This document represents the final report of the Clean Hands Save Lives Campaign which was conducted in New South Wales between November 2005 and May 2007.

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Foreword

The importance of hand hygiene as the single most important strategy to reduce the burden of infection with multi-resistant organisms in modern hospitals is undisputed. It is not, however, a new strategy – Ignaz Semmelweis in the 1840s and Florence Nightingale in the following decade both recognized the importance of hand hygiene in the transmission of infection in hospitalized patients.

As a practicing surgeon for many years, these issues were of personal importance to me in my own practice. To lead a campaign that aimed to improve this practice amongst all staff groups across the state was an exciting challenge for the CEC in its first full year of operation.

The passion with which staff at all levels of the NSW health service embraced this challenge was gratifying. The Clean Hands Save Lives Campaign also allowed the CEC the opportunity to work closely with our colleagues at the NSW Department of Health who were key partners in this effort.

I congratulate all members of the team on their efforts – in particular, the campaign Steering Committee, the CEC project management team, the project officers in each area health service and all the clinicians across the state who contributed to the strategies in striving for excellence in hand hygiene.

This report is the culmination of more than twelve months hard work but it is by no means the end of the story. Hand Hygiene must remain on the agenda in NSW as in the rest of the world and we must continue to find new and innovative strategies to reduce the risk of infection to our patients.

Clifford F Hughes AO
CLINICAL PROFESSOR
CHIEF EXECUTIVE OFFICER
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Executive Summary

The Clean Hands Save Lives Campaign was a joint initiative of the Clinical Excellence Commission and NSW Department of Health. It was developed in response to community and health system concerns about Multi-resistant Organisms (MRO’s) in health facilities.

Better application and adherence to infection control programs, policies and procedures has been shown to reduce the spread of Healthcare Associated Infections (HAIs). Changes introduced by the campaign were designed to assist implementation of existing evidence based guidelines, and aid health facilities to address identified problems and barriers associated with current local hand hygiene activities.

The Clean Hands Save Lives Campaign was launched on 27th March 2006, and was designed to reduce Multi Resistant Organisms (MROs) through improving hand hygiene compliance through the implementation of the campaign in New South Wales health facilities.

Combining campaign methodologies from Pittet¹ and Larson², the Clean Hands Save Lives campaign used a multimodal approach to improve staff compliance by increasing usage of alcohol-based hand rubs and, as a flow-on effect, reduce MRO infections. Strategies employed included:

1. Appointment of project officers to each Area Health Service (AHS) to co-ordinate local campaigns
2. Dissemination of “campaign collateral” was linked to key messages of the campaign, based on the WHO ‘Talking Walls’ strategy
3. Introduction of alcohol-based hand rubs at point of patient care within each facility to assist busy staff decontaminate their hands before and after patient contact
4. Measurement of alcohol based hand rub usage and distribution through NSW facilities
5. Audit of adherence with hand hygiene and feedback to staff on their performance

Standardised data collection tools were used to assist staff to evaluate local implementation of the campaign and provide de-identified data for statewide aggregation and analysis.

Key achievements

The Clean Hands Save Lives campaign resulted in

1. Improved hand hygiene compliance across all professional groups in NSW health facilities by 15.1%.
2. Improvement in availability of alcohol based hand rubs in patient care areas to 70% of all available acute beds
3. Increase in staff reported understanding and knowledge of hand hygiene, which was reflected in observed hand hygiene compliance
4. Improvement in confidence of staff in using alcohol based hand rubs by 17.9% (29.6% - 47.6%) by the end of the campaign

The major area of improvement in Hand Hygiene has been in low risk procedures (27.1% improvement). This is a major achievement as this is reported to be the most difficult behaviour to influence (patient protection versus self protection). An important and interesting finding from the campaign relates to the perception of patient and visitor involvement. As expected, patients and visitors strongly encouraged involvement and knowledge of activities affecting patient care. However, they reported a preference for and were more comfortable in ‘passive involvement’, rather than confronting staff directly about hand hygiene.

Multi Resistant Organism (MRO) data collected through the Infection Control Quality Monitoring Indicator Program, during the campaign period showed a reduction of MRO infections, particularly MRSA infections in ICU sterile sites from 5.28 per 10,000 occupied bed days to 3.92 per 10,000 occupied bed days.

**Barriers to Success**

The recruitment of Hand Hygiene Project Officers created a staggered implementation of campaign strategies. Together with the variable availability of alcohol based hand rubs in patient areas at commencement of the campaign, this may have been reflected in the small improvements in hand hygiene compliance in August 2006. Delays in recruitment also slowed appointment of staff champions promoting the campaign, which was important in providing leadership and driving practice improvements.

Although a reduction in infections has been seen during the campaign period, delays in feedback of statewide MRO data through the NSW Health Quality Monitoring Indicator Program meant that it is difficult to ascribe a direct link to the campaign. Given that a key campaign strategy was outcome feedback to staff this also limited the potential of the campaign.

**Sustainability**

Sustainability of the Clean Hands Save Lives Campaign practice improvements must be maintained through ongoing hand hygiene compliance observations, availability of hand hygiene products near patients, hand hygiene education and permanent resources applied to maximise the potential this strategy has demonstrated for patient safety.

Staff confidence for sustaining hand hygiene was high, but relied mainly on the availability of alcohol based hand rubs in near-patient locations. The perceptions of senior executive’s support for these campaign strategies into health facilities core business is central to continued gains.

**Recommendations**

1. **Hand Hygiene**

   Emphasis on hand hygiene should continue to be a priority and an ongoing permanent feature for the healthcare system. (Rec 3.5.1)

2. **Infection control governance arrangements**

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With infection control in general and the reduction of MROs in particular an important issue for all AHS, consideration should be given to the development of defined and standardised Infection Control governance arrangements with clear reporting lines and accountabilities for future improvement programs. (Rec 2.4.3)

3. **Ongoing monitoring of hand hygiene compliance**
   It is recommended that in order to continue the focus of staff on hand hygiene that a program for monitoring hand hygiene compliance must be implemented in all facilities in the NSW health system. (Rec 3.5.2)

4. **Ongoing monitoring of alcohol based hand rub usage and availability**
   To further the progress and maximise the benefits of the campaign it is recommended that: ongoing monitoring of the usage and availability of alcohol hand based rub be undertaken. (Rec 3.5.3)

5. **Performance indicator monitoring**
   Hand hygiene compliance rates should be a key component of performance indicators for Head of Department or ward Nurse Unit Manager. (Rec 3.5.5)

6. **Review of infection control**
   Consideration should be given by NSW Health to undertake a review of infection control practices in NSW health facilities to identify data collection and reporting issues, surveillance practices and personnel requirements (eg the role of link nurses). (Rec 3.5.6)

7. **Education and resources**
   It is recommended that ongoing education for staff on hand hygiene practices in general and the particular elements of the current campaign shown to be ongoing barriers to improved compliance with hand hygiene, including the reproduction of campaign resources be undertaken. (Rec 3.5.8)

8. **Medical officer engagement and compliance**
   Further work should be undertaken to develop and implement strategies to increase hand hygiene compliance rates among doctors and stimulate their clinical leadership role in this activity. (Rec 3.5.4)

9. **Senior executive commitment**
   Continued AHS senior executive commitment and support for inclusion of campaign strategies into health facilities core business should be encouraged and promoted through further involvement in wider strategies to reduce healthcare associated infections. (Rec 3.5.6)
10. **Sharing lessons learned**
   
a) It is recommended that the learnings from this hand hygiene campaign be incorporated into the development of future relevant projects and programs such as the Central Line Associated Bacteremia Project. In addition, tools developed as part of the campaign, such as education resource from SW SAHS should be shared across the NSW health system. (Rec 3.5.9)
   
b) Project planning – Adequate lead time should be incorporated into future campaigns to enable time to engage all stakeholders and to facilitate the length of time needed to employ local project staff. (Rec 2.4.1)
   
c) Role of Project Officers in campaigns/programs – In future CEC projects or campaigns consideration should be given to other methods of project implementation apart from funding to support the recruitment of project officers. (Rec 2.4.2)
   
d) Features of exemplar wards or facilities should be identified and shared to inform strategies for future improvement work. (Rec 3.5.10)

11. **Change in campaign strategies**

The level of improvement in hand hygiene compliance achieved by international studies using the methodology of the Pittet or similar approaches (talking walls, staff champions, overt observation and feedback etc) have gained an average of 12% improvement. Development and implementation of a new strategy or strategies is necessary to exceed the current levels of achievement. (Rec 3.5.11)

12. **Continuation of Hand Hygiene Activities**

Although this program was undertaken as a twelve month initiative by the CEC and NSW Department of Health it is clear that further activity is required to continue to improve Hand Hygiene compliance in NSW. It is recommended that each AHS assign designated staff to continue to undertake activities to maintain awareness of the need to improve hand hygiene including regular overt observation and feedback of these results to staff at ward and unit level. (Rec 2.4.4).
1. Introduction

1.1 Background

Ignaz Semmelweis showed experimentally that hand washing could decrease infections and therefore reduce morbidity and mortality in obstetric patients in the 1840s but it was not until the work of Pasteur, Koch and Lister, who revisited Semmelweis’ work and produced more evidence of the germ theory and antiseptic techniques that the value of hand washing was appreciated⁴.

In 1854 when Florence Nightingale arrived in the Crimea she and her nurses found wounded soldiers being badly cared for by overworked medical staff in the face of official indifference. Medicines were in short supply, hygiene was being neglected, and mass infections were common, many of them fatal. In fact 40% of soldiers brought to hospital died when the death rate in the general population in Britain was only 3.5%. After 6 months, she was able to reduce the death rate in the hospital in Crimea to 3% through the implementation of 3 key strategies:

- simple hygiene measures,
- scrupulous cleanliness in her hospitals and
- efficient nurse training

Why then if hand decontamination has been shown to prevent the spread of infectious agents in clinical settings for over 150 years was the Clinical Excellence Commission embarking on a statewide Hand Hygiene Campaign for NSW in 2005?

The evidence of the international literature suggests that even though hand hygiene practices exist compliance with them is significantly low⁵. Hospital acquired infections (HAIs) pose a very real and serious threat to all who are admitted to hospital. Pathogens are readily transmitted on health care workers hands, and hand hygiene substantially reduces this transmission.

In 2001, Pittet⁶ reviewed the then current evidence of hand hygiene compliance, summarized in the table below, which shows relatively poor compliance with hand hygiene in a number of international studies. The table shows that hand hygiene rates of compliance in non ICU settings ranged from 16% to 60% similarly, 28% to 81%, in ICUs. Reported improvements in compliance after interventions of varying focus have been small after alcohol hand rub was introduced: 18% in Switzerland (Pittet 2000) and 21% in Australia⁷ to no sustained improvement⁸ in any wards after architectural improvement in sink locations in an Australian hospital.

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<table>
<thead>
<tr>
<th>Year</th>
<th>Setting</th>
<th>Average Compliance</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>1981</td>
<td>Open ward</td>
<td>16%</td>
<td>Preston</td>
</tr>
<tr>
<td></td>
<td>ICU</td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>1981</td>
<td>ICUs</td>
<td>41%</td>
<td>Albert</td>
</tr>
<tr>
<td></td>
<td>ICUs</td>
<td>28%</td>
<td></td>
</tr>
<tr>
<td>1983</td>
<td>All wards</td>
<td>45%</td>
<td>Larson</td>
</tr>
<tr>
<td>1987</td>
<td>PICU</td>
<td>30%</td>
<td>Donowitz</td>
</tr>
<tr>
<td>1990</td>
<td>ICU</td>
<td>32%</td>
<td>Graham</td>
</tr>
<tr>
<td>1990</td>
<td>ICU</td>
<td>81%</td>
<td>Dubbert*</td>
</tr>
<tr>
<td>1991</td>
<td>SICU</td>
<td>51%</td>
<td>Pettinger</td>
</tr>
<tr>
<td>1992</td>
<td>NICU / others</td>
<td>29%</td>
<td>Larson</td>
</tr>
<tr>
<td>1992</td>
<td>ICUs</td>
<td>40%</td>
<td>Doebbeling</td>
</tr>
<tr>
<td>1992</td>
<td>ICUs</td>
<td>40%</td>
<td>Zimakoff</td>
</tr>
<tr>
<td>1994</td>
<td>ER</td>
<td>32%</td>
<td>Meengs</td>
</tr>
<tr>
<td>1999</td>
<td>All wards</td>
<td>48%</td>
<td>Pittet</td>
</tr>
<tr>
<td></td>
<td>ICUs</td>
<td>36%</td>
<td>Pittet</td>
</tr>
</tbody>
</table>

Table 1 – Compliance with hand hygiene in different hospital settings

["Note the Dubbert et al study was a small study conducted with nurses of an intensive care unit which showed a rapid increase in compliance to over 90% with overt observation after four short pre-intervention education sessions without subsequent reinforcement, but noted the improvement was sustained for less than four weeks.

There were few comparable measures in Australian hospitals apart from Whitby and McLaws\(^9\) in 2004 who showed that hand hygiene rates differed before and after patient contact in different target wards (Medical/surgical wards 15% before patient contact and 42% after patient contact; ICU/Infectious disease 34% pre patient contact to 61% after patient contact). Bahal et al (2005)\(^10\) showed that hand hygiene compliance rates after patient contact in ICU ranged from 51% to 100% in medium to high risk procedures. The Tibballs study of 1996 examined medical officer hand hygiene practices.\(^11\)

There are a number of factors known to influence compliance with hand hygiene including the following reported barriers to compliance:

- **Staff/personal issues:**
  - High workload and understaffing (staff busyness and increased workload)
  - Insufficient time
  - Ignorance of guidelines
  - Negative influence to hand hygiene compliance by colleagues
  - Lack of scientific information demonstrating impact of improved hand hygiene on hospital infection rates
  - Skin irritation or skin sensitivity problems experienced by staff
  - Interference with worker-patient relation
  - Patient needs perceived as priority

- **Staff/behaviour issues:**
  - Forgetfulness
  - Low priority by some healthcare workers
  - Wearing gloves – perception this negates need for hand hygiene
  - Low internal motivation - lack of educational resources, guidelines and protocols

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Translation of community learned and practiced behaviour

- Infrastructure issues:
  - Location or shortage of sinks in patient care areas
  - Unavailability or inadequate supply of alcohol-based hand rubs / gels or hand cleansers, moisturisers and paper towels

In October 2005, the World Health Organisation (WHO) launched the first Global Patient Safety Challenge "Clean Care is Safer Care". The advanced draft guidelines for hand hygiene in health care were released as part of the Global Patient Safety Challenge 2005-2006. As a follow-up to this launch, a one-year-on meeting was organised by the WHO World Alliance for Patient Safety in Geneva, on 10 November 2006, where Australia pledged their commitment to address healthcare associated infections through actions such as promoting understanding of the importance of improving hand hygiene among health care providers.

NSW
In early 2005, the NSW Minister for Health established an Expert Group, including the Clinical Excellence Commission (CEC), to advise the NSW Department of Health and the Government on all aspects of Multiresistant Organisms (MRO's) in response to community and health system concerns about MRO's.

The Expert Group identified the need for a statewide campaign on hand hygiene and the CEC recognised that as healthcare associated infections (HAIs) are a safety issue, the proposed campaign fell within the CEC’s charter as part of its continuing and wider work on safety. The CEC conducted the Hand Hygiene Campaign called "Clean Hands Save Lives" in conjunction with the NSW Health Department. The Clean Hands Save Lives campaign is underpinned by international practice and research from the UK's "clean your hands" campaign, behavioural interventions to improve infection control practices and from a long term study conducted in Switzerland. The campaign, based on posters and education, also attempted to incorporate findings specific to Australian healthcare workers. The campaign was also in line with NSW Health Infection Control Policy that minimises the risk of health care consumers and providers acquiring a health care associated or occupational infection and the MRO Expert Group recommendations identified in 2005.

NSW has had, since 2003 a system of mandatory surveillance of MRO infection and colonisation within the public hospital system. The recently published results of this surveillance shows that methicillin-resistant Staphylococcus aureus (MRSA) is endemic in many hospitals and vancomycin resistant enterococci (VRE), multi-resistant Acinetobacter baumanii (MRAB), other multi-resistant Gram negative bacteria (MR GNB) and

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12 Flowing with the go – the sequel to Ready, steady, go: the clean your hands campaign, National Patient Safety Agency, June 2006
15 WHO Guidelines for Hand Hygiene in Health Care, Geneva, 10 Oct 2005
16 NSW Department of Health, Infection Control Policy PD 2005_47
vancomycin intermediate Staphylococcus aureus (VISA) occur sporadically in some but not all hospitals.

On the 6th October 2005, a summit on Multiple Antibiotic Resistant Organisms (MROs) was held in Sydney. MROs cause serious illness and avoidable deaths in hospital patients in Australia. Many MRO infections are preventable and significant savings in the form of reduced morbidity and mortality, reduced length of stay and reduced costs associated with hospitalisation ensue for individual patients, the community and the health system if MROs are adequately controlled and prevented where possible. The summit primarily focussed on issues related to antibiotic prescribing, patient screening, environmental cleaning and surveillance. In addition, the summit introduced the hand hygiene campaign for NSW.

The Clean Hands Save Lives campaign commenced on 27th March 2006 and was designed to increase awareness of alcohol-based hand rubs to improve compliance with hand hygiene and reduce MROs in wards and departments providing clinical care for patients in NSW health facilities.

The campaign did not address surgical scrub techniques, nor specifically was it aimed at improving hand hygiene amongst patients or hand hygiene in the context of food hygiene.

1.2 Campaign aim
The campaign aimed to reduce infections with Multi Resistant Organisms (MROs) through improving hand hygiene compliance through the implementation of the Hand Hygiene Campaign in all hospital facilities in the NSW health system.

1.3 Campaign interventions
To achieve this goal the campaign employed a number of well researched strategies used in the UK and Switzerland including:

1) Alcohol based hand rub – at point of patient care
2) Staff Champions and project leads – to promote the campaign locally
3) Promotional collateral to market the campaign and maintain the interest of target groups in the messages of the campaign:
   • Talking Walls – staff posters changed every month
   • Hand Hygiene Technique poster
   • Patient/Visitor targeted posters
   • Patient/Visitor brochures (translated into 22 languages)
   • “Teaser” stickers
   • “It’s OK to ask” badges
   • T-shirts with campaign logo
   • Balloons with campaign logo
4) Involvement of patients, carers and visitors in this aspect of their healthcare
5) A key intervention was the measurement of hand hygiene compliance through overt observation and feedback to staff on the results of these compliance audits.

1.4 Clinical Practice Improvement Methodology
Issues around best practice and the quality and safety of health services have become a major concern in recent years for providers and consumers, both in Australia and overseas.
The Clean Hands Save Lives campaign was a statewide initiative based on clinical practice improvement methodology and change management theory, working in partnership with clinicians, administrators and consumers, to improve hand hygiene compliance in NSW health facilities.

The clinical practice improvement methodology is key to the implementation of statewide projects to improve quality and safety of patient care in NSW health facilities. It is a process for improving care and service delivery through the application of evidence based practice, identification and diagnosis of a problem, measurement of the scope and size of the problem, identification of various interventions that might reduce the problem, implementation of the intervention/s and re-measurement to determine whether the intervention/s have been successful.

The Clinical Practice Improvement Model (below) identifies three questions to be answered prior to implementing the four steps for implementing changes known as the PDSA cycle:

1. **Plan** – Plan the change that is to be trialled
2. **Do** – Conduct a trial of the proposed change
3. **Study** – Evaluate the impact of the trial
4. **Act** – Implement the changes that were effective or select new changes to be tested

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22 Kotter, John P. "Winning at Change" Leader to Leader. 10 (Fall 1998): 27-33
2. Methodology

2.1 Project Management Methodology

The Clean Hands Save Lives campaign was rolled out in three phases: Planning Phase, Launch Phase and Project Implementation Phase, in all 11 NSW area health services (AHS), including:

- Greater Western Area Health Service (GWAHS)
- Greater Southern Area Health Service (GSAHS)
- North Coast Area Health Service (NCAHS)
- Hunter New England Area Health Service (HNEAHS)
- South Eastern Sydney Illawarra Area Health Service (SESIAHS)
- Sydney South West Area Health Service (SSWAHS)
- Sydney West Area Health Service (SWAHS)
- North Sydney Central Coast Area Health Service (NSCCAHS)
- Ambulance Service of NSW (ASNSW)
- The Children’s Hospital at Westmead (CHW)
- Justice Health (JH)

2.1.1 Planning Phase

The planning phase, commencing in August 2005, incorporated establishment of the extent of existing local hand hygiene activities, project governance, project communication, and the development of guidelines and tools for the implementation of the Clean Hands Save Lives Campaign. The Director of CPI projects commenced at the CEC on 5 September 2005 and there was an expectation that the campaign would be launched in time to coincide with the new JMO year in early 2006. An announcement was made at the MRO summit in October 2005 that the campaign would be launched on 6 February 2006. Hence there were significant time pressures on the planning phase.

a) Hand Hygiene Activities Questionnaire

In preparation for the Clean Hands Save Lives Campaign, the Hand Hygiene Activities Questionnaire was developed to collect information on current activities and to inform the project development. This web-based questionnaire was available for all NSW health facilities to complete during September 2005. Results were incorporated into planning the NSW Clean Hands Save Lives Campaign.

b) Project Governance

The Hand Hygiene Steering Committee was established in October 2005, to provide guidance and direction on the implementation of the Clean Hands Save Lives Campaign. The committee consisted of 19 members (see Appendix 1 – Hand Hygiene Steering Committee Terms of Reference), who attended monthly meetings to discuss local and state campaign progress, and risk management strategies for identified campaign issues and risks.
The Governance structure is represented in the following diagram:

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c) CEC Project officer recruitment
In October 2005 expressions of interest were sought for the position of Project Officer to co-ordinate the campaign under the direction of the newly appointed Director of Clinical Practice Improvement Projects. The position was not filled through this process and a formal recruitment process was undertaken to secure the services of an appropriately skilled person. The CEC Hand Hygiene Project Officer commenced duties on 21 November 2005. The project officer was responsible for the development of the implementation guide to be used by AHS project officers as well as coordinating the development of campaign collateral which was a key feature of the campaign.

d) AHS Project Officer Recruitment
Area Health Service Project Officers, funded by the CEC, were required to be recruited for the implementation of the Clean Hands Save Lives Campaign in each of the 11 area health services. Funding was provided for one FTE in each of the 8 larger AHS ($70,000) and proportionally less for each of the three smaller AHS ($15,000 each for JH, ASNS, CHW). With an expectation of the launch of the campaign in early 2006 there was significant pressure to recruit project officers in each of the AHS to undertake and coordinate campaign activities locally.

Communication with AHS Chief Executives and Directors of Clinical Governance included information about the upcoming campaign; the local commitment required for the recruitment of project officers and the impact of resource requirements including cost of purchase of alcohol based hand rubs. Details of funding available and an externally graded generic position description were provided to facilitate prompt recruitment to the positions. However with the rapid approach of Christmas recruitment embargoes and related issues with vacancies associated with the AHS restructure from 2004 delays were experienced by all AHS. A pragmatic decision to delay the campaign launch until March 2006 was made by the Steering Committee and AHS were advised of the need to complete recruitment processes before the Clean Hands Save Lives Campaign Orientation Workshop on 21st and 22nd February 2006 (Table 2).```
<table>
<thead>
<tr>
<th>Date</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>26 August 2005</td>
<td>Project Sponsor addressed Senior Executive Advisory Board (SEAB)</td>
</tr>
<tr>
<td>6 October 2005</td>
<td>Project Sponsor announced campaign at “MRO Summit”</td>
</tr>
<tr>
<td>6 October 2005</td>
<td>Project Sponsor representative attended Directors of Clinical Governance Unit (DCGU) forum to advise of available funds for the hand hygiene project officer</td>
</tr>
<tr>
<td>3 November 2005</td>
<td>Project Director provides detailed brief to DCGU requesting early identification and recruitment of suitable project officer</td>
</tr>
<tr>
<td>December 2005</td>
<td>CEC forwarded generic position description and external grading for AHS project officer positions to Directors, Clinical Governance and Directors, Workforce Development</td>
</tr>
<tr>
<td>11 January 2006</td>
<td>Project Sponsor writes to all Chief Executives advising project is underway, launch date revised to March, request for project officers to be recruited by Orientation Workshop in February 2006.</td>
</tr>
<tr>
<td>27 January to 7</td>
<td>Project Director met with each Director of Clinical Governance re appointment of Hand Hygiene Project Officers</td>
</tr>
<tr>
<td>February 2006</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 – Senior Executive Campaign Communication

Nevertheless, only 5 of 11 AHS had recruited Hand Hygiene Project Officers by late February 2006, creating a staggered start across the state. In some AHS current infection control staff was temporarily assigned to co-ordinate the campaign within the area health service in addition to their normal duties. Seven AHS chose to fill their project officer position with part time staff to enable better geographical coverage over the larger AHS. Only four AHS appointed one full time project officer for the duration of the campaign. In total, 17 project officers were recruited in 11 area health services.

As the major interface of the Clinical Excellence Commission with the AHS has been the Clinical Governance Unit (CGU) in each AHS funding was distributed by the CEC to each CGU to recruit suitably qualified project officers to co-ordinate the campaign locally with the project officers reporting through the CGU. However, in some AHS responsibility for infection control in general rested with nursing directorates or clinical operations and there was potential for conflict in accountability for improvement in hand hygiene with Infection Control Professionals.

While funding from the CEC to employ project officers in each of the AHS was available for release to the AHS in late 2005 there were significant delays in the recruitment of staff to undertake these roles and also issues in regard to retention of this key project resource. It appeared that in many cases recruitment delays were related to practical issues and uncertainties relating to the ongoing effects of the recent AHS restructure with a number of similar level positions either vacant or “spilled” at this time. In addition, local recruitment processes appeared slow if not unwieldy with many AHS not able to recruit unless the funding was already deposited in cost centre accounts rather than “on promise” from the CEC. Some AHS employed project officers to be available for the orientation session without adequate office or other resources to enable them to undertake their duties. Other AHS sent temporary project staff such as Infection Control Professionals to attend the orientation who clearly felt that hand hygiene was their province and that by implementing this campaign there was some question of their effectiveness or even their ongoing role in this activity. As well, there was a relatively short lead time imposed by the public announcement of the launch of the campaign which impacted on the time frames for preparation.

A number of project officers terminated their contract with the project early due to either taking up other employment opportunities, sick leave or maternity leave. Some moved on to the next CEC project supported by another directorate of the organisation which
commenced prior to the conclusion of the hand hygiene campaign. Few project officers completed the full twelve month period for which funding was provided apart from project officers in GSAHS, GWAHS, ASNSW, CHW, HNEAHS and 1 of 2 project officers from NCAHS.

<table>
<thead>
<tr>
<th>AHS</th>
<th>Project start date</th>
<th>officer (FTE)</th>
<th>Project completion officer date</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCAHS</td>
<td>February 2006 (2x0.5 FTE)</td>
<td></td>
<td>Northern Sector April 2007, Southern Sector August 2006</td>
<td>Replacement for southern sector project officer employed from Dec 06 – Feb 07</td>
</tr>
<tr>
<td>HNEAHS</td>
<td>Feb 2006</td>
<td></td>
<td>April 2007</td>
<td>Although project officer attended orientation workshop in Feb 06, delay in commencement of project activities due to recruitment process</td>
</tr>
<tr>
<td>NSCCAHS</td>
<td>February 2006 (2x0.5 FTE)</td>
<td></td>
<td>November 2006</td>
<td>Both project officers resigned November 2006; replacement recruited January 2007</td>
</tr>
<tr>
<td>SWAHS</td>
<td>June 06</td>
<td></td>
<td>March 07</td>
<td>Project initially co-ordinated by ICPs from one facility in addition to regular duties</td>
</tr>
<tr>
<td>SSWAHS</td>
<td>2x0.5 FTE Feb 06 and March 06</td>
<td>1 retired Nov 2006, 1 resigned Dec 06</td>
<td>No designated project officer. 2x 0.5 FTE ICPs appointed to undertake role in addition to regular duties</td>
<td></td>
</tr>
<tr>
<td>SESIAHS</td>
<td>0.1 FTE project coordinator appointed Feb 2006, 3x0.3 FTE project officers March/April 2006.</td>
<td>Resigned Nov 2006, 1x0.3 FTE mat leave from Aug 06 and replaced Dec 2006 until March 2007</td>
<td>Loss of project coordinator limited communication with part time project officers assigned to geographical sectors within AHS</td>
<td></td>
</tr>
<tr>
<td>GSAHS</td>
<td>February 2006</td>
<td></td>
<td>February 2007</td>
<td>Project officer moved to role with CEC Blood Watch program in Feb 07</td>
</tr>
<tr>
<td>GWAHS</td>
<td>March 2006</td>
<td></td>
<td>February 2007</td>
<td>Project officer moved to role with CEC Blood Watch program in Feb 07</td>
</tr>
<tr>
<td>JH</td>
<td>Sept 2006</td>
<td></td>
<td>March 2007</td>
<td>Difficulties in determining the applicability of the campaign to the JH setting impacted on participation</td>
</tr>
<tr>
<td>CHW</td>
<td>Feb 2006</td>
<td></td>
<td>Feb 2007</td>
<td>Position extended through clinical governance to maintain project gains</td>
</tr>
<tr>
<td>ASNSW</td>
<td>Feb 2006</td>
<td></td>
<td>March 2007</td>
<td>Part time role within project by ICP who continues to undertake hand hygiene within normal duties.</td>
</tr>
</tbody>
</table>

Table 3 – AHS Project Officer Recruitment
e) The Hand Hygiene Campaign Orientation Workshop

The Hand Hygiene Orientation Workshop was conducted on 21st and 22nd February 2006, and was designed to bring together newly appointed Hand Hygiene Project Officers to introduce the campaign to be rolled out over the following 12 months. One Infection Control representative from each area health service was also invited to attend Day One of the workshop in order to facilitate engagement of this key group of staff and to enable the building of relationships between AHS project officers and Infection Control Professionals (ICPs).

Day One of the workshop incorporated setting the scene and providing appropriate skills for implementation of the campaign such as qualitative research methods and practical project management. Sessions included:

- Infection Control and the International and National Experience
- Infection Control in NSW
- Networking and Involving Stakeholders
- Infection Control and Procurement
- Qualitative Research Methods
- Practical Project Management
- Project Officer Networking Dinner

Day Two of the workshop provided Hand Hygiene Project Officers with detailed information about the implementation strategies and activities to be undertaken. This information was provided to them in an “Implementation Guide”. In addition arrangements for the formal launch of the campaign were discussed including engagement of local public affairs personnel and the value of local media and opportunities for discussion and education regarding the evaluation strategies including overt observation of hand hygiene compliance which was a key feature of the campaign. (Appendix 2 – Hand Hygiene Orientation Workshop Program)

A formal evaluation of both days of the workshop was undertaken. (Appendix 3 – Orientation Workshop Evaluation Form)

f) “Three, Two, One – Bugs Off!” Implementation Guide

The “Three, Two, One – Bugs Off!” Implementation Guide, adapted from the UK’s “clean your hands” campaign, provided Hand Hygiene Project Officers with a step-by-step guide for the Planning Phase, Launch Phase and Campaign Implementation Phase. The implementation guide was presented to Hand Hygiene Project Officers at the Orientation Workshop and was also available on the Clean Hands Save Lives website: (http://www.cec.health.nsw.gov.au/campaigns/cleanhandssavelives/index.html)

The guide detailed background information, a ‘pre-campaign checklist’ and provided tools and templates to secure local clinician and management commitment, patient involvement, and to prepare for campaign strategy implementation including the campaign evaluation.

Whilst the implementation guide broadly outlined the requirements of the planning phase on a month-by-month basis, there was room within the guide for local adaptation and flexibility.

The table below outlines the five-week local planning phase for preparation of the campaign up to the launch phase. It should be noted that in comparison the planning phase in the UK “clean your hands” campaign was six months.

<table>
<thead>
<tr>
<th>Three</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two</td>
</tr>
<tr>
<td>One</td>
</tr>
<tr>
<td>Bugs</td>
</tr>
<tr>
<td>Off!</td>
</tr>
</tbody>
</table>
Commitment of managers | Promote patient involvement | Countdown to GO LIVE day
---|---|---
Communicate with staff | Prepare for poster display and changes | Complete final checklist
Identify lead staff in each facility | Prepare for near-patient alcohol | Go live and launch campaign
Communicate opportunity costs | Prepare to receive other materials | Establish current compliance rates
| | Review additional supporting materials |

Table 4 – Planning phase activities

**g) AHS Reporting and Governance**

Support and guidance was provided to project officers by the CEC via regular formal teleconference meetings and informal email and one to one teleconferencing, throughout all campaign phases.

**Project Officer Meetings**

The CEC co-ordinated regular Hand Hygiene Project Officer Meetings (teleconference) providing participants with the opportunity to network across the state to discuss and monitor local improvement strategies. The project officers met weekly prior to the campaign launch and monthly during the implementation phase, a total of fourteen teleconferences.

Project officers submitted monthly progress reports of each campaign element (see appendix 4 – AHS Status Report Template), which were compiled into a state summary for distribution to project officers prior to each meeting. This forum shaped further improvement strategies including the production of six hand hygiene fact sheets (see Appendix 5 – Hand Hygiene Factsheets), Hand Hygiene DVD (produced by Sydney South West Area Health Service) and the development of Hand Hygiene education sessions for facility staff.

Guest speakers, including occupational health and safety managers, attended these meetings addressing both statewide and local improvement strategies.

**Area Health Service Infection Control Governance**

In addition to support provided by the CEC, Project Officers were further supported by Area Infection Control departments and/or Clinical Governance Units to implement the campaign. Of the 11 AHS, 5 AHS were supported through regular support and meetings with area infection control and 6 AHS by Clinical Governance staff. However, at the project officers workshop on 9 November 2006 several project officers reported they were unclear of governance arrangements for infection control in their AHS and it became apparent that there were inconsistent governance arrangements for infection control across NSW with infection control reporting through clinical governance, clinical operations or nursing in different AHS. Four project officers reported that their AHS did not have an AHS level infection control committee in place.
h) Hand Hygiene Project Officers Workshop

The Hand Hygiene Project Officer Workshop was held on 9\textsuperscript{th} November 2006, to provide a forum to discuss lessons learned and the progress of the Hand Hygiene Campaign.

The learning objectives of the workshop were to:

1. Review the hand hygiene compliance data and identify areas for improvement
2. Identify further strategies to improve hand hygiene compliance
3. Understand the steps to implement change
4. Understand the factors affecting behaviour change
5. Understand strategies to encourage Medical Officer participation
6. Identify potential barriers to success and sustainability of your local project and plans to manage it
7. Understand the next steps for the Hand Hygiene campaign
8. Understand how your achievements can be reflected in your CV (see Appendix 6 – Project Officer Workshop Program)

The workshop used a review of data from consolidated reports of hand hygiene observations audits as the basis for a gap analysis (SWOT), action plan development and identification of issues for sustainability.

The Clinical Excellence Commission obtained the “Alison and Sue” DVD from the UK’s National Patient Safety Agency to assist Project Officers identify with changing behaviours through patient involvement, whilst the ‘Involving Doctors’ role play focussed on practical skills for project officers to use to involve medical officers in the campaign.

Participants were asked to complete a workshop evaluation at the end of the workshop (see Appendix 7 – Project Officer Workshop Evaluation). Evaluation questions included if workshop achieved its learning objectives, audience interaction and the speakers presentations were satisfactory, and other general comments. A five point ‘Likert’ scale was used to determine participant responses, including 5 = Strongly Agree, 4 = Agree, 3 = Somewhat Agree / Unsure, 2 = Disagree, 1 = Strongly Disagree.

i) Collateral development

The NSW Department of Health, AIDS and Infectious Diseases Branch provided the financial resources for development of campaign collateral. A brief was prepared for the designers, and the Steering Committee and CEC Board provided advice and direction to the development of relevant and localised messages to support the campaign. A suite of high quality resources were produced to support promotion of key hand hygiene messages to staff, patients and visitors of NSW health facilities including:

- Four (4) ‘teaser’ stickers designed to raise curiosity of the upcoming campaign
- Ten (10) staff posters based on Geneva’s Talking Walls Strategy, changed monthly
- Three (3) patient / visitor targeted posters
- Patient / visitor brochure – available in English in hard copy and electronically in 22 languages
- “It’s OK to Ask” badges
- PowerPoint presentation template
- Clean Hands Save Lives Lectern Banner
- Clean Hands Save Lives Pull-up banner
- Clean Hands Save Lives Balloons
- Clean Hands Save Lives T-shirts
In addition, the CEC developed Clean Hands Save Lives Campaign website was used to support the campaign through dissemination of campaign initiatives and information. www.cec.health.nsw.gov.au/campaigns/cleanhandssavelives/overview.html (See Appendix 8 – Campaign Resources)

These campaign resources were distributed to all AHS, free of charge, prior to the launch for wider dissemination to health facilities within each area health service. Electronic design files were made available for area health services to reproduce all campaign materials. Campaign resources were also made available to private hospitals and other organisations on a cost-recovery basis by the NSW Health Infection Control Resource Centre.

The resource quantities produced and disseminated are detailed in the table below.

<table>
<thead>
<tr>
<th>Campaign Resource</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean Hands Save Lives staff posters (10 posters x 7,700)</td>
<td>77,000</td>
</tr>
<tr>
<td>Hand Hygiene Technique Poster</td>
<td>7,700</td>
</tr>
<tr>
<td>“I do, so can you” champion poster</td>
<td>7,700</td>
</tr>
<tr>
<td>Patient and Visitor posters (3 posters x 7,700)</td>
<td>23,100</td>
</tr>
<tr>
<td>Patient and Visitor Brochure</td>
<td>220,000</td>
</tr>
<tr>
<td>“It’s OK to Ask” badges</td>
<td>55,000</td>
</tr>
<tr>
<td>Balloons</td>
<td>7,700</td>
</tr>
<tr>
<td>Teaser Stickers</td>
<td>8,000</td>
</tr>
<tr>
<td>T-shirts</td>
<td>1,100</td>
</tr>
</tbody>
</table>

Table 5 – Clean Hands Saves Lives Campaign Resources
j) Budget

The Clean Hands Save Lives Campaign budget was funded through the NSW Department of Health and the Clinical Excellence Commission.

<table>
<thead>
<tr>
<th>Budget Item</th>
<th>Budget allocation</th>
<th>Expense</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries and Wages</td>
<td>$726,500</td>
<td>$726,500</td>
<td>$0</td>
</tr>
<tr>
<td>8 x 1.0 FTE AHS Project Officers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 x 1.5 FTE State Project Officer (Nov 05-May 07)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 x 0.2 FTE Project Officers (ASNSW, JH, CHW)</td>
<td>(Funded by CEC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Management</td>
<td>$40,000</td>
<td>$36,921</td>
<td>$3,079</td>
</tr>
<tr>
<td>(Including steering committee meetings, project officer teleconference meetings, site visits, orientation workshop, campaign launch, project officer workshop)</td>
<td>(Funded by CEC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$766,500</td>
<td>$763,421</td>
<td>$3,079</td>
</tr>
<tr>
<td>Campaign Resources</td>
<td>Nil</td>
<td>$140,321</td>
<td>0</td>
</tr>
<tr>
<td>(All campaign resources including translation of patient visitor brochure into 22 languages)</td>
<td>(Funded by NSW DoH)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total project expenditure</td>
<td>$903,742</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6 – Budget details

k) Campaign Communication

The Clean Hands Save Lives Campaign communication plan was developed to provide direction and guidance for communication to specific target audiences throughout the campaign period.

In addition to campaign strategies, such as campaign posters, regular audit feedback and other educational activities, the plan incorporated audience specific communication modalities to broaden the reach of the campaign message. (See Appendix 9 – Communication Plan)

Area Health Service Executive Presentations and Site Visits

Area Health Service Executives were specifically informed in a series of site visits on the progress of the campaign from a statewide perspective. AHS Project Officers were encouraged to present area health service data and to emphasise local progress. Fourteen presentations and site visits were conducted by the CEC’s Director of Clinical Practice Improvement and State Hand Hygiene Project Officer.

These site visits also provided opportunities to discuss the implementation of the campaign with local facility staff. They also provided local media interviews and photograph opportunities to promote the campaign to the local community.
Support from medical, nursing, allied health and other organisations was crucial for sharing key hand hygiene key messages across NSW. Campaign information was forwarded to fourteen organisations requesting support and promotion of the Clean Hands Save Lives campaign to their members. The organisations included:

- Alliances of NSW Divisions
- Australian Medical Association
- Royal College of Nursing Australia
- Committee of Presidents of Medical Colleges
- Dental Board of NSW
- Dietitians Association of Australia – NSW Branch
- Greater Metropolitan Clinical Taskforce (GMCT)
- Health Services Union
- NSW Medical Board
- NSW Nurses’ Association
- NSW Physiotherapists Registration Board
- Nurses and Midwives Board of New South Wales
- Occupational Therapists Australia – NSW Branch
- Speech Pathology Australia – NSW Branch

Letters of support for the work of the campaign were received from Royal College of Nursing Australia, Greater Metropolitan Clinical Taskforce, New South Wales Medical Board, Health Services Union, Nurses and Midwives Board of New South Wales, Physiotherapists Registration Board, and Westmead Private Hospital. Further to the letter of support, a number of articles were published in organisational publications such as ‘the Lamp’, ‘Rask Magasinet’ (Denmark publication), ‘nmb update’ (March 2006). [Appendix 10 – Samples of Key Health Organisation publications]

**Website**

In conjunction with the campaign launch, the Clean Hands Save Lives campaign website went live on 27th March 2006. The website was designed as a communication tool to provide information to health professionals and the general public about the campaign. The website included:

- An overview of the campaign
- Details of campaign resources
- List of participating hospitals providing links to area health service websites where Hand Hygiene Project Officers were encouraged to include local campaign activities
- Information for Health Professionals including:
  - Three, Two One – Bugs Off Implementation Guide
  - Hand Hygiene and Skin Sensitivity Package
  - MRO Fact sheets
  - Hand Hygiene Fact sheets
  - WHO Hand Hygiene Guidelines
  - Hazardous Substances and Dangerous Goods Guideline

A hit on a web site denotes a single action on the Web server as it appears in the log file. A visitor downloading a single file is logged as a single hit, while a visitor requesting a Web page including two images registers as three hits on the server; one hit is the request for the .html page, and two additional hits are requests for the downloaded image files. While the volume of hits is an indicator of Web server traffic, it is not an accurate reflection of
how many pages are being looked at. Unfortunately logs of traffic on the Clean Hands Save Lives web site were only able to be retrieved for June, July and August 2007 which is well after the end of the campaign and hence provide only a small approximation of the activity on the web site during the campaign. The website achieved 7,669 hits during June 2007, 8,503 hits during July 2007 and 10,262 hits during August 2007. The site remains live.

(see Appendix 11 – Clean Hands Save Lives website page examples)

**NSW Private Health Facilities**

Although not funded with project officer support, NSW Private Health Facilities were invited to participate in the campaign. The CEC wrote to all private hospitals and offered the “Three, Two, One – Bugs Off” Implementation Guide, project implementation advice, and availability to purchase campaign resources through the NSW Infection Control Resource Centre. Clean Hands Save Lives Campaign Resource Order Forms were sent to 176 facilities. Ninety-five facilities including private hospitals, nursing homes, day surgeries and clinics, TAFE colleges and training organisations, food companies and other government departments purchased the Clean Hands Save Lives resources, through the Infection Control Resource Centre.

<table>
<thead>
<tr>
<th>Campaign Resource</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean Hands Save Lives Posters</td>
<td>3,497</td>
</tr>
<tr>
<td>Patient and Visitor Brochure</td>
<td>1,497</td>
</tr>
<tr>
<td>“It’s OK to Ask” badges</td>
<td>1,424</td>
</tr>
<tr>
<td>Balloons</td>
<td>840</td>
</tr>
<tr>
<td>“I do, so can you” champion poster</td>
<td>69</td>
</tr>
</tbody>
</table>

Table 7 – Campaign Resources Ordered by Private Facilities

The Clean Hands Save Lives Campaign resources have also been made available to other health jurisdictions, including Queensland Health, Western Australian Department of Health, South Australian Department of Health, ACT Health, Chinese Ministry of Health and World Health Organisation (WHO) delegates from Malaysia and Taiwan.

**Other Communication and Promotional Activities**

During the campaign implementation, the Clinical Excellence Commission was invited to present to:

- NSW Infection Control Conference – July 2006
- WHO Chinese Delegate tour – August 2006
- WHO Malaysian Delegate tour – December 2006
- WHO Taiwanese Delegate tour – December 2006

In October 2006, the CEC approached television’s Channel 7 to offer the Clean Hands Save Lives campaign posters for display on the set of their hospital-based drama “All Saints”. Campaign posters were gratefully accepted and agreed to be displayed on forthcoming episodes, aired in early 2007.
2.1.2 Launch Phase

The purpose of the Clean Hands Save Lives Campaign launch was to officially commence the implementation of the campaign and to raise the profile of hand hygiene with healthcare workers, patients and visitors in NSW health facilities.

The Hon. John Hatzistergos MLC, Minister for Health, launched the “Clean Hands Save Lives” Campaign on Monday 27th March 2006, at the Norman Nock Lecture Theatre, at The Royal North Shore Hospital. (see Appendix 12 – launch program)

Approximately 50 invitees attended the launch including senior executives, doctors, nursing staff, patient transport, allied health, and steering committee members.

The Clean Hands Save Lives Campaign Launch attracted media coverage from ABC Radio, 2GB and Ten News.

Area health service hand hygiene project officers co-ordinated local launches in conjunction with the NSW launch, using campaign resources displayed in public and staff areas. (See Appendix 13 – State and Local Campaign Launch photographs)

2.1.3 Project Implementation – The Campaign Strategies

Based on international evidence and research, the Clean Hands Save Lives Campaign had identified a number of factors behind low compliance for hand hygiene. Campaign strategies were developed to address these factors and assist staff to improve hand hygiene compliance. The campaign strategies were:

1) Alcohol based hand rub – at point of patient care
2) Staff Champions and project leads – to promote the campaign locally
3) Promotional collateral to market the campaign and maintain the interest of target groups in the messages of the campaign:
   • Talking Walls – staff posters changed every month
   • Hand Hygiene Technique poster
   • Patient / Visitor targeted posters
   • Patient / Visitor brochures (translated into 22 languages)
   • “Teaser” stickers
   • “It’s OK to ask” badges
4) Involvement of patients, carers and visitors in this aspect of their healthcare
5) A key intervention was the measurement of hand hygiene compliance through overt observation and feedback to staff on the results of these compliance audits.

The table below illustrates the factors behind low compliance and how the Clean Hands Save Lives strategies addressed these.

<table>
<thead>
<tr>
<th>Factors behind low compliance</th>
<th>Elements of “Clean Hands Save Lives” campaign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff too busy</td>
<td>Near patient alcohol based hand rubs</td>
</tr>
<tr>
<td>Too few sinks</td>
<td></td>
</tr>
<tr>
<td>Not enough hand rubs</td>
<td></td>
</tr>
<tr>
<td>Some skin problems</td>
<td></td>
</tr>
<tr>
<td>Negative influence of colleagues</td>
<td>Staff Champion and Local Leads</td>
</tr>
<tr>
<td>Generally low priority</td>
<td>Clean Hands Save Lives campaign with all its multifaceted elements</td>
</tr>
<tr>
<td>Low internal motivation</td>
<td></td>
</tr>
</tbody>
</table>

Table 8 – Summary of factors behind low hand hygiene compliance and Clean Hands Save Lives campaign elements

a) Alcohol Based Hand Rub

WHO Guidelines for Hand Hygiene provide evidence that accessibility to alcohol based hand rub near patient locations is key to assisting staff decontaminate their hands. Additionally, studies have shown alcohol hand rub is more effective, less drying and takes less time than cleansing with soap and water.

The statewide contract for hand hygiene products was negotiated in late 2005 by Health Procurement Branch of the NSW Department of Health with input from Steering Committee members. Advice regarding the outcome of contract negotiations was available to project officers when the campaign commenced in early 2006. Part of the contract negotiations included assistance with fixing brackets and supply and distribution of products to ward areas. The Hand Hygiene Products working party, established by the Steering Committee, worked with NSW Health Procurement Branch to co-ordinate the availability of a variety of hand hygiene products meeting current standards for health facilities.

Hand Hygiene Project Officers worked with local Infection Control Practitioners, Clinical Product Managers, Occupational Health and Safety Managers / Officers, Pharmacy, Maintenance and product suppliers to ensure placement of alcohol based hand rubs near patient locations. Much of the activity of project officers in the early post implementation phase was taken up with the procurement, supply and distribution of alcohol based hand rubs in near patient locations. In addition, the availability of brackets to fix product to the walls in near patient locations and availability of maintenance or engineering staff to install the required number of brackets also presented challenges to the project officers in this endeavour.

While some organisations had implemented the procurement of alcohol based hand rubs site visits by the CEC project team revealed that they were often not available in near patient locations – ie by the bedside. This issue was raised at both steering committee.

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Boyce J. Infect Control Hosp Epidemiol 2000;21 (7): 438-441
and hand hygiene project officer meetings and an audit of product placement was conducted.

**b) Staff Champions and Project Leads**
Staff champions were recognized as a key strategy for engaging staff to participate in activities of the campaign. To support their involvement one of the posters developed as part of the campaign collateral was an “I do, so can you” poster which had space to insert the photograph of local ward champions. Hand Hygiene Project officers sourced staff champions and project leads to encourage staff to participate in the campaign and to appear on these posters displayed in wards. This strategy was conducted at varying levels across the state: some area health services sourced over 100 champions whilst others nominated champions from the pool of existing infection control staff. Very few champions came from the medical staff.

**c) Promotional collateral**
See 2.1.1 j) above
The focus was on patient care rather than staff “safety”. In addition the campaign collateral promoted hand hygiene as an intervention requiring effort from all team members and one for which each staff member needed to take individual and corporate responsibility.

**d) Involvement of patients carers and visitors**
Consumer participation had been a key initiative of the NHS *cleanyourhands* campaign which resonated strongly with consumers consulted in the development of the NSW Hand Hygiene Campaign and at the MRO summit in October 2005. A consumer representative was involved in the planning of the Clean Hands Save Lives Campaign and was a valued member of the Steering Committee. Promotional collateral aimed at facilitating the involvement of patients, their visitors and carers in this aspect of patient care was developed and the “Its OK to ask badges” worn by staff during the campaign targeted this...
message. In addition staff and patients were surveyed both before and after the campaign to evaluate the effectiveness of this element of the campaign.

e) Overt observation of hand hygiene compliance

Overt observation of Hand Hygiene Compliance was used as both an evaluation measure and an opportunity for education and promotion of hand hygiene at the coal face. Staff were trained in the observation methodology and results were fed back to staff in an attempt to stimulate their innate competitiveness to improve compliance with hand hygiene. By measuring both opportunities for and completed hand hygiene in all risk categories and by staff group, further insights into the hand hygiene behaviour of health care staff were gathered. (see evaluation methodology below)

2.2 Project Evaluation Methodology

The project evaluation sought to determine whether the ‘Clean Hands Save Lives’ Campaign improved hand hygiene compliance in NSW health facilities and reduced MRO infections.

Evaluation was conducted through the overt observation audits, review of MRO clinical indicator data, staff survey, patient / visitor survey, product placement audit and product usage audit. Limited patient involvement was expected in the Ambulance Service of New South Wales, The Children’s Hospital at Westmead and Justice Health. All facilities submitted pre-implementation staff surveys however post implementation staff surveys were not received from GSAHS or the Children’s Hospital at Westmead.

The Clinical Excellence Commission developed standardised tools for use in area health services to ensure consistency of data collection. Hand Hygiene Project Officers were responsible for the co-ordination and submission of de-identified data from the hand hygiene campaign evaluation in their area health service.

The Hand Hygiene Steering Committee identified and agreed on the evaluation sample size to ensure appropriate number and representation from a cross section of NSW health facilities were included in the evaluation. This methodology was based on the NSW Infection Control Quality Monitoring Indicators where health facilities are grouped into the following categories.

- Group One – Major teaching or referral hospital
- Group Two – District Hospital
- Group Three – Community based health facility such as multi-purpose services and aged care facilities

2.2.1 Overt Observation

Monitoring adherence with hand hygiene and providing staff with feedback on their performance is a highly effective practice improvement tool and is strongly recommended in the literature. A range of tools were developed based on the UK’s clean your hands’ campaign which assisted staff in calculating hand hygiene compliance across a sample of NSW health facilities. The model used for the development of the hand hygiene observation tool was a modified version of a tool used by Pittet in Geneva. This very large study demonstrated that feedback was a key factor for improvement.

The Hand Hygiene Project Officers received training in qualitative research methods (including observational studies) as part of their orientation to the project. The overt observation tool allowed staff to record over a 20-minute period whether healthcare workers who touched patients had adequately decontaminated their hands before and after patient care. The tool also differentiated between high, medium or low risk for infection transfer.

Infection Risk Categories were defined as:

- **Low risk activities** – touching sterile goods, making clean bed, contact with patient notes, telephone, computer and medication round.
- **Medium risk activities** – stripping a non-soiled bed, patient contact such as hand shake, manipulating medical devices in immediate patient environment, helping to move patient in/out of bed, cleaning beds and/or furniture, observations (TPR & BP), setting up & removing IVI, giving injections, donning and removing gloves, bed bath and washing patients.
- **High risk activities** – dealing with bodily secretions (urine, faeces, blood) eg catheter bags, suctioning, tracheostomy care, wound dressings, phlebotomy, cannulation, various procedures conducted on same patient and attending a MRO patient

Observations were undertaken by staff on the ward who had been identified by Hand Hygiene Project Officers, Nurse Unit Managers, Facility Directors of Nursing or Nurse Managers.

The tool provided examples of opportunities for high, medium and low risk. All hand hygiene opportunities were to include hand washing or use of alcohol rub both before and after patient contact.

A healthcare worker decontaminating their hands immediately after attending a patient and then directly attending another patient, without touching any object (including medical notes, telephone, computer keyboard, monitor, curtain etc) or any other patient would be considered to have conducted hand hygiene before patient contact.

The feedback form summarised the findings from the observational tool and compared hand hygiene opportunities (Opp) with actual observed hand hygiene (HH Obs). Compliance was expressed as a percentage.

**Compliance** can be defined as either washing hands with soap and water or rubbing with an alcohol rub in accordance with a hand hygiene opportunity, so

\[
\text{Compliance} = \frac{\text{Hand Hygiene Observed (HH Obs)}}{\text{hand hygiene opportunity (Opp)}} \times 100 = \text{compliance %}
\]

It was noted by all involved that the methods used to observe healthcare workers hand hygiene compliance would be overt not covert observations and while undoubtedly resulting in a ‘Hawthorne Effect’ would provide an additional hand hygiene learning opportunity. All observational periods were to use this method comparing compliance rates with similar biases.

Overt Observations were recorded for before and after patient contact, by professional groups and by infection risk categories.

Professional groups included:
• Nurses – Registered Nurses, Enrolled Nurses, Assistants in Nursing, Nurse Managers, Clinical Nurse Educators, Clinical Nurse Consultants, Clinical Nurse Specialists
• Doctors – Visiting Medical Officers, Consultants, Registrars, Junior Medical Officers, Residents, Interns, Medical Students
• Allied Health – Physiotherapists, Occupational Therapists, Dieticians, Social Workers
• Other Staff – Environmental Services, Hotel Services, Security, Pastoral Care

The data collected provided a snapshot of current hand hygiene practice to use as baseline data and to inform development of practice improvement strategies in NSW health facilities (Appendix 14 – Overt Observation tool and instructions).

The initial evaluation methodology specified overt observations to be conducted once in the pre-implementation and twice in the post implementation phases. However, when it became apparent that there had been minimal improvement in compliance between the pre-implementation data collection and the first post-implementation period in August a further data collection was added in November 2006. Overt observations were conducted then in February / March 2006, August 2006, November 2006 and February 2007. Staff were required to conduct the overt observations in a sample of wards and facilities. The sampling methodology was designed to provide a suitable sample size while creating minimal impost on staff who were concerned about the amount of time and effort required to undertake this element of the evaluation. Across the state, a minimum of 212 20-minute overt observations were conducted in each data collection period. It is interesting to note that a number of AHS conducted overt observations in more than the minimal number of wards and facilities suggested.

The table below describes the minimum sample for each data collection period.

<table>
<thead>
<tr>
<th>Facility Group</th>
<th>No of Wards</th>
<th>No of observations per ward</th>
<th>Total 20-min observations to be collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>One health facility from Group One</td>
<td>3</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>One health facility from Group Two</td>
<td>3</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>One health facility from Group Three</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 9 – Minimum Overt Observation Sample

While it may have been useful to be able to identify the number of observations undertaken in each level of facility this information was not submitted to CEC for statewide analysis. Most AHS provided summary data only to the CEC so that total numbers of hand hygiene observations undertaken by AHS were submitted. The sample size above was derived to allow statistical precision of estimates and it should be noted that most AHS submitted more than this minimum sample for each data collection period. Similarly, for the surveys undertaken the minimum sample by level of facility was also often exceeded by AHS.

2.2.2 Staff Survey
The staff survey was conducted to provide information on staff knowledge and attitudes to issues involving hand hygiene both before and after implementation of the campaign strategies (see appendix 15). The table below (Table 9) describes the minimum sample for each data collection period.
Staff returned completed surveys to Facility coordinators or AHS Hand Hygiene Project Officers directly. Across all NSW facilities, a minimum of 390 staff surveys were required to be collected in each data collection period.

<table>
<thead>
<tr>
<th>Facility Group</th>
<th>No of Wards</th>
<th>No of staff surveys per ward</th>
<th>Total staff surveys to be collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>One health facility from Group One</td>
<td>3</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>One health facility from Group Two</td>
<td>3</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>One health facility from Group Three</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 10 – Minimum Staff Survey Sample

### 2.2.3 Patient Visitor Survey

The patient / visitor survey was conducted to provide information about patient and visitor knowledge of the campaign, and attitudes and beliefs of hand hygiene practices in NSW health facilities (see Appendix 16). Completed surveys were collected from patients and visitors by facility coordinators and forwarded to AHS Hand Hygiene Project Officers. The minimum sample of Patient / Visitor surveys collected in each data collection period was 288. Table 10 below describes the minimum sample for the patient / visitor surveys coordinated by each AHSs Hand Hygiene Project Officer.

<table>
<thead>
<tr>
<th>Facility Group</th>
<th>No of Wards</th>
<th>No of patient/visitor surveys per ward</th>
<th>Total patient / visitor surveys collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>One health facility from Group One</td>
<td>3</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>One health facility from Group Two</td>
<td>3</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>One health facility from Group Three</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 11 – Minimum Patient / Visitor Sample
2.3 Conclusions

While the planning phase for the campaign commenced in August 2005 delays in recruitment of key staff including the CEC project officer and AHS project officers contributed to very tight time frames for implementation of the campaign. It was an ambitious undertaking to implement a statewide improvement strategy with complex and detailed implementation and evaluation methodologies on such seemingly uncertain foundations. However the commitment of the individuals involved and the quality and detail of that planning coupled with strong support from the project steering committee enabled the campaign to continue to move forward. Whilst it would have made the implementation phase smoother to have all AHS staff on board at the same time, the staggered implementation and involvement of infection control practitioners in dual roles contributed to their practical involvement in the campaign and ownership of the activities it generated.

The quality of the campaign collateral developed and its applicability in a wider Australian context is evidenced by its popularity with both private organisations in NSW and other jurisdictions. The campaign strategies employed were strongly evidence based and specifically designed to mitigate barriers to compliance identified through local and international evidence.

Commitment gained to support the campaign from key stakeholders such as the NSW Medical Board and Nurses and Midwives Board of NSW were important in providing credibility for the campaign’s activities and an understanding of its importance in the wider health context. The approach to these stakeholders seeking their support was part of a detailed and continuously executed communication strategy.

It was of particular concern that at a fairly advanced stage of the campaign (6 months after commencement) project officers were unclear of the governance arrangements for infection control in their AHS. There was confusion around what appeared to be inconsistent governance arrangements for infection control across NSW with infection control reporting through clinical governance, clinical operations or nursing in different AHS.

In addition, the ongoing impact of the AHS restructure undertaken in 2004 was evident in the implementation of this campaign. Project officer recruitment in AHS was delayed by uncertainty in recruitment to tier 3 and tier 4 positions; changes in AHS boundaries meant new reporting structures and communication relationships needed to be developed. In addition, the larger geographical areas to be covered required innovative implementation strategies and delegation to clinical staff to implement campaign initiatives with a coordinating role undertaken by the project officers.
2.4 Recommendations

2.4.1. Project planning
Adequate lead time should be incorporated into future campaigns to enable time to engage all stakeholders and to facilitate the length of time needed to employ local project staff.

2.4.2. Project officer recruitment
In future CEC projects or campaigns consideration should be given to other methods of project implementation apart from funding to support the recruitment of project officers.

2.4.3. Infection control governance arrangements
With infection control in general and the reduction of MROs in particular an important issue for all AHS, consideration should be given to the development of defined and standardised Infection Control governance arrangements with clear reporting lines and accountabilities for future improvement programs.

2.4.4 Continuation of Hand Hygiene Activities
Although this program was undertaken as a twelve month initiative by the CEC and NSW Department of Health it is clear that further activity is required to continue to improve Hand Hygiene compliance in NSW. It is recommended that each AHS assign designated staff to continue to undertake activities to maintain awareness of the need to improve hand hygiene including regular overt observation and feedback of these results to staff at ward and unit level.
3. Results

The Clean Hands Save Lives campaign was evaluated in three main categories: ‘Project Management’ to assess success of implementation of the campaign and to inform further clinical practice improvement activities; ‘Project Implementation’ to assess the effectiveness of the campaign’s multifaceted approach to improve hand hygiene compliance and reducing health care associated infections; and ‘Patient Outcomes’ measuring the reduction in MROs.

The Hand Hygiene Campaign Evaluation Plan at Appendix 17 summarises the outcome, impact and process evaluation which was conducted during the pre campaign and campaign implementation phases.

3.1 Project Management Results

3.1.1 Hand Hygiene Activity Questionnaire

In preparation for the Hand Hygiene Campaign, the hand hygiene activity questionnaire (Appendix 18) was conducted to collect information to inform the project direction and to determine current hand hygiene activities in NSW health facilities.

Sixty-two surveys were received from 10 of 11 area health services, with over 50% of surveys from Greater Western and Greater Southern Area Health Services (Figure 1).

![Figure 1 – Responses from AHSs](image-url)
Area and Facilities Hand Hygiene Activities

Respondents identified strategies or activities undertaken in the past 3 years designed to improve hand hygiene in facilities and area health services (Figure 2). The majority of respondents (96.8%, n=60) identified both education and training, and posters as hand hygiene improvement activities, most of which were promoted through planned quality programs (88.7%) (Figure 3). Responses showed 73% of activities were conducted in various clinical areas and specialities, as identified in “Other” category which was described as all departments, facility / hospital wide, maternity, aged care, and allied health (Figure 4).

Almost all respondents (95%) indicated to have implemented or developed hand hygiene programs in their area health service of which 87.1% reported education and training, 74.2% reported posters, and 64.5% reported audit / surveillance to be successful strategies (Figure 5). While large proportions of respondents noted education and training, promotions and posters and audit/surveillance to have been successful strategies to improve hand hygiene only 48% of respondents indicated that they had implemented all three strategies. Interestingly, free text responses indicated a number of activities were in place locally however substantial improvements were yet to be observed.

Respondents predominantly described the benefits of hand hygiene activities conducted in health facilities to increase greater awareness and better understanding of hand hygiene.

When asked to identify problems and barriers associated with hand hygiene strategies and activities implemented, respondents identified time and resources, product purchasing, organisational support, skin sensitivity, staff attitudes and hand hygiene compliance to be major issues in area health services and health facilities.

Figure 2 – Strategies and Activities undertaken in past 3 years to improve hand hygiene
Q2 - What prompted the strategies?

- Planned quality program: 88.7%
- Other: 29.0%
- Increased infection rates: 17.7%
- Healthcare complaint: 3.2%

Figure 3 – Reasons for prompted hand hygiene activities

Q3 - Clinical areas or specialties in which the activity occurred [NB respondents could select multiple answers]

- Other: 72.9%
- Medical Ward: 69.4%
- Emergency Department: 56.5%
- Surgical Ward: 45.2%
- Intensive Care Unit: 37.1%
- Operating Theatres: 35.0%
- Haematology / oncology Unit: 12.9%

Figure 4 – Clinical areas or specialities in which activities occurred

95% of AHS respondents reported that they had Hand Hygiene Programs developed that had not yet been implemented
Q21 - Based on your experience, what hand hygiene programs have you found to be successful? [NB respondents could select multiple answers]

- Education and training: 87.1%
- Promotions / posters: 74.2%
- Audit / surveillance: 64.6%
- Policy: 22.6%
- Other: 16.1%

Figure 5 – Successful hand hygiene programs

Hand Hygiene Product Selection and Availability
To further inform the campaign direction respondents were asked about local hand hygiene product selection.

Over 75% of respondents identified their area or facility infection control or product selection committee to have protocols or guidelines for trialling and selecting hand hygiene products. Of those who identified the existence of a protocol or guideline, 81% indicated Occupational Health & Safety was incorporated into the guidelines.

Interestingly, 82% of respondents stated to have standardised solutions across the AHS, with only 36% having an evaluation of hand hygiene products in their area. 36% of respondents indicated to have existing area policies in place promoting hand hygiene, of which 90% were disseminated at facility level promoting timely and effective hand decontamination. Of those areas with policies in place, 55% of respondents indicated that the policy did not outline specific use or appropriate location of hand hygiene solutions / products.

Hand Hygiene Compliance
It is well documented that decontamination of staff hands is critical to the reduction of infections in health facilities. Encouragingly the survey showed 70% of respondents had evaluated staff hand hygiene compliance in their facility (Figure 6), however over 70% of respondents indicated this was conducted only six-monthly, annually, or as a one-off; with only 11.9% stating quarterly and 2.4% stating monthly (Figure 7).
Q15 Have you evaluated staff hand hygiene compliance in your facility?

- Yes: 70%
- No: 30%

Figure 6 – Staff hand hygiene compliance evaluated in facilities

Q16 If yes to 15, how often was the evaluation undertaken to examine ongoing compliance?

- Six Monthly: 26.2%
- Annually: 26.2%
- One Off: 19.0%
- Other: 14.3%
- Quarterly: 11.9%
- Monthly: 2.4%
- Weekly: 0.0%

Figure 7 – Frequency of evaluated hand hygiene compliance

Patient Involvement in Hand Hygiene

Encouragingly, 75% of respondents reported to have previously worked with patients on hand hygiene. Respondents were further asked to rank the effectiveness of hand hygiene patient involvement strategies, including posters, consumer involvement in committees, information brochures, focus groups, patient education. All strategies were identified as effective or very effective (Figure 8).
3.1.2 Orientation Workshop Evaluation Results

The Orientation Workshop was designed to provide newly appointed Hand Hygiene Project Officers with the necessary information to introduce the Clean Hands Save Lives Campaign. Infection Control representatives from each Area Health Service, all Hand Hygiene Project Officers or appointed representative and nine Steering Committee members attended the Orientation Workshop. Of 30 attendees of Day One of the workshop (22 Project Officers and Infection Control Practitioners; 8 Steering Committee members and workshop presenters), 17 responded to Day One Evaluation Questions (56.7% response rate). Of 14 attendees of Day Two (12 Project Officers and 2 Steering Committee members), 92.9% of attendees responded to the Day Two evaluation (n=13).

Overall Response to the Orientation Workshop

Overall, all respondents reported the Orientation Workshop to be valuable or very valuable. Most respondents indicated facilitators subject knowledge at the workshop to be very knowledgeable; Presenters ability to convey information effectively or very effectively; Presenters responsiveness to participants as helpful or very helpful; and effectiveness of breakout sessions to be useful or very useful.
Facilitator subject knowledge

Figure 9 – Facilitators subject knowledge

Presenters ability to convey information

Figure 10 – Presenters ability to convey information

Presenters responsiveness to participants

Figure 11 – Presenters responsiveness to participants
Day One Evaluation Responses

The Day One program incorporated setting the scene and providing appropriate skills for implementation of the campaign such as qualitative research methods and practical project management and was attended by both Hand Hygiene Project Officers and Infection Control Practitioners.

All respondents indicated the information provided on infection control and the international and national experience was helpful (41.2%) or very helpful (58.8%).
The information on Infection Control in NSW, 35.3% of respondents reported the session to be 'Very Helpful', 5.9% 'More than Helpful', 52.9% 'Helpful', and 5.9% 'Somewhat Helpful'.

![Helpfulness of information on infection control in NSW](image1)

Figure 14 – Infection Control in NSW

Respondents revealed the session on Networking and Involving Stakeholders was 'Very Helpful' (58.8%), 'More than Helpful' (11.8%) and 'Helpful' (23.5%). One respondent did not answer this question.

![Helpfulness of information on networking and involving stakeholders](image2)

Figure 15 – Networking and Involving Stakeholders
Most respondents to the workshop session on Procurement reported the session to be ‘Helpful’ or above (‘Very Helpful’ – 41.2% (n=7); ‘More than Helpful’ – 23.5% (n=4); ‘Helpful’ – 29.4% (n=5)). One respondent reported the session to be ‘Somewhat Helpful’.

Figure 16 – Procurement

The Qualitative Research methods session was presented by Professor Jan Ritchie of the University of NSW. Eight respondents indicated this session to be ‘Very Helpful’ (47.1%); 2 respondents ranked the session to be ‘More than Helpful’ (11.7%); and 5 to be ‘Helpful’ (29.4%). Two respondents indicated they did not attend the session.

Figure 17 – Qualitative Research Methods
Most respondents indicated the project management session to be ‘Helpful’ or above (‘Very Helpful’ – 64.7% (n=11); ‘More than Helpful’ – 5.9% (n=1); ‘Helpful’ – 17.7% (n=3)). Two respondents did not attend this session.

![Helpfulness of project management session](image)

Figure 18 – Project Management

Day Two Evaluation Responses

The aim of Day Two of the workshop was to provide Hand Hygiene Project Officers with a review of Day One; walkthrough the “Implementation Guide”; Overview of the Hand Hygiene Launch; and provide directions on ‘Where to from here’.

Most respondents indicated the review of Day One was ‘Informative’, the Implementation Guide to be ‘Very Helpful’, the Overview of the launch to be ‘Informative’, and the ‘Where to from here” session to be ‘Informative’.

![Review of Day One](image)

Figure 19 – Review of the Day
Participants were asked to provide free text comments on various aspects of the workshop. Comments on the content and layout of the Hand Hygiene Orientation Workshop presentation folders were very positive.

Overall, the Hand Hygiene Orientation Workshop was reported to be very positive, informative and useful. Respondents indicated the content of the workshop, to provide Hand Hygiene Project Officers with orientation to the implementation of the Clean Hands Save Lives campaign in each Area Health Service in NSW, was met.

Even though the time between the Orientation Workshop and Clean Hands Save Lives campaign launch was close, respondents indicated that the Orientation Workshop was valuable and provided a strong foundation for implementation of the campaign across NSW.

### 3.1.3 Hand Hygiene Project Officers Workshop

The Hand Hygiene Project Officers Workshop was designed as a ‘learning session’ to review current progress of the campaign and provide participants with information to further assist with the implementation of the campaign.

Fifteen participants attended the workshop on 9th November 2006. All participants completed workshop evaluations (100% response rate).

**Learning Objectives**

Learning Objective 1 was to “Review hand hygiene compliance data and identify areas for improvement”. Ten participants (66.7%) agreed or strongly agreed the workshop achieved this learning objective. Two participants (13.3%) somewhat agreed and three (20%) disagreed. (Appendix 19 – SWOT Analysis)

![Learning Objective 1: Review hand hygiene compliance data and identify areas for improvement](image)

Figure 20 – Learning Objective 1: Review hand hygiene compliance data and identify areas for improvement
Nine participants (60%) agreed or strongly agreed that Learning Objective 2 enabled them to “Identify strategies to improve hand hygiene compliance”. Three participants (20%) somewhat agreed and three participants (20%) disagreed.

Learning Objective 3 was identified to enable participants to “Understand the steps to implement change”. Nine participants (60%) agreed or strongly agreed this was achieved, three (20%) somewhat agreed, and two (13.3%) disagreed. One participant did not answer this question.

Ten participants (67.6%) agreed or strongly agreed that the workshop enabled them to “Understand the factors affecting behaviour change (Learning Objective 4). Five participants (33.3%) somewhat agreed.
Learning Objective 5 was developed to assist participants “Understand strategies to encourage medical officer participation”. Ten participants (67.6%) agreed or strongly agreed this was achieved, four participants (26.7%) somewhat agreed, and three (13.3%) disagreed.

Ten respondents (66.7%) indicated the workshop enabled them to “Identify potential barriers to success and sustainability of your local project and plans to manage it” (Learning Objective 6). Four respondents (26.7%) indicated they somewhat agreed, and one respondent (6.7%) disagreed.
Identify potential barriers to success and sustainability of your local project and plans to manage it

Figure 25 – Learning Objective 6: Identify potential barriers to success and sustainability of your local project and plans to manage it

Ten participants (66.7%) agreed or strongly agreed that they understood the next steps for the hand hygiene campaign (Learning Objective 7), three participants (20%) somewhat agreed, and two participants (13.3%) disagreed.

Learning Objective 8 – Understand your achievements can be reflected in your curriculum vitae – 86.7% agreed or strongly agreed, 13.3% somewhat agreed.

Understand the next steps for the hand hygiene campaign

Figure 26 – Learning Objective 7: Understand the next steps for the hand hygiene campaign
Figure 27 – Learning Objective 8: Understand your achievements can be reflected in your CV

All participants agreed or strongly agreed that there was enough opportunity for questions, audience interaction and the response to questions were satisfactory.

Figure 28 – Audience Interaction: There was enough opportunity for questions
Further comments from participants in relation to the workshop were once again very positive:

“A very useful and informative day. It was great to share ideas, issues and solutions. I felt that it was a tailor made day.”

“The most valuable information I received was listening to the concerns and ideas of other project officers, and as a group working through these to improve the progress of the campaign for the next 4 months, to ensure success and sustainability.”

“This was a good opportunity to debrief and understand the scope of individual AHS with the whole of NSW.”

Overall, the Hand Hygiene Project Officers Workshop was reported to be very positive, informative and useful. Most respondents indicated the learning objectives were met through interactive sessions and constructive feedback.

The workshop provided Hand Hygiene Project Officers the opportunity to debrief on campaign activities to date, identify achievements, and identify and plan improvement strategies to be implemented until the end of the campaign.

3.2 Project Implementation Results

Compliance with evaluation data submission requirements was generally excellent with only small subsets of data not included in the overall statewide analysis. Details of data submission by AHS appear at Appendix 20.

3.2.1 Overt Observation

Overt observations were collected in February / March 2006, August 2006, November 2006 and February 2007. Table 12 (hand hygiene opportunities) shows the total number of hand hygiene opportunities in each data collection period and the proportion of nurses, doctors, allied health and other staff.

This table clearly shows nurses to have the greatest opportunity for patient contact and conducting hand hygiene, compared with doctors, allied health and other staff. However,
doctors, allied health and other staff are more mobile throughout the hospital, suggesting greater ease of spreading infections.

Table 12 – Hand Hygiene Opportunities

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Total</th>
<th>Nurses</th>
<th>Doctors</th>
<th>Allied Health</th>
<th>Other staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre campaign</td>
<td>8,057</td>
<td>5,213 (64.7%)</td>
<td>1,408 (17.5%)</td>
<td>728 (9.0%)</td>
<td>708 (8.8%)</td>
</tr>
<tr>
<td>August 2006</td>
<td>7,229</td>
<td>4,383 (60.6%)</td>
<td>1,394 (19.3%)</td>
<td>770 (10.7%)</td>
<td>682 (9.4%)</td>
</tr>
<tr>
<td>November 2006</td>
<td>8,251</td>
<td>4,718 (57.2%)</td>
<td>1,816 (22.0%)</td>
<td>913 (11.1%)</td>
<td>804 (9.7%)</td>
</tr>
<tr>
<td>February 2007</td>
<td>8,225</td>
<td>5,191 (63.1%)</td>
<td>1,671 (20.3%)</td>
<td>728 (8.9%)</td>
<td>635 (7.7%)</td>
</tr>
</tbody>
</table>

Hand Hygiene Compliance

As indicated in figure 30 below, overall hand hygiene compliance between February 2006 and February 2007 improved from 47.1% to 62.2%, noting the highest compliance in November 2006 (62.7%). Although the hand hygiene compliance results show an increase during the campaign period, it must be noted that proportionally over one-third of hand hygiene opportunities are missed by NSW health facility staff.

Figure 30 – Overall Hand Hygiene Compliance

Hand Hygiene Compliance by Professional Group

The overt observation data showed during the campaign period each professional group showed improvement in overall hand hygiene compliance between the pre campaign and February 2007 data collection periods.

Figure 31 shows both nurses and allied health professional groups showed an increase in hand hygiene compliance. However doctors and allied health peaked in November 2006, and then indicated a decrease in compliance in February 2007.
This further shows a difference in timeliness of taking up the campaign messages with doctors and nurses not changing until after August 2006, while allied health and other staff changed their behaviour more rapidly.

![Overall Hand Hygiene Compliance by Professional Group](image)

**Figure 31 – Overall Hand Hygiene Compliance by Professional Group**

**Hand Hygiene Compliance Before and After Patient Contact**

Comparisons of hand hygiene compliance before patient contact and after patient contact are illustrated in Figure 32.

There was a significant difference in hand hygiene compliance rates before and after patient contact in the post campaign periods (56.8% compliance before patient contact; 70.8% compliance after patient contact, p<0.0001), suggesting that staff’s hand hygiene behaviour is performed to protect themselves. However over the duration of the campaign the proportion of staff’s before patient contact hand hygiene compliance has significantly improved from 38.6% (95%CI, 37.1-40.0%) to 53.8% (95%CI, 52.2% to 55.3%).
Hand Hygiene Compliance Before and After Patient Contact by Professional Group

Further analysis of hand hygiene compliance before and after patient contact shows nursing and allied health staff to have consistently improved hand hygiene compliance before patient contact, whilst rates for doctors and other staff indicate a decline in compliance before patient contact (Figures 33 and 34).

Figure 33 – Hand Hygiene Compliance Before Patient Contact by Professional Group
Hand Hygiene Improvement by Professional Group

During the campaign period, the most notable improvement in hand hygiene compliance is shown to be by other staff (23.1%) and allied health (23.0%) professional groups.

Nurses showed a lower overall improvement (13.5%) in hand hygiene compliance during the campaign period; however it should be noted nurses have maintained the higher hand hygiene compliance across all professional groups. This suggests professional groups with higher compliance prior to the campaign commencement, may have more difficulties in achieving larger improvements than those with lower compliance at commencement.

<table>
<thead>
<tr>
<th>Professional Group</th>
<th>Before Patient Contact</th>
<th>After Patient Contact</th>
<th>Overall Total Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percentage</td>
<td>Percentage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Range)</td>
<td>(Range)</td>
<td></td>
</tr>
<tr>
<td>Nurses</td>
<td>14.5% (44.7% to 59.2%)</td>
<td>11.4% (65.5% to 76.9%)</td>
<td>13.5% (54.5% to 68.0%)</td>
</tr>
<tr>
<td>Doctors</td>
<td>12.0% (24.9% to 36.9%)</td>
<td>20.1% (34.8% to 54.9%)</td>
<td>16.1% (29.6% to 45.7%)*</td>
</tr>
<tr>
<td>Allied Health</td>
<td>24.7% (32.0% to 56.7%)</td>
<td>19.5% (50.2% to 69.7%)</td>
<td>23.0% (40.2% to 63.2%)</td>
</tr>
<tr>
<td>Other Staff</td>
<td>23.1% (27.9% to 51.0%)</td>
<td>21.6% (42.6% to 64.2%)</td>
<td>23.1% (34.5% to 57.6%)**</td>
</tr>
</tbody>
</table>

Table 13 – Hand Hygiene Compliance Improvement by Professional Group
With relatively small sample sizes for allied health and other staff groups the data for doctors and nurses was further analysed. In this analysis, the data for low and medium risk activities was combined due to the small sample size of these activities within the doctor groups and the experience of previous observations that these two classifications of hand hygiene opportunities are more likely to be missed (due to a faulty perceptions that hand hygiene isn’t really needed). When examined for overall differences between the 8 large AHS there were differences in both nurses and doctors in their hand hygiene compliance both before and after patient contact. A median hand hygiene compliance rate was calculated across all of the eight AHS and a test for significance applied to the lowest compliance percentage against the highest compliance percentage to ensure that the observed differences were not simply due to chance. In addition, the lowest compliance percentage was tested against the highest hand hygiene compliance rate which showed that there was a significant difference between these values. Rates of hand hygiene compliance for nurses were significantly different (p<0.00001) ranging from 40.2% to 75.1% for before patient contact across the eight AHS. The rates for after patient contact were also different (p<0.00001) ranging from 62.5% to 95.8%. Hand hygiene compliance by doctors before patient contact ranged from as low as 15.0% to 64.1% (p<0.00001) and 18.7% to 87.3% after patient contact (p<0.0001). There were also anecdotal reports of particular wards within some facilities achieving exemplary performance in hand hygiene although the aggregated data analysis provided to the CEC did not reflect this granularity.

<table>
<thead>
<tr>
<th>Low + medium Risk</th>
<th>Nurses Before</th>
<th>Nurses After</th>
<th>Doctors before</th>
<th>Doctors after</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Op %</td>
<td>HH Obs</td>
<td>%</td>
<td>Op %</td>
</tr>
<tr>
<td>SSWAHS</td>
<td>171</td>
<td>71</td>
<td>41.5</td>
<td>179</td>
</tr>
<tr>
<td>GWAHS</td>
<td>277</td>
<td>208</td>
<td>75.1</td>
<td>286</td>
</tr>
<tr>
<td>HNEAHS</td>
<td>107</td>
<td>46</td>
<td>43.0</td>
<td>113</td>
</tr>
<tr>
<td>SESAHS</td>
<td>137</td>
<td>96</td>
<td>70.1</td>
<td>143</td>
</tr>
<tr>
<td>GSAAHS</td>
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<td>376</td>
<td>73.6</td>
<td>430</td>
</tr>
<tr>
<td>NCAHS</td>
<td>199</td>
<td>100</td>
<td>50.2</td>
<td>179</td>
</tr>
<tr>
<td>NSCAAHS</td>
<td>131</td>
<td>80</td>
<td>61.1</td>
<td>119</td>
</tr>
<tr>
<td>SWAHS</td>
<td>640</td>
<td>257</td>
<td>40.2</td>
<td>676</td>
</tr>
<tr>
<td>Total opps</td>
<td>2173</td>
<td></td>
<td></td>
<td>2125</td>
</tr>
</tbody>
</table>

**Difference between AHS:**

<table>
<thead>
<tr>
<th>Chi-square, DF=7</th>
<th>207.5</th>
<th>128.6</th>
<th>90.8</th>
<th>113.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>p-value</td>
<td>&lt;0.0001</td>
<td>&lt;0.0001</td>
<td>&lt;0.0001</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

**Median versus lowest %:**

| median % | 55.7 | 80.5 | 26.5 | 55.65 |
| lowest %  | 40.2 | 62.7 | 15   | 18.7  |
| P-value between lowest & median or top % | p=0.00001 | p=0.00001 | p=0.049 | p=0.00001 |
| chi²      | 47.77 | 89.61 | 3.87 | 24.49 |

**Top% versus lowest%:**

| Top % | 75.1 | 95.8 | 64.1 | 87.3 |
| lowest % | 40.2 | 62.7 | 15.0 | 18.7 |
| P-value between lowest & median or top % | p=0.00001 | p=0.00001 | p=0.00001 | p=0.00001 |
| chi²      | 94.39 | 50.69 | 39.75 | 77.99 |

**Number of AHS above median**

| 4 | 4 | 3 | 4 |

Table 14 – Analysis of Hand hygiene Compliance by AHS and professional group (doctors and nurses)
Hand Hygiene Compliance by Risk Category

Hand hygiene compliance was also collected by low, medium and high risk activities. The results show only one-third of staff decontaminated their hands during low risk activities, whilst high risk activities showed higher compliance than medium and low risk activities.

Between August and November 2006, a large improvement is noted in low risk categories, suggesting staff have greater understanding of spreading infections even during conducting regular low risk activities. This was one of the key messages of the campaign and improvement in hand hygiene as a routine part of patient care is imperative to ensure a reduction in the spread of infections via healthcare workers hands.

Figure 35 – Hand Hygiene Compliance by Risk Category

3.2.2 Staff Survey

A minimum of 390 staff surveys were requested from area health services to provide an appropriate cross section for determining staff responses to the Clean Hands Save Lives Campaign. A total of 1,458 surveys in the pre campaign data collection period and 618 surveys in the post campaign period were collected by area health services.

Demographics

Consistently in both pre and post surveys, the majority of the responses were obtained from nursing staff (Figure 36 and 37). A slight increase is noted from Allied Health (including dieticians) and Other Staff (wardsmen and environmental services) in the post survey, whilst a reduction in responses from doctors is noted in the post implementation survey.
A consistency in the experience of the respondents to both surveys was noted with just under two-thirds having been in their positions for more than five years, approximately 26% having been in their positions between 1 and 5 years and the remainder having occupied their positions for less than a year.

Staff’s shift pattern data again showed reasonable consistency for the respondents to both surveys with just over a third working days and nights and about two thirds working mainly days. Additionally, the majority of respondents to both surveys were working in their usual ward or department, suggesting consistency of staff in both data collection periods.
Staff Responses to Clean Hands Save Lives Campaign Resources

The post campaign implementation staff surveys asked facility staff whether they had read the Clean Hands Save Lives campaign posters in the last 12 months. Most respondents (93.0%) indicated they had read the campaign posters.

Free text responses showed that only a small percentage of respondents who read the posters did not recall a message, the overwhelming majority recalled the general message and 77% recalled a message directly from one of the posters. Figure 39 shows the breakdown of identified messages received by respondents who saw the posters while Figure 40 shows for the recipients who recalled a specific poster message, which campaign message they recalled, including seven of ten staff posters, all patient / visitor posters, hand hygiene technique poster and champion poster.
Q2c - If you have read the campaign posters, what messages have you read

- Get with the Program (22%)
- The most Unlikely Patients… (4%)
- Got a spare 20 secs to save a life? (3%)
- To help, we need a little squirt (3%)
- Before you put your gloves on… (6%)
- What's your personal best? (1%)
- What's the secret to reducing infections in hospitals? (6%)
- Please clean your hands. (9%)
- of course it's ok to tell him… (5%)
- Its ok to ask (13%)
- Hand washing technique (3%)
- I do it so can you (2%)
- Other Poster Messages (1%)
- Those that couldn't recall a message (4%)
- Responses related to the general message but not a specific poster (18%)

Figure 39 – Staff responses to read campaign messages
The post campaign implementation staff survey asked respondents if the campaign posters they had seen had made staff change their own hand cleaning practices. Data illustrates approximately two-thirds of survey respondents who read the posters changed their behaviour, whilst one-third were unaffected.

Interestingly, the two-thirds of respondents who were affected by the campaign posters changed their hand cleaning practices through cleaning hands more after patient contact (30.4%), cleaning their hands more before patient contact (27.2%), and understanding why hands need to be cleaned more (19.8%).

Staff were also asked if there was any other way they have changed their hand cleaning behaviour. Analysis of the data showed 32% of staff increased their use of alcohol based hand rub, 26% found the campaign posters served as a reminder and 11% now had confidence to remind other staff members to clean their hands. However, approximately one-third of respondents indicated the campaign posters did not influence their hand cleaning practices.
Staff Responses to Alcohol Based Hand Rubs
The use of alcohol based hand rubs for hand decontamination was a key element of the Clean Hands Save Lives Campaign.

Staff responses to the survey indicated a 1.6% increase in the presence / availability of alcohol hand rubs over the course of the campaign, with a 4.4% increase of staff reporting the use of the alcohol hand rubs during the campaign.

Staff responses indicating ‘always’ using alcohol based hand rub before patient contact show an improvement from pre campaign to post campaign responses, 33.3% to 43.0 (Figure 41), whilst an approximate 10% decrease in staff responses to ‘sometimes’, ‘rarely’ or ‘never’ using alcohol based hand rub before patient contact between data collection periods (Figure 42).

Similarly, there is a notable increase in respondents indicating the use of alcohol based hand rub after patient contact, with almost 70% of staff indicating they always use alcohol based hand rubs after patient contact. Figure 43 and 44 clearly illustrates an 11% increase in the respondents who ‘always’ use alcohol based hand rub after patient contact, and an 11% decrease in respondents indicating ‘sometimes’, ‘rarely’ or ‘never’ using alcohol based hand rub after patient contact, between the pre and post surveys.

This further supports hand hygiene compliance data obtained from the overt observations indicating a change in behaviour.

Figure 41 – Staff reported frequencies of use of alcohol based hand rubs before patient contact
Q4a(6a) - Change in Behaviour [Before Contact]

<table>
<thead>
<tr>
<th>Response</th>
<th>No. of Responses (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always</td>
<td>9.7%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>-3.8%</td>
</tr>
<tr>
<td>Rarely</td>
<td>-5.0%</td>
</tr>
<tr>
<td>Never</td>
<td>-0.9%</td>
</tr>
</tbody>
</table>

Figure 42 – Change in use of alcohol based hand rub before patient contact

Q4b(6b) - If you used the alcohol hand rubs or hand cleansers, please indicate frequencies [after patient contact].

<table>
<thead>
<tr>
<th>Response</th>
<th>No. of Responses (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always</td>
<td>69.0%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>35.6%</td>
</tr>
<tr>
<td>Rarely</td>
<td>5.2%</td>
</tr>
<tr>
<td>Never</td>
<td>1.3%</td>
</tr>
</tbody>
</table>

Figure 43 – Staff reported frequencies of use of alcohol based hand rubs after patient contact
The post campaign implementation staff survey data reveals that 85.7% of respondents indicated that the alcohol based hand rub in the ward helped staff clean their hands more frequently than they did before (Figure 45). Notably, an increase (17.9%) in respondents who ‘strongly agree’ that the alcohol hand rubs help them clean their hands more frequently than they used to, between the pre and post campaign implementation survey data. Figure 46 shows 11.4% of respondents who ‘did not agree’ previously now ‘strongly agreeing’ that the alcohol hand rubs help hand cleaning in wards.
Staff Perceptions on Necessity, Practicality, Effectiveness and Likelihood of Maintaining Hand Hygiene

Qualitative data was obtained through the staff surveys where respondents were asked their opinion on the necessity, practicality, effectiveness and likelihood of maintaining hand hygiene before and after every patient contact.

a) Necessity of Hand Hygiene Before and After Every Patient Contact

Almost all respondents (91.6%) in the post campaign surveys indicated the ‘necessity’ of cleaning hands before and after every contact positively. There was a small increase (2.26%) in positive sentiment regarding ‘necessity’ between pre and post data collection periods. Notably, a 2.26% decrease from ‘depends / not always’ and ‘negative’ responses between pre and post survey data in relation to the necessity of cleaning hands before and after patient contact.

Approximately 8% of post survey respondents answered depends / not always or indicated negative comments to the question of necessity of cleaning hands before and after every contact. Comments included:

- Cleaning hands was “Necessary after contact, but it’s hard to see the point before if we are moving between patients.” (2.6%)
- “Depends on the type of contact.” (2.1%)
- “I understand it is necessary but not always practical” (1.8%)
- Hand cleaning is “Not always necessary, gloves are enough” (1.5%)
- “Depends on the patient’s illness” (1.2%)
- “It was not necessary”, “only did it to protect themselves”, “rarely touched patients” or “did not know” (1.8%)
b) Practicality of Hand Hygiene Before and After Every Patient Contact

Interestingly, 67.4% of respondents in the post campaign surveys indicated positively to the ‘practicality’ of cleaning hands before and after every contact (Figure 47).

Figure 48 shows a five percent increase in the perceived ‘practicality’ of the practice of cleaning hands before and after every patient contact and similar decreases in negative or conditional responses.

Data for question 8b raises a potential area of concern, whilst 89% of respondents agree that cleaning hands before and after every contact is absolutely ‘necessary’, only 54% agreed that it was ‘practical’ to do so. Figure 49 describes the remaining 46% of respondents:

- 19% believe it is not always practical
- 17% believe it is only sometimes practical
- 3.9% believe it is only rarely practical
• 2.6% believe it is not practical before contact but always after
• 2.3% believe it is never practical; and
• 1% are not sure

Figure 49 – Staff Opinion on ‘Practicality’ of cleaning hands before and after every contact

c) Effectiveness of Hand Hygiene Before and After Every Patient Contact
In the post campaign implementation surveys, 91.1% of respondents indicated positive comments to the ‘effectiveness’ of cleaning hands before and after every contact (Figure 50). Notably, an increase of 30% in respondents expressing positive sentiments regarding the effectiveness of cleaning hands before and after every contact. A slight increase (1.92%) in negative comments is also noted between the pre and post campaign periods; however this is small in relation to the overall improvement in positive comments towards ‘effectiveness’ (Figure 51).
d) Likelihood of Maintaining Hand Hygiene Before and After Every Patient Contact

Staff’s opinion on the ‘likelihood of maintaining’ cleaning hands before and after every contact shows 89.5% of respondents indicated positively to maintaining the practice (Figure 52), where there is a clear reduction in respondents who expressed uncertain or negative comments (Figure 53). The data shows the campaign has been effective in increasing the percentage of respondents who believe there is a high likelihood of maintaining hand hygiene.
Figure 52 – ‘Likelihood of Maintaining’ Cleaning Hands ‘Before and After Every Contact’

Figure 53 – Staff Change in Opinion on ‘Likelihood of Maintaining’ Cleaning Hands ‘Before and After Every Contact’

Post campaign implementation survey data for question 8d shows 71% of respondents believe that it is absolutely necessary to maintain cleaning hands before and after every contact, whilst;

- 9% believe the likelihood of maintaining the practice is low
- 8% believe it depends on supply
- 8% believe it depends on promotion or reminders
- 2.4% believe there is no likelihood of maintaining the practice
- 1.6% believe it depends on the individual case (Figure 54)
Patients/ Visitors Asking Staff About Hand Hygiene

Patient and Visitor involvement was encouraged throughout the campaign. The staff survey asked staff if patients and visitors had asked them about hand cleaning or alcohol based hand rubs. The data reveals that in the pre campaign data collection period 58.2% of staff had not been asked about hand cleaning or alcohol based hand rubs and that this was reduced to 37.7% of staff not being asked about hand cleaning or alcohol based hand rubs in the post campaign data collection period (Figure 55). This change may have been due to patients observing more hand hygiene and therefore not needing to question staff or indeed a multiple of other reasons which is not apparent in the data collection. Additionally, the number of patients and visitors / relatives reportedly asking about hand hygiene remained relatively consistent across both pre and post campaign implementation surveys (Figures 57 and 58).
Change in patient enquiries -
Have patients (and/or their relatives/visitors) asked you about hand washing or the alcohol hand rubs?

<table>
<thead>
<tr>
<th>Response</th>
<th>No. of Responses (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes patients</td>
<td>4.0%</td>
</tr>
<tr>
<td>yes, relatives/visitors</td>
<td>1.8%</td>
</tr>
<tr>
<td>yes, both</td>
<td>14.7%</td>
</tr>
<tr>
<td>no</td>
<td>-20.6%</td>
</tr>
</tbody>
</table>

Figure 56 – Change in patients/visitors asking about hand cleaning or alcohol based hand rub

Q8a (11a) - If yes, how many patients asked?

<table>
<thead>
<tr>
<th>Response</th>
<th>No. of Responses (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>at least 1</td>
<td>23.3% 23.4%</td>
</tr>
<tr>
<td>1 to 5</td>
<td>55.6% 55.6%</td>
</tr>
<tr>
<td>6 to 10</td>
<td>8.9% 11.1%</td>
</tr>
<tr>
<td>&gt;10</td>
<td>12.1% 9.9%</td>
</tr>
</tbody>
</table>

Figure 57 – Number of patients asking staff about hand cleaning or alcohol based hand rubs
Q8b (11b) - If yes, how many relatives / visitors asked?

<table>
<thead>
<tr>
<th>No. of Responses (%)</th>
<th>pre</th>
<th>post</th>
</tr>
</thead>
<tbody>
<tr>
<td>at least 1</td>
<td>23.0%</td>
<td>18.8%</td>
</tr>
<tr>
<td>1 to 5</td>
<td>52.5%</td>
<td>47.2%</td>
</tr>
<tr>
<td>6 to 10</td>
<td>9.5%</td>
<td>16.9%</td>
</tr>
<tr>
<td>&gt;10</td>
<td>11.9%</td>
<td>20.2%</td>
</tr>
</tbody>
</table>

Figure 58 – Number of relatives / visitors asking staff about hand cleaning or alcohol based hand rubs

From the number of patients and visitors asking staff about hand washing or alcohol based hand rub, staff were further asked about how comfortable they felt by being asked. Data shows a slight increase (2.3%) in the comfort level of respondents who were asked about hand washing or alcohol hand rubs (Figures 59 and 60).

Q9(12) - If you have been asked about hand washing or alcohol handrubs, how comfortable did you feel?

<table>
<thead>
<tr>
<th>No. of Responses (%)</th>
<th>very</th>
<th>comfortable</th>
<th>not comfortable</th>
<th>very uncomfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>pre</td>
<td>55.3%</td>
<td>65.29%</td>
<td>4.8%</td>
<td>1.8%</td>
</tr>
<tr>
<td>post</td>
<td>55.1%</td>
<td>40.38%</td>
<td>3.37%</td>
<td>0.96%</td>
</tr>
</tbody>
</table>

Figure 59 – Staff’s comfort in being asked about hand washing or alcohol based hand rubs
If you have been asked about hand washing or alcohol hand rubs, how comfortable did you feel?

<table>
<thead>
<tr>
<th>Comfort Level</th>
<th>No. of Responses (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very comfortable</td>
<td>2.3%</td>
</tr>
<tr>
<td>Comfortable</td>
<td>0.0%</td>
</tr>
<tr>
<td>Not comfortable</td>
<td>-1.5%</td>
</tr>
<tr>
<td>Very uncomfortable</td>
<td>-0.8%</td>
</tr>
<tr>
<td>Not very comfortable</td>
<td>-2%</td>
</tr>
<tr>
<td>Very not comfortable</td>
<td>-1%</td>
</tr>
<tr>
<td>Very not very</td>
<td>0%</td>
</tr>
<tr>
<td>Not very</td>
<td>1%</td>
</tr>
<tr>
<td>Not not very</td>
<td>2%</td>
</tr>
<tr>
<td>Not not not very</td>
<td>3%</td>
</tr>
<tr>
<td>Not not not not very</td>
<td>4%</td>
</tr>
<tr>
<td>Not not not not not</td>
<td>5%</td>
</tr>
</tbody>
</table>

Figure 60 – Change in staff’s comfort in being asked about hand washing or alcohol based hand rubs

Clean Hands Save Lives Campaign Local Leaders

AHS Hand Hygiene Project Officers were to identify Clean Hands Save Lives local leaders and champions to assist with local promotion and implementation of the campaign. In the post campaign implementation surveys, almost two-thirds of staff were aware of who was leading the Clean Hands campaign within their organisation / health facility (Figure 61), with 82% identifying AHS Infection Control Practitioners (Figure 62).

Figure 61 – Number of staff aware of local Clean Hands Save Lives Campaign Leader
Staff Clean Hands Save Lives Badges

During the campaign period, staff were encouraged to wear the “It’s OK to Ask” badges, designed to promote patient / visitor involvement and environment where patients were comfortable about asking staff about hand hygiene.

The post survey data reveals that approximately two-thirds of respondents did not wear the badges, and nearly one-third of respondents indicated wearing the badges ‘sometimes’ and approximately 10% ‘always’ wearing them (Figure 63).

Further analysis of the data shows that of the 67% of respondents who did not wear the badge:

- Almost half of respondents indicated they were not given a badge (48%)
- 20% didn’t know about them
- 14% didn’t want to wear a badge (Figure 64)
Figure 63 – Staff Wearing Clean Hands Save Lives Badges

![Pie chart showing reasons for not wearing the Clean Hands Save Lives badge]

Q13b - If you didn’t wear a badge, why not?
- 48% wasn’t given one
- 20% Didn’t know about them
- 14% Don’t want to wear a badge
- 3% there wasn’t enough
- 3% No: I’m a student
- 3% OHS risk
- 3% Not practical (i.e. work in theatre)
- 2% Don’t want to encourage complaints
- 2% Other Responses

Figure 64 – Staff reasons for not wearing the Clean Hands Save Lives badge

3.2.3 Patient and Visitor Survey
A minimum of 288 patient and visitor surveys were requested from area health services to provide an appropriate cross section for determining staff responses to the Clean Hands Save Lives Campaign. Area health services collected a total of 505 surveys in the pre-campaign data collection period and 515 surveys in the post-campaign period.
Demographics
Consistently in both pre and post surveys, approximately 60% of responses were obtained from patients, approximately 30% from relatives, and approximately 5% from carers and other visitors.

Patient / Visitor Campaign Messages
Patients and visitors were asked if they had seen any ‘Clean Hands Save Lives’ posters in the last 24 hours prior to completing the survey. The post patient / visitor survey reveals almost three-quarters of respondents indicated they had seen ‘Clean Hands Save Lives’ posters in the last 24 hours prior to completing the survey, with 21.3% indicating they had not seen any posters, and 4.6% did not know. The responses show a marked increase (28.6%) in the proportion of patients and visitors who had sighted posters.

Patients and visitors who identified they had seen the Clean Hands Save Lives posters were further asked about the messages they had seen. Over 64% of responses cited key messages for the campaign, and 30.6% were related to general hand hygiene and infection control messages. The remaining proportion of respondents was unable to recall a message.

Interestingly, the pre-survey data reveals 28% of patients and visitors reported seeing patient / visitor campaign posters, and 11% of other campaign messages such as the staff posters, champion posters and hand hygiene technique posters. Over 60% of respondents indicated they saw non campaign messages, which may have included existing infection control posters displayed in health facilities.

Patient / Visitor Campaign Brochure and Posters
The patient / visitor brochure “What you need to know about hand hygiene” was developed to provide patients and their visitor’s information about hand hygiene.

Interestingly, almost two-thirds of respondents in the post campaign implementation survey indicated they had not received a copy of the brochure, with 29.4% reporting they had, and 6.9% did not know if they had received a copy. Although this is of concern, there was an increase of 11.7% of respondents who had received a copy of the brochure in the post campaign survey.

Patients and visitors were further asked about the quality of information provided in the brochure and posters. Seventy-nine percent of respondents indicated the posters and brochure was ‘extremely’ or ‘very informative’, 17.8% indicated they were ‘somewhat informative’ and only 3.3% reporting the posters and brochure ‘not informative’. The post campaign implementation survey revealed a decrease in the percentage of respondents who thought the brochure was not informative and an increase in those who thought it was extremely informative (Figure 65).

Free text answers provided additional information on patients and visitors opinions of the Clean Hands Save Lives brochure and posters. In the post survey results, 80% of respondents indicated positive comments about how informative the patient / visitor brochure and posters were. Notably, there was a 30% increase in respondents expressing positive comments regarding the brochure and posters, and 36% decrease in the number of respondents who reported negative comments.
Figure 65 – Change in opinion of how informative the brochure and posters

Patients and Visitors opinion on staff cleaning hands

The Patient and Visitor survey data reveals an increase from 50.5% to 63.8% in the sightings of staff always washing their hands before and after contact by patients and visitors between the data collection periods (Figures 66 and 67). This increase is similar to the increase noted in hand hygiene compliance through the overt observations.

Figure 66 – Proportion of patients and visitors seeing staff clean their hands before and after patient contact
Q4 - Change in sighted behaviour ‘In the last 24 hours, have you seen staff clean their hands before and after contact?’

<table>
<thead>
<tr>
<th>Response</th>
<th>No. of Responses (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always</td>
<td>13.3%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>-3.4%</td>
</tr>
<tr>
<td>Rarely</td>
<td>-1.7%</td>
</tr>
<tr>
<td>Never</td>
<td>-8.3%</td>
</tr>
</tbody>
</table>

Figure 67 – Change in proportion of patients and visitors seeing staff clean their hands before and after patient contact

Additional information obtained through analysis of free text responses found an increase of 19.5% in positive comments on staff hand hygiene practices before and after patient contact.

**Patient and Visitor Involvement**

The Patient / Visitor Survey asked further about how they might respond if they thought a member of staff had not cleaned their hands. Interestingly, the data shows an increase in the proportion of patients and visitors who would tell either the patient liaison officer or someone in charge if they thought a member of staff had not washed their hands (Figure 68).

Figure 69 describes the change in reported behaviour of patients and visitors if they thought a staff member had not cleaned their hands. This shows nearly 5% decline in the proportion of respondents who would do nothing and an increase in the proportion of those who would tell a member of staff.
Q5 - What would you do if you thought a member of staff had not cleaned their hands?

![Bar chart showing responses to Q5](chart.png)

Figure 68 – What would patients or visitors do if they thought a member of staff had not cleaned their hands?

Q5 - Change in behaviour 'What would you do if you thought a member of staff had not cleaned their hands?'

![Bar chart showing changes in responses](chart2.png)

Figure 69 – Change in reported behaviour of patients or visitors if they thought a member of staff had not cleaned their hands.

Further information obtained from analysis of free text responses reveals a slight increase in positive comments (3.6%), and greater increase in negative comments (8.3%) about how patients and visitors may respond to staff who they though had not cleaned their hands. Whilst there was a small increase in the proportion of patients or visitors who would question staff there was also a large increase in the proportion who would assume staff had washed their hands or do not feel comfortable confronting them (Figure 70 and 71).
Q5b - What would you do if you thought a member of staff had not cleaned their hands (comments)?

Figure 70 – Patient and Visitor comments on what they would do if they thought a staff member had not cleaned their hands

The post campaign implementation patient/visitor survey further reveals that only 26.7% of respondents would ask a member of staff if they had washed their hands before they had direct patient contact (Figure 72). Figure 73 describes the change in opinion indicating approximately about 10% of patients and visitors who would not have asked a member of staff if they had washed their hands in the pre campaign survey data, reported in the post survey results they would either ask a member of staff or at least consider asking a member of staff.
Q6 - Would you ask a member of staff if they had washed their hands before they had direct patient contact?

<table>
<thead>
<tr>
<th>Response</th>
<th>Pre (%)</th>
<th>Post (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>25.9%</td>
<td>26.7%</td>
</tr>
<tr>
<td>No</td>
<td>47.4%</td>
<td>57.7%</td>
</tr>
<tr>
<td>Not sure</td>
<td>17.4%</td>
<td>25.9%</td>
</tr>
</tbody>
</table>

Figure 72 – Would patients or visitors ask a member of staff if they had washed their hands before they had direct patient contact?

Q6 - Change in behaviour “Would you ask a member of staff if they washed their hands prior to contact?”

<table>
<thead>
<tr>
<th>Response</th>
<th>Pre (%)</th>
<th>Post (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>1.7%</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>-10.3%</td>
</tr>
<tr>
<td>Not sure</td>
<td>8.6%</td>
<td></td>
</tr>
</tbody>
</table>

Figure 73 – Change in opinion if patients or visitors ask a member of staff if they had washed their hands before they had direct patient contact.

Patients and visitors were asked if they thought patients and the public should be involved in helping staff improve hand hygiene in hospitals. Interestingly, Figure 74 shows almost 79% of respondents in the post survey results indicated that patients and the public should be involved in helping staff improve hand hygiene in hospitals, further indicating a slight increase (1.4%) from the pre survey data (Figure 75).

This is further supported by free text responses illustrating a marked increase in the proportion of positive comments by respondents who believe they have a part to play in helping staff improve their hand hygiene (19.5%) (Figures 76 and 77).
The high proportion of patients and visitors reporting patients and the publics positive involvement in improving hand hygiene in hospitals, could possibly reflect ‘passive involvement’ rather than the perceived difficulty of ‘active involvement’ and asking staff directly about hand hygiene.

![Figure 74 – Patient and the publics’ involvement in helping staff improve hand hygiene in hospitals](image)

Q7 - Do you think patients and the public should be involved in helping staff improve hand hygiene in hospitals?

- **Yes**: 77.5% pre, 78.9% post
- **No**: 22.5% pre, 21.1% post

![Figure 75 – Change in opinion of patients and visitors about if patients and the public should be involved in helping staff improve hand hygiene in hospitals](image)

Q6 - Change in opinion ‘Do you think patients and the public should be involved in helping staff improve hand hygiene in hospitals?’

- **Yes**: 1.4% post
- **No**: -1.4% post

Figure 75 – Change in opinion of patients and visitors about if patients and the public should be involved in helping staff improve hand hygiene in hospitals
Q7b - Do you think patients and the public should be involved in helping staff improve hand hygiene in hospitals (comments)?

<table>
<thead>
<tr>
<th>No. of Response (%)</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>63.8%</td>
<td>41.7%</td>
</tr>
<tr>
<td>Negative</td>
<td>46.5%</td>
<td>29.0%</td>
</tr>
<tr>
<td>Depends / Not Always</td>
<td>11.8%</td>
<td>7.5%</td>
</tr>
</tbody>
</table>

Figure 76 – Patient and visitors comments on patient and the publics’ involvement in improving hand hygiene in hospitals

Q7b - Do you think patients and the public should be involved in helping staff improve hand hygiene in hospitals (comments)?

<table>
<thead>
<tr>
<th>No. of Responses (%)</th>
<th>Positive</th>
<th>Negative</th>
<th>Depends / Not Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre</td>
<td>19.5%</td>
<td>-5.0%</td>
<td>-14.5%</td>
</tr>
</tbody>
</table>

Figure 77 – Change in opinion of patients and visitors in patient and the publics’ involvement in helping staff improve hand hygiene in hospitals
3.2.4 Product Placement Audit and Product Usage

The Hand Hygiene Product Placement Audit was conducted in ten of 11 area health services, revealing 13,280 alcohol based hand rubs available in NSW health facilities.

![NSW Health Facility Alcohol Based Hand Rub Product Placement by Available Beds](image)

**Figure 78 – NSW Health Facility Alcohol Based Hand Rub Product Placement by Available Beds (Available beds data obtained from NSW Health Annual Report)**

Some area health services reported difficulties in placing alcohol based hand rub as a result of some concerns about product flammability and storage in general and in specific specialty areas, such as mental health areas and paediatrics. These issues were resolved through consultation with the Clinical Product Managers Group and development of safety alert (See Appendix 21 – Alcohol Based Hand Rub Safety Alert).

Two area health services (HNEAHS and SWAHS) also developed area specific policy on the placement of alcohol based hand rub (Appendix 22).

![Secured and Not Secured Alcohol Based Hand Rub in NSW Health Facilities](image)

**Figure 79 – Secured and Not Secured Alcohol Based Hand Rub in NSW Health Facilities**

Of the 13,280 alcohol based hand rubs, 69.7% (n=9,254) were identified as secure in a bracket, and 30.3% (n=4,026) were not secure. Non-secure products were predominantly on patient drawers, medication trolleys and on blood pressure trolleys, however the audit did not include non-secure products carried with staff whilst on ward (Figure 79).
Hand Hygiene Project Officers obtained data from pharmacy and stores departments to identify if there was an increase in alcohol based hand rub purchased before and after the campaign.

A number of area health services identified already utilising alcohol based hand rub at point of patient care prior to the implementation of the campaign. Data obtained from area pharmacy and stores departments indicates a clear increase from approximately 1,476 litres of alcohol based hand rub purchased in a one month period prior to the campaign, to approximately 5,568 litres purchased in a one month period post campaign implementation, showing an increase of approximately 377%. (Figure 80.)

![Pre and Post Campaign Monthly Purchase of Alcohol Based Hand Rub](image)

Figure 80 – Pre and post campaign monthly purchase of alcohol based hand rub

### 3.3 Project outcome results

From 1 January 2003 all NSW Public Health Organisations (excluding Psychiatric, Rehabilitation and Mothercraft) were obligated to collect specific healthcare associated infection data for two 6-month periods each calendar year (PD2005_414 Infection Control Program Quality Monitoring). The NSW Department of Health contracted the Australian Council on Healthcare Standards (ACHS) to co-ordinate data collection, analysis and reporting, and provided organisations with specific software to facilitate healthcare associated infection data submission. The NSW Department of Health provided the Multi-Resistant Organisms data to the Clinical Excellence Commission for review with regard to evaluation of the success of the Clean Hands Save Lives Campaign in reducing MRO infections.

Area health services collect MRO data by infection type (Methicillin-resistant *Staphylococcus aureus* (MRSA), Vancomycin resistant *Enterococci* (VRE), multi-resistant *Acinetobacter baumanii* (MRAB) and Vancomycin Intermediate *Staphylococcus aureus* (VISA), where the infection was acquired (Intensive Care or Non-Intensive Care Units) and the type of site in which the infection has been located (sterile or non-sterile site; where non-sterile sites include patients with colonisations). Only new healthcare-associated infections (even if patient previously known to be MRO colonised) or new MRO colonisation (patients not previously documented as colonised) are included in the numerator. Colonised refers to a patient with a non-sterile site isolate and not receiving...
MRO-specific antibiotic therapy\textsuperscript{26}. This represents a limitation in the data in terms of a value-for-money calculation in that the “cost” of an MRO infection is obviously far greater and more easily quantified than the “cost” of colonization. A further limitation is encountered in that not all organisations reported this data in all periods.

3.3.1 Methicillin-resistant Staphylococcus aureus (MRSA)

The data shows MRSA represents over 90% of MROs detected in NSW health facilities per 10,000 bed days.

Between July-December 05 (pre-campaign) and July-December 06 (post campaign) collection periods, the decline in NSW rates for MRSA infection detected in ICU sterile sites (Clinical Indicator 6.1), ICU non-sterile sites (Clinical Indicator 6.2) and non-ICU non-sterile sites (Clinical Indicator 6.4) were clinically significant but not statistically significant in crude and adjusted rates (with the exception of Clinical Indicator 6.2). The increase in the crude and adjusted rates for Clinical Indicator 6.3 was not statistically significant.

In the table below infection rates are expressed per 10,000 bed days.

<table>
<thead>
<tr>
<th>Clinical Indicator</th>
<th>July-Dec 05</th>
<th>July-Dec 06</th>
<th>No. of Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1 MRSA in ICU sterile site</td>
<td>5.28</td>
<td>3.92</td>
<td>39</td>
</tr>
<tr>
<td>6.2 MRSA in ICU non-sterile site</td>
<td>36.34</td>
<td>32.15</td>
<td>39</td>
</tr>
<tr>
<td>6.3 MRSA in non-ICU sterile sites</td>
<td>0.59</td>
<td>0.62</td>
<td>185</td>
</tr>
<tr>
<td>6.4 MRSA in non-ICU non-sterile sites</td>
<td>5.94</td>
<td>5.52</td>
<td>199</td>
</tr>
</tbody>
</table>

Table 15 – MRSA infection rates

3.3.2 Vancomycin resistant Enterococci (VRE)

The data shows a slight reduction in the NSW rate for VRE infections detected in ICU sterile sites (Clinical Indicator 6.5), and ICU non-sterile sites (Clinical Indicator 6.6), between July – December 05 and July – December 06 data collection periods, whilst both non-ICU sterile sites (Clinical Indictor 6.7) and non-ICU non sterile sites (Clinical Indicator 6.8) show a slight increase in infections per 10,000 beds days. (Note: as the actual numbers of these infections are small any small increase in infections will skew the results for a single reporting period)

\textsuperscript{26} Infection control program quality monitoring indicators Version 2 users’ manual, NSW Department of Health 2005
VRE infection rates are expressed per 10,000 bed days in the table below.

<table>
<thead>
<tr>
<th>Clinical Indicator</th>
<th>July-Dec 05</th>
<th>July-Dec 06</th>
<th>No. of Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.5 VRE in ICU sterile site</td>
<td>0.26</td>
<td>0</td>
<td>38</td>
</tr>
<tr>
<td>6.6 VRE in ICU non-sterile site</td>
<td>0.38</td>
<td>0.12</td>
<td>38</td>
</tr>
<tr>
<td>6.7 VRE in non-ICU sterile site</td>
<td>0.02</td>
<td>0.03</td>
<td>133</td>
</tr>
<tr>
<td>6.8 VRE in non-ICU non-sterile site</td>
<td>0.13</td>
<td>0.18</td>
<td>137</td>
</tr>
</tbody>
</table>

Table 16 – VRE infection rates

3.3.3 Multi-resistant Acinetobacter baumanii (MRAB)
Between July – December 05 and July – December 06 data collection periods, the MRO data shows NSW MRAB rates in ICU sterile sites (Clinical Indicator 6.9), ICU non-sterile sites (Clinical Indicator 6.10), and non-ICU non sterile sites (Clinical Indicator 6.12), to have reduced infections per 10,000 beds days. Clinical Indicator 6.11 (non-ICU sterile sites) show a slight increase between the data collection periods.

<table>
<thead>
<tr>
<th>Clinical Indicator</th>
<th>July-Dec 05</th>
<th>July-Dec 06</th>
<th>No. of Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.9 MRAB in ICU sterile site</td>
<td>0.76</td>
<td>0.48</td>
<td>36</td>
</tr>
<tr>
<td>6.10 MRAB in ICU non-sterile site</td>
<td>5.67</td>
<td>3.16</td>
<td>36</td>
</tr>
<tr>
<td>6.11 MRAB in non-ICU sterile site</td>
<td>0</td>
<td>0.03</td>
<td>134</td>
</tr>
<tr>
<td>6.12 MRAB in non-ICU non-sterile site</td>
<td>0.20</td>
<td>0.12</td>
<td>137</td>
</tr>
</tbody>
</table>

Table 17 – MRAB infection rates per 10,000 bed days

3.3.4 Vancomycin Intermediate Staphylococcus aureus (VISA)
The NSW rate for VISA infections detected in ICU sterile sites (Clinical Indicator 6.13), ICU non-sterile sites (Clinical Indicator 6.14), and non-ICU non-sterile sites (Clinical Indicator 6.16), remain unchanged between July – December 05 and July – December 06 data collection periods. However Clinical Indicator 6.15 (non-ICU sterile sites) showed a slight decrease in VISA infections (0.02 to 0 per 10,000 bed days) between the data collection periods.

3.4 Conclusions
While the pre-implementation Hand Hygiene Activity Questionnaire indicated that all AHS had some activity underway in regard to improving hand hygiene these activities appeared to be focussed primarily on staff education and training. The majority of respondents reported that they had standardised hand hygiene products across their AHS however the reality evident in the early phase of campaign implementation was quite different to this perception. The questionnaire also revealed that monitoring of hand hygiene compliance was infrequent and irregular prior to the campaign.
Bringing the project officers together for education, training and networking to share improvement strategies and successes (as well as failures) was seen as an important and valuable aspect of the campaign.

Overt observation results showed improvement in hand hygiene compliance across all staff groups and all risk categories. However one of the most striking findings was the hand hygiene compliance rates of medical staff which rose from 29.6% prior to campaign implementation to a high of 58.1% post implementation and then falling to 45.7% by the end of the campaign in February 2007. It is postulated that the influx of new JMOs towards the end of January 2007 who had not been subject to the previous 9 months of campaign activity may have contributed to this decline. Alternatively, the impact of the campaign education may have decreased over the Christmas-New Year period implying that healthcare workers need continuous reminders to hand hygiene. Previous projects have shown that medical staff are often slow to engage with and adopt clinical practice improvement initiatives, particularly when the “evidence” is weak, however, with strong evidence for this intervention coupled with their recognised position as clinical leaders, engagement of this group of professionals is considered key for the success of the change management required to sustain improvements in hand hygiene. Doctor involvement and improvement in some AHS, such as some parts of the GWAHS and GSAHS, was marked and it would be valuable and informative to further explore both the barriers and enablers to medical staff involvement in this activity in at least one of these AHS. Equally it would be of value in the development of future hand hygiene strategies to examine the features of exemplar wards within certain facilities to identify replicable features or practices. The requirements of staff in regard to hand hygiene could be further reinforced at the orientation of all new clinical and non-clinical staff.

Perhaps of more concern however was the low rate of overall improvement in hand hygiene shown by nurses especially when it is considered that their opportunities for hand hygiene greatly outnumber those of all other staff categories. Hand hygiene project officers reported that there appeared to be some general complacency from nursing staff in regard to hand hygiene as well as confusion regarding the need to hand hygiene before patient contact. Staff often felt that having performed hand hygiene after patient contact would suffice regardless of other activities undertaken prior to the next patient contact such as answering the telephone or recording in patients notes etc. It was however encouraging to note the improvement by the end of the campaign in hand hygiene compliance in low risk activities which indicates the effectiveness of campaign strategies in influencing what is perceived to be inherent behaviour.

As expected, compliance with hand hygiene was better overall when there was high risk of transmitting infections (64.7% - 73.5%) however it was pleasing to note the significant improvement observed in hand hygiene compliance in regard to low risk activities (32.5% - 59.6%) which indicates that the messages of the campaign were heard and being implemented.

While NSW has had a system of reporting infection control data related to MRO infection since 2003 the availability of that data to the CEC for analysis was problematic. Data for the pre-implementation period of July – December 2005 and post implementation comparison period of July - December 2006 was not available to the CEC until May 2007. This delayed one of the most important aspects of the campaign evaluation and a key strategy of feedback to AHS on the progress of the campaign in regard to proving a reduction in infection rates. In order to use feedback of MRO data to staff as a strategy to improve compliance with hand hygiene in future a far more timely process is required. There was also some doubt on the validity of the data with not all organisations reporting in all data collection periods. However, in terms of numbers of infections alone there was a clear reduction in all indicator categories apart from VRE outside of intensive care units where rates were low (0.02 per 10,000 patient days).
The staff survey showed that the key messages of the campaign were effectively retained and more importantly were reported as effective in changing behaviour in two thirds of respondents. The surveys also showed that staff reported an improvement in hand hygiene behaviour using alcohol based hand rubs both before and after patient contact. While the surveys showed an overwhelming 91.6% of respondents reported that it was necessary to clean hands both before and after patient contact the overt observation data did not support this being translated into observed behaviour. This may be influenced by the reported perception that it was not always practical to hand hygiene before and after every patient contact even though a significant proportion of respondents indicated that they would endeavour to maintain the practice. It is clear that further implementation of campaign strategies and ongoing attention to hand hygiene are required to embed the changes made into everyday behaviour and to identify and mitigate remaining barriers to improved hand hygiene compliance.

The involvement of patients and visitors in the hand hygiene campaign appeared to be the least effective element of the campaign both from the staff perspective (minimal change in rates of engagement with patients over the issue pre and post campaign) and from the patient perspective (patients more inclined to tell someone in charge or a complaints officer than the staff member themselves if hand hygiene not performed).

Staff champions and local leads were largely drawn from nursing staff which, given their dominance in hand hygiene opportunities would seem logical, however it would have been pleasing to see medical officers participate with their nursing colleagues as leaders in this aspect of the campaign.

### 3.5 Recommendations

1. Emphasis on hand hygiene should continue to be a priority and an ongoing permanent feature for the healthcare system.

2. It is recommended that in order to continue the focus of staff on hand hygiene that a program for ongoing monitoring of hand hygiene compliance must be implemented in all facilities in the NSW health system.

3. To further the progress and maximise the benefits of the campaign it is recommended that: ongoing monitoring of the usage and availability of alcohol hand based rub be undertaken.

4. Further work should be undertaken to develop and implement strategies to increase hand hygiene compliance rates among doctors and stimulate their clinical leadership role in this activity.

5. Hand hygiene compliance rates should be a key component of performance indicators for Head of Department or ward Nurse Unit Manager.

6. Continued senior executive commitment and support for inclusion of campaign strategies into health facilities core business should be encouraged and promoted through further involvement in wider strategies to reduce healthcare associated infections.

7. Consideration should be given by NSW Health to undertake a review of infection control practices in NSW health facilities to identify data collection and reporting issues, surveillance practices and personnel requirements (eg the role of link nurses).
8. It is recommended that ongoing education for staff on hand hygiene practices in general and the particular elements of the current campaign shown to be ongoing barriers to improved compliance with hand hygiene, including the reproduction of campaign resources be undertaken.

9. It is recommended that the learnings from this hand hygiene campaign be incorporated into the development of future relevant projects and programs such as the Central Line Associated Bacteremia Project.

10. Features of exemplar wards or facilities should be identified and shared to inform strategies for future improvement work.

11. The level of improvement in hand hygiene compliance achieved by international studies using the methodology of the Pittet or similar approaches (talking walls, staff champions, overt observation and feedback etc) have gained an average of 12% improvement. Development and implementation of a new strategy or strategies is necessary to exceed the current levels of achievement.
4. Discussion

4.1 Was the campaign effective?

From the pre-campaign survey undertaken in October 2005 it was clear that hand hygiene had been recognised as a priority area by most AHS and that there was already some activity underway in NSW health facilities in regard to improving compliance with hand hygiene. However, most of the strategies employed were centred on education and training with many using posters to prompt behaviour change. With no previous routine data collection in NSW it was important to establish a baseline and pre-implementation compliance measures in order to measure improvement as a result of the implementation of campaign strategies. The pre-campaign intervention compliance audits in NSW showed poor compliance with hand hygiene with rates. With the mobility of staff across the NSW health system well recognised it was both logical and desirable to co-ordinate such an important activity on a statewide basis thereby minimising a large duplication of effort and allowing standardisation of data collection methodology, strategies for improvement and campaign resource development. The opportunity cost to be realised from a centralised project management and large scale development of campaign resources was clearly evident.

While one of the key strategies of the Clean Hands Saves Lives campaign was to ensure the availability of alcohol based hand rubs at the point of patient care it was clear that much of the activity of project officers in the early post implementation phase was taken up with the procurement, supply and distribution of alcohol based hand rubs in near patient locations. The co-ordination of the campaign as a statewide effort focused on enabling staff to comply with hand hygiene requirements, coupled with the product contract negotiations ensuring easy availability of the required products assisted the campaign to achieve one of its goals. This is evidenced by the increase in the amount of hand hygiene products purchased and used. By the end of the campaign period product usage audits showed a 377% increase in the amount of product purchased on an average monthly basis compared with the baseline audit. In addition, a product placement audit demonstrated that 13,280 units of alcohol based hand rubs were available in near patient locations while the estimated number of available beds was 18,951. This represents approximately a 1:1.5 ratio. From this perspective, the campaign was clearly effective. However this achievement in itself was not without difficulty. Staff in a number of AHS were concerned about the flammability of alcohol based products in the hospital environment – a concern that was not pre-empted by examination of the international literature or previous hand hygiene activities in Australia. These concerns were addressed through the development of fact sheets and supported by the development and distribution of a Safety Alert Broadcast from NSW Health.

The behaviours affecting compliance with hand hygiene in a hospital environment are complex. One group of researchers have postulated that hand hygiene behaviour among healthcare workers mirrors behaviour learned from childhood, ie inherent behaviour, and that it is largely self protective behaviour.27 The compliance patterns shown in this campaign would support that hypothesis with higher rates when the risk of infection transmission is perceived to be high. In addition, staff had difficulty reconciling the need to hand hygiene before and after every patient contact with their busy working environments and had little recognition of the potential for contamination of the environment with multi-resistant organisms through poor hand hygiene practices. With hand hygiene rates averaging 62.2% overall by the end of the campaign (range 45.7 – 68%) the campaign

27 Whitby, McLaws and Ross, 2006, Why healthcare workers don’t wash their hands. Infection Control and Hospital Epidemiology, May 2006, Vol 27, No 5
was clearly successful and comparable to the results gained in large international studies. In Pittet's\textsuperscript{26} study reported in 2000, from more than 20 000 opportunities for hand hygiene compliance improved progressively from 48% in 1994, to 66% in 1997 through a hospital wide program. Interestingly this study also showed that while hand hygiene improved significantly among nurses and nursing assistants, it remained poor among doctors.

It is also of interest to note recent advertising in the general media of hand hygiene products available in supermarkets for everyday use. The acceptance of alcohol based hand rubs in daily living activities will no doubt assist in improving the compliance with hand hygiene in hospitals.

Consumer engagement in health care is a key priority of the NSW health system.\textsuperscript{29} Therefore it is of concern that perhaps the least successful strategy of the campaign was that of engaging patients and visitors in this element of their health care. Troubling comments such as concern that their care may be prejudiced by questioning the hand hygiene practices of the staff caring for them were noted.

Tensions between Infection Control Professionals and Hand Hygiene Project officers were evident early in the campaign and had the potential to present significant barriers to implementation. Confusion over delineation of roles and early misinformation contributed to these tensions which largely dissipated over the duration of the campaign. Other barriers to success included the ongoing struggle for dedicated project officer resources in some AHS. Sustainability of campaign activities could have been obviated by the development of a network of "link nurses" as in other jurisdictions where infection control activities including the monitoring of hand hygiene compliance is delegated to specific ward nurses who are identified as the liaison point with infection control. Those AHS which made early and dedicated appointments to the project officer positions had much less difficulty in adhering to the implementation and evaluation deadlines of the campaign. For those without such dedicated resources, such as those AHS who appointed part time infection control professionals to undertake the campaign activities in a shared capacity and in addition to normal workloads found coordination of the surveys and any additional requests for information difficult.

In some cases however, this struggle for dedicated time led to innovation, such as Sydney South West AHS who developed and produced a hand hygiene education DVD which has been reproduced by the CEC for distribution to other AHS.

4.2 Was it value for money?

The value in terms of improvement to patient safety by improved hand hygiene practices is undisputed but as with many other patient safety initiatives it is difficult to quantifiy in economic terms. The only proxy measure to be applied in examining value for money is the potential savings from a reduction in numbers of infections. Data from the South Australian Department of Health\textsuperscript{30} suggests that each \textit{Staph aureus} Blood Stream Infection costs approximately $16,000 to $20,000 based on costs of care and increased lengths of stay. Overall, the NSW MRO data shows a reduction of 15 MRSA infections between the periods July - December 2005 and July – December 2006 and 2 less VISA infections in the same period. It is difficult to attribute the acquisition of VRE and MRAB infections to poor hand hygiene practices as there are significant environmental factors to

\begin{flushright}
\textsuperscript{29} Strategic Directions for Health 2000 – 2005 (October 2000)
\textsuperscript{30} Irene Wilkinson, SA Department of Health conference presentation Brisbane August 2005, Change Champions – Improving Patient Safety: Preventing Healthcare Associate Infections
\end{flushright}
their spread and acquisition. Therefore based on a conservative estimated cost of $16,000 to $20,000 per infection the reduction in MRSA and VISA alone would be expected to represent a financial saving to the health system of between $272,000 and $340,000. The greatest reduction in infections was reported in MRSA, which represents over 90% of all multi resistant organisms detected in NSW health facilities.

The total cost of the campaign was calculated as $903,742 with the majority of this cost represented by the human resource cost of project officer employment. Campaign resource development and production cost $140,000 and these resources were shared by all AHS and facilities. The economies of scale realised in this centralised approach however are not taken into account in raw mathematic calculations. However, while the campaign was implemented intensively over a twelve month period ongoing activity in hand hygiene is both necessary and practical as was realised by the NHS in the UK where an initial hand hygiene campaign became a 4 year program of improvement in healthcare associated infections.31

4.3 Lessons learned
The short time frame for implementation of the campaign has been discussed above however the most significant lesson learned was the need to allow adequate time to engage key stakeholders such as AHS Directors of Clinical Governance to enable their assistance in campaign implementation.

4.4 Where to from here?
While the campaign was successful in improving compliance with hand hygiene there is clearly more work to be done to move compliance rates from the observed average of around 62% to the community expected rate of 100%. A number of AHS have continued to implement the strategies developed as part of the campaign however ongoing monitoring of hand hygiene compliance needs to be built into regular staff activities and performance development processes to ensure ongoing attention to this important activity.

31 Personal communication – Julie Wells, NHS Institute for Innovation and Improvement, May 2006
Conclusion

The NSW Clean Hands Save Lives Campaign has identified through the implementation of multimodal strategies and regular feedback that hand hygiene compliance can be improved across all professional groups.

It addressed low hand hygiene compliance in NSW health facilities and offered NSW Area Health Services an opportunity to address both the system and the behavioral factors which are known to contribute to low compliance with hand hygiene. Through improving compliance with hand hygiene the campaign afforded AHS with an opportunity to improve the quality of clinical care provided to patients.

Area Health Service Project Officer’s reported the importance of performance feedback to staff in wards. Feedback provided staff with data on hand hygiene compliance indicating possible areas for improvement within their own facility.

Sustainability of the Clean Hands Save Lives Campaign practice improvements will be maintained through ongoing hand hygiene compliance observations, availability of hand hygiene education and campaign resources to maximise the progress the campaign has made for patient safety.
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<td>VRE infection rates</td>
<td>82</td>
</tr>
<tr>
<td>Table 17</td>
<td>MRAB infection rates per 10,000 bed days</td>
<td>82</td>
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</tbody>
</table>
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<td>Clinical areas or specialities in which activities occurred</td>
<td>32</td>
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