

Characteristics of a successful hospital hand hygiene program: an Australian perspective

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Abstract. *Introduction:* Healthcare-associated infections (HAIs) are the most common adverse health event affecting patients in hospital. Approximately 200 000 HAIs occur in Australian acute care facilities annually with an estimated annual cost of approximately \$1 billion. They are largely preventable adverse events, which can be significantly reduced through the implementation of effective infection prevention and control programs and guidelines. Hand hygiene is well established as being fundamental in infection control programs for preventing and controlling HAIs. This paper will describe a successful hand hygiene program introduced into one Australian private hospital.

Methods: In 2009, a 323-bed, acute care facility implemented a program based on the Hand Hygiene Australia Hand Hygiene Culture Change Program. The aim of the program was to effect culture change using a structured multimodal approach, improving hand hygiene using the five elements of the World Health Organization (WHO) Multimodal Hand Hygiene Improvement Strategy.

Results: The program was successful at improving and maintaining hand hygiene compliance from 22% to 71% and this improvement was evidenced by an increase in the usage of alcohol-based handrub from 32 L per 10 000 bed days to 90 L, increases in the volumes of liquid soap used, a decrease in the bed days associated with surgical site infections, and a decrease in *Staphylococcus aureus* bacteraemia bed days.

Conclusions: Culture change for improvements in hand hygiene is difficult to achieve but possible to achieve through a structured multimodal whole-of-organisation program approach.

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Introduction

Infection prevention and control for quality and safety in healthcare

Infection prevention and control is integral to providing high quality healthcare and a safe working environment in healthcare settings. Gilbert, Cheung and Kerridge¹ report that in the United States of America in 2002 there was an estimated 1.7 million healthcare-associated infections (HAIs) which resulted in 99 000 deaths. Unfortunately there is limited data available for Australia, although Gilbert *et al.* report that the impact and outcome of HAIs is likely to be similar. Healthcare-associated infections are the most common complication affecting patients in hospital with ~200 000 HAIs occurring in Australian acute care facilities annually. The estimated annual cost of HAIs in Australia in 2005 was at least \$1 billion.²

Preventing and controlling HAIs: infection control programs

HAIs are not an unpredictable complication of healthcare. They are largely preventable adverse events, which can be significantly reduced through the implementation of effective infection prevention and control programs and guidelines. Zimmerman *et al.*³ argue that the significance of extensive infection prevention and control programs to prevent HAIs is well reported in the literature. Zimmerman *et al.* report that an infection prevention and control program encompasses a range of activities, resources, policies and procedures. The World Health Organization (WHO) has categorised the essential components of an infection prevention and control program as: organisation of an infection prevention and control program, technical guidelines, human resources, surveillance of infections and assessment of compliance with

Implications

- Hand hygiene is universally acknowledged as the fundamental measure to prevent and control healthcare-associated infections.
- In this paper we describe a successful hand hygiene program, aimed at effecting culture change, which significantly improved and maintained hand hygiene compliance from 22% to 71%, tripling the use of alcohol-based handrub.
- A whole-of-organisation program using a structured multimodal approach focused on culture change yields the greatest dividends with respect to the prevention and control of healthcare-associated infection.

infection prevention and control practices, microbiology laboratory support, environmental minimum requirements, monitoring and evaluation of programs, and links with public health or other relevant services. There is evidence of effective control of infection transmission in healthcare facilities in high income countries with infection prevention and control programs.³ Following recommendations from the Australian Commission on Safety and Quality in Health Care, the National Health and Medical Research Council (NHMRC) developed national guidelines aimed to provide a systematic and coordinated approach to the management and prevention of HAIs. These guidelines are based on a risk-management framework that relies on the concept of interrupting the chain of infection: the transmission of infectious agents to susceptible hosts. This risk-management approach manages the human and system factors associated with the transmission of infectious agents.²

First among equals: hand hygiene

Hand hygiene is well established as being fundamental in infection control programs for preventing and controlling HAIs. The hands of healthcare workers represent the principal route of transmission of HAIs.⁴ Hand hygiene is described as the process that decreases the number of microorganisms on hands. Hand Hygiene Australia indicates that the term hand hygiene is applicable to both the use of soap or solution (non-antimicrobial or antimicrobial) and water or a waterless antimicrobial agent to the surface of the hands (e.g. alcohol-based handrub). Studies have confirmed that increasing hand hygiene compliance with the use of alcohol-based handrub and the implementation of multimodal culture change programs in healthcare facilities reduces the rates of HAIs.⁵ The WHO Guidelines on Hand Hygiene in Health Care⁶ provide both a review of the evidence on hand hygiene in healthcare as well as recommendations to improve practices and reduce the transmission of infectious agents to patients and healthcare workers using multi-modal strategies.

Following the release of the WHO Guidelines on Hand Hygiene in Health Care,⁶ the Australian Commission on

Safety and Quality in Health Care (ACSQHC) implemented the National Hand Hygiene Initiative.⁷ The National Hand Hygiene Initiative was the first integrated national program targeted at changing hand hygiene culture. HAIs are a significant clinical and economic issues in Australian healthcare facilities.¹ Preventing and controlling healthcare-associated infections is the aim of ACSQHC National Safety and Quality Health Service (NSQHS) Standard 3.⁸ The ACSQHC funded the establishment of Hand Hygiene Australia, a national organisation to coordinate and implement this program within all healthcare facilities in Australia. Hand Hygiene Australia has integrated the WHO Guidelines on Hand Hygiene in Health Care including the '5 Moments for Hand Hygiene' into their Hand Hygiene Australia program.⁹ This paper will describe a successful hand hygiene program introduced into one Australian private hospital.

Methods

Setting

John Flynn Private Hospital is a 345-bed, acute care facility with ~1100 FTE staff. Opened in 1993, it provides a range of healthcare services including a 24-h emergency care centre, cardiac services, general and orthopaedic surgery, oncology, medical services, maternity and paediatrics, renal dialysis, day surgery, and rehabilitation services.

Prior to 2009 there was limited focus on hand hygiene and hand hygiene compliance at the John Flynn Private Hospital with no systematic facility-wide auditing or monitoring. While policies and competencies associated with hand hygiene were in place, a structured program ensuring all staff received education and completed these competencies was lacking. The required infrastructure for best practice hand hygiene according to the '5 Moments for Hand Hygiene',⁹ such as automatic taps, automated soap and paper towel dispensers, and alcohol-based handrubs, were not available at all points of care. Alcohol-based handrub was available in two clinical departments.

Intervention: The John Flynn Private Hospital Program and the John Flynn Private Hospital Hand Hygiene Program

In 2009, the limited focus on hand hygiene and low hand hygiene compliance had been identified as a specific issue or challenge at the John Flynn Private Hospital. The results of an infrastructure survey identified that the facility lacked adequate resources and equipment that would enable staff to practice hand hygiene as per the National Hand Hygiene Culture Change Program.¹⁰ To remedy this, the infection control coordinator implemented the John Flynn Private Hospital Hand Hygiene Program. This program was based on the Hand Hygiene Australia Hand Hygiene Culture Change Program, which focuses on improving hand hygiene compliance among healthcare workers with the aim of decreasing the transmission of infection in Australian healthcare facilities. It is a multi-interventional culture-change program incorporating the WHO '5 Moments for Hand

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