

Adherence to hand hygiene and risk factors for poor adherence in 13 Ontario acute care hospitals

Dominik Mertz, MD,^{a,b} Jennie Johnstone, MD,^{a,b,c} Paul Krueger, PhD,^{a,d} Kevin Brazil, PhD,^{a,e} Stephen D. Walter, PhD,^a and Mark Loeb, MD, MSc^{a,b,c,f}
Hamilton and Toronto, Ontario, Canada

Multicenter studies assessing hand hygiene adherence and risk factors for poor performance are scarce. In an observational study involving 13 hospitals across Ontario, Canada, we found a mean adherence rate of 31.2%, and that adherence was positively associated with nurses, single rooms, contact precautions, and the availability of alcohol hand rub dispensers.

Key Words: Hand hygiene; adherence risk factor; Ontario; multicenter.

Copyright © 2011 by the Association for Professionals in Infection Control and Epidemiology, Inc. Published by Elsevier Inc. All rights reserved. (*Am J Infect Control* 2011;39:693-6.)

Hand hygiene is the single most important factor in preventing hospital-acquired infections,¹ but adherence remains low.¹⁻⁵ Reasons are multifactorial but include type and sex of the health care worker (HCW), accessibility of alcohol-based hand rub dispensers, indication for contact precautions, type of room and unit, and workload, as summarized by World Health Organization (WHO) guidelines.¹ However, evidence from multicenter studies assessing risk factors for poor hand hygiene adherence is scarce. We assessed this question among HCWs in 13 hospitals across Ontario.

METHODS

Five tertiary care and 4 community health care centers in Ontario, Canada, were enrolled, totaling 13 public acute care hospital sites and 123 hospital units. The study was approved by each center's Research Ethics Board.

Nine trained observers (interobserver reliability, >0.85) used a standardized hand hygiene instrument, comparable with the instrument used in a recent cluster-randomized trial on hand hygiene,⁵ which was adapted to Boyce's Hand Hygiene Monitoring Tool (John M. Boyce, Hospital Saint Raphael, New Haven, CT).⁴ Adherence was directly observed during randomly selected 20-minute intervals between 8:00 a.m. and 8:00 p.m. (February 2005-June 2006).

For the primary outcome of hand hygiene adherence, each opportunity was assessed and was defined as successful if the HCW either rubbed their hands with an alcohol-based hand rub or washed them with soap and water. An opportunity consisted of 1 or more of the following indications for hand hygiene as similarly defined in the recent WHO guidelines¹: before first patient contact; before and after contact with patient's skin, wounds, mucous membrane; risk of contact with body fluids; before and after care or insertion of an intravenous line or handling similar devices; after contact with inanimate objects and patients' gowns; and after removal of gloves. As a secondary outcome, the adherence rate for each HCW patient contact was calculated by dividing the number of successful opportunities by the total number of opportunities.

To determine predictors of hand hygiene, we performed logistic regression analysis. All predictors were chosen a priori (Table 1). To control for dependence of opportunities of hand hygiene within the

From the Department of Clinical Epidemiology and Biostatistics,^a Michael G. DeGroote Institute for Infectious Disease Research,^b and Department of Medicine, McMaster University, Hamilton, Ontario, Canada^c; Department of Family and Community Medicine, University of Toronto, Toronto, Ontario, Canada^d; St. Josephs Health System, Ontario, Canada^e; and Department of Pathology and Molecular Medicine, McMaster University, Hamilton, Ontario, Canada.^f

Address correspondence to Mark Loeb, MD, MSc, Professor, Departments of Pathology and Molecular Medicine and Clinical Epidemiology and Biostatistics, McMaster University, MDCL 3203, 1200 Main St W, Hamilton, ON, L8N 3Z5, Canada. E-mail: loebm@mcmaster.ca.

Supported by the Canadian Institute of Health Research (CIHR); by a research scholarship from the Swiss National Science Foundation (PBBSP3-124436, PASMP3-132571 to D.M.) and the Lichtenstein-Stiftung, Basel, Switzerland (to D.M.); and by the McMaster University Infectious Diseases Bayer Healthcare Research Fellowship (2009-2010 to J.J.) and the Canadian Thoracic Society (2010-2011 to J.J.).

Conflicts of interest: None to report.

0196-6553/\$36.00

Copyright © 2011 by the Association for Professionals in Infection Control and Epidemiology, Inc. Published by Elsevier Inc. All rights reserved.

doi:10.1016/j.ajic.2010.12.002

Table 1. Hand hygiene adherence among 13 hospital sites in Ontario

	Single opportunities (n = 9,511)					HCW patient contacts (n = 3,697)				
	n	%	Adherence rate, %	OR (95% CI) single factor*	OR (95% CI) multivariable*	n	%	Adherence rate, %	OR (95% CI) single factor*	OR (95% CI) multivariable*
Overall	9,511	100	31.2			3,697	100	27.5		
Type of hospital										
Tertiary care center	7,600	80	31.5	1.04 (0.88-1.22)		2,925	79	27.6	1.02 (0.86-1.22)	
Community hospital	1,911	20	29.8			772	21	27.0		
Type of unit										
On intensive care units	2,354	25	36.2	1.38 (1.18-1.61) [†]	1.03 (0.86-1.25)	875	24	32.7	1.36 (1.16-1.60) [†]	1.00 (0.83-1.22)
On medical units	4,548	48	29.2			1,773	48	25.9		
On surgical units	2,013	21	29.6			810	22	25.0		
On rehabilitation units	596	6	31.9			239	6	29.0		
Type of room	Missing data in n = 126 (1.3%)					Missing data in n = 60 (1.6%)				
Single room	3,813	41	38.7	1.76 (1.54-2.03) [†]	1.53 (1.29-1.81) [†]	1,408	38	34.7	1.79 (1.55-2.07) [†]	1.56 (1.31-1.87) [†]
Double room	3,593	38	28.1			1,452	39	24.4		
Triple room	681	7	20.9			244	7	18.9		
Quad room	1,298	14	23.7			533	14	21.5		
Type of contact										
Contact precautions	1,006	89	52.2	2.69 (2.20-3.29) [†]	2.44 (1.96-3.04) [†]	367	10	47.6	2.90 (2.33-3.61) [†]	2.64 (2.09-3.33) [†]
No contact precautions	8,505	11	28.7			3,330	90	25.3		
Group of HCW	Missing data in n = 59 (0.6%)					Missing data in n = 24 (0.6%)				
Nurses	7,497	79	33.0	1.64 (1.38-1.96) [†]	1.69 (1.39-2.05) [†]	2,809	76	29.8	1.77 (1.48-2.12) [†]	1.84 (1.50-2.25) [†]
Physicians/medical students	738	8	26.0			323	9	21.9		
Allied HCW	614	7	29.0			234	6	25.5		
Patient service associates	603	6	17.7			307	8	14.6		
Sex of HCW	Missing data in n = 68 (0.7%)					Missing data in n = 26 (0.7%)				
Female	8,282	88	31.4%	1.17 (0.95-1.44)	1.02 (0.81-1.29)	3,181	86	27.9	1.20 (0.97-1.48)	1.04 (0.82-1.32)
Male	1,161	12	29.7%			490	13	24.7		
Hand rub dispensers	Missing data in n = 166 (1.7%)					Missing data in n = 70 (1.9%)				
Not available	943	10	13.4%	0.74 (0.58-0.94) [†]	0.72 (0.56-0.93) [†]	362	10	22.3	0.69 (0.54-0.89) [†]	0.67 (0.52-0.87) [†]
Only inside the room	1,818	19	30.5%			693	19	26.8		
Only outside the room	6,448	69	31.8%			2,527	68	28.2		
In and outside the room	136	2	36.8%			45	1	40.1		

CI, confidence interval; HCW, health care worker; OR, odds ratio.

*Odds ratio for adherence, comparing the first/indicator category to all the other categories of each variable combined (additionally to the variables shown here, the hospital site was entered into the multivariable model).

[†]Statistically significant ($P < .05$). Note, type of hospital not entered in multivariable analysis ($P > .2$ in single-factor analysis).

Download English Version:

<https://daneshyari.com/en/article/2637911>

Download Persian Version:

<https://daneshyari.com/article/2637911>

[Daneshyari.com](https://daneshyari.com)