Evidence-based recommendations for hand hygiene for health care workers in New Zealand

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CRD summary
This review investigated hand hygiene for healthcare workers and found that alcohol-based hand rubs were significantly more effective than soap in reducing microbial activity. There was insufficient evidence on the relative efficacy of medicated and plain soaps and hand drying methods. The conclusions were appropriate, but the reliability of the conclusions is unclear due to shortcomings in the review process.

Authors' objectives
To establish evidence-based recommendations for hand hygiene for health care workers in New Zealand

Searching
MEDLINE, The Cochrane Library, CINAHL and AMED were searched from 1985 to May 2006 for relevant studies in English; search terms were reported. Reference lists from retrieved studies were searched.

Study selection
Inclusion criteria were alluded to but not reported. Studies were excluded if they investigated hand asepsis, in vitro studies, observational or case studies or studies within the community, day care centres or schools.

In the included studies, comparisons were made between alcohol-based hand rubs and plain or medicated/antimicrobial soap and water, medicated soap and plain soap and various methods of hand drying (paper towel, cloth towel, air dryer). Outcomes included antimicrobial efficacy and skin condition.

The authors did not state how many reviewers selected studies and how disagreements were resolved.

Assessment of study quality
Validity assessment was undertaken by critical appraisal of each study with the Generic Appraisal Tool for Epidemiology (GATE) checklist for randomised controlled trials (RCTs) and a modified quality scoring system based on the methods of the Cochrane Musculoskeletal Injuries Group. The scoring system evaluated 11 aspects of internal and external validity with individual scores for each domain of 0, 1 or 2 and a maximum score of 22. High-quality studies were defined as those that scored 19 or greater, moderate quality studies scored 15 to 18. All studies that scored 14 or less were defined as low quality and excluded from the review.

Four reviewers independently and blindly performed the validity assessment. Where consensus was not achieved between reviewers, a fifth reviewer was brought into the process.

Data extraction
Data were extracted for each study. Outcomes were defined as positive if the intervention outcome was statistically significantly more effective than the comparison group, neutral if there was no significant difference and negative if the intervention outcome was significantly less effective than the comparison group.

The authors did not state how many reviewers performed data extraction and how disagreements were resolved.

Methods of synthesis
The studies were synthesized in narrative format. Conclusions were based on five levels of scientific evidence: strong (generally consistent findings in multiple relevant high quality RCTs), moderate (one relevant high-quality RCT and/or generally consistent findings in multiple relevant moderate quality RCTs), limited (one RCT of moderate quality), conflicting (inconsistent findings among multiple RCTs) or no evidence (no RCTs).
Results of the review
Eighteen studies (participant number not provided for one trial, so total number of participants unknown) were included in the review (the authors acknowledged that they reported 23 studies and that this was an error). Two studies were classified as high quality and the others as moderate quality. The number of blinded studies was not reported. Only one study had intention-to-treat analysis. Some studies had difficulty creating experimental conditions and risk of cointervention or contamination cannot be excluded.

Sixty-nine percent (24 out of 35) of the comparisons reported statistically significant differences between alcohol-based hand rubs and plain or medicated soap in antimicrobial activity; the other 11 comparisons had no evidence of statistically significant differences.

When medicated soap was compared to plain soap, 45% (10 out of 22) of comparisons indicated a statistically significant difference in favour of medicated soap, 50% (11 out of 22) of comparisons reported no significant difference and 5% (one out of 22) of comparisons found a statistically significant difference that favoured plain soap.

All five studies that assessed skin condition reported that alcohol-based hand rubs were less irritating than medicated or plain soap.

The two studies that assessed hand-drying methods had conflicting results: one trial found no difference between cloth towels, paper towels, air dryer and spontaneous evaporation; and the other trial found that a warm air dryer was significantly more effective than up to three paper towels in reducing bacteria levels.

Authors' conclusions
The authors’ conclusion appeared to be that alcohol-based hand rubs were superior to soap in reducing microbial activity, but there was insufficient evidence to determine the effectiveness of type of soap (plain or medicated) and hand-drying method.

CRD commentary
The objective of the review was broad: to develop evidence based recommendations for hand hygiene, but no details were provided on how hand hygiene was measured. Four databases were searched and efforts were made to find other studies by reviewing reference lists. The restriction to studies in English meant that language bias could not be excluded. Publication bias was not assessed.Validity assessments were undertaken by independent assessors and low-quality trials were excluded. No details on methods of study selection and data extraction were reported, so reviewer error and bias in these aspects of the review process could not be excluded. Conclusions were based on syntheses of the relevant studies by determining the proportion that found statistically significant differences between interventions. Recommendations were developed based on five levels of evidence, where consistency was defined as two to three or more studies reporting the same finding.

The authors’ conclusions reflected the evidence base and were appropriate, but the reliability of the conclusions is unclear due to shortcomings in the review process.

Implications of the review for practice and research
The authors did not state any implications for practice and research.

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