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[Intervention Review]

Interventions to improve hand hygiene compliance in patient care

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ABSTRACT

Background

Health care-associated infection is a major cause of morbidity and mortality. Hand hygiene is regarded as an effective preventive measure. This is an update of a previously published review.

Objectives

To assess the short- and long-term success of strategies to improve compliance to recommendations for hand hygiene, and to determine whether an increase in hand hygiene compliance can reduce rates of health care-associated infection.

Search methods

We conducted electronic searches of the Cochrane Register of Controlled Trials, PubMed, Embase, and CINAHL. We conducted the searches from November 2009 to October 2016.

Selection criteria

We included randomised trials, non-randomised trials, controlled before-after studies, and interrupted time series analyses (ITS) that evaluated any intervention to improve compliance with hand hygiene using soap and water or alcohol-based hand rub (ABHR), or both.

Data collection and analysis

Two review authors independently screened citations for inclusion, extracted data, and assessed risks of bias for each included study. Meta-analysis was not possible, as there was substantial heterogeneity across studies. We assessed the certainty of evidence using the GRADE approach and present the results narratively in a 'Summary of findings' table.

Main results

This review includes 26 studies: 14 randomised trials, two non-randomised trials and 10 ITS studies. Most studies were conducted in hospitals or long-term care facilities in different countries, and collected data from a variety of healthcare workers. Fourteen studies assessed the success of different combinations of strategies recommended by the World Health Organization (WHO) to improve hand

hygiene compliance. Strategies consisted of the following: increasing the availability of ABHR, different types of education for staff, reminders (written and verbal), different types of performance feedback, administrative support, and staff involvement. Six studies assessed different types of performance feedback, two studies evaluated education, three studies evaluated cues such as signs or scent, and one study assessed placement of ABHR. Observed hand hygiene compliance was measured in all but three studies which reported product usage. Eight studies also reported either infection or colonisation rates. All studies had two or more sources of high or unclear risks of bias, most often associated with blinding or independence of the intervention.

Multimodal interventions that include some but not all strategies recommended in the WHO guidelines may slightly improve hand hygiene compliance (five studies; 56 centres) and may slightly reduce infection rates (three studies; 34 centres), low certainty of evidence for both outcomes.

Multimodal interventions that include all strategies recommended in the WHO guidelines may slightly reduce colonisation rates (one study; 167 centres; low certainty of evidence). It is unclear whether the intervention improves hand hygiene compliance (five studies; 184 centres) or reduces infection (two studies; 16 centres) because the certainty of this evidence is very low.

Multimodal interventions that contain all strategies recommended in the WHO guidelines plus additional strategies may slightly improve hand hygiene compliance (six studies; 15 centres; low certainty of evidence). It is unclear whether this intervention reduces infection rates (one study; one centre; very low certainty of evidence).

Performance feedback may improve hand hygiene compliance (six studies; 21 centres; low certainty of evidence). This intervention probably slightly reduces infection (one study; one centre) and colonisation rates (one study; one centre) based on moderate certainty of evidence.

Education may improve hand hygiene compliance (two studies; two centres), low certainty of evidence.

Cues such as signs or scent may slightly improve hand hygiene compliance (three studies; three centres), low certainty of evidence.

Placement of ABHR close to point of use probably slightly improves hand hygiene compliance (one study; one centre), moderate certainty of evidence.

Authors' conclusions

With the identified variability in certainty of evidence, interventions, and methods, there remains an urgent need to undertake methodologically robust research to explore the effectiveness of multimodal versus simpler interventions to increase hand hygiene compliance, and to identify which components of multimodal interventions or combinations of strategies are most effective in a particular context.

PLAIN LANGUAGE SUMMARY

Methods to improve healthcare worker hand hygiene to decrease infection in patient care

What is the aim of this review?

To find out what strategies can improve healthcare workers' compliance with recommendations for hand hygiene, either handwashing with soap and water or using alcohol-based hand rub (ABHR), or both. This is an update of a previously published review.

Key messages

A variety of single intervention strategies and combinations of strategies, many based on current recommendations from the World Health Organization (WHO), led to increased hand hygiene compliance in most studies, regardless of setting. However, the certainty of the evidence varied from very low to moderate, depending on the strategy. What remains unclear is which strategy or combination of strategies is most effective in a given context.

What did we study in the review?

Traditionally hand hygiene has been considered the single most important way of reducing health care-associated infections, many of which are spread by direct contact, especially by the hands of healthcare workers. Much time and effort is spent worldwide promoting hand hygiene. Many different strategies have been tried to improve hand hygiene compliance but the most effective methods remain unclear.

What are the main results of the review?

We included 26 studies in the review. Fourteen studies assessed the success of different combinations of strategies recommended by WHO to improve hand hygiene compliance. Strategies consisted of the following: increasing the availability of alcohol-based hand hygiene products, different types of education for staff, reminders (written and verbal), different types of performance feedback, administrative support and staff involvement. Six studies assessed different types of performance feedback, two studies evaluated education, three studies evaluated cues such as signs or scent, and one study assessed placement of ABHR.

Multimodal (combinations of) strategies that include some but not all strategies recommended by WHO may slightly improve hand hygiene compliance and slightly reduce infection rates (low certainty of evidence). Multimodal interventions that include all strategies recommended by WHO may lead to little or no difference in methicillin-resistant *Staphylococcus aureus* (MRSA) infection rates (low certainty of evidence), but it is uncertain whether such WHO-based approaches improve hand hygiene compliance or reduce colonisation rates because the certainty of this evidence is very low. Multimodal interventions that contain all recommended strategies plus additional strategies may slightly improve hand hygiene compliance (low certainty of evidence). It is unclear whether such WHO-enhanced interventions reduce infection rates because the certainty of this evidence is very low.

Performance feedback may improve hand hygiene compliance (low certainty of evidence) and probably slightly reduces infection and colonisation rates (moderate certainty of evidence). Education may improve hand hygiene compliance (low certainty of evidence). Cues, such as signs or scent, may slightly improve hand hygiene compliance (low certainty of evidence). Placement of ABHR close to the point of use probably slightly improves hand hygiene compliance (moderate certainty of evidence).

How up-to-date is this review?

The review authors searched for studies that had been published up to October 2016.