

## HAND HYGIENE COMPLIANCE: INTERVENTIONS IN HEALTHCARE SETTINGS

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### Question

What is the best available evidence related to the effectiveness of strategies to improve hand hygiene compliance in healthcare settings?

### Clinical Bottom Line

Effective hand hygiene practice by healthcare workers is crucial to the prevention of healthcare-associated infection (HCAI).<sup>1,2,3</sup> Guidelines provide recommendations for the compliance to hand hygiene during patient care, including the World Health Organization (WHO) Five Moments technique.<sup>1</sup> However, challenges still exist in improving compliance to recommended hand hygiene protocols.<sup>1</sup> Interventions to improve compliance may subsequently improve HCAI rates in healthcare settings.

- An umbrella review examined interventions to improve healthcare workers' hand hygiene compliance. Overall, 13 systematic reviews had a high risk of bias, five had an unclear risk of bias, and one review had a low risk of bias; risk of bias was mainly attributable to not reporting individual study results in the synthesis of findings, or not reporting risk of bias. Fifteen of the 18 reviews reporting overall effectiveness showed positive effects from interventions on hand hygiene compliance, across various healthcare settings for different professional groups. However, only one of these reviews had low risk of bias. Several of the systematic reviewers advocated for multimodal interventions, incorporating performance feedback and extending the WHO multimodal strategy to elicit improvements. Interventions included: the introduction of, and accessibility to, alcohol-based hand rub; education; psychological theory; monitoring technology; and quality improvement strategies. Authors concluded, despite a substantial number of reviews showing positive effects from these interventions, the evidence regarding what interventions were most effective, and how they should be delivered, remained unclear. It was concluded however that, the evidence for monitoring technology is insufficient to recommend its use; however, targeting theory driven interventions such as social influence attitude, self-efficacy and intention may enhance effectiveness.<sup>1</sup> (Level 1)
- A second systematic review (not included in the review above and having one primary study in common) investigated hand hygiene compliance rate, factors affecting the rate, and intervention strategies to improve hand hygiene compliance in emergency departments (EDs). Cross-sectional studies were of moderate to high quality and the non-randomized interventions rated mostly low risk of bias. Only four (33%) of the intervention studies showed increases in hand hygiene rate of greater than 50%; factors influencing rates were reported as types of healthcare worker and type of shift, hand hygiene indication, ED crowding, positive attitudes towards hand hygiene compliance, patient location, and auditing hand hygiene. Most of the interventions (83.3%) were multimodal or dual interventions, and strategies using education, monitoring and providing feedback and cues, effectively improved compliance. Authors reported that hand hygiene definitions may have varied among studies with cross-sectional studies

reporting a wide range in hand hygiene rates (7% to 89.7%). Authors concluded that using multi-dimensional strategies is an effective way to improve hand hygiene compliance among healthcare workers in EDs, and these strategies should contain a combination of education, feedback, cues, and placement of alcohol hand rubs.<sup>2</sup> (Level 2)

- A qualitative study examined the effect on sensory properties and acceptability of alcohol-based hand rub format (gel/foam/liquid) and dose (0.7 ml, 1.5 ml, 3 ml), to consider how this might affect healthcare workers' hand hygiene compliance. Participants were asked to rate positive and negative characteristics of the hand rub formats (from most important to least important) to indicate their preferences (eg, low residue/stickiness, smell, ease of dispensing). Sensory descriptive analysis was used to compare differences between three gels, four foams, two liquids, and one aerosol foam, followed up with focus groups. Participant's preferences were related to those products more familiar to them – those who used foams preferred foams, those who used gels preferred gels, etc. In both focus groups, liquid was chosen as the least preferred format. The largest dose (3 ml) was rejected by all participants giving reasons such as difficult to apply, or the larger dose may drip on the floor and cause a slip hazard. Overall, the most important characteristics reported by participants were fast absorption, soft-moisturized hand feeling, not sticky, clean feel, and no smell, and gels and foams were more widely accepted by the nurses compared to liquid.<sup>3</sup> (Level 2)
- A systematic review investigated the effectiveness of strategies to promote hand hygiene among healthcare workers. Included studies were conducted in various clinical settings with the majority representing medical and surgical wards, followed by dispensaries and then the intensive care setting. Healthcare workers involved in the studies also varied, with most studies involving nurses followed by physicians. The majority of included studies involved multimodal approaches for promoting hand hygiene, with only a third of the studies involving single intervention. Of the different strategies used, education and training were the most common components; other interventions included performance feedback, hand hygiene reminders, provision of hand hygiene materials and/or infrastructure, teamwork interventions and leadership interventions/administrative support. Hand hygiene compliance was measured either by direct observation or by electronic recording. The varied combinations of interventions as well as the differing formats used, made it impossible to determine the relationship between type of intervention and improved outcomes. The review was also unable to determine whether hand hygiene improvements can be enhanced with the number of interventions used. The review reported that baseline compliance to hand hygiene was 41%, with all included studies, except for one, showing an increase in compliance post intervention that ranged from 1% to 66% (mean net effect of 26%). Not all studies included in this review defined the duration of the intervention periods, with more than half of the studies reporting a period of  $\leq$  one year. Peak hand hygiene compliance was 90% at two-year follow-up and decreased to 82% at three-year follow-up.<sup>4</sup> (Level 1)

## Characteristics Of The Evidence

This evidence summary is based on a structured search of the literature and selected evidence-based health care databases. The evidence in this summary comes from:

- A systematic review of 19 systematic reviews including a total of 236 unique primary studies.<sup>1</sup>
- A systematic review of 24 studies (12 cross-sectional, eight before and after studies, two interrupted time series, one post-intervention study, and one quasi-experimental study).<sup>2</sup>
- A qualitative study using focus groups and sensory descriptive analysis, involving 13 nurses.<sup>3</sup>
- A systematic review that included 57 clinical trials.<sup>4</sup>

## Best Practice Recommendations

- Strategies to improve compliance to hand hygiene (eg, the introduction of and accessibility to alcohol-based hand rub, education, psychological theory, monitoring, and feedback and cues) should be implemented; however, evidence is insufficient at this time to recommend which intervention, and what delivery method, is most effective. (Grade A)
- Interventions used to improve compliance to hand hygiene should be multi-faceted. (Grade A)
- Clinicians should consider the use of theory-driven interventions (eg, social influence attitude, self-efficacy and intention) to increase hand hygiene compliance. (Grade B)

## References

1. Price L, MacDonald J, Gozdzielewska L, Howe T, Flowers P, Shepherd L, et al. Interventions to improve healthcare workers' hand hygiene compliance: a systematic review of systematic reviews. *Infect Control Hosp Epidemiol.* 2018; 39(12):1449-56.
2. Seo HJ, Sohng KY, Chang SO, Chaung SK, Won JS, Choi MJ. Interventions to improve hand hygiene compliance in emergency departments: a systematic review. *J Hosp Infect.* 2019; 102(4):394-406.
3. Greenaway RE, Ormandy K, Fellows C, Hollowood T. Impact of hand sanitizer format (gel/foam/liquid) and dose amount on its sensory properties and acceptability for improving hand hygiene compliance. *J Hosp Infect.* 2018; 100(2):195-201.
4. Clancy C, Delungahawatta T, Dunne CP. Hand-hygiene-related clinical trials reported between 2014 and 2020: a comprehensive systematic review. *J Hosp Infect.* 2021; 111:6-26.

## Archived Publications

1. JBI-ES-2065-1 (Published at 12 October 2021)
2. JBI-ES-2065-2 (Published at 12 October 2021)

The author declares no conflicts of interest in accordance with International Committee of Medical Journal Editors (ICMJE) standards.

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For details on the method for development see Munn Z, Lockwood C, Moola S. The development and use of evidence summaries for point of care information systems: A streamlined rapid review approach. *Worldviews Evid Based Nurs.* 2015;12(3):131-8.

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