

The search for an evidence-based intervention to improve hand hygiene compliance in a residential aged care facility

Gail Abernethy^{1,4} BHealth, PGDPHTM, GCHSt

Wendy Smyth^{2,3} MAppSc, MBus, PhD

¹Queensland Health, Herberton Hospital, Herberton, Qld 4887, Australia.

²Tropical Health Research Unit for Nursing and Midwifery Practice, Townsville Hospital and Health Service, Townsville, Qld 4814, Australia.

³School of Nursing, Midwifery and Nutrition, James Cook University, Townsville, Qld 4811, Australia.

⁴Corresponding author. Email: Gail.Abernethy@health.qld.gov.au

Abstract. *Introduction:* Healthcare-acquired infections are a major source of morbidity and mortality in people living in residential aged care facilities. Compliance with hand hygiene by healthcare workers can reduce the risk of infection to residents, yet compliance rates are generally low. Infection-control advocates within the aged care sector are looking to conduct programs to improve rates among their staff. This review was conducted to identify a reproducible intervention to improve staff hand hygiene compliance within an Australian residential aged care facility.

Method: Medline, Embase, and CINAHL databases were searched for combinations of ‘hand hygiene’, ‘hand washing’, ‘residential aged care facility’, ‘aged care’, ‘nursing home’ and ‘long-term care facility’ from 2000 to current. Articles were excluded if the information was not clearly stated as pertaining to a residential aged care facility or if the data investigated staff knowledge or perceptions of hand hygiene.

Results: Most of the five articles included in the review reported an improvement in compliance rates. Studies were multimodal, had an education or training component, and included the promotion of alcohol-based hand rubs. Several used aspects of the World Health Organization’s hand hygiene initiatives. Compliance audit tools across the studies were not consistent; thus, results may not be comparable.

Conclusion: There are few published studies which report interventions that improve hand hygiene compliance among healthcare workers within residential aged care facilities. Successful studies included the promotion of alcohol-based hand rubs. More research is needed to improve hand hygiene compliance in the aged care sector.

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Introduction

Healthcare-acquired infection is a major cause of morbidity and mortality for people living in residential aged care facilities (RACF). RACF, which can also be termed nursing homes or long-term care facilities, provide nursing and/or personal care, accommodation, and related services to older people unable to care for themselves in their own homes. To receive government funding or gain approval to operate, RACF must meet certain standards of care which include infection prevention and control.^{1–3}

The elderly are at increased risk of infection due to age-associated immune changes, multiple co-morbidities, and impaired functional status.^{4,5} Residents of aged care facilities may also have invasive devices such as enteral feeding tubes or tracheostomies for their care, further increasing their risk of infection.³ By providing a home-like environment with shared facilities and common sources of air, food and water, the RACF may itself contribute to the transmission of infection among residents.^{6,7}

It has been reported that 25% of all acute hospital admissions from nursing homes can be attributed to infection.⁸ Studies report the prevalence of infection in RACF ranges from 2.2% to 6.0%.^{5,9,10} Overall incidence rates are stated as 2.20 to 4.16 episodes per 1000 resident-care bed days.^{11–13} The number of elderly requiring residential care may be impacted by the trend across health sectors towards rapid discharge from acute facilities to non-acute facilities.^{4,6} A shorter length of stay in hospital will reduce the cost to, and burden on, the acute hospital sector but the patient may subsequently require admission to a RACF for nursing care. Compliance with hand hygiene by staff in RACF can contribute to effective infection prevention and control.¹⁴

Hand hygiene by healthcare personnel is regarded as one pillar of any infection prevention and control program. Studies suggest that staff compliance with hand hygiene is generally poor across all healthcare settings¹⁵ and that compliance rates among healthcare workers (HCW) in the aged care sector range from 9.3% to 54.0%.^{6,16} In an attempt

Implications

- There are limited data from the residential aged care sector relating to interventions to improve hand hygiene compliance
- Interventions should be multifaceted, address local needs and include use of alcohol-based hand rubs
- Hand hygiene compliance audit tools may need refinement to be applicable for the residential aged-care environment

to reduce healthcare-acquired infections, the World Health Organisation (WHO) initiated the global 'Clean Care is Safer Care' campaign in 2005 as a means to promote hand hygiene. The National Hand Hygiene Initiative (NHHI) was instigated by the Australian Commission on Safety and Quality in Health Care in 2009 to improve hand hygiene compliance among staff in Australian hospitals. This hand hygiene culture-change program includes the appropriate use of alcohol-based hand rubs (ABHR), and hand hygiene education, whilst monitoring hand hygiene compliance and patient infection rates.¹⁷ Australian acute healthcare facilities need to be able to demonstrate how they meet the national standards for safety and quality in healthcare when they undergo accreditation. Standard 3 requires the implementation of a governance structure and systems for preventing and controlling healthcare-associated infections. The subsequent monitoring of compliance with national hand hygiene guidelines, and taking corrective action to address identified deficiencies falls within this Standard.¹⁸

To satisfy the Aged Care Act 1997, RACF in Australia must comply with the accreditation standards, as assessed by the Aged Care Standards and Accreditation Agency Ltd, which include an effective infection-control program.¹¹ The guidelines for aged care facilities in relation to hand hygiene, at least in Australia, are not as prescriptive as those for acute healthcare facilities. Rather, they have a set of broad principles, which include the need to balance the provision of a safe environment with the residents' quality of life.¹⁹ The Australian Guidelines for the Prevention and Control of Infection in Healthcare were released in 2010 and provide information for healthcare providers, including RACF, to develop infection-control protocols appropriate to their service. Geary *et al.*²⁰ found 97% of the participant Australian long-term care facilities had an infection-control program in place by 2000 which suggests the industry has prioritised this area for resource allocation.

Much work has been undertaken within the acute care sector regarding hand hygiene compliance and education programs.^{15,21–25} A Cochrane Review found only four studies, all of which were undertaken in an acute care setting, assessing the success of programs to improve hand hygiene compliance.¹⁵ The interventions, including hand hygiene product substitution and multimodal campaigns, had varying success at increasing hand hygiene compliance rates. Social

marketing or interventions with staff involvement appeared effective but the authors suggest there was not enough evidence to be conclusive. In another systematic review, Huis and colleagues²⁶ examined the determinants of behaviour change in hand hygiene improvement strategies in the acute care sector. In the 41 studies matching their criteria, they found certain combinations of determinants within an intervention, such as social influence, attitude, self-efficacy and addressing existing local barriers were necessary to improve compliance. From these two systematic reviews, it appears that interventions to improve hand hygiene compliance must be evidence-based and sustainable.

Hand hygiene compliance is as important to the health of staff and residents of the RACF as it is in the acute care setting. Hand hygiene compliance can reduce the risk of healthcare-acquired infection to both residents and staff. This review was conducted to search the literature for a reproducible intervention to improve HCW hand hygiene compliance within an Australian RACF.

Method

Studies, published from 1 January 2000 to 22 March 2013 were identified through searching the Medline, Embase, and CINAHL databases. The search strategy included all English-language articles with the headings ('intervention\$' or 'effect\$' or 'randomised controlled trial' or 'experiment\$' or 'compar\$' or 'evaluat\$') and ('handwashing' or 'hand washing' or 'hand hygiene'). These were then combined with the terms ('aged care' or 'nursing home' or 'residential aged care facility' or 'long-term care facilit\$'), to retrieve $n = 307$ titles, including duplicates.

The abstracts were inspected, and the full article retrieved where found relevant. Additional articles were also identified using cited-reference searching. All studies that involved interventions to improve healthcare worker compliance with hand hygiene in RACF were included in the review. Studies that reported only knowledge and attitudes to hand hygiene or healthcare-acquired infection rates were excluded. Studies with both acute and non-acute care site data were included if the RACF data were clearly identified.

Results

Five relevant papers specific to RACF were identified and are summarised in Table 1.^{16,27–30} Within these five studies, a variety of interventions to improve healthcare worker hand hygiene compliance were reported. Studies that reported healthcare-acquired infection rates following an intervention but not hand hygiene compliance were excluded from this review.^{31,32} Some studies included RACF and acute care hospital sites including rehabilitation, but the data pertaining to the RACF were not clearly identified and thus were also excluded from this review.^{6,33–35}

The use of an alcohol-based hand rub (ABHR), either as a new product to the facility, providing pocket-sized products to staff or increasing availability of an existing product, was a component of four studies,^{16,27,29,30} while the fifth study

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