Search Request: What are best ways to clean/disinfect hands in low-resource settings where water is scarce? (these areas will not have access to manufactured hand sanitizer either)

Date: 2008 Jan
Author: Ogunsola FT
Journal: West Afr J Med
Summary: Comparison of four methods of hand washing in situations of inadequate water supply.

Abstract: BACKGROUND: Hand washing is the single most important means of preventing hospital acquired infections, but requires for effectiveness, a constant supply of running water and proper facilities. Most developing countries do not have constant running water facilities, so alternate methods have been developed and used in clinics and hospitals. OBJECTIVE: To compare and validate alternate methods of hand washing developed for use in Nigeria. METHODS: The hands of 12 volunteers were pre-contaminated with known isolates of Klebsiella pneumoniae, Escherichia coli and Pseudomonas aeruginosa. The volunteers washed their hands as described by Ayliffe. The hands and equipment were cultured pre- and post-contamination and post-hand washing. The water used for the hand wash was also cultured pre-hand washing to control for water-based contamination. Each method was evaluated three times and various parts of the equipment were cultured to determine the areas contaminated by the hands during the hand wash. RESULTS: “Elbow-way” was shown to be the best and the gold standard Sink and Tap for promoting an effective hand washing, as there was no evidence of post-contamination. The worst was the single-bowl method in which the hands of all the 12 (100%) volunteers were contaminated from the bowl, followed by the two-bowl initiative 10 (83%) and the bucket and bowl 9 (75%). CONCLUSION: The bucket and bowl as well as the single-bowl methods most commonly used in hospitals result in gross contamination of the bowls and bucket and are therefore unsafe and should be discouraged. The elbow way on the other hand appears to be an easy and safe alternative in situations where there is no running water.

URL: https://www.ncbi.nlm.nih.gov/pubmed/18689299
Publication Type: Article
Open Access (Y/N): N
BACKGROUND: Diarrhoeal diseases are a major contributor to morbidity and mortality in humanitarian crises. Handwashing with soap may reduce diarrhoea by up to 47%, however, the circumstances associated with displacement make it challenging for crisis-affected populations to be able to wash their hands with soap. The Supertowel is an alternative hand-cleaning product, proven to be as efficacious as handwashing with soap. The Supertowel is a micro-fibre towel with an anti-microbial treatment. When dipped in water it is capable of removing and killing pathogens from hands. This study aims to assess whether the Supertowel could be an acceptable and feasible product for crisis-affected populations. METHODS: The study took place in an Eritrean refugee camp located in Tigray state in Ethiopia. We used a mix of qualitative methods to understand use and acceptability, including baseline observations (n = 13), behaviour trials involving interviews at three time points (n = 19) and focus group discussions (n = 3). We thematically analysed data from interviews and discussions. RESULTS: Participants indicated that the Supertowel was convenient, easy to use and saved them water and money. All households participating in the behaviour trials had at least one Supertowel in use at the end of the trials (follow-up visit two). In discussions participants reported that the Supertowel was more desirable than comparable hand cleaning products. In interviews, trial participants explained that the product enabled them to clean their hands at times when they might not normally bother. The research also identified some issues with the smell of the Supertowel and its intuitive use. CONCLUSIONS: The Supertowel was found to be an acceptable and useful hand-cleaning product that could complement soap use in crisis contexts. This pilot study also identified areas of future research including the need to compare different distribution models for the Supertowel (distribution in hygiene kits compared to distribution with an accompanying communication package) and to evaluate its use at scale over a longer time period.

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Publication Type: Article

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Abstract: The burden of healthcare-associated infections (HAIs) is greatest in low- and middle-income countries (LMICs); surgical site infections (SSIs) are the most common HAI in LMICs. Hand hygiene is the single most effective strategy for reducing HAIs and the transmission of antimicrobial drug-resistant pathogens. Similarly, effective surgical hand preparation is a critical step in the prevention of SSIs in the surgical patient.

Methods: Surgical hand preparation (SHP) is a seemingly simple activity that is easily overlooked. Performed properly, however, along with other measures, it has the potential to reduce SSIs in LMICs. The article reviews the current state of surgical hand preparation in LMICs.

Results: Alcohol-based handrubs (ABHRs) have received wide acceptance by healthcare workers for both hand hygiene and SHP; when mixed with emollients, ABHRs retain efficacy against microorganisms and gain skin tolerability and user acceptability. Healthcare institutions in many LMICs face difficulties obtaining the products needed to ensure effective SHP using ABHRs. Conclusion: The ABHRs are the most efficacious surgical hand preparation products available today. They are cost-effective and can safely be prepared locally in hospitals, even in LMICs. The challenge of access to ABHRs should be addressed by national and local governments, through advocacy by healthcare workers coupled with continued lobbying and campaigns by the World Health Organization. Effective surgical hand preparation, like hand hygiene, saves lives.

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Author Keywords: Hand hygiene; Infection prevention and control; Low- and middle-income countries

Abstract: A panel of experts was convened by the International Society for Infectious Diseases (ISID) to overview evidence based strategies to reduce the transmission of pathogens via the hands of healthcare workers and the subsequent incidence of hospital acquired infections with a focus on implementing these strategies in low- and middle-income countries. Existing data suggests that hospital patients in low- and middle-income countries are exposed to rates of healthcare associated infections at least 2-fold higher than in high income countries. In addition to the universal challenges to the implementation of effective hand hygiene strategies, hospitals in low- and middle-income
countries face a range of unique barriers, including overcrowding and securing a reliable and sustainable supply of alcohol-based handrub. The WHO Multimodal Hand Hygiene Improvement Strategy and its associated resources represent an evidence-based framework for developing a locally-adapted implementation plan for hand hygiene promotion.

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Author: D'Mello-Guyett L et al.

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Abstract: INTRODUCTION: Cholera remains a frequent cause of outbreaks globally, particularly in areas with inadequate water, sanitation and hygiene (WASH) services. Cholera is spread through faecal-oral routes, and studies demonstrate that ingestion of Vibrio cholerae occurs from consuming contaminated food and water, contact with cholera cases and transmission from contaminated environmental point sources. WASH guidelines recommending interventions for the prevention and control of cholera are numerous and vary considerably in their recommendations. To date, there has been no review of practice guidelines used in cholera prevention and control programmes.

METHODS: We systematically searched international agency websites to identify WASH intervention guidelines used in cholera programmes in endemic and epidemic settings. Recommendations listed in the guidelines were extracted, categorised and analysed. Analysis was based on consistency, concordance and recommendations were classified on the basis of whether the interventions targeted within-household or community-level transmission.

RESULTS: Eight international guidelines were included in this review: three by non-governmental organisations (NGOs), one from a non-profit organisation (NPO), three from multilateral organisations and one from a research institution. There were 95 distinct recommendations identified, and concordance among guidelines was poor to fair. All categories of WASH interventions were featured in the guidelines. The majority of recommendations targeted community-level transmission (45%), 35% targeted within-household transmission and 20% both.

CONCLUSIONS: Recent evidence suggests that interventions for effective cholera control and response to epidemics should focus on case-centred approaches and within-household transmission. Guidelines did consistently propose interventions targeting transmission within households. However, the majority of recommendations listed in guidelines targeted community-level transmission and tended to be more focused on preventing contamination of the environment by cases or recurrent outbreaks, and the level of
service required to interrupt community-level transmission was often not specified. The guidelines in current use were varied and interpretation may be difficult when conflicting recommendations are provided. Future editions of guidelines should reflect on the inclusion of evidence-based approaches, cholera transmission models and resource-efficient strategies.

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Author Keywords: acute respiratory infections; behaviour change; changement de comportement; handwashing; hygiene; hygiène; infections respiratoires aiguës; lavage des mains; low- and middle-income countries; pays à revenu faible et intermédiaire

Abstract: OBJECTIVES: Acute respiratory infections (ARIs) disproportionately affect those living in low- and middle-income countries (LMICs). We aimed to determine whether hygiene interventions delivered in childcare, school or domestic settings in LMICs effectively prevent or reduce ARIs. METHODS: We registered our systematic review with PROSPERO (CRD42017058239) and searched MEDLINE, EMBASE, CENTRAL, and Scopus from inception to 17 October 2017 for randomised controlled trials (RCTs) examining the impact of hygiene interventions on ARI morbidity in adults and children in community-based settings in LMICs. We stratified data into childcare, school and domestic settings and used the Grading of Recommendations Assessment, Development and Evaluation approach to assess evidence quality. RESULTS:

We identified 14 cluster RCTs evaluating hand-hygiene interventions in LMICs with considerable heterogeneity in setting, size, intervention delivery and duration. We found reduced ARI-related absenteeism and illness in childcare settings (low- to moderate-quality evidence). In school settings, we found reduced ARI-related absenteeism and laboratory-confirmed influenza (moderate- to high-quality evidence), but no reduction in ARI illness (low-quality evidence). In domestic settings, we found reduced ARI illness and pneumonia amongst children in urban settlements (high-quality evidence) but not in rural settlements (low-quality evidence), and no effect on secondary transmission of influenza in households (moderate-quality evidence). CONCLUSIONS: Evidence suggests that hand-hygiene interventions delivered in childcare, school and domestic settings can reduce ARI morbidity, but effectiveness varies according to setting, intervention target and intervention compliance. Further studies are needed to develop, deliver and evaluate targeted and sustainable hygiene interventions in LMICs.
Abstract: To assess the health impact of reusable, antimicrobial hand towels, we conducted a cluster randomized, yearlong field trial. At baseline, we surveyed mothers, and gave four towels plus hygiene education to intervention households and education alone to controls. At biweekly home visits, we asked about infections in children < 2 years old and tested post-handwashing hand rinse samples of 20% of mothers for Escherichia coli. At study’s conclusion, we tested 50% of towels for E. coli. Baseline characteristics between 188 intervention and 181 control households were similar. Intervention and control children had similar rates of diarrhea (1.47 versus 1.48, P = 0.99), respiratory infections (1.38 versus 1.48, P = 0.92), skin infections (1.76 versus 1.79, P = 0.81), and subjective fever (2.62 versus 3.40, P = 0.04) per 100 person-visits. Post-handwashing hand contamination was similar; 67% of towels exhibited E. coli contamination. Antimicrobial hand towels became contaminated over time, did not improve hand hygiene, or prevent diarrhea, respiratory infections, or skin infections.
carriage of S. aureus. METHODS AND DESIGN: Nonrandomized interventional design. Seventy-two (72) of 86 nurses were provided with portable ABHR to use during patient care (intervention group). The remaining 14 nurses constituted the control group. Evaluation was done via HHC observation per WHO 5-moments of HH, determining S. aureus nasal carriage prevalence and HH guideline knowledge assessment via a self-response questionnaire. RESULTS: In the intervention group, HHC improved from 48.9% to 67.7% (P < .001) especially for hand-hygiene before and after patient contact. Hand-hygiene by handrubbing improved from 16 to 105 moments. There was positive feedback to portable ABHR use from nurses. S. aureus nasal carriage significantly decreased from 30.6% to 21% (P < .031). Negative carriage of S. aureus was significantly associated with increase in HHC (P < .001). Despite the low preintervention HHC, nurses showed considerably high levels of knowledge on relevance of hand hygiene. CONCLUSIONS: Portable ABHR use was associated with improved HHC and reduced S. aureus nasal carriage prevalence. As nurses' knowledge of HH guidelines was high, provision of portable ABHR compensated for deficient facility HH resources resulting in improved HHC, which effected reduction in nasal carriage of S. aureus among nurses.

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Abstract: Healthcare-associated infections (HCAIs) are the most frequent adverse event compromising patient safety globally. Patients in healthcare facilities (HCFs) in low-income and middle-income countries (LMICs) are most at risk. Although water, sanitation and hygiene (WASH) interventions are likely important for the prevention of HCAIs, there have been no systematic reviews to date. METHODS: As per our prepublished protocol, we systematically searched academic databases, trial registers, WHO databases, grey literature resources and conference abstracts to identify studies assessing the impact of HCF WASH services and practices on HCAIs in LMICs. In parallel, we undertook a supplementary scoping review including less rigorous study designs to develop a conceptual framework for how WASH can impact HCAIs and to identify key literature gaps. RESULTS: Only three studies were included in the systematic review. All assessed hygiene interventions and included: a cluster-randomised controlled trial, a cohort study, and a matched case-control study. All reported a reduction in HCAIs, but all were considered at medium-high risk of bias. The additional 27 before-after studies included in
our scoping review all focused on hygiene interventions, none assessed improvements to water quantity, quality or sanitation facilities. 26 of the studies reported a reduction in at least one HCAI. Our scoping review identified multiple mechanisms by which WASH can influence HCAI and highlighted a number of important research gaps.

CONCLUSIONS: Although there is a dearth of evidence for the effect of WASH in HCFs, the studies of hygiene interventions were consistently protective against HCAIs in LMICs. Additional and higher quality research is urgently needed to fill this gap to understand how WASH services in HCFs can support broader efforts to reduce HCAIs in LMICs.


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Author Keywords: Cross infection; Hospital infection; Infection control; Quality of health care

Abstract: Infection control faces radical changes at the beginning of the third millennium. The first part of this review focuses on problems not yet solved, such as 1) surveillance systems, which should be active and extremely flexible; 2) infection outbreaks in hospitals and strategies to avoid them; 3) hand washing and alternatives such as rapid hand antisepsis; 4) water and food in the hospital as potential reservoirs of nosocomial pathogens; 5) upgrading of infection control programs to turn them into systems to improve the quality of care; 6) fatal Gram-negative bacteremias in hospitals from developing countries, which can be avoided with better standards of care; 7) the elemental role of the microbiology laboratory in the prevention and control of infections; 8) the unprecedented crisis due to the emergence of specific multi-resistant pathogens; 9) the risks for healthcare workers, such as tuberculosis, hepatitis, HIV, SARS, and hemorrhagic fevers; and 10) the need for the consistent application of guidelines. The second part of this review focuses on new challenges for infection control, such as 1) the ever-growing number of immunocompromised patients and basic control measures to avoid opportunistic infections; 2) the concerns about the capacity of the public health systems to deal with terrorist acts; 3) the practice of high-risk procedures in facilities lacking trained personnel, efficient laboratories, and protective items; and 4) gene therapy and its potential infectious complications. Consideration is given to the asymmetric development of infection control globally.
