

# Compliance of hand washing practices: Theory versus practice

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## Abstract

*Hand washing remains an important preventative method for making the transmission of nosocomial infections redundant. Despite awareness by health workers of the practices required and of the legislation governing hand washing, the study reported here found that compliance to these procedures was quite poor. The results of two surveys distributed to health workers and direct observation by clinical staff in an aged care hospital found that 45% of health workers did not wash their hands and 24% did not change their gloves between patient consultation. Methods for increasing effective hand washing in clinical settings must be identified if hygienic practice is to be improved.*

## Introduction

The importance of hand washing by health care workers in preventing nosocomial infections was identified by Ignaz Semmelweis more than 100 years ago (Semmelweis 1995). Even today, nosocomial infections continue to be major sources of morbidity and mortality for patients, particularly in high-risk areas of the hospital such as intensive care, emergency departments and patient wards (Doebbeling et al. 1992). Most infections are transmitted by the hands of health care workers and research has shown that hand washing reduces the incidence of nosocomial infections (Semmelweis 1995; Black et al. 1981; Doebbeling et al. 1992). The consequences of nosocomial infection can be dramatic. Nosocomial infection can add to the morbidity and mortality expected from underlying diseases and may greatly increase hospital costs because of extended stays (Doebbeling et al. 1992). It has been estimated that in the United States the annual direct costs of nosocomial infection range from

\$5 billion to \$10 billion (Wenzel 1988) and therefore necessitate mandatory effective control measures.

The widespread use of gloves by health care workers does not decrease the need for hand washing. Due to the high glove breakage rate and the fact that bacteria multiply rapidly under gloves, hand washing remains important (Meengs et al. 1994). Hand washing remains one of the simplest and most important interventions but, despite the apparent simplicity, several studies have shown poor compliance with hand washing procedures (Albert & Condie 1981; Quraishi, McGuckin & Blais 1984; Graham 1990; Lohr et al. 1991; Doebebling et al. 1992; Meengs et al. 1994). In addition, Lohr and colleagues (1991) found that hand washing before patient contact did not increase despite physicians being reminded of the importance of the practice at the beginning of each clinic rotation.

In response to the apparent poor compliance rates to hand washing practices by health care workers, State Health Departments in Australia have adopted, and continue to update, infection control policies aimed at ensuring the health and safety of all patients and health workers in health care settings. In 1995, as a result of an extensive review process, the New South Wales (NSW) Health Department released legislative changes to the 1992 Medical Practice Act that outline the broad principles of infection control for public health settings (NSW Health Department 1995). Section 2.1 of the NSW Health Department Infection Control Policy recognises that 'hand washing and hand care are considered to be the most important measures in infection control' (p 2) and stipulates that 'hands must be washed and dried immediately before and after any direct patient care' (Section 2.1.5, p 3).

This study was conducted at Balmain Hospital in New South Wales. Balmain Hospital is a 106-bed hospital that caters predominantly for the aged. Admitted patients generally have acute/chronic medical problems and/or the need for rehabilitation services. The hospital also has a unique 24-hour General Practice Casualty (GPC) Department that is staffed by general practitioners from the Division of General Practice Central Sydney Area. The GPC opened in September 1994 in response to community need for a casualty department after the hospital's traditional accident and emergency department closed. The GPC provided care to approximately 15 000 patients in 1995–96.

Balmain Hospital conducted internal risk factor analyses relating to patient risk of incurring a nosocomial infection based on the survey developed by the Herringford Hospital in 1993 (Rogers 1993). These analyses indicated that patients in Balmain Hospital have relatively high scores and thus are at high risk

of infection. From June 1994 to February 1996, nosocomial infection rates were reported as occurring on average in 2–3% of admissions per month.

With the release of the 1995 NSW Health Department Infection Control Policy, it was considered important to ascertain the familiarity of health care workers with the policy and the degree to which health care workers complied with the regulations as outlined in the policy.

## Methods

The 1995 NSW Health Department Infection Control Policy was distributed to all department managers and clinical staff for their information in November/December 1995. Simultaneously, inservice education was provided explaining the legislation. Three months later (in February 1996) a confidential survey (see Appendix) was given to 60 randomly selected staff members (including doctors, nurses and allied health workers) to assess the familiarity of clinical staff with fundamental infection control issues and the amendments to the NSW Infection Control Policy. The results and correct responses were fed back to department managers and clinical staff. The survey was then again given to 86 staff members (doctors, nurses and allied health workers) during April/May 1997. The survey contained 12 questions, all of which were to be answered 'yes/no' or 'true/false'. Eight questions were phrased in the positive and to address response bias four questions were phrased in the negative. For the purpose of this article, the results of the five questions that relate directly to the amended Infection Control Policy and the specific legislation concerning hand washing are reported. Of these questions, three questions were phrased in the positive and two questions in the negative. Finally, in June/July 1997, 66 random episodes of patient contact were observed and it was recorded whether or not staff washed their hands and/or changed gloves between episodes of patient care.

## Results

### Surveys

#### *Survey 1 (February 1996)*

The overall response rate was 79% (n = 47). Sixty-two per cent of respondents (n = 29) stated that they knew about the amendments to the NSW Infection Control Policy; 81% (n = 38) stated that hands were to be washed and dried immediately before every episode of direct patient care; 96% (n = 45) stated that

hands were to be washed and dried immediately after every episode of direct patient care; 62% (n = 29) stated that hands need not be washed if medical treatment is required urgently; and 19% (n = 9) stated that hands need not be washed if gloves are worn (see Table 1).

### ***Survey 2 (April/May 1997)***

The overall response rate was 86% (n = 74). Forty-five per cent of respondents (n = 33) stated that they knew about the amendments to the NSW Infection Control Policy; 92% (n = 68) stated that hands were to be washed and dried immediately *before* every episode of direct patient care; 99% (n = 73) stated that hands were to be washed and dried immediately *after* every episode of direct patient care; 38% (n = 28) stated that hands need not be washed if medical treatment is required *urgently*; and 18% (n = 13) stated that hands need not be washed if gloves are worn (see Table 1). Figure 1 illustrates the comparison of survey results.

**Table 1: Comparison of survey responses**

Issue	Correct response	Correct response Survey 1	Correct response Survey 2	p value
Do you know about the amendments to the NSW Infection Control Legislation?		62%	46%	0.068
Hands must be washed and dried immediately before every episode of direct patient care	True	81%	92%	0.080
Hands must be washed and dried immediately after every episode of direct patient care	True	96%	99%	NA (cell sizes too small)
Must hands be washed if medical treatment is required urgently?	No	62%	38%	0.011 <sup>1</sup>
Hands need not be washed if gloves are worn	False	19%	18%	0.826

1.  $p < 0.05$ .

A chi-square analysis (with alpha set at 0.05) revealed that there was a significant difference ( $p = 0.011$ ) between the response of the survey administered a second time compared to the initial administration of the survey for the question 'Must hands be washed if medical treatment is required urgently?' The correct response was 'no' but significantly fewer staff responded correctly in the second survey compared to the first. Interestingly, while there was no significant difference between the responses to the questions that hands must be washed before and

after every episode of direct patient care, the results reveal a trend that more staff were aware of the correct response when the survey was administered a second time.

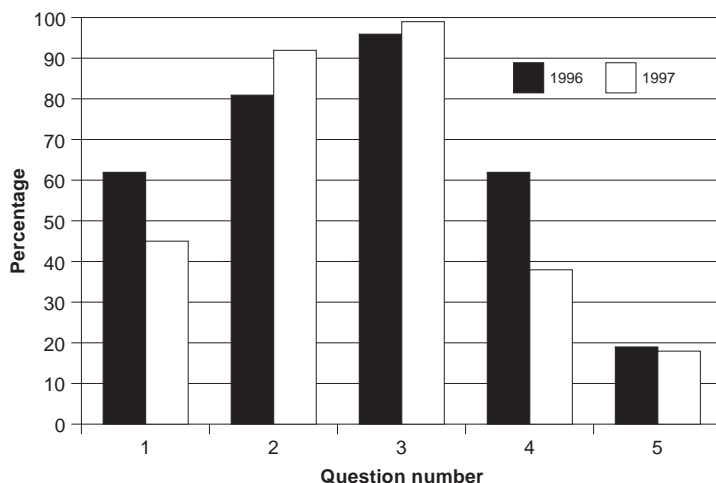


Figure 1: Comparison of responses to survey in 1996 and 1997

### *Observation (June/July 1997)*

Nurse unit managers recorded whether staff washed their hands between 49 observed episodes of direct patient care and whether staff changed gloves between 17 episodes of direct patient care. The purpose of the observation was to ascertain if the relatively medium-high awareness of infection control issues as determined by the surveys was actually being practised in the clinical setting. Fifty-five per cent ( $n = 27$ ) of staff were seen to wash their hands between episodes of patient care; 45% ( $n = 22$ ) of staff were seen *not* to wash their hands between episodes of patient care; 76% ( $n = 13$ ) of staff were seen to change gloves between episodes of patient care; and 24% ( $n = 4$ ) of staff were seen *not* to change gloves between episodes of patient care.

## Discussion

Our study found that there was a good awareness of changes to infection control legislation and hand washing practices. When the survey was reissued 18 months after the revised legislation had initially been widely distributed, awareness of amendments to the NSW Infection Control Legislation had decreased but awareness of the required hand washing practices had increased (see Figure 1). This may indicate that the actual intent of the legislative changes had successfully been adopted.

Whilst it was encouraging to find such high awareness of policy regarding infection control, it was disappointing to view the actual compliance rates. There were relatively high failure rates where staff were seen not to wash their hands (45%) and/or not change gloves (24%) between episodes of care. These failure rates are similar to those found in other studies (Lohr et al. 1991; Meengs et al. 1994). Of equal concern was that both surveys revealed that almost one-fifth of respondents believed that the wearing of gloves made the washing of hands unnecessary.

Lohr et al. (1991) found that hand washing did not increase before patient contact despite physicians being reminded by the clinic head nurse at the beginning of clinic rotation and prominent signs being placed throughout the workroom. Our study had similar findings: despite relatively high awareness of the legislation, hand washing incidence remained low.

## **Conclusion**

Hand washing remains an important method available for reducing the transmission of nosocomial infections. Despite awareness of the practices required and legislated in hand washing by health workers, compliance to these procedures is quite poor. Distribution of written legislation for the perusal of health care workers did not aid in increasing compliance. Methods for increasing effective hand washing in clinical settings must be identified if sanitary practice is to be improved.

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## **Appendix: Balmain Hospital Infection Control Regulations Survey**

### ***Questions:***

1. Do you know about the amendments to the NSW Infection Control Legislation?  
yes      no
2. Hands must be washed and dried immediately before every episode of direct patient care  
true      false
3. Hands must be washed and dried immediately after every episode of direct patient care  
true      false
4. Must hands be washed if medical treatment is required urgently?  
yes      no
5. Hands need not be washed if gloves are worn.  
true      false