



August 2016 – SUPPORT Summary of a systematic review

# Are interventions to increase hand hygiene among healthcare workers effective?

Healthcare-associated infections are a major cause of morbidity and mortality, and constitute a significant burden on health systems. Hand hygiene is regarded as an effective preventive measure but the frequency of hand hygiene by healthcare workers is low.

## Key messages

- Educational interventions may increase hand hygiene guidance compliance.
- Multifaceted marketing campaigns may increase the use of hand hygiene products.
- It is uncertain whether marketing campaigns decrease healthcare-associated infections.
- Rigorous evaluation of interventions to increase hand hygiene compliance are needed.



## Who is this summary for?

People deciding how to control hospital-acquired infections through handwashing initiatives

### ! This summary includes:

- **Key findings** from research based on a systematic review
- **Considerations about the relevance of this research** for low-income countries

### ✗ Not included:

- Recommendations
- Additional evidence not included in the systematic review
- Detailed descriptions of interventions or their implementation

## This summary is based on the following systematic review:

Gould DJ, Moralejo D, Drey N, Chudleigh JH. Interventions to improve hand hygiene compliance in patient care. Cochrane Database Syst Rev. 2010(9):CD005186.

## What is a systematic review?

A summary of studies addressing a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise the relevant research, and to collect and analyse data from the included studies

**SUPPORT** was an international project to support the use of policy relevant reviews and trials to inform decisions about maternal and child health in low- and middle-income countries, funded by the European Commission (FP6) and the Canadian Institutes of Health Research.

**Glossary of terms used in this report:**  
[www.supportsummaries.org/glossary-of-terms](http://www.supportsummaries.org/glossary-of-terms)

**Background references on this topic:**  
See back page

# Background

Healthcare-associated infections are a serious health problem and significant burden on health systems. Hand hygiene is widely accepted as a key preventative measure but compliance with hand hygiene recommendations among healthcare workers is low. This summary reviews the effectiveness of interventions to improve hand hygiene.

## How this summary was prepared

After searching widely for systematic reviews that can help inform decisions about health systems, we have selected ones that provide information that is relevant to low-income countries. The methods used to assess the reliability of the review and to make judgements about its relevance are described here:

[www.supportsummaries.org/how-support-summaries-are-prepared/](http://www.supportsummaries.org/how-support-summaries-are-prepared/)

## Knowing what's not known is important

A reliable review might not find any studies from low-income countries or might not find any well-designed studies. Although that is disappointing, it is important to know what is not known as well as what is known.

A lack of evidence does not mean a lack of effects. It means the effects are uncertain. When there is a lack of evidence, consideration should be given to monitoring and evaluating the effects of the intervention, if it is used.

## About the systematic review underlying this summary

**Review objective:** To assess the effectiveness of strategies to improve hand hygiene compliance in patient care and their subsequent effects on healthcare-associated infections

Types of	What the review authors searched for	What the review authors found
<b>Study designs &amp; Interventions</b>	Any single or multifaceted intervention intended to improve compliance with hand hygiene using aqueous solutions or alcohol based products	1 randomised clinical trial assessing education about hand hygiene and universal precautions 2 interrupted time series studies of social marketing campaigns; one of which also analysed a campaign for substituting types of alcohol-based hand rub either for another type or for soaps 1 controlled before-after study that used a single teaching session
<b>Participants</b>	Healthcare workers (except operating theatre staff)	Healthcare workers
<b>Settings</b>	Any hospital or community setting	4 studies: United Kingdom (UK) (general surgical wards), China (hospital), Switzerland (acute hospital) and Australia (three acute units)
<b>Outcomes</b>	Rates of observed hand hygiene compliance (or proxies for compliance), and reduction in healthcare-associated infection or colonisation rates	Frequency of hand washes, percentage of nurses washing hands, and use of hand hygiene products
<b>Date of most recent search:</b> November 2009		
<b>Limitations:</b> This is a well-conducted systematic review.		

Gould DJ, Moralejo D, Drey N, Chudleigh JH. Interventions to improve hand hygiene compliance in patient care. Cochrane Database Syst Rev. 2010(9):CD005186

## Summary of findings

Four studies met the inclusion criteria of this review. Three were performed in hospital settings in high-income countries. Two of the studies assessed educational interventions and two assessed marketing campaigns.

- **Educational interventions may increase compliance with hand hygiene guidance. The certainty of this evidence is low.**
- **Multifaceted marketing campaigns may increase the use of hand hygiene products. The certainty of this evidence is low.**
- **It is uncertain whether marketing campaigns decrease healthcare-associated infections. The certainty of this evidence is very low.**

### About the certainty of the evidence (GRADE) \*

⊕⊕⊕⊕

**High:** This research provides a very good indication of the likely effect. The likelihood that the effect will be substantially different† is low.

⊕⊕⊕○

**Moderate:** This research provides a good indication of the likely effect. The likelihood that the effect will be substantially different† is moderate.

⊕⊕○○

**Low:** This research provides some indication of the likely effect. However, the likelihood that it will be substantially different† is high.

⊕○○○

**Very low:** This research does not provide a reliable indication of the likely effect. The likelihood that the effect will be substantially different† is very high.

\* This is sometimes referred to as 'quality of evidence' or 'confidence in the estimate'.

† Substantially different = a large enough difference that it might affect a decision

See last page for more information.

Education or multifaceted marketing campaigns to improve compliance with hand hygiene				
People	Healthcare workers			
Settings	Hospital and acute units			
Intervention	Education or multifaceted marketing campaigns			
Comparison	Control group with usual care			
Outcomes	Impacts			Certainty of the evidence (GRADE)
	Without interventions*	With interventions*	Relative effect (95% CI)	
Compliance with hand hygiene post-education interventions	53% to 71% compliance	85.7% before patient contact	<b>65% increase</b> (25% to 120%) in hand hygiene compliance before patient contact	⊕⊕○○ Low
		91.8% compliance post-intervention after patient contact	<b>29% increase</b> (6% to 56%) after patient contact	
	58.6% of hand decontamination	64.1% of hand decontamination post-intervention	<b>9% increase</b> of hand decontamination	
Hand hygiene products use post-marketing campaigns	1.3 L/100 patient-days (in 2001)	2.0 L/100 patient-days (in 2006)	<b>56% increase</b> (29% to 89%) in products use at the infectious diseases unit, and no change in use at medical wards in one campaign	⊕⊕○○ Low
			<b>48% increase</b> (20% to 81%) in products use at an infectious diseases unit in another campaign	
Healthcare associated infections post-marketing campaigns	An association between the use of alcohol-based hand rub and a decrease in the incidence of methicillin-resistant <i>Staphylococcus aureus</i> was reported. An increase in the use of alcohol-based hand rubs was not associated with an increase in the incidence of <i>Clostridium difficile</i> .			⊕○○○ Very low
*The assumed risk WITHOUT the intervention is based on included studies. The corresponding risk WITH the intervention is based on the overall relative effect. CI: Confidence interval GRADE: GRADE Working Group grades of evidence (see above and last page)				

# Relevance of the review for low-income countries

→ Findings	▷ Interpretation*
APPLICABILITY	
→ All studies were conducted in high-income countries settings, except for one which was conducted in China.	<p>▷ The findings are likely to be applicable to low-income countries settings but the availability of functioning washing facilities or alcohol-based products for healthcare workers could limit the applicability of the results.</p> <p>▷ Specific approaches may need to be developed for particular settings.</p>
EQUITY	
→ The included studies provided no data regarding approaches that might be used in settings in which resources are limited, or regarding the potential differential effects of the interventions in disadvantaged populations.	<p>▷ It is unlikely that hand hygiene interventions will increase inequities provided that implementation efforts in disadvantaged areas include the provision of washing facilities where these are unavailable.</p> <p>▷ Local solutions may be needed to provide hand hygiene facilities and sustainable supplies of hand hygiene products.</p>
ECONOMIC CONSIDERATIONS	
→ No information was given on the costs of the interventions and no cost benefit analyses were conducted.	<p>▷ The costs of most interventions are likely to be low, except in instances in which washing facilities do not exist and need to be provided.</p> <p>▷ The provision of hand hygiene facilities may not be expensive if locally sustainable solutions (such as the use of rainwater) are implemented.</p> <p>▷ Healthcare units can create their own low-cost interventions using the formula for alcohol-based products.</p>
MONITORING & EVALUATION	
→ There is little evidence of the effectiveness of hand hygiene interventions, and it is based on studies mainly conducted in high-income countries.	<p>▷ Existing studies of interventions to increase hand hygiene among healthcare workers are of poor quality.</p> <p>▷ The impact of hand hygiene interventions should be monitored using objective measures to assess their impact on important outcomes such as healthcare-associated infection rates and not just on compliance and knowledge.</p> <p>▷ Future studies should focus on the long-term effects and the sustainability of both the interventions and the effects measured.</p>

\*Judgements made by the authors of this summary, not necessarily those of the review authors, based on the findings of the review and consultation with researchers and policymakers in low-income countries. For additional details about how these judgements were made see:

[www.supportsummaries.org/methods](http://www.supportsummaries.org/methods)

# Additional information

## Related literature

This systematic review showed benefits of hand hygiene against gastrointestinal and, to a lesser extent, respiratory infections.

- Aiello AE, Coulborn RM, Perez V, Larson EL. Effect of hand hygiene on infectious disease risk in the community setting: a meta-analysis. *Am J Public Health* 2008; 98:1372–81.

This systematic review found a lack of rigorous evidence linking specific hand hygiene interventions with the prevention of healthcare-associated infections.

- Backman C, Zoutman DE, Marck PB. An integrative review of the current evidence on the relationship between hand hygiene interventions and the incidence of health care-associated infections. *Am J Infect Control* 2008; 36:333–48.

This systematic review assessed the prevalence and correlates of compliance and noncompliance with hand hygiene guidelines in hospital care, mostly in high-income countries.

- Erasmus V, Daha TJ, Brug H, et al. Systematic review of studies on compliance with hand hygiene guidelines in hospital care. *Infect Control Hosp Epidemiol* 2010; 31:283–94.

This article summarizes historical perspectives, efficacy of hand cleansing methods/agents, elements and impacts of successful hand hygiene promotion, as well as scale-up and sustainability.

- Stewardson A, Allegranzi B, Sax H, et al. Back to the future: rising to the Semmelweis challenge in hand hygiene. *Future Microbiol* 2011; 6:855–76.

## This summary was prepared by

Agustín Ciapponi and Sebastián García Martí, Instituto de Efectividad Clínica y Sanitaria, Buenos Aires, Argentina. It is an update of Merrylees N, Treweek S. What interventions are effective in increasing hand hygiene in healthcare workers? A SUPPORT Summary of a systematic review. September 2009.

## Conflict of interest

None declared. For details, see: [www.supportsummaries.org/coi](http://www.supportsummaries.org/coi)

## Acknowledgements

This summary has been peer reviewed by: Benedetta Allegranzi, Dinah Gould, Simon Goudie, Hanna Bergman, and Donna Moralejo.

## This review should be cited as

Gould DJ, Moralejo D, Drey N, Chudleigh JH. Interventions to improve hand hygiene compliance in patient care. *Cochrane Database Syst Rev*. 2010(9):CD005186.

## The summary should be cited as

Ciapponi A, García Martí A. Are interventions to increase hand hygiene among healthcare workers effective? A SUPPORT Summary of a systematic review. August 2016. [www.supportsummaries.org](http://www.supportsummaries.org)

## About certainty of the evidence (GRADE)

The “certainty of the evidence” is an assessment of how good an indication the research provides of the likely effect; i.e. the likelihood that the effect will be substantially different from what the research found. By “substantially different” we mean a large enough difference that it might affect a decision. These judgements are made using the GRADE system, and are provided for each outcome. The judgements are based on the study design (randomised trials versus observational studies), factors that reduce the certainty (risk of bias, inconsistency, indirectness, imprecision, and publication bias) and factors that increase the certainty (a large effect, a dose response relationship, and plausible confounding). For each outcome, the certainty of the evidence is rated as high, moderate, low or very low using the definitions on page 3.

For more information about GRADE: [www.supportsummaries.org/grade](http://www.supportsummaries.org/grade)

## SUPPORT collaborators:

**The Cochrane Effective Practice and Organisation of Care Group (EPOC)** is part of the [Cochrane Collaboration](http://www.cochrane.org). The Norwegian EPOC satellite supports the production of Cochrane reviews relevant to health systems in low- and middle-income countries. [www.epocoslo.cochrane.org](http://www.epocoslo.cochrane.org)

**The Evidence-Informed Policy Network (EVIPNet)** is an initiative to promote the use of health research in policymaking in low- and middle-income countries. [www.evipnet.org](http://www.evipnet.org)

**The Alliance for Health Policy and Systems Research (HPSR)** is an international collaboration that promotes the generation and use of health policy and systems research in low- and middle-income countries. [www.who.int/alliance-hpsr](http://www.who.int/alliance-hpsr)

**Norad**, the Norwegian Agency for Development Cooperation, supports the Norwegian EPOC satellite and the production of SUPPORT Summaries. [www.norad.no](http://www.norad.no)

**The Effective Health Care Research Consortium** is an international partnership that prepares Cochrane reviews relevant to low-income countries. [www.evidence4health.org](http://www.evidence4health.org)

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