

Interventions to improve hand hygiene compliance in patient care: Evidence and implications for public health

Review on which this evidence summary is based:

Gould, D.J., Moralejo, D., Drey, N., & Chudleigh, J.H. (2010). **Interventions to improve hand hygiene compliance in patient care.** *Cochrane Database of Systematic Reviews*, Issue 9, Art. No.: CD005186. DOI: 10.1002/14651858.CD005186.pub3

Note: The Cochrane review that this evidence summary is based on has been updated. This evidence summary summarizes the above-cited version of this review, not the updated version.

Review Focus

- P** Nurses, doctors and other allied health professionals (except operating room staff)
- I** Any intervention to improve hand hygiene guideline compliance using aqueous solutions and/or alcohol based products (e.g. education, audit with performance feedback, etc.)
- C** Usual practice
- O** *Primary Outcomes:* Rates of observed hand hygiene compliance and/or a proxy indicator of hand washing compliance (e.g. increased use of hand washing products). *Secondary Outcomes:* Reduction in healthcare-associated infection and/or colonization rates by nosocomial pathogens

Review Quality Rating: 10 (strong) *Details on the methodological quality are available [here](#).*

Considerations for Public Health Practice

Conclusions from Health Evidence

This high quality review is based on primary studies of poor methodological quality and small sample sizes.

Improved hand hygiene compliance was achieved with:

- a multi-year, national marketing campaign, with a corresponding decrease in MRSA cases, but no decrease on rates of *C. difficile* or antibiotic use.

Improved hand hygiene was *inconsistently* achieved with:

- universal precautions education for nurses
- staff-designed hand hygiene programs and promotions

Improved hand hygiene compliance was *not* achieved with:

- product substitution (e.g. ABHR for soap) alone

There is still not enough evidence to be certain which strategies improve hand hygiene compliance. Given much hospital-acquired infection is spread via direct contact, it is logical that initiatives to promote proper hand hygiene are worth undertaking.

General Implications

Limited evidence suggests public health *should* support:

- national, multi-year social marketing campaigns (e.g. WHO's *Clean Care is Safer Care*) to potentially increase healthcare workers use of alcohol-based hand rubs (ABHR) and decrease the number of new MRSA cases
- staff participation in developing hand hygiene programs, though the effect was greater on some wards than others.

Limited evidence suggests public health *should not* support:

- hospital-based universal precautions education, or product substitution (e.g. ABHR for soap) alone to improve hand hygiene compliance
- marketing campaigns to impact the number of *C. difficile* cases and antibiotic use

Policy and/or practices will need to be revisited as higher-quality trials become available.

Evidence and Implications

What's the evidence?

1. Universal Precautions Education (2 studies)

- Education for nurses led to increased use of appropriate hand hygiene from baseline both before (51% vs. 85.7%, $p = <.001$) and after patient contact (75.5% vs. 91.8%, $p = <.05$) at 4 months post-

Implications for practice and policy

1. Universal Precautions Education

- Public health decision makers should not rely on education alone to increase the use of appropriate hand hygiene among hospital-based nurses as evidence of its effectiveness is mixed.

<p>intervention.</p> <ul style="list-style-type: none"> • <u>No impact</u> with a single teaching session on rate of hand washing among nurses at 3 months post-intervention. 	
<p>2. Social Marketing (1 study)</p> <ul style="list-style-type: none"> • National marketing campaigns (e.g. WHO's <i>Clean Care is Safer Care</i>) increased use of alcohol-based hand rub (ABHR) from baseline (1.3 L/100 patient-days vs. 2.0 L/100 patient-days, $p = <.0001$), which corresponded with a reduced number of new MRSA cases. • <u>No impact</u> on rates of <i>C. difficile</i> or antibiotic use 	<p>2. Social Marketing</p> <ul style="list-style-type: none"> • Public health decision makers should consider use of multi-year, national marketing campaigns to increase use of alcohol-based hand rubs – thereby decreasing MRSA cases - but note that the intervention is supported by a single study; • But, should not focus on social marketing to decrease rates of <i>C. difficile</i> or impact antibiotic use.
<p>3. Product Substitution, Training, and Staff Participation (1 study)</p> <ul style="list-style-type: none"> • Staff consultation to develop a hand hygiene program (incl. screen savers, promotional posters design) + provision of ABHR at patient bed and chart trolleys led to a 48% increase in product use (IRR 1.48, 95%CI 1.20 to 1.81, $p=<.0001$) sustained over two years. • A second intervention using staff engagement and promotional media increased product use by 56% on an infectious diseases unit (IRR 1.56, 95%CI 1.29 to 1.89, $p=<0.001$), but not on medical wards. • <u>No impact</u> with simple product substitution (e.g. ABHR for soap) on any outcome. 	<p>3. Product Substitution, Training, and Staff Participation</p> <ul style="list-style-type: none"> • Public health decision makers should consider training and healthcare staff consultation to increase use of hand hygiene products; • But, should not support simple product substitution alone (e.g. ABHR for soap) to improve hand hygiene.
<p>Legend: P – Population; I – Intervention; C – Comparison group; O – Outcomes; CI – Confidence Interval; IRR – Incidence Rate Ratio; OR – Odds Ratio; RR – Relative Risk ** For definitions see the healthevidence.org glossary http://www.healthevidence.org/glossary.aspx</p>	

Why this issue is of interest to public health in Canada

In Canada, an estimated 220 000 healthcare-associated infections occur each year, with 8000 deaths resulting.¹ Although no published Canadian data or costs are available, healthcare-associated infections are estimated to be very costly in terms of morbidity and mortality, as well as direct and indirect costs.¹ MRSA alone is associated with estimated costs between \$42 and \$59 million per year for Canadian hospitals.² It is estimated that 30%-50% of healthcare-associated infections are preventable.¹ Healthcare-associated infection is largely spread by direct contact, especially through the hands of healthcare workers.³ Despite the fact that hand hygiene has been shown to be the most effective method to reduce healthcare-associated infections, compliance with hand hygiene recommendations in healthcare workers is poor.^{3,4} Effective strategies that successfully promote long-term compliance with hand hygiene recommendations in patient care areas are needed.

1. Zoutman, D.E., Ford, D.B., Bryce, E., Gourdeau, M., Herbert, G., Henderson, E., Paton, S., Canadian Hospital Epidemiology Committee, Canadian Nosocomial Infection Surveillance Program, & Health Canada (2003). The state of infection surveillance and control in Canadian acute care hospitals. *Journal of Infection Control*, 31, 266–73.
2. Kim, T., Oh, P.I., & Simor, A.E. (2001). The economic impact of methicillin-resistant *Staphylococcus aureus* in Canadian hospitals. *Infection Control and Hospital Epidemiology*, 22(2), 99-104.
3. Gould, D.J., Moralejo, D., Drey, N., & Chudleigh, J.H. (2010). Interventions to improve hand hygiene compliance in patient care. *Cochrane Database of Systematic Reviews*, Issue 9, Art. No.: CD005186. DOI: 10.1002/14651858.CD005186.pub3
4. Teare, E.L., Cookson, B., French, G.L., Jenner, E.A., Scott, G., Pallett, A., Gould, D., Schweiger, M., Wilson, J., Stone S. (1999). UK handwashing initiative. *Journal of Hospital Infection*, 43, 1–3.

Other quality reviews on this topic are available on www.healthevidence.org

Suggested citation

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This evidence summary was written to condense the work of the authors of the review referenced on page one. The intent of this summary is to provide an overview of the findings and implications of the full review. For more information on individual studies included in the review, please see the review itself. The opinion and ideas contained in this document are those of the evidence summary author(s) and healthevidence.org. They do not necessarily reflect or represent the views of the author's employer or other contracting organizations. Links from this site to other sites are presented as a convenience to healthevidence.org internet users. Healthevidence.org does not endorse nor accept any responsibility for the content found at these sites. The production of this evidence summary was funded with support from the Public Health Agency of Canada. The views expressed herein do not necessarily represent the views of the Public Health Agency of Canada.