Nose	5.2	4	3	2	3	3
	3.2	4	1	1	1	1
	2.2	4	0	0	0	0
Eyes	5.2	4	3	0	2	3
	3.2	4	1	0	0	0
	2.2	4	0	0	0	0
Mouth	5.2	8	1[d]	1	1	1

[a] CF, Complement fixation test, with seroresponse defined as ≥ fourfold rise in titer.

[b] NT, Neutralization test, with seroresponse defined as ≥ fourfold rise in titer.

[c] ELISA, Enzyme-linked immunosorbent assay. Response defined as E ratio (absorbance of post-inoculation serum at 1:100 over absorbance of pre-inoculation serum) of ≥ 1.22 (18).

[d] Infected probably by secondary spread.

personnel (7). In part, this may be because there is no method of infection control that protects both the eyes and the nose from viral inoculation. Masks cover only one of the two potentially sensitive routes for RSV inoculation. Protection of the eyes and the nose, as by goggles, might be a more effective means of interrupting the transmission of RSV from infected infants to hospital personnel.

-

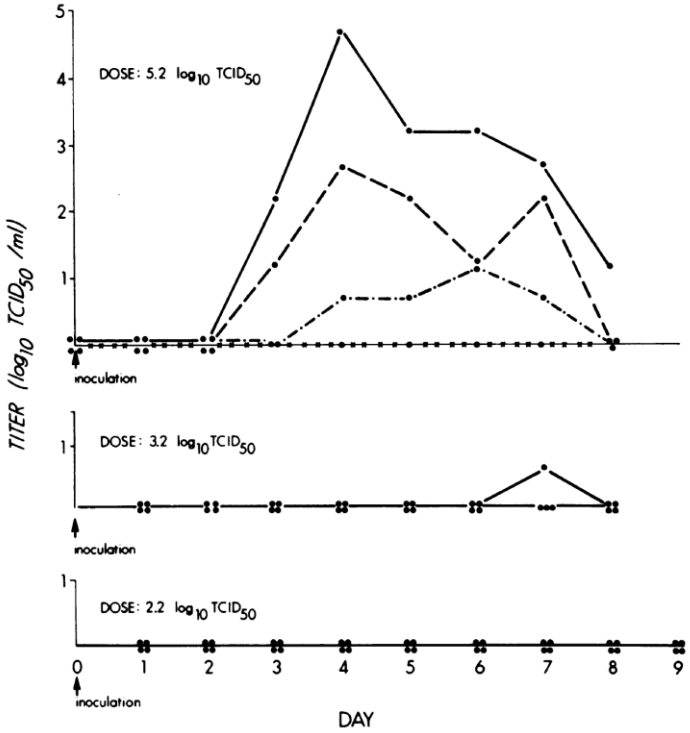


FIG. 1. *Daily frequency and quantity of viral shedding in 12 volunteers inoculated intranasally with RSV are shown, relative to inoculating dose.*

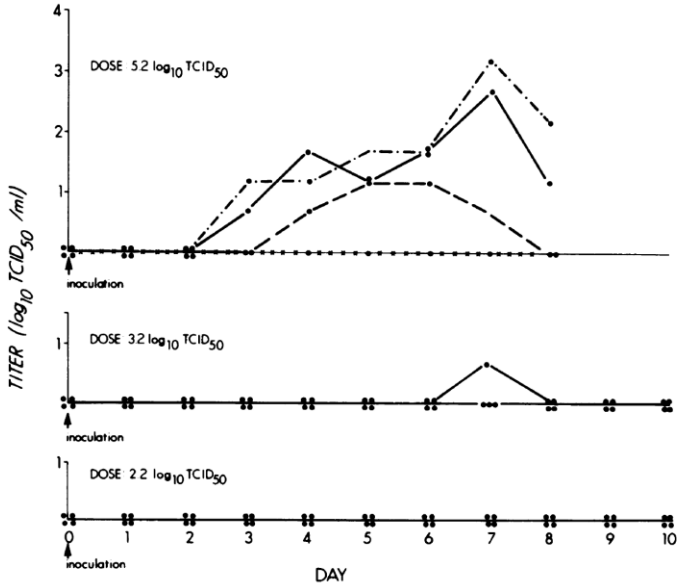


FIG. 2. *Daily frequency and quantity of virus shedding in 12 volunteers inoculated by eye with RSV are shown, relative to inoculating dose.*

The Use of Eye-Nose Goggles to Control Nosocomial Respiratory Syncytial Virus Infection

(*JAMA* 1986;256:2706-2708)

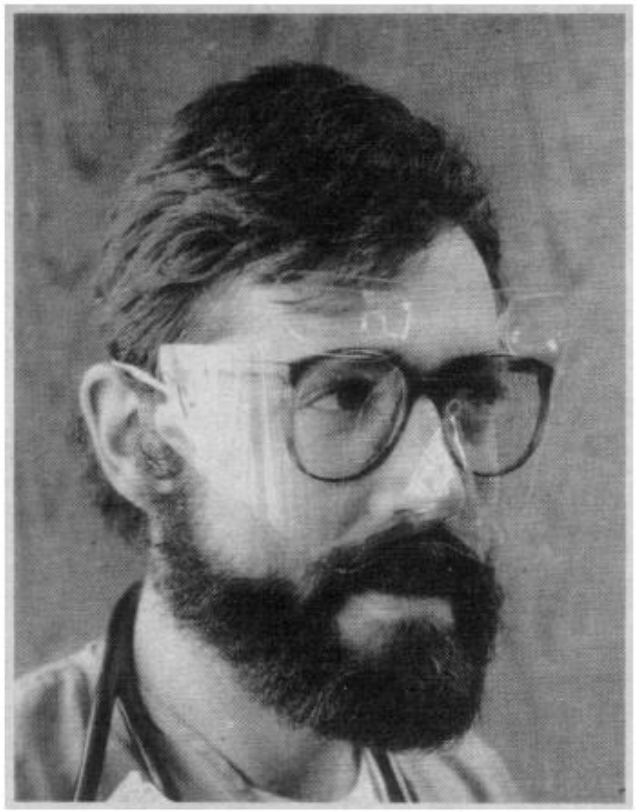
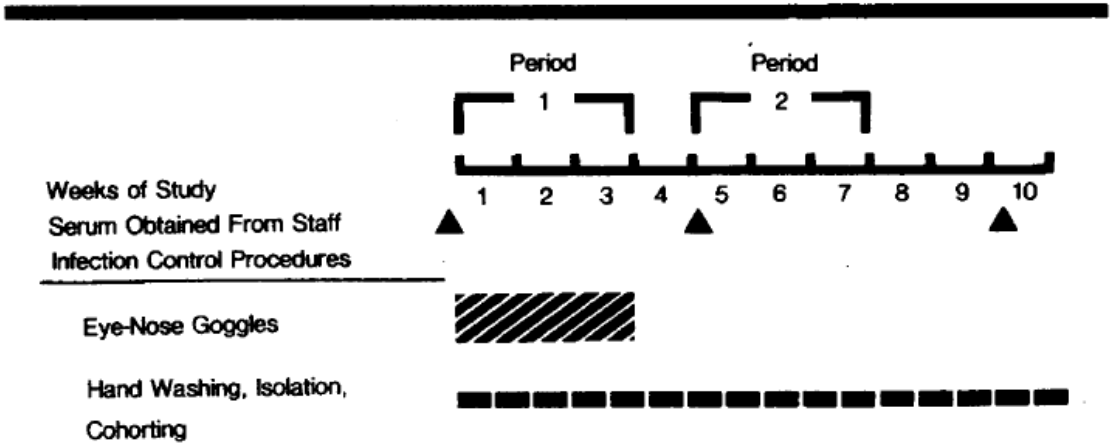


Fig 2.—Staff member wearing disposable plastic eye-nose goggles. Goggles are vented, held in place by elastic band, and able to be used over eyeglasses.

Fig 1.—Study design and infection control procedures utilized during ten weeks.



Coleta de exame nasal e sorológico dos colaboradores a cada 3-4 dias ou sintomas

VSR hospitalar: aquele cujo inicio dos sintomas ocorreu >7 dias após a admissão

Table 1.—Frequency of Respiratory Syncytial Virus Infection in Infants Hospitalized More Than Seven Days During Periods When Eye-Nose Goggles Were Used (Period 1) and Not Used (Period 2) as Detected by Viral Isolation

Period	Total No. of Infants	No. of Infants Admitted With Respiratory Syncytial Virus (% of Admissions)	Infant Contacts		
			Total No.	No. (%) Hospitalized ≥7 d	No. (%) of Contacts Hospitalized ≥7 d With Nosocomial Infection
1	74	15 (20)	59	17 (29)	1 (6)†
2	77*	17 (22)	60	21 (35)	9 (43)†
Total	**151**	**32** (21)	**120**	**38** (32)	**10** (21)

*Includes 13 children studied previously (12 in period 1, one in interim week) who did not acquire respiratory syncytial virus infection but were still hospitalized during the second period.

†Statistical significance, $P=.04$.

Table 2.—Frequency of Respiratory Syncytial Virus Infection in Hospital Personnel During Periods When Eye-Nose Goggles Were Used (Period 1) and Not Used (Period 2) as Detected by Viral Isolation and Serology

Period	No. of Staff Studied	No. Potentially Susceptible	No. (%) Infected According to	
			Viral Isolation	Viral Isolation and Serology
1	40	40	2 (5)*	3 (8)†
2	41	39	11 (28)*	13 (34)†

*Statistical significance, $P=.005$.

†Statistical significance, $P=.003$.

Nosocomial Respiratory Syncytial Virus Infections: The "Cold War" Has Not Ended

Table 1. Infection control procedures, both standard precautions and contact precautions, for prevention of respiratory syncytial virus (RSV) infection.

Recommendation category, procedure	Comment(s)
Category I-B recommendations[a]	
Hand washing	Water with soap or antibacterial agent or waterless antiseptic hand rub
Wearing gloves[b]	Combined with hand washing before and after each glove change; may diminish self-inoculation
Wearing gowns[b]	When direct contact with patient or patient secretions is likely
Wearing masks plus eye protection[b]	Eyes and nose are major sites for inoculation
Housing patients in private rooms or in a cohort isolated from other patients[b]	Patients with documented infection can be grouped and isolated from other patients; beds should be separated by >0.9 m
Use of dedicated patient-care equipment	Equipment, including toys, assigned to specific patients
Sometimes recommended with less or no supporting evidence	
Staff assigned according to patient's RSV status	Specific staff care only for patients with RSV infection
Visitor restrictions during RSV season[b]	Some qualify by restricting young children only
Screening visitors for illness during RSV season	Visitors assessed by trained personnel and/or advised by use of an educational patient information sheet

STATE-OF-THE-ART

Strategies for prevention of RSV nosocomial infection

Journal of Perinatology (2008) 28, 319–323

Table 1 Infection control measures evaluated for prevention of viral NI including RSV in NICUs

General measures most commonly adopted
Rapid screening diagnostic tests
Upon admission to hospital or specialty care unit
Hand hygiene
Alcohol-based rubs
Soap and water
Cohorting of infected patients
Gloving
Wear when entering patient room; change between patients; decontaminate hands after glove removal
Gowning
Wear when entering patient room and change after each patient contact Avoid contact of contaminated gown with clothes
Masks and eye protection
Wear when performing procedures or patient-care activities that might generate sprays of respiratory secretions
Cohorting of health-care staff
Limiting visitors
Visits by family members should be limited and all members should obey appropriate infection containment procedures

Influenza

Pandemic influenza (also a human influenza virus)	D	5 days from onset of symptoms	See http://www.pandemicflu.gov for current pandemic influenza guidance.

http://www.cdc.gov/ncidod/dhqp/pdf/isolation2007.pdf

STUDIES ON INFLUENZA IN THE PANDEMIC OF 1957–1958. I. AN EPIDEMIOLOGIC, CLINICAL AND SEROLOGIC INVESTIGATION OF AN INTRAHOSPITAL EPIDEMIC, WITH A NOTE ON VACCINATION EFFICACY *

62 pessoas confinadas no WardH5: médicos, enfermeiros, acadêmicos, técnicos e 3 padres/pastores: colhida pesquisa viral no 3º. dia e se sintomas

Journal of Clinical Investigation

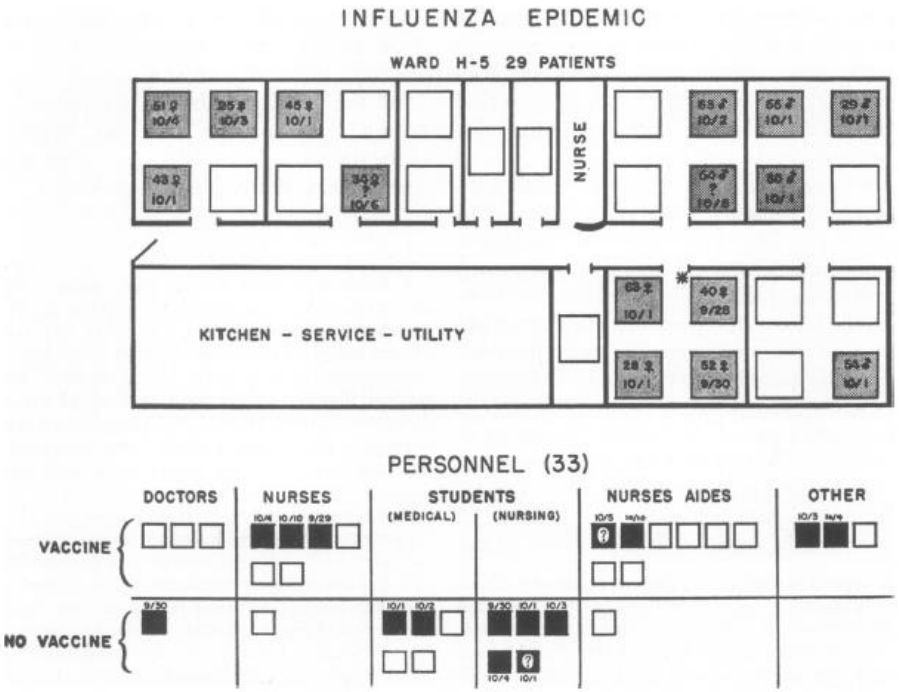


FIG. 1. TOPOGRAPHY OF WARD H5 AND MAKE-UP OF WARD PERSONNEL

Shaded blocks represent individual patients and personnel who developed influenza symptoms. The date of appearance of symptoms is indicated within or above the blocks. The location of the initial case is indicated by an asterisk.

(Submitted for publication July 10, 1958; accepted August 7, 1958)

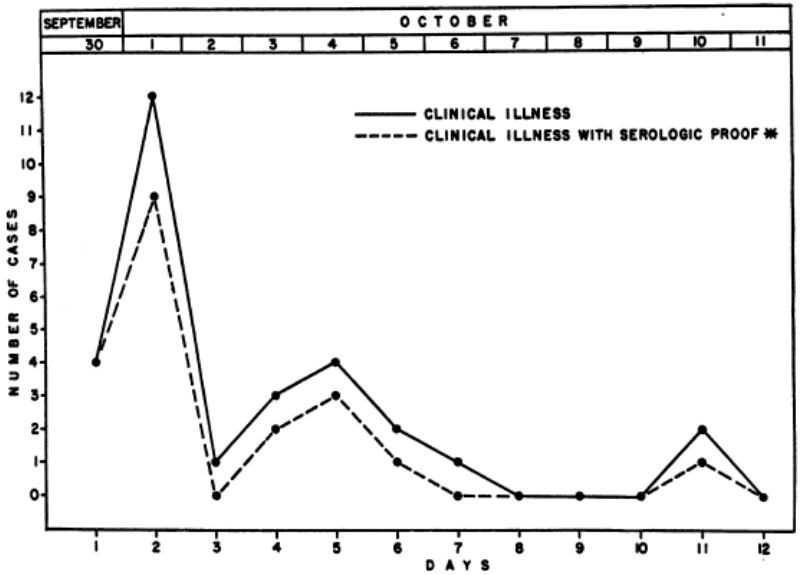


FIG. 2. DAILY APPEARANCE OF NEW CASES OF INFLUENZA ON WARD H5 BY DATE OF MONTH AND DAY OF EPIDEMIC

TABLE IV

Serologic findings on individuals manifesting clinical influenza and/or significant antibody rise

No.	Case	Date, onset of symptoms	Vaccination route, Date	Date of sera		Reciprocal of antibody titers						Significant antibody rise		
				Early	Convalescent	HI-inhibit. resis. virus		HI-inhibit. sens. virus		Comp. fix.		HI-resis. virus	HI-sens. virus	Comp. fix.
1	R. S.	9/28		10/3	10/16	<8	32	160	2,560+	16	4,096+	+	+	+
2	D. B.	9/30		10/3	10/16	<8	<8	80	320	16	64	0	+	+
3	L. F.	9/30	S.C. 9/11	10/4	10/16	<8	16			32	32	+		0
4	S. F.	9/30		10/4	10/16	<8	8	<20	<20	8	128	0	0	+
5	B. N.	9/30		10/3	10/16	<8	64	80	2,560+	16	1,024	+	+	+
6	J. B.	10/1		10/3	10/16	<8	<8	80	80	16	16	0	0	0
7	C. C.	10/1		10/3	10/8	<8	<8	20	160	4	4	0	+	0
8	G. C.	10/1		10/3	10/16	8	<8			<4	16	0		+
9	M. D.	10/1		10/3	10/16	8	<8	<20	<20	8	8	0	0	0
10	S. D.	10/1		10/3	10/16	<8	16	20	20	8	16	+	0	0
11	J. G.	10/1		10/4	10/16	<8	<8			8	32	0		+
12	V. G.	10/1		10/3	10/16	16	<8			<4	<4	0		0
13	E. L.	10/1		10/3	10/16	16	64	160	320	16	512	+	0	+
14	R. K.	10/1		10/3	10/24	<8	<8	20	80	32	64	0	+	0
15	A. M.	10/1		10/3	10/8	16	32	80	160	8	128	0	0	+
16	K. N.	10/1		10/3	10/24	<8	16	160	160	32	128	+	0	+
17	G. V.	10/1		10/3	10/16	32	32	<20	40	32	512	0	+	+
18	J. S.	10/2												
19	E. C.	10/3		10/3	10/16	<8	<8	160	640	8	1,024	0	+	+
20	M. R.	10/3	S.C. 9/11	10/3	10/16	<8	<8	160	160	8	64	0	0	+
21	M. T.	10/3												
22	M. E.	10/4		10/3	10/16	<8	<8			8	64	0		+
23	A. F.	10/4	S.C. 9/11	10/3	10/16	<8	<8	80	80	64	64	0	0	0
24	E. H.	10/4		10/3	10/16	8	8	20	320	8	16	0	+	0
25	L. S.	10/4	S.C. 9/11	10/3	10/24	8	64	80	2,560+	64	256	+	+	+
26	I. C.	10/5		10/3	10/24	<8	8	20	80	8	256	0	+	+
27	J. L.	10/5	S.C. 9/11											
28	A. P.	10/6		10/3	10/16	16	8	320	320	16	16	0	0	0
29	M. B.	10/10	S.C. 9/11	10/3	10/17	<8	16	160	640	8	16	+	+	0
30	L. J.	10/10	I.D. 10/2	10/2	11/1			40	160				+*	
31	G. B.		I.D. 9/11	10/3	10/16	<8	8	80	1,280	8	16	0	+	0
32	D. D.			10/3	10/16	<8	<8	80	1,280	8	8	0	+	0
33	Z. H.			10/3	10/16	<8	16	20	160	32	64	+	+	0
34	R. K.			10/3	10/16	<8	<8	<20	80	8	4	0	+	0
35	F. L.			10/3	10/16	<8	8	20	40	16	64	0	0	+
36	V. N.			10/3	10/16	8	8	160	80	4	128	0	0	+
37	A. S.			10/3	10/16	8	8	<20	160	<4	32	0	+	+
38	K. W.			10/3	10/17	<8	8	80	320	64	32	0	+	0

* This antibody rise was assumed to be due to vaccination

TABLE V

Incidence of influenza in vaccinated and nonvaccinated individuals

Group	No. developing clinical influenza / No. at risk	No. with significant antibody titer rise / No. tested
Vaccinated	7/20 (35%)	5/16 (31%)
Nonvaccinated	23/42 (55%)	24/37 (65%)

AN OUTBREAK OF INFLUENZA ABOARD A COMMERCIAL AIRLINER

AMERICAN
Journal of Epidemiology
Formerly AMERICAN JOURNAL OF HYGIENE

VOL. 110 JULY, 1979 NO. 1

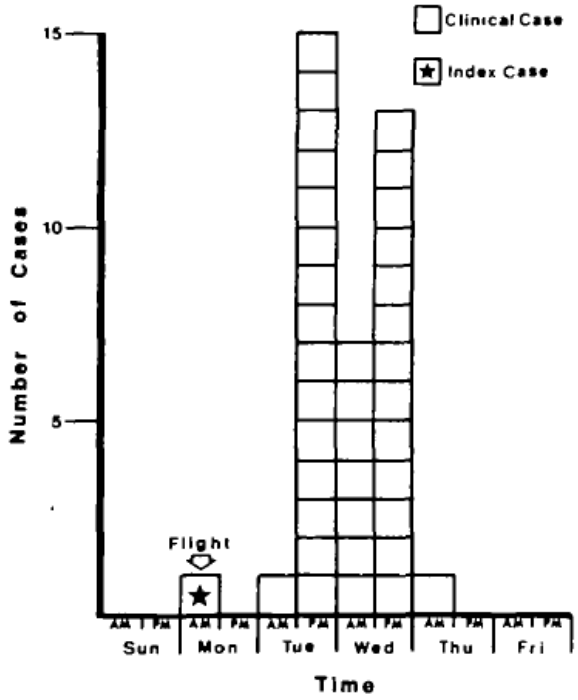


FIGURE 1. Onset of clinical influenza among 37 persons following exposure to an index case aboard a delayed airliner, Homer, Alaska, March, 1977.

TABLE 2

*Association of clinical influenza with time spent on delayed airliner, Homer, Alaska, March, 1977**

Time (hours)	No.† (ill/at risk)	Attack rate (%)
<1	8/15	53
1–3	5/9	56
>3	25/29	86

* $\chi^2 = 6.657$ ($p < 0.05$).
† Excludes index case.

Rinovírus

Rhinovirus	D	DI	Droplet most important route of transmission [104, 1090]. Outbreaks have occurred in NICUs and LTCFs [413, 1091, 1092]. Add Contact Precautions if copious moist secretions and close contact likely to occur (e.g., young infants) [111, 833].

- Sítio inicial de infecção é a nasofaringe, normalmente por auto-inoculação e gotículas.
  - Voluntários que jogaram cartas por 12 horas tiveram taxa de ataque semelhante quando podiam e não podiam tocar a face.

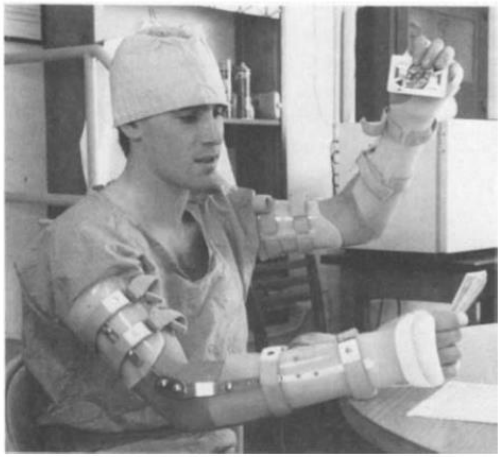


Figure 2. The arm braces used for restraining half of the recipients in experiments B and C. The braces allowed normal poker playing but prevented the wearer from touching any part of his head or face.

Aerosol Transmission of Rhinovirus Colds

J Infect Dis. (1987) 156 (3): 442-448

- Período de maior risco de contágio: primeiros 5 dias (5-7 dias)

Adv Virus Res. 1999;54:453-66.

Clinical virology of rhinoviruses.

JAMA

October 3, 1986

Sites of Rhinovirus Recovery After Point Inoculation of the Upper Airway

April 1978 • Annals of Internal Medicine • Volume 88 • Number 4

Hand-to-Hand Transmission of Rhinovirus Colds

JACK M. GWALTNEY, Jr., M.D., F.A.C.P.; PATRICIA B. MOSKALSKI; and J. OWEN HENDLEY, M.D.; Charlottesville, Virginia

bacteria, fungi, and *Mycobacterium tuberculosis*. The donor of the nasal secretions was in good general health and had a negative chest roentgenogram, tuberculin skin test, and serum test for hepatitis B antigen.

Doadores soavam o nariz

3 contatos das mãos por 10 segundos do 3º. ao 5º. Dia, ambos com mascara

Receptores levavam as mãos no nariz e mucosa

AEROSSOL “Grande”: Doadores e receptores em uma mesa redonda de 70 cm de diâmetro. Doador tossia, ria, falava alto e espirrava por 15 minutos.

AEROSSOL “Pequeno”: Doadores e receptores na mesma sala mas separados por uma parede feita de rede metálica, durante 3 dias. Contados quantos espirros e tosses.

Table 1. Transmission of Infection, Coughing, Sneezing, and Shedding of Virus by Donors with Experimental Rhinovirus Colds

Donor	Transmissions			Coughs			Sneezes		
	Hand to Hand	Large Particle	Small Particle	Day 1	Day 2	Day 3	Day 1	Day 2	Day 3
1	1/2‡	ND	0/2	43	30	4	1	0	0
2	3/3	0/2	0/2	ND	ND	ND	ND	ND	ND
3	3/3	ND	0/2	27	38	9	17	6	0
4	1/2	0/3	0/2	2	3	13	7	6	6
5	2/2	1/3	0/1	143	160	59	0	0	0
6	1/3	0/4	0/1	131	214	171	1	0	0
	11/15††	1/12	0/10	69‡‡	89	51	5	2	1

* Day of attempted transmission; Day 1 was the third day after the first inoculation of the donors.
† Number of recipients infected/number exposed.
‡ Presence or absence of virus on donor's hands at the time of exposure to Recipient 1.
§ Presence or absence of virus on donor's hands at the time of exposure to Recipient 2.
‖ Presence or absence of virus on donor's hands at the time of exposure to Recipient 3.
** ND = not done.
†† Hand contact versus large particle, $P < 0.005$ (Fisher's exact test); hand contact versus small particle, $P < 0.005$.
‡‡ Average.

Table 2. Frequency and Amount of Viral Shedding and Hand Contamination by Donors

	By Site			Nasal Shedding by Day					
	Nasal Swab	Hand Rinse	Saliva	1*	2	3†	4†	5†	6
Number positive/number of specimens	9/18 (50%)	28/43 (65%)	7/18 (39%)	0/6‡	4/6‡	4/6‡	2/6‡	3/6‡	0/4‡
Geometric mean titer§	$10^{1.5}$	$10^{1.4}$	$10^{1.2}$	. . .	$10^{1.1}$	$10^{2.1}$	$10^{1.25}$	$10^{1.25}$	. . .

* First day after initial challenge of donors.
† Exposure days.
‡ Number of donors.
§ Tissue culture infectious dose$_{50}$/ml (TCID$_{50}$/ml).

VARICELA

An Outbreak of Airborne Nosocomial Varicella

PEDIATRICS Vol. 70 No. 4 October 1982

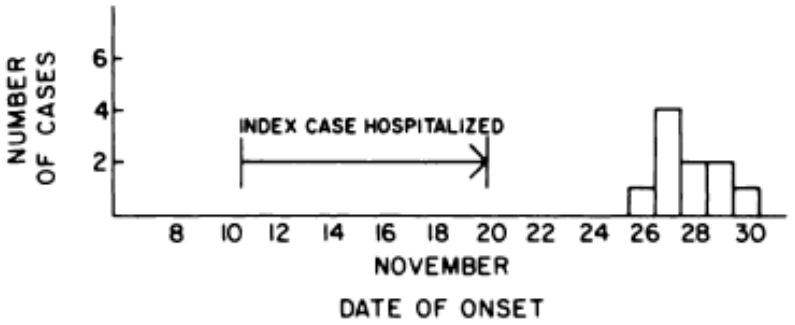
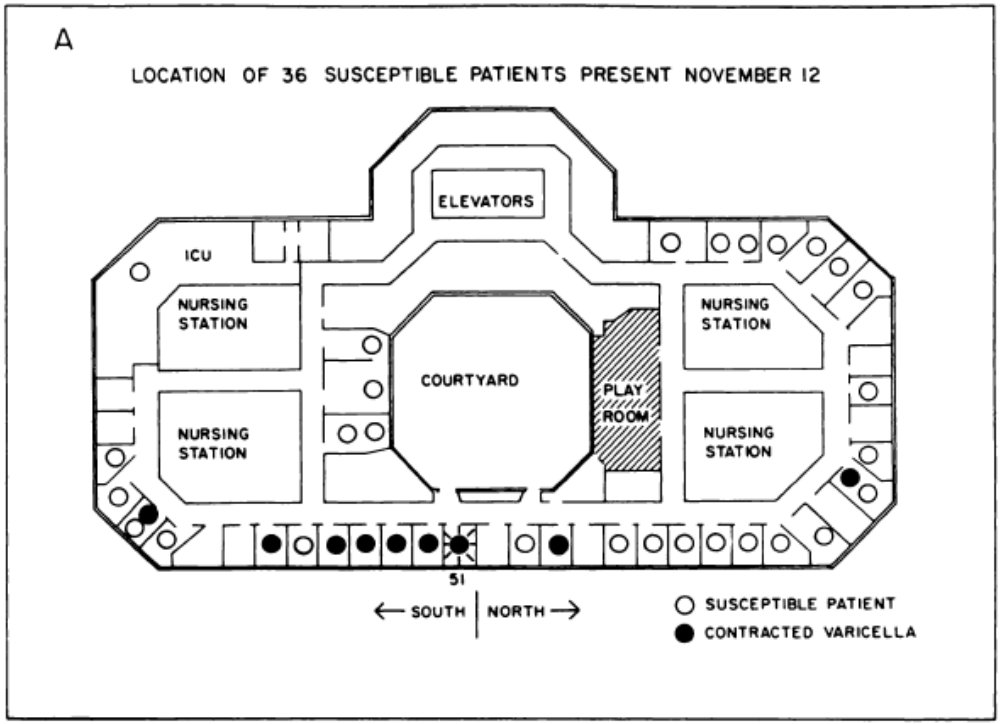
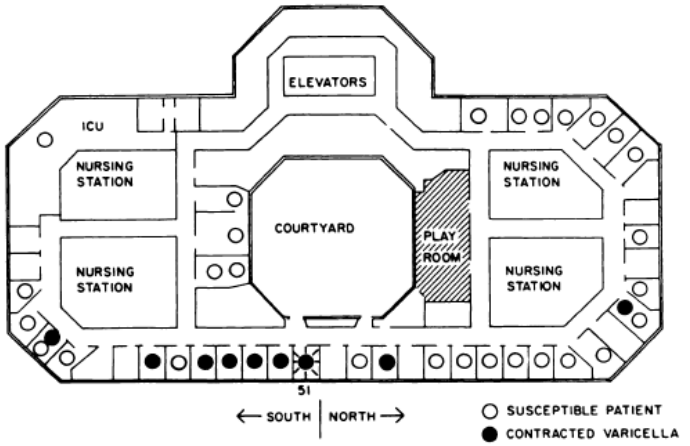


Fig 1. Ten cases of nosocomial varicella, Tennessee, 1980.



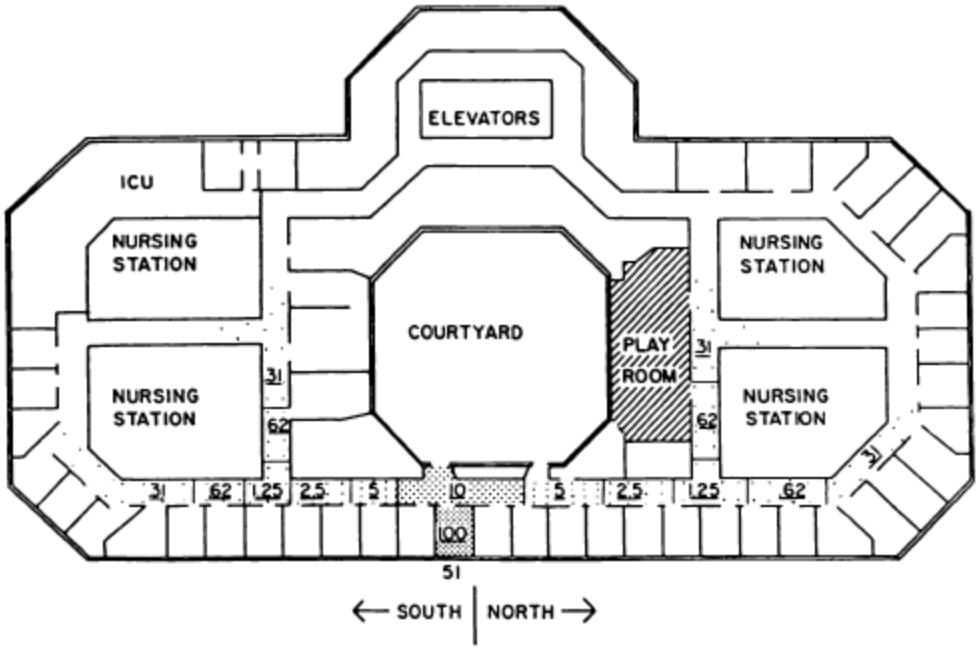
A

LOCATION OF 36 SUSCEPTIBLE PATIENTS PRESENT NOVEMBER 12



B

CONCENTRATION GRADIENTS OF TRACER GAS IN CORRIDORS



The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Evidence of Airborne Transmission of the Severe Acute Respiratory Syndrome Virus

Ignatius T.S. Yu, M.B., B.S., M.P.H., Yuguo Li, Ph.D., Tze Wai Wong, M.B., B.S., Wilson Tam, M.Phil., Andy T. Chan, Ph.D., Joseph H.W. Lee, Ph.D., Dennis Y.C. Leung, Ph.D., and Tommy Ho, B.Sc.

N ENGL J MED 350;17 WWW.NEJM.ORG APRIL 22, 2004

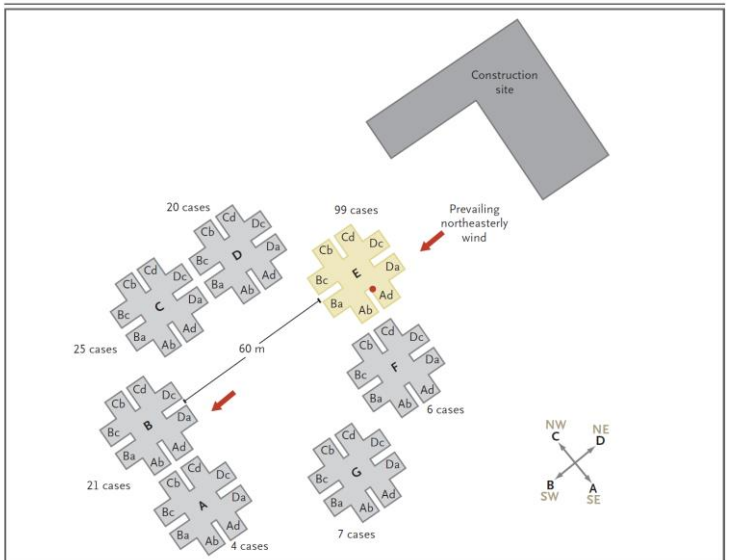


Figure 1. Distribution of Cases of SARS Infection in Buildings A to G in the Amoy Gardens Housing Estate.

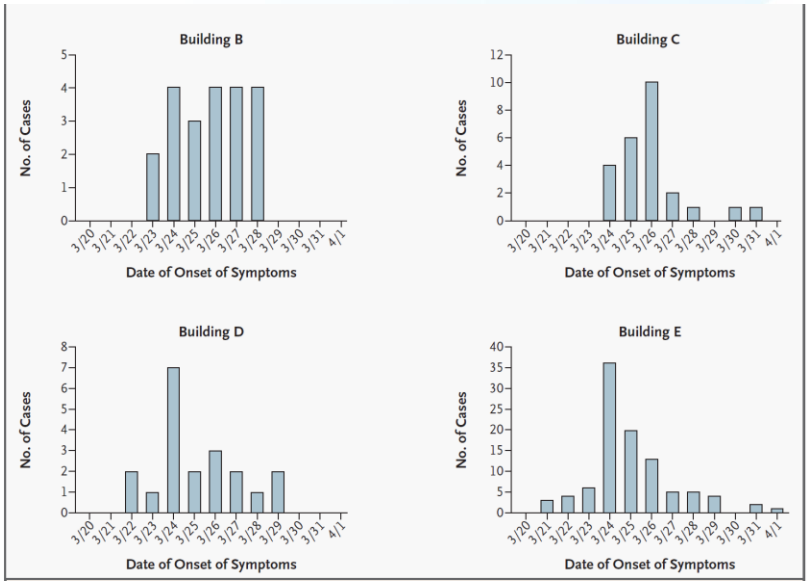


Figure 2. Epidemic Curves for All Buildings and for Buildings B, C, D, and E.

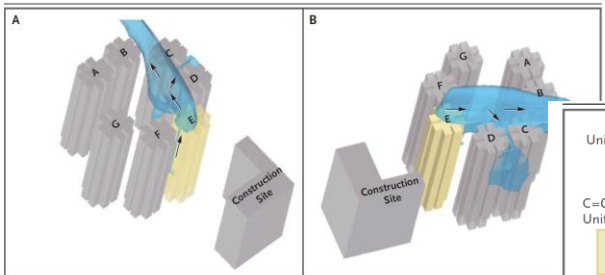


Figure 3. Model of the Movement of the Virus-Laden Plume.

According to our computational fluid-dynamics modeling, the buoyant plume (blue) rose from the air shaft betw housing units in building E (yellow) and was carried by a northeasterly wind toward the middle-level floors in b C and D. The L-shape structure (Panels A and B) was a nearby construction site that blocked the wind flowing t lower-level floors in buildings E, C, and D. The wake flow of the construction site created a region of negative air in the space between buildings E, C, and D (Panel B) that caused the plume to bend downward, toward buildings

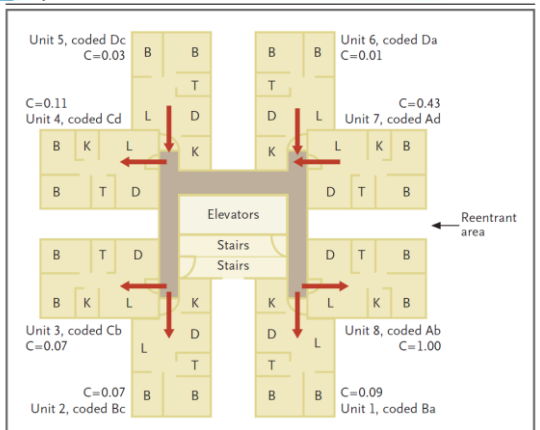


Figure 4. Predicted, Time-Averaged, "Normalized" Concentration of Virus-Laden Aerosols in Apartment Units 1 to 8 in Building E.

JAMA Internal Medicine | Original Investigation

Community Outbreak Investigation of SARS-CoV-2 Transmission Among Bus Riders in Eastern China

Ye Shen, PhD; Changwei Li, PhD; Hongjun Dong, MD; Zhen Wang, MD; Leonardo Martinez, PhD; Zhou Sun, MD; Andreas Handel, PhD; Zhiping Chen, MD; Enfu Chen, MD; Mark H. Ebell, MD, MS; Fan Wang, MA; Bo Yi, MD; Haibin Wang, MD; Xiaoxiao Wang, MD; Aihong Wang, MD; Bingbing Chen, MD; Yanling Qi, PhD; Lirong Liang, MD, PhD; Yang Li, PhD; Feng Ling, MD; Junfang Chen, MD; Guozhang Xu, MD

JAMA Intern Med. 2020;180(12):1665-1671. doi:10.1001/jamainternmed.2020.5225
Published online September 1, 2020. Corrected on January 25, 2021.

293 lay Buddhists, 2 bus drivers, and 5 monks attending an outdoor worship event held in a temple in Ningbo city of Zheji-

Ônibus 1: 59 pessoas
Ônibus 2: 67 pessoas

Viagem de 100 minutos (50+50)

Evento de 150 minutos ao ar livre com lanche em mesas redondas de 10 pessoas em sala espaçosa sem sistema de recirculação de ar.

Sem uso de máscaras.

Ninguém do ônibus 1 pegou COVID
7 pessoas que não foram de ônibus pegaram
Risco de pegar COVID se ônibus 2: 42.2 (95% CI, 2.6-679.3)

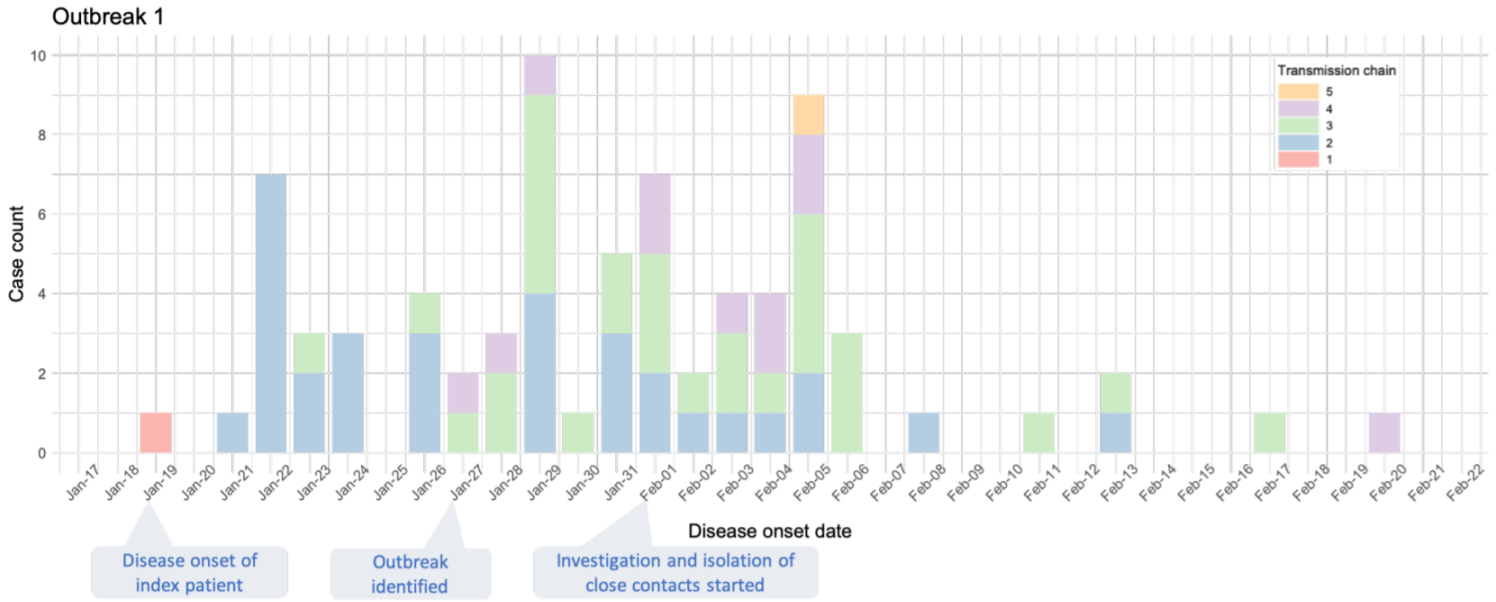
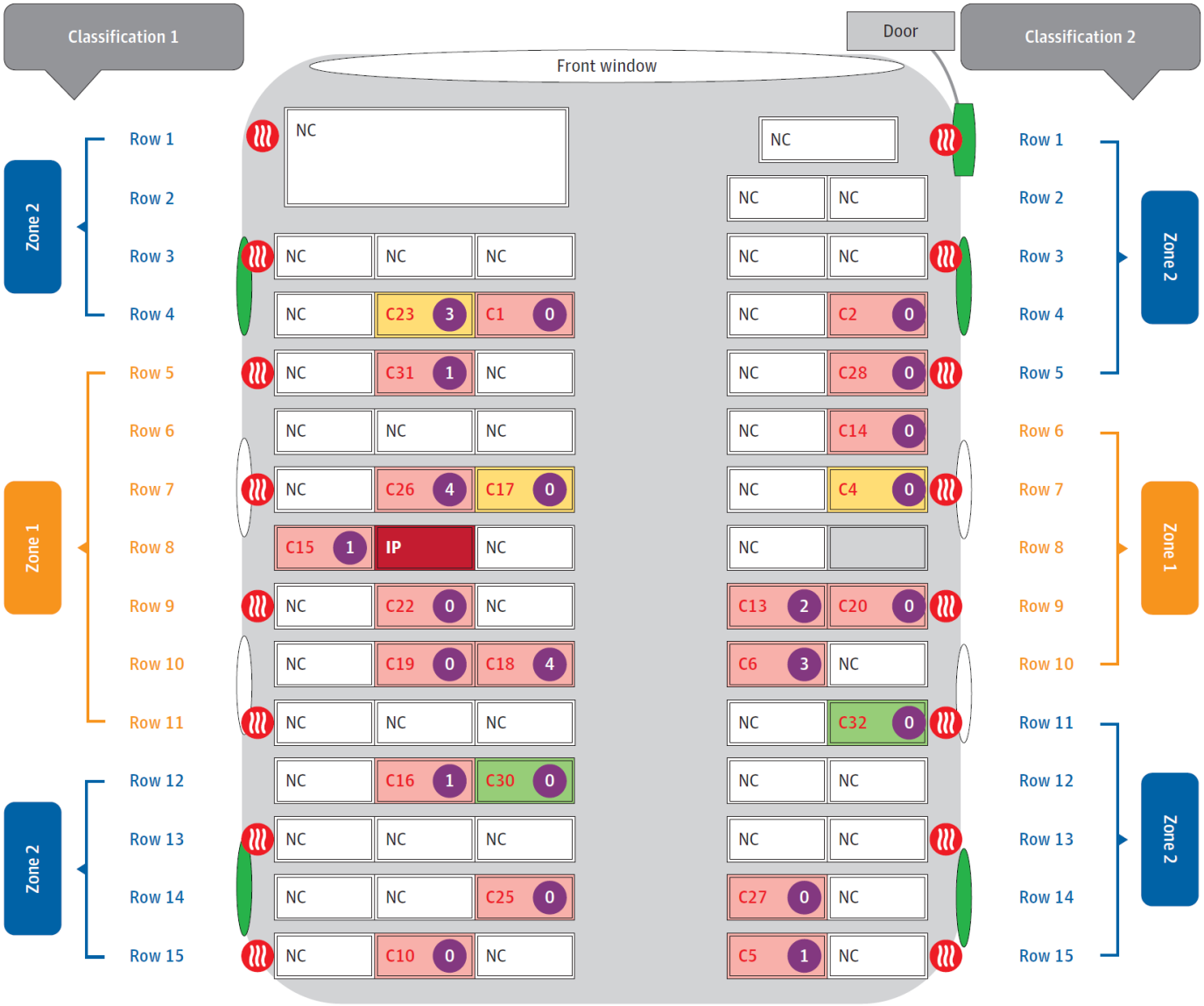


Figure S1: Disease onset dates of lay Buddhist passengers relative to the index patient who took Bus 2. Transmission chain:

1 - Index patient; 2 - Secondary cases; 3 - Tertiary cases; 4 - Quaternary cases; 5 – Quinary cases.

Figure. Schematic Diagram of Bus 2, the Bus Carrying the Coronavirus Disease 2019 (COVID-19) Initial Patient (IP)



Noncase | Asymptomatic case | Mild case | Moderate case | The index patient (a moderate case) | # No. of tertiary cases infected | Air vents (warm air)

Sem diferença de taxa de ataque entre áreas de “alto” e “baixo” risco.

Excreção viral

Long-Term Shedding of Influenza Virus, Parainfluenza Virus, Respiratory Syncytial Virus and Nosocomial Epidemiology in Patients with Hematological Disorders

Nicola Lehners[1☯], Julia Tabatabai[2☯], Christiane Prifert[3], Marianne Wedde[4], Joe Puthenparambil[1], Benedikt Weissbrich[3], Barbara Biere[4], Brunhilde Schweiger[4], Gerlinde Egerer[1], Paul Schnitzler[2]*

PLOS ONE

2016

- Estudo retrospectivo no dpto de Hematologia, em Heildelberg, Alemanha
- Screening dos pacientes na entrada e se qualquer sintoma respiratório na internação ou acompanhamento ambulatorial

  PCR –RT no lavado nasal (Influenza, PIV e VSR)
- Pacientes + → teste repetido até clearance viral

672 pacientes testados

111 positivos 40 Influenza
13 PIV
64 VSR
6 co-infecções

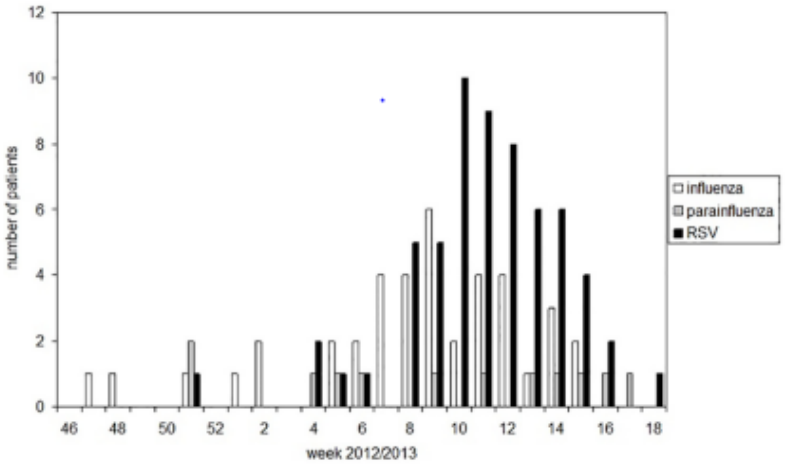


Fig 1. Cases of influenza virus, parainfluenza virus and RSV infections in the hematology unit during the winter of 2012/2013 by week of laboratory confirmation.

Medidas de controle:

1) Isolamento até 2 swabs negativos
2) Isolamento de contato
3) Coorte de pacientes
4) Uso de Máscara
5) Higienização das mãos
6) Isolamento de novos pacientes
7) Redução de visitas
8) Proibição de <12 anos
9) Visitas com sintomas respiratórios proibidas

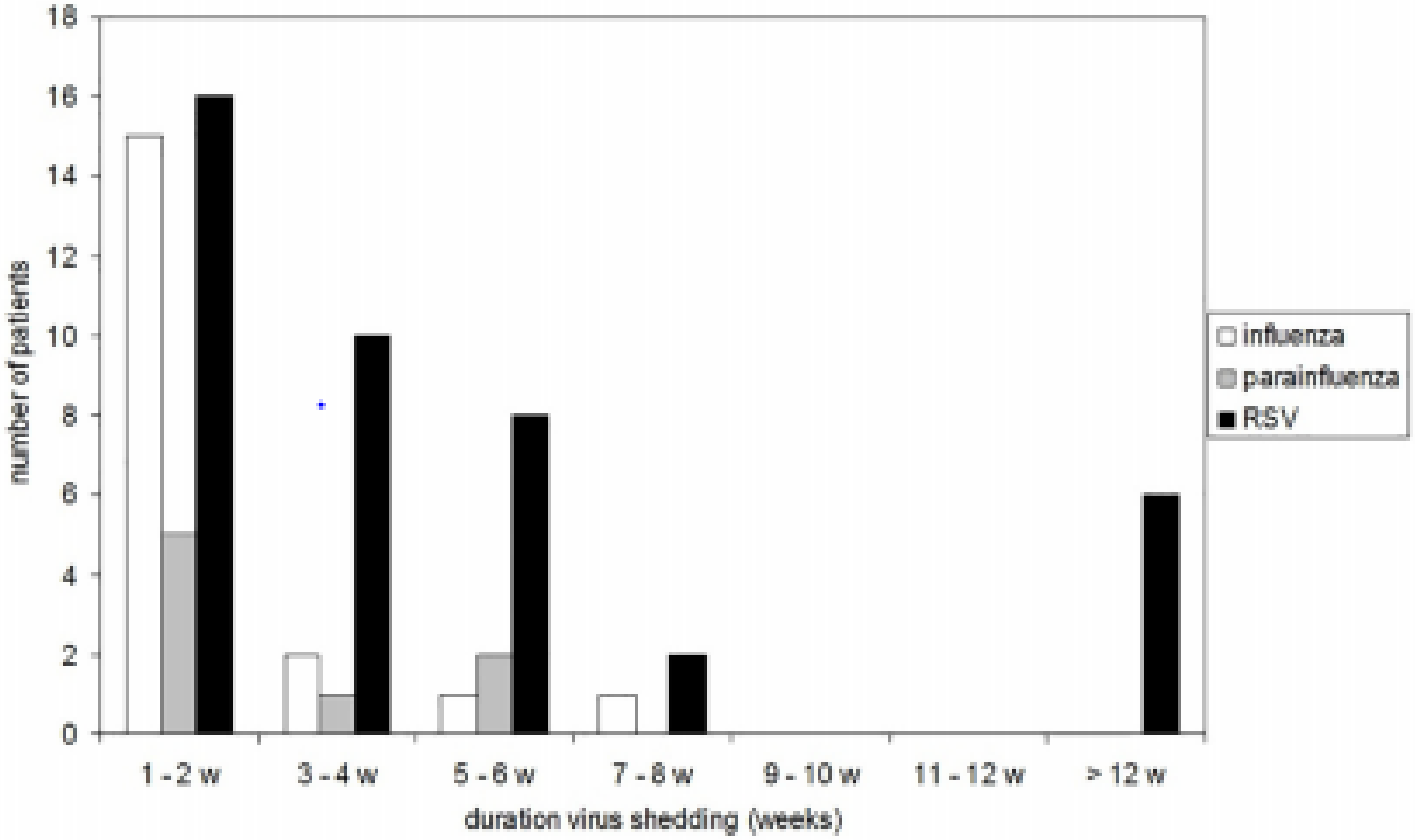


Fig 5. Duration of influenza virus, parainfluenza virus and RSV shedding periods.

Resultados

TCTH alogênico

14/20 X 34/91→ = 0,01

Table 2. Long-term viral shedding more than 30 days.

patient	sex	age	underlying disease	transplant status	URTI/LRTI	infection	virus type	shedding duration	clearance
P31	m	66	CLL	allogeneic	URTI	influenza	H3N2	48 d	yes
P32	m	34	ALL	-	URTI	influenza	H1N1	41 d	yes
P33	m	55	MM	auto/allo	LRTI	RSV	A ON1	35 d	yes
P48	m	52	MM	auto/allo	LRTI	RSV	A ON1 cluster 1	334 d	yes
P51	m	69	MDS	allogeneic	LRTI	RSV	A ON1 cluster 1	111 d	yes
P52	m	55	DLBCL	autologous	LRTI	RSV	A ON1 cluster 2	156 d	no[a]
P55	m	66	MM	autologous	URTI	RSV	A ON1 cluster 1	40 d	yes
P56	m	34	AML	allogeneic	LRTI	RSV	A ON1 cluster 2	90 d	yes
P57	m	53	MM	auto/allo	LRTI	RSV	A ON1 cluster 1	39 d	yes
P59	f	66	MM	auto/allo	URTI	RSV	A ON1 cluster 1	43 d	yes
P61	m	54	MM	autologous	URTI	RSV	A ON1 cluster 1	57 d	no[b]
P68	m	56	AML	-	LRTI	RSV	A ON1 cluster 2	33 d	yes
P79	f	38	ALL	allogeneic	URTI	RSV	A ON1 cluster 1	91 d	yes
P82	f	63	MM	auto/allo	LRTI	RSV	A ON1 cluster 1	38 d	yes
P88	m	62	AML	allogeneic	URTI	parainfluenza	3	30 d	yes
P95	m	51	pancr. cancer	allogeneic	LRTI	RSV	A ON1 cluster 1	91 d	yes
P102	m	49	ALL	allogeneic	URTI	RSV	A ON1	35 d	yes
P103	f	55	TNHL	-	LRTI	RSV	B BA IX	40 d	yes
P105	f	49	MM	auto/allo	LRTI	parainfluenza	3	36 d	yes
P107	f	71	Burkitt	auto/allo	URTI	RSV	A ON1	57 d	yes

[a] died while still shedding,

[b] lost to follow-up; m: male,

f: female, ALL: acute lymphatic leukemia; AML: acute myeloid leukemia; CLL: chronic lymphatic leukemia; DLBCL: diffuse large B-cell lymphoma; LRTI: lower respiratory tract infection; MM: multiple myeloma; MDS: myelodysplastic syndrome; RSV: respiratory syncytial virus; TNHL: T-cell non-Hodgkin lymphoma; URTI: upper respiratory tract infection

Gotícula OU Aerossol? -> ESPECTRO!!!!!!!

Uso de Máscara – “sistemático” ou precaução padrão?

As pessoas sabem que PP envolve uso de máscaras?

Tempo de isolamento?

- Duração da doença?
- Até alta para imunossuprimidos?
- Exame negativo?
  - Excreção intermitente
  - Alto custo
- Avaliar custo isolamento x exame

Visitantes??

Profissionais da área da saúde??