



INFECTION PREVENTION AND CONTROL

# Hand Hygiene New Zealand *Ringa Horoia Aotearoa*

## Guidelines on Hand Hygiene for New Zealand Hospitals

(Advanced Draft – Updated Version) December 2008



**CLEAN HANDS SAVE LIVES**  
Ringa Mā, Hunga Ora

[www.handhygiene.org.nz](http://www.handhygiene.org.nz)



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### **Disclaimer**

Although every effort has been made to ensure that this guidance document is as accurate as possible, the authors will not be held responsible for any action arising out of its use. District Health Boards and other organisations or individuals involved in implementing a hand hygiene programme should also refer directly to other documents and evidence referred to in these guidelines; and decide for themselves the most appropriate approach for their particular circumstances.

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## Acknowledgments

The Hand Hygiene New Zealand Project Team<sup>1</sup> acknowledges the authors of the following documents. Much of this manual is based on the content of those documents.

- Advanced Draft '*WHO Guidelines on Hand Hygiene in Health Care*' (World Health Organization, April 2006)
- '*5 Moments for Hand Hygiene Manual*' (Quality and Safety Programs Unit, Statewide Quality Branch, Department Human Services, Victoria, April 2008)
- '*Hand Hygiene Australia 5 Moments for Hand Hygiene, Advanced Draft August 2008*' (Australian Commission on Safety and Quality in Healthcare)

We also acknowledge the generous support and advice offered by our counterparts in *Hand Hygiene Victoria*, Australia. Their agreement to our using information they have generated and resources they have developed is greatly appreciated. We are also grateful for the initial training of our 'platinum auditors' in Melbourne during August 2008.

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<sup>1</sup> In this document, 'Hand Hygiene New Zealand Project Team' is a collective term used to represent the many people who have participated to varying degrees in the Hand Hygiene Project as part of the National Quality Improvement Programme (NQIP). More information on NQIP is provided in the 'Background' section of this document. People involved include members of the Infection Prevention and Control Steering Group, the Technical Reference Group, an independent project manager, Auckland District Health Board staff members and staff from other DHBs that contributed as 'working group' members.

## Foreword

The national hand hygiene campaign, referred to in this manual as 'Hand Hygiene New Zealand', is part of the National Quality Improvement and Infection Prevention and Control Programmes (explained in the background section below). Chapter 5 of the Ministry of Health 2006 publication '*Scoping Priorities for Quality Improvement in the Health and Disability Sector*' sets out the national programme for infection prevention and control<sup>2</sup> and notes that:

- the most simple and effective means of avoiding infections is good hand hygiene
- failure to comply with hand hygiene:
  - is the leading cause of healthcare associated infections
  - contributes to the spread of multi-resistant organisms
  - is a significant contributor to infection outbreaks.

Hand Hygiene New Zealand (HHNZ) is based on the World Health Organization (WHO), April 2006 Advanced Draft '*WHO Guidelines on Hand Hygiene in Health Care*' (the WHO Guidelines).<sup>3</sup> The WHO Guidelines are clear that the features of a successful hand hygiene campaign include:

- the promotion and proper use of alcohol-based hand product at the point of care
- repeated and high quality audit/monitoring of compliance and timely performance feedback
- communication and education tools
- constant reminders in the work environment
- active participation and feedback at both individual and organisational levels
- senior management support and involvement of sector leaders.

Accordingly, HHNZ involves building on substantial international experiences in reducing healthcare-acquired infections. In particular, this will be achieved through education and culture change supported by the use of a validated hand hygiene compliance assessment tool and alcohol-based hand hygiene products.

HHNZ will be rolled out in two stages. The stage 1 rollout will commence in mid-October 2008. The DHBs participating in stage 1 are Auckland, Tairāwhiti and Waikato.

The stage 2 roll-out should be underway with other DHBs in mid-February 2009. The table on the following page summarises activities to be undertaken by DHBs and the timeline for the initial implementation of the national hand hygiene campaign.

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<sup>2</sup> [http://www.qic.health.govt.nz/moh.nsf/pagescm/847/\\$File/prioritiesforquality5.doc](http://www.qic.health.govt.nz/moh.nsf/pagescm/847/$File/prioritiesforquality5.doc)

<sup>3</sup> [http://whqlibdoc.who.int/hq/2005/WHO\\_EIP\\_SPO\\_QPS\\_05.2.pdf](http://whqlibdoc.who.int/hq/2005/WHO_EIP_SPO_QPS_05.2.pdf) for the summary of the WHO Guidelines.

## DHB Activity Timeline

	Months 1-2	Months 3-4	Months 5-6	Months 7-8	Months 9-10
Initial preparation	Step 1 Roll-out and facility preparation	Step 2 Baseline evaluation	Step 3 Implementation	Step 4 Follow-up evaluation	Step 5 Developing ongoing action plan and review cycle
Identify key individuals and groups	Undertake DHB situation analysis	Complete alcohol hand product review; and procure as appropriate	Undertake auditor and data entry training	Project progress analysis	Study and analyse results
Identify hand hygiene project coordinator/officer	Evaluate lab IS capability	Staff knowledge assessment	Baseline hand hygiene observations	Staff campaign evaluation survey	Feedback on follow-up data
	Confirm hand product requirements and complete placement planning	Develop launch strategy and finalise project implementation plan	Implement launch strategy	Data entry analysis	Develop 5-year sustainability plan
	Ward structure survey	Develop DHB specific resources	Placement of alcohol hand product	Ongoing hand hygiene compliance observations	Commence scale-up as per the 5-year action plan
			Distribute resource materials		
			Facility staff education and practical training		
			Monitor hand product tolerance		
			Feedback baseline data		
Preliminary deliverables	Step 1 deliverables	Step 2 deliverables	Step 3 deliverables	Step 4 deliverables	Step 5 deliverables
Written confirmation of support and commitment from key senior managers  Hand hygiene Project Coordinator appointed	Alcohol hand product requirements confirmed  Budget analysis undertaken  Written confirmation of lab IS capacity to retrieve data for outcome measures  Decisions made relating to placement of alcohol hand product  Key staff and wards identified	Appropriate alcohol hand product is available  Staff knowledge assessed to assist with identifying training needs and resource requirements  DHB specific resources developed  Launch strategy and project implementation plan in place	Auditor and data entry training complete  Baseline data collected and reported  Successful launch indicated by healthcare workers engagement and understanding of roles and the 5 'moment' programme	Post implementation compliance assessment completed  Project progress assessment completed  Key learning's and outcomes communicated	Sustainability plan formulated with ongoing feedback and education  An action plan and scale for the next 5 years is developed following implementation, evaluation and analysis  The findings are presented to staff in a formal manner

Further information on the activities and deliverables summarised in the table above can be found throughout the body of this manual and/or in the appendices.

All DHBs will be supported by the HHNZ Project Team, as outlined below, throughout their participation in the national hand hygiene campaign (ie, during both stages of the national roll-out).

Support facilities will include:

- an introductory training seminar immediately before rollout and practical workshop(s) after rollout commences
- the ability to interact directly with Project Team members and other advisors through a telephone 'helpline' and to access information on the internet
- access to support from trained 'platinum auditors' (see below for more information)
- access to printed and electronic resources to be used as is, or adapted for use as appropriate, to meet individual DHB requirements (eg, reference materials, publications, posters, templates and worked examples)
- guidance and advice on data monitoring, collation, analysis and reporting.

The term 'platinum auditor' is used to describe lead personnel who perform a critical role in the HHNZ campaign. This includes contributing to the development and maintenance of an ongoing, high quality, national audit of hand hygiene compliance.

To fulfil this role, platinum auditors will be trained, among other things, to:

- accurately measure hand hygiene compliance through the use of a hand hygiene compliance assessment tool
- undertake compliance assessment data collection, entry and analysis
- effectively present and disseminate the results of data analyses.

Platinum auditors will assist with compiling and providing specific compliance feedback for all DHBs participating in the HHNZ campaign. In some cases this may involve site visits.

The platinum auditors will train and interact with a hand hygiene observation team to be established by each DHB. The observation teams will consist of a number of suitably qualified healthcare workers who will be responsible for undertaking local hand hygiene observations. These DHB observation team members will be known as 'gold auditors'.

Each platinum auditor will be allocated specific DHBs to train. They will also be available for email and telephone enquires from gold auditors, for example in relation to data collection and entry.

The number of platinum auditors in New Zealand should, ideally, be no more than four. This limited number of platinum auditors will help to ensure:

- reasonable training costs and the most cost-effective use of limited resources
- the maintenance of consistent and high auditing and training standards nationally (ie, through improved inter-observer reliability and validation)

- adequate geographical coverage (eg, by having two platinum auditors in the North Island and two in the South Island).

Up-to-date information on the HHNZ helpline and other HHNZ contacts will be published at [www.handhygiene.org.nz](http://www.handhygiene.org.nz)

HHNZ project work is carried out by a multi-disciplinary project team reporting to me as the DHB Chief Executive with lead responsibility for this national project. I am therefore delighted to sign-off on this manual as an important first step in the HHNZ campaign.

I and the rest of the HHNZ Project Team look forward to working with all DHBs. Effective hand hygiene practices throughout all our hospitals and other healthcare providers will benefit our patients, healthcare workers and the wider community as well as helping to ensure that scarce health sector resources are not unnecessarily consumed by healthcare-acquired infections.



Garry Smith  
Lead Chief Executive  
NQIP Infection Prevention and Control Programme

## Executive Summary

This manual has been produced as part of the National Quality Improvement and Infection Prevention and Control Programmes.<sup>4</sup> The Infection Prevention and Control Programme includes a national hand hygiene campaign (Hand Hygiene New Zealand, hereafter HHNZ). HHNZ is one of a number of projects being undertaken to improve the prevention and control of health care acquired infections. The projects are seen as an essential quality improvement for all healthcare facilities and organisations.

This manual is a supporting document for the HHNZ campaign. It is a guide for changing healthcare workers' behaviour and attitudes to ensure the desired level, understanding and practice of effective hand hygiene. The manual explains how to facilitate that process by providing suitable hand hygiene products and policies, and monitoring the outputs and effectiveness of a hand hygiene programme in a healthcare facility.

As part of the HHNZ roll out DHBs will initially undertake a situation analysis of current hand hygiene practices, identify a project coordinator, identify key individual and groups, and undertake an information systems capacity assessment. Information in this manual has been designed to assist this preliminary process.

Following the initial roll out process, DHBs will complete other activities described in this manual. For example, training of auditors who will undertake systematic observations of healthcare worker compliance with hand hygiene requirements, training on data entry, the alcohol hand hygiene product will be made available as well as other resource materials.

Subsequent steps in the process will involve assessing healthcare workers' understanding and practice of effective hand hygiene. These assessments will set the baseline values for later comparisons and evaluation of improvements in hand hygiene and rates of healthcare acquired infections.

Training and monitoring of staff on good hand hygiene will then commence. Evaluation and follow up will be ongoing and based on analysis of the assessment results. Using the evaluation results and feedback a five year plan will be devised by DHBs towards the end of 2009. This plan will help to ensure effective hand hygiene programmes are maintained over the longer-term in healthcare facilities throughout New Zealand.

The manual is arranged to align with the three goals related to culture change, method and evaluation. Each goal includes information on what is to be achieved and suggests actions which can be taken.

DHBs will be required to collect and submit specified data for national collation and analysis. Microbiological data will be collected monthly, and hand hygiene compliance data will be collected quarterly. More information about the project can be found on the project website [www.handhygiene.org.nz](http://www.handhygiene.org.nz).

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<sup>4</sup> <http://www.qic.health.govt.nz/moh.nsf/indexcm/qic-improvementprogrammes>

## Background

### ***The National Quality Improvement Programme***

The National Quality Improvement Programme (NQIP) is one of the programmes initiated by the Quality Improvement Committee (QIC)<sup>5</sup>, implemented by District Health Boards (DHBs) and overseen by the Ministry of Health.

NQIP recognises that the most important quality improvement activities are frequently those activities that are planned and undertaken by the staff who deliver services directly to consumers. Health care has, however, become increasingly complex and a strategic, consumer-focused, approach to quality improvement at all levels within the system is vital.

QIC has initiated a coordinated national approach to quality improvement to address quality and safety problems within public hospitals because the greatest risks are in this part of the health care system. There are, however, more quality improvement opportunities than there are resources to address them, so programmes have been prioritised to achieve value for money and higher quality services. Each of the priority programmes has a lead DHB for implementation.

More information on QIC and the NQIP can be found on the QIC website <http://www.qic.health.govt.nz/>.

### ***The Infection Prevention and Control Programme***

The Infection Prevention and Control Programme is part of the NQIP. The Programme is part of New Zealand's response to the fact that infections contracted in the health care system are a significant problem worldwide.

The programme has been strongly influenced by the June 2003 report of the Controller and Auditor-General '*Management of Hospital -acquired Infection*'.<sup>6</sup> That report noted that, internationally, it is recognised that up to 10 percent of patients admitted to modern hospitals in the developed world acquire one or more infections.

This is very significant in terms of avoidable patient mortality and morbidity, occupational risks to healthcare workers and health risks to the wider community. In 2003 it was also estimated that annual cost of such infections in New Zealand could be almost \$140m nationally.<sup>7</sup>

Up-to-date information on the Infection Prevention and Control Programme is published at [www.infectioncontrol.org.nz](http://www.infectioncontrol.org.nz)

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<sup>5</sup> QIC is a statutory committee established under the New Zealand Public Health and Disability Act 2000. QIC members are appointed by, and accountable to, the Minister of Health.

<sup>6</sup> <http://www.oag.govt.nz/2003/hospital-infections/>

<sup>7</sup> [Graves N, Nicolls T, Morris A: Modelling the Costs of Hospital-acquired Infections in New Zealand; published in Infection Control and Hospital Epidemiology, vol. 24, No 3, March 2003](#)

## ***The ‘5 moments’ for hand hygiene***

The WHO approach being implemented in New Zealand identifies the following five ‘moments’ for hand hygiene as critical to the prevention and control of infections.

**Moment 1:** *Before touching a patient*

**Moment 2:** *Before a procedure*

**Moment 3:** *After a procedure or body fluid exposure risk*

**Moment 4:** *After touching a patient*

**Moment 5:** *After touching a patient’s surroundings*

### **Moment 1 – Before touching a patient**

**WHY:** To protect the patient against acquiring an infection from the hands of the healthcare worker.

**WHEN:**

Touching a patient in any way	<ul style="list-style-type: none"> <li>Shaking hands, assisting a patient to move, allied health intervention</li> </ul>
Any personal care activities	<ul style="list-style-type: none"> <li>Bathing, dressing, brushing hair, putting on personal aids such as glasses</li> </ul>
Any non-invasive observations	<ul style="list-style-type: none"> <li>Taking a pulse, blood pressure, oxygen saturation, chest auscultation, abdominal palpation, applying ECG electrodes</li> </ul>
Any non-invasive treatment	<ul style="list-style-type: none"> <li>Applying an oxygen mask or nasal cannula, fitting slings/braces, application of incontinence aids (including condom drainage)</li> </ul>
Preparation and administration of oral medications	<ul style="list-style-type: none"> <li>Oral medications</li> </ul>
Oral care and feeding	<ul style="list-style-type: none"> <li>Feeding a patient, brushing teeth or dentures</li> </ul>
Contact with a patient’s surroundings before, during and after any of the above	<ul style="list-style-type: none"> <li>Bedside table, medical chart</li> </ul>

## Moment 2 – Before a procedure

**WHY:** To protect the patient from pathogens (including their own) from entering their body during a procedure.

**WHEN:**

Insertion of a needle into a patient's skin, or into an invasive medical device	<ul style="list-style-type: none"> <li>• Venipuncture, blood glucose level, arterial blood gas, subcutaneous or intramuscular injections, IV flush</li> </ul>
Preparation and administration of any medications given via an invasive medical device	<ul style="list-style-type: none"> <li>• IV medication, NGT feeds, PEG feeds</li> </ul>
Administration of medications where there is direct contact with mucous membranes	<ul style="list-style-type: none"> <li>• Eye drop instillation, suppository insertion</li> </ul>
Insertion of, or disruption to, the circuit of an invasive medical device	<ul style="list-style-type: none"> <li>• Procedures involving the following:</li> <li>• ETT, tracheostomy, nasopharyngeal airways, suctioning of airways, urinary catheter, colostomy/ileostomy, vascular access systems, invasive monitoring devices, wound drains, PEG tubes, NGT, secretion aspiration</li> </ul>
Any assessment, treatment and patient care where contact is made with non-intact skin or mucous membranes.	<ul style="list-style-type: none"> <li>• Wound dressings, burns dressings, surgical procedures, digital rectal examination</li> </ul>

## Moment 3 – After a procedure or body fluid exposure risk

**WHY:** To protect yourself and the healthcare surroundings from patient pathogens

**WHEN:**

After any Moment 2	<ul style="list-style-type: none"> <li>• See Moment 2</li> </ul>
After any potential body fluid exposure	<ul style="list-style-type: none"> <li>• Contact with a used urinary bottle/bedpan, with sputum either directly or indirectly via a cup or tissue, contact with used specimen jars/pathology samples, cleaning dentures, cleaning spills of urine, faeces or vomit from patient surroundings</li> </ul>

## **Moment 4 – After touching a patient**

**WHY:** To protect yourself and the healthcare surroundings from patient pathogens.

**WHEN:**

After any Moment 1 except where there has been a potential body fluids exposure

- See Moment 1 and 2

## **Moment 5 – After touching a patient’s surroundings**

**WHY:** To protect yourself and the healthcare surroundings from patient pathogens.

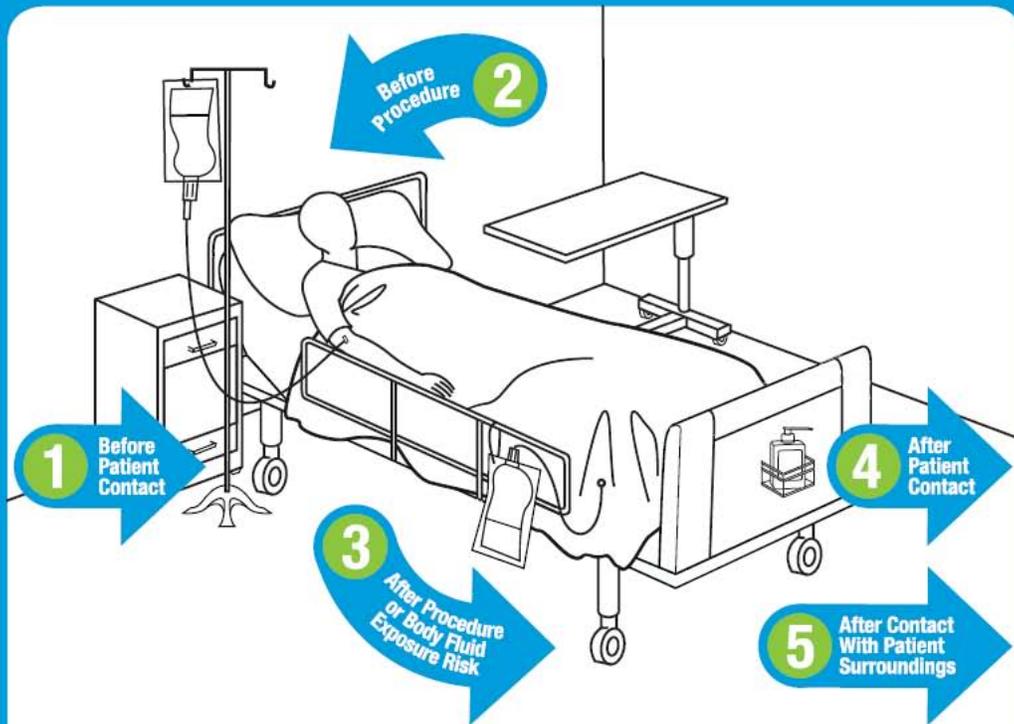
**WHEN:**

After touching the patient’s immediate surroundings when the patient has not been touched.

- Patient surroundings include: Bed, bedrails, linen, table, bedside chart, bedside locker, call bell, TV remote control, light switches, personal belongings (including books, mobility aids), chair, foot stool

The 5 moments approach is illustrated and further explained by the poster on the following page. More detailed information on the 5 moments is also provided in later sections of this manual relating to the assessment of hand hygiene compliance.

# YOUR 5 MOMENTS FOR HANDHYGIENE



<b>1</b> Before Patient Contact	<b>WHEN?</b> Clean your hands before touching a patient when approaching him/her. <b>WHY?</b> To protect the patient against harmful germs carried on your hands.
<b>2</b> Before Procedure	<b>WHEN?</b> Clean your hands immediately before any procedure. <b>WHY?</b> To protect the patient against harmful germs, including the patient's own, from entering his/her body.
<b>3</b> After Procedure or Body Fluid Exposure Risk	<b>WHEN?</b> Clean your hands immediately after an exposure risk to body fluids (and after glove removal). <b>WHY?</b> To protect yourself and the health-care environment from harmful patient germs.
<b>4</b> After Patient Contact	<b>WHEN?</b> Clean your hands after touching a patient and her/his immediate surroundings, when leaving the patient's side. <b>WHY?</b> To protect yourself and the health-care environment from harmful patient germs.
<b>5</b> After Contact with Patient Surroundings	<b>WHEN?</b> Clean your hands after touching any object of furniture in the patient's immediate surroundings, when leaving - even if the patient has not been touched. <b>WHY?</b> To protect yourself and the health-care environment from harmful patient germs.



## CLEAN HANDS SAVE LIVES

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INFECTION PREVENTION & CONTROL

# Hand hygiene: A response to the growing problem of healthcare-acquired infections

## ***Barriers to improvement***

Good hand hygiene is known to reduce the risk of healthcare-acquired infection, yet efforts to improve and maintain good hand hygiene habits often fail. There are a number of reported reasons for this, all of which need considering in any hand hygiene programme.<sup>[1]</sup>

**Table 1: Reported reasons for hand hygiene failure**

Perceived priority	Patient's immediate needs take priority over hand hygiene
	Time for hand hygiene not available, due to work pressures
	Not regarded as a priority and is therefore forgotten
Physical environment	Hand basins inconveniently located or not available
	Hand hygiene protocols not widely published or publicised
Organisation	Hand hygiene products cause skin irritation and dryness
	The (incorrect) perception that surgical gloves replace hand hygiene
	No role models on the importance of good hand hygiene
	Guidelines and protocols for hand hygiene are not well promulgated
	Risk of cross transmission of microbial pathogens not well understood

## ***Overcoming the barriers***

European and Australian studies<sup>[1, 3, 4, and 13]</sup> have demonstrated the clinical efficacy of a hand hygiene culture-change programme that uses an alcohol hand product. They have shown a marked and sustainable increase in hand hygiene compliance and a significant reduction in healthcare acquired infections.

Recent research<sup>[2]</sup> has shown that alcohol hand products are superior to soap and water because they take less time to use, are easily accessible, are less irritating to skin, and significantly reduce bacterial numbers than ordinary soap and water.

Preventing healthcare acquired infections is a three pronged approach: choice of hand hygiene product; promoting a culture of hand hygiene; and up-to-date information available to educate staff and evaluate effectiveness.

The HHNZ approach, described in this manual, includes activities in each of these three areas.

## The Hand Hygiene New Zealand aim and goals

The aim of HHNZ is to improve hand hygiene compliance among healthcare workers and thereby reduce the transmission of healthcare-acquired infections in New Zealand.

To meet this aim, HHNZ has set three goals (Table 2).

**Table 2: Goals of the Hand Hygiene New Zealand programme**

Goal 1:	Culture change - adopt and promote behaviour which supports good hand hygiene practices
Goal 2:	Introduce and support a hand hygiene programme where all healthcare workers complete appropriate hand hygiene before and after every patient contact
Goal 3:	Monitor and evaluate outputs and outcomes of the hand hygiene programme

As described in the following sections of this manual, the actions required to meet each of these goals combine to form the key components of the HHNZ campaign.

## **Key components of the hand hygiene campaign**

### ***Goal 1: Culture change - adopt and promote behaviour which supports good hand hygiene practices.***

#### **Introduction**

Culture change will be assisted by improved knowledge on infection control among healthcare workers, especially regarding the importance of appropriate hand hygiene in reducing the risk of healthcare acquired infections. HHNZ is a multi-faceted approach including:

- education regarding hand hygiene and the '5 moments' for hand hygiene
- an alcohol hand hygiene product
- monitoring hand hygiene compliance and other measures, including rates of Staphylococcus aureus disease.

#### **The education process**

HHNZ notes that the New Zealand Standard for Infection Control (NZS 8142:2000) and the infection control audit workbook (HB 8142:2001) associated with the Standard states that all service providers and support staff shall receive an orientation in relation to infection control practices that are relevant to the service or organisation.

The workbook also identifies the following as essential components of the orientation for all staff:

- overview of infection control programme
- hand hygiene
- standard precautions
- policies and guidelines and key infection control issues relevant to the service.

Consistent with the '5 moments' approach, education must place emphasis on preventing the transfer of organisms from a contaminated body site to a clean body site during patient care. The latest guidelines also recommend hand hygiene after contact with inanimate objects, including medical charts and equipment in the immediate vicinity of the patient.<sup>[2]</sup>

Central to the hand hygiene education process is feedback of audit results to healthcare workers. Also, executive management making demonstrated hand hygiene education a compulsory requirement for all new staff and students has proven successful in many institutions in improving hand hygiene culture-change.

It is recommended that a hand hygiene education package is developed and rolled out organisation-wide. An online hand hygiene education package has

been shown to be effective in supporting the culture change process. Typical hand hygiene education packages include a series of educational slides and questions, provide for immediate feedback after each answer is selected and users can only move to the next slide after they have selected the correct answer.

A user is usually considered to have sufficient knowledge and understanding of effective hand hygiene if they achieve a score of 100 percent. The implementation of an on-line education package will be dependent on the organisation and will require support from information technology and human resources.

User identification and responses should be recorded (user name, type of healthcare worker, department, employment status, answers selected and final score) and accessed by managers and clinical coordinators for information on staff who have completed the education package.

Once developed, the education package may become a condition of employment of all new healthcare workers. Employment contracts and student agreements would therefore include a requirement to score 100 percent in the hand hygiene education package within a specified time period. Ideally new employees should complete the education package before they can obtain their photo identification badge or as soon as possible after employment.

Certificates can be generated on successful completion of the education package. For already employed healthcare workers, the education package may become a mandatory component of their annual or biannual performance appraisal.

The hand hygiene education package should be easily accessible to all staff either through electronic or paper media. If paper based, individual results can be entered later onto the education database. The database should be maintained so that infection control staff and ward managers can identify staff that have not completed the education package or work areas which require further assistance.

To keep the programme going, it is important to promote the education package. This can be done electronically through the organisation computer network, or through devices such as promotional cards, posters and pay slip messages. The recruitment of hand hygiene programme representatives will also serve to promote the programme, its overall aim and three goals.

## **Leadership and key staff appointments**

A successful programme requires the enthusiastic support of the executive management team and strong clinical leadership. Healthcare workers' ownership and acceptance and of the programme and the change in behaviour required will assist in keeping the programme running.

Goal 1 will be met through leadership and ownership of the programme. Table 3 describes how this can be achieved.

**Table 3: Leadership and actions**

Executive management team	<p>Demonstrates commitment and support of the hand hygiene programme through:</p> <ul style="list-style-type: none"> <li>• Interest and participation at all levels</li> <li>• Regular reporting on the programme at executive management meetings</li> </ul>
Clinical leadership team	<p>Involved in the programme by:</p> <ul style="list-style-type: none"> <li>• Staff from the Infection Control Committee (or its equivalent) are active in the programme implementation throughout the organisation</li> </ul>
Staff	<p>Staff own the programme by:</p> <ul style="list-style-type: none"> <li>• Appointment of staff as hand hygiene “liaison officers” or “ward champions” who are responsible for hand hygiene promotion</li> <li>• Education tools are visible at point of use for hand hygiene facilities</li> <li>• Completing audits of product availability and staff completion of hand hygiene education package</li> <li>• Supporting promotional activities such as competitions, crosswords, launches, “Talking Walls”, feedback sessions, afternoon teas and newsletters</li> <li>• Advocating the programme using kits such as alcohol hand hygiene product T-shirts and hat which can be worn by the hand hygiene programme team during educational sessions, presentations and launches. Merchandise may also be supplied to staff as prizes if appropriate</li> <li>• Providing and receiving regular and timely feedback on progress and compliance</li> <li>• Formally recognise achievements by staff</li> </ul>
Key staff appointments	<p>Hand hygiene liaison officers or champions are appointed to promote the hand hygiene programme and assist with changing behaviour by:</p> <ul style="list-style-type: none"> <li>• Motivation of individuals and teams</li> <li>• Facilitation between staff groups</li> <li>• Promoting the programme</li> <li>• Modelling good hand hygiene practices</li> </ul>

- Presenting output and outcome results to staff
- Auditing alcohol hand product placement and availability
- Teaching and assisting healthcare workers to practice hand hygiene effectively
- Educating new staff in hand hygiene and alcohol hand product use

## **A multidisciplinary team**

A multidisciplinary team is required to oversee implementation of the hand hygiene programme. The team is responsible for development of the programme for the organisation to achieve a culture change necessary for improved hand hygiene in all areas of the health care facility or organisation. The team is also responsible for introducing the alcohol hand hygiene product into the workplace, monitoring compliance, and measuring outputs and outcomes.

The team will include a Programme Coordinator, clinicians, and members of the Infection Control team. The Programme Coordinator is the main point of contact for the healthcare facility or organisation, and will have an understanding of hand hygiene and infection control. The Programme Coordinator may also have professional experience of quality and safety practices in healthcare provision. An essential role of the clinicians on the team is to champion the hand hygiene programme throughout all levels of the organisation.

## **Developing policies and protocols**

Policies and protocols on hand hygiene are required to be developed by the organisation. The hand hygiene policy will recommend the use of an alcohol hand hygiene product. There will also need to be clear guidelines about wearing jewellery and acrylic/false nails in clinical areas. It is recommended that the guidelines also include information for appropriately managing instances of contact dermatitis potentially associated with hand hygiene product use.

## **Promoting good hand hygiene practices**

There are many ways which good hand hygiene practices can be promoted. One example is 'Talking Walls' <sup>[3]</sup> (see [www.handhygiene.org.nz](http://www.handhygiene.org.nz) for examples of Talking Walls posters). This approach uses art and humour to reinforce the principles of infection prevention through improved hand hygiene among staff. Staff from each ward can be invited to help design a poster featuring their own hand hygiene message.

A Talking Walls campaign will require staff to meet with the Programme

Coordinator, Infection Control staff and often a hand hygiene artist to discuss ideas for posters with the hand hygiene message. The poster should show activities or practices reflective of the work environment and should include identification of the work area that helped in its design. Healthcare workers can be involved by selecting the Talking Wall sites to be background-painted for poster display, and by choosing the final poster. Staff can also assist with rotating work area posters as new posters became available.

Other promotional activities might focus around social events (such as BBQ lunch, work area lunch or afternoon tea, and giveaways), competitions (such as spot prize slogan competitions, quizzes, crosswords, and word searches) and also through the use of visual media (such as stickers, badges, pay slip notices, internal newsletters, and screen savers).

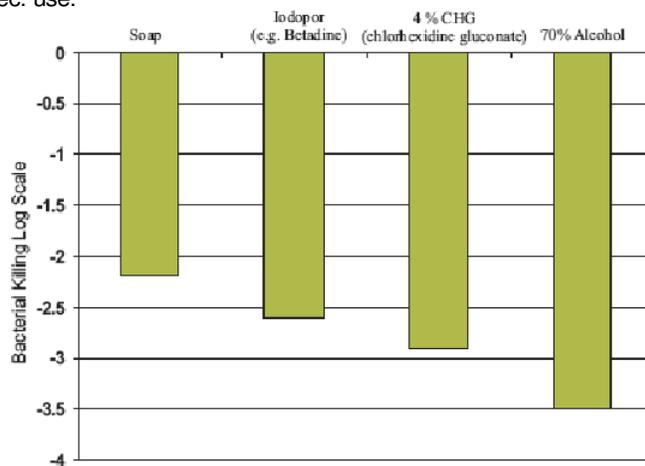
## **Goal 2: Introduce and support a hand hygiene programme where all healthcare workers complete appropriate hand hygiene before and after every patient contact**

Two activities are essential to meet this goal: appropriate hand hygiene product, and education. This programme recommends the use of an alcohol hand hygiene product, and that healthcare workers and support staff are included in educational activities designed to initiate and sustain a hand hygiene behaviour change.

### **Activity 1: Appropriate hand hygiene product**

Alcohol hand products are more effective at reducing bacterial loads than either medicated or non-medicated soaps (see figure 1 below), but there are a number of factors which will reduce their effectiveness against bacteria, fungi and viruses<sup>[2]</sup>.

Figure 1: Effectiveness of different Hand Hygiene products in reducing bacterial counts after 30 sec. use.



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(THE LANCET Infectious Diseases, 2001;April:9-20)

The antimicrobial efficacy of alcohols is very sensitive to dilution with water and is therefore vulnerable to inactivation, especially if only small volumes of alcohol product are applied.<sup>[5]</sup> Accordingly, the product must be applied to dry hands. Alcohol has virtually no activity against bacterial spores or protozoan oocysts. Washing hands with soap and water is preferred in this situation (eg, for *Clostridium difficile*).

Alcohol has poor activity against some non-enveloped viruses (eg, rotavirus, norovirus, polio, and hepatitis A). There is, however, conflicting evidence suggesting that alcohol hand product is more effective than soaps in reducing virus titres on finger pads. In an outbreak, each DHB should have specific policies for hand hygiene and those policies should be followed.

Published clinical studies that have demonstrated reductions in healthcare acquired infections with the use of an alcohol hand product have been associated with the use of an alcohol hand product that contains at least 70% alcohol (isopropanol), 0.5% chlorhexidine and skin emollient.<sup>[3, 4]</sup> There are several alcohol hand product formulations available on the market that are suitable for use in New Zealand hospitals. The choice of alcohol hand product, with or without chlorhexidine, is for each DHB and/or hospital to determine as it sees fit according to its particular circumstances.

The following guidance information is intended to assist with product selection. There is no intention to favour any particular product formulation or brand. In determining which alcohol hand product(s) to use, it is recommended that you refer directly to other documents and evidence referred to in these guidelines. The British Standard: BS EN 1500:1997 *Chemical disinfectants and antiseptics. Hygienic handrub. Test method and requirements (phase 2/step 2)* is regarded internationally as an appropriate minimum standard for alcohol hand products.

**Table 4: Some points to consider when selecting an alcohol hand product**

Price and user acceptance	<p>While the price of an alcohol hand product is an important factor in product selection, it is far less important than the acceptability of the alcohol hand product to healthcare workers<sup>[8]</sup></p> <p>See table 5 below for more information on product properties</p> <p>To successfully implement and sustain a hand hygiene programme the choice of hand hygiene product must be acceptable to the users</p> <p>If you are not already using an appropriate product, before deciding which alcohol hand hygiene product to introduce, it is important to provide healthcare workers with an opportunity to evaluate available products</p>
Type of alcohol	<p>Suitable isopropanol and ethanol hand product formulations are available</p> <p>Isopropanol and ethanol both have in-vitro activity against bacteria, fungi and viruses</p> <p>Isopropanol has slightly greater activity than ethanol against bacteria<sup>[2]</sup></p>
Chlorhexidine	<p>Alcohols are rapidly germicidal when applied to the skin and are suitable for routine hand hygiene, however, they have no appreciable persistent or residual activity</p> <p>The optional addition of chlorhexidine results in persistent activity<sup>[5]</sup></p>
Alcohol concentration	There is a clear positive association between

	<p>the extent of bacterial reduction and the concentration of alcohol contained in an alcohol hand products</p> <p>The concentration for maximum efficacy is different for isopropanol than ethanol – e.g. Alcohol hand products containing 60% isopropanol are associated with similar cutaneous bactericidal activity as an alcohol hand product that contains 77% ethanol <sup>[5]</sup></p>
Alcohol hand product volume and drying time:	The volume of alcohol hand product dispensed is important. 1ml of alcohol hand product has been shown to be substantially less effective than 3 ml <sup>[6]</sup> .

As indicated above, health care workers' acceptance of an alcohol hand product is essential for the success of the culture-change programme. Acceptability of the product may be influenced by several factors including those listed in Table 5.

**Table 5: Product properties**

Physical properties	The emollient agent(s) in the alcohol hand product should prevent skin drying and irritant skin reactions, but not leave a sticky residue on hands
Drying characteristics	In general, alcohol hand solutions have lower viscosity than gels and therefore tend to dry quicker. This is usually more acceptable to healthcare workers
Skin irritation and dryness	Proactive and sympathetic management of this problem is required
Fragrance and colour	Whilst these can increase appeal, they may cause allergenic reactions
Product availability	Product should be readily available at the bedside and in other patient-care areas
Peer group pressure	Staff education on the advantages of the alcohol hand hygiene product is important to achieve maximum compliance. These advantages include the reduced time (15 seconds) to decontaminate hands, less irritating and drying than soap and water, and paper towels are not required

## **Making it easy**

The success of a hand hygiene programme is dependant on the ready availability of the alcohol hand hygiene product in the work area and near the patient. It is not thought to be an advantage to place dispensers next to sinks as this causes confusion for some healthcare workers who may think they need to rinse their hands with water after using an alcohol hand product. Alcohol hand hygiene products should be placed at point-of-care, together with signage for appropriate use. Point-of-care places are, for example, patient beds, trolleys, and clinical areas.

Placement of an alcohol hand hygiene product needs to be consistent and predictable. Clinical staff should assist with the deciding the best positions in their work areas. Special consideration is necessary when locating the alcohol hand product in clinical areas where oral consumption or accidental splashing is a particular risk.

Areas requiring special consideration include paediatrics, aged care, mental health and public areas.

In paediatrics, care must be taken to locate the alcohol hand hygiene product in supervised areas and out of reach of small children.

In the aged care areas, and mental health inpatient settings, the alcohol hand hygiene product should be placed in supervised areas.

In public areas, the alcohol hand hygiene product must have clear signage regarding appropriate use and supervision of children.

Bracket design is important since alcohol hand hygiene product placement may be affected if the brackets are ill-fitting (e.g. varying sizes of bed rails can affect the efficacy of some brackets). Bracket availability and installation costs associated with these items should be considered, since these expenses can be substantial.

The alcohol hand hygiene product can be placed in many locations such as:

- at the end of every patient bed (fixed or removable brackets)
- on mobile work trolleys (e.g. intravenous, drug and dressing trolleys)
- in high staff traffic areas (e.g. nurse's station, sluice room and patient room entrance)
- in multi-use patient-care areas, such as examination rooms and outpatient consultation rooms
- at the entrance to each ward, outpatient clinic or department
- in public areas, such as waiting rooms, receptions areas, hospital foyers, near elevators
- personal dispensers.

## Caring for hands

The management of hand care requires early recognition and a systematic approach to ensure success of an alcohol hand hygiene programme. Strategies for minimising occupational hand dermatitis include:

- use of a hand hygiene product that contains skin emollient to minimise the risk of skin irritation and drying
- educating staff on caring for their hands, including the regular use of skin moisturisers both at work and at home. The moisturising skin-care products need to be compatible with an alcohol product
- providing a supportive attitude towards staff with skin problems.

The majority of skin problems among healthcare workers that are related to hand hygiene consist of “irritant contact dermatitis”.<sup>[10]</sup> Irritant contact dermatitis is primarily due to frequent and repeated use of hand hygiene products, especially soaps and other detergents, which result in skin drying. The initial use of an alcohol hand hygiene product among such healthcare workers often results in a stinging sensation.

Recent studies have suggested that the ongoing use of emollient-containing alcohol hand hygiene product leads to improvement in irritant contact dermatitis in approximately 70 percent of affected healthcare workers<sup>[15]</sup>. The most common causes of contact allergies are fragrances and preservatives; it is recommended that these are kept to a minimum or eliminated.

Alcohol produces the lowest incidence of irritant contact dermatitis of all the hand hygiene products currently available. Among the various alcohols included in alcohol hand hygiene products, isopropanol is generally considered less drying than ethanol. True allergy to an alcohol product is rare and allergy to alcohol alone has never been described. Some reports have suggested that irritant contact dermatitis can occur in up to 30% healthcare workers<sup>[11]</sup>, but the incidence of this problem in a recent study of Victorian healthcare workers was extremely low (0.47 percent).<sup>[15]</sup>

The WHO Guidelines also note (page 34 of the Guidelines), with respect to chlorhexidine, that the frequency of skin irritation is concentration-dependent, with products containing 4 percent most likely to cause dermatitis when used frequently (ie, a concentration much higher than the 0.5 percent recommended by HHNZ). The WHO Guidelines also note that true allergic reactions to chlorhexidine gluconate are very uncommon.

All staff should be educated about appropriate hand skin care and be encouraged to use moisturiser at home as well as at work. Irritant contact dermatitis related to appropriate hand hygiene can be minimised by providing a moisturising skin-care product, staff education, and a tolerant, supportive attitude to reported problems.

Healthcare workers should be encouraged to notify the Programme Coordinator if skin irritation occurs following the use of an alcohol product.

All complaints should be taken seriously and a review process instigated. All hospitals should have referral access to an occupational health department for

healthcare workers with persistent skin problems.

## Activity 2: Educating health care workers

Educating healthcare workers is required to sustain the desired hand hygiene behaviour. All healthcare workers and support staff should be included in the educational activities. To assist with improving healthcare workers' general knowledge about infection prevention and hand hygiene, a computer-based education programme is recommended.

### The education programme approach

The components and approach of the education programme are presented in table 6 below.

**Table 6: Components and approach of an education programme**

Component	Approach
Organisational goal	Promotion of personal ownership and involvement of healthcare workers  Evidence that increased hand hygiene decreases the risk of healthcare-associated infections due to a reduction in colonisation with healthcare associated pathogens
Convenience	Engineering factors that ensure hand hygiene product is easily and conveniently available to all healthcare workers
Product type	Use of the best available hand hygiene product  Practical guidelines on use of the various hand hygiene products
Skin care	Promotion and facilitation of good skin care for healthcare workers' hands
Staff support	Hand hygiene guidelines/local policy  Provision of a tolerant and supportive attitude to reported skin care problems
Safety	Improvement in general safety awareness in the hospital <sup>[8]</sup>  Discussion about reasons for poor hand hygiene compliance among healthcare workers <sup>[1]</sup>
Audit	Regular monitoring and feedback on compliance, training requirements, product analysis  Timely feedback on hand hygiene compliance results and comparison with other units, including stratification by infection risk

## Educating staff on hand hygiene practices

Education of staff can occur through both formal and informal mechanisms. Formal education can be conducted as part of the medical and nursing Grand Rounds, or as part of in-service education, or within the nurse unit managers' meetings and other clinical meetings. Other important formal opportunities for education are workplace orientations, student intake sessions and during promotional weeks.

Informal education opportunities include providing immediate feedback on hand hygiene practice observed when working alongside the healthcare worker, or on a work area "walkabout". Informal feedback can be enhanced with the use of a reward or incentive scheme. Other mechanisms include informal chats with staff (for example in the corridor or tea room) and the provision of easily accessible, highly visible resources for staff (such as access to hand hygiene programme staff, or Infection Control staff).

## Teaching tools

There are many tools available for teaching. Some are listed below, and suggestions of when these could be used.

**Table 7: Tools and teaching opportunities**

PowerPoint presentations	Grand Rounds Orientation In-service education
Fact sheets	New staff Promotional weeks
Promotional cards	Promotional weeks Students
Pens and sticky note pads	Staff training programme Informal observations of good practice
Stickers for staff identification badges once healthcare workers have completed the education package	Staff training programme Peer support in work area Completing education requirements
Hospital Policy	Management meetings Orientation
Peer-reviewed journal publications regarding hand hygiene	Management meetings Grand Rounds

Hand hygiene brochures	Informal observation of poor practice Students
Role play sessions	One-on-one training Staff training programme
Regular newsletters	Results of output and outcome measures Feedback on audits Update on programme, and any changes
Incentives such as small gifts, pens, stickers, movie passes may be offered as a form of positive re-enforcement once all staff have completed the education package	Staff training programme Informal observations of good practice When targets have been met

### Creating and using role models

Role models are especially valuable for creating and maintaining the environment for good hand hygiene. A successful hand hygiene programme requires the commitment from all healthcare workers, but medical role models are particularly important.

Encouraging the involvement of medical staff to champion hand hygiene and be role models for their peers and staff is an important step to engage medical clinicians in the hand hygiene programme. As role models, medical champions can challenge the research findings, which suggest that medical staff repeatedly under-perform in hand hygiene compliance and are difficult to reach with education to generate behaviour change, through personal discussions with their colleagues and by modelling good behaviour in front of their staff.

Successful programmes will identify role models and clinical champions, and work with medical staff to remove barriers for compliance. In addition, opportunities for learning will be created through House Officer training programmes, scientific presentations at clinical meetings and Grand Rounds, and attendance of Infection Control staff on ward rounds.

### **Goal 3: Outputs and outcomes of hand hygiene programme are regularly monitored and evaluated**

Monitoring the effects of the interventions involves reporting on the rates of hand hygiene compliance as recorded by trained auditors, the number of *Staphylococcus aureus* clinical isolates identified per 100 discharges per month at each healthcare facility, and the number of *Staphylococcus aureus* bacteraemia per 100 discharges per month at each healthcare facility.

The hospital is required to submit monthly reports to HHNZ on the results of two key outputs expected from the introduction of a hand hygiene programme. These outputs are the rates of Hand Hygiene Compliance, and the rate of *Staphylococcus aureus* disease.

The HHNZ Project Team will collate all submitted data and provide summary reports to participating hospitals. A standardised document for collection of data will be provided to hospitals.

### **Getting the results to Hand Hygiene New Zealand**

Monthly rates of clinical *Staphylococcus aureus* isolates for each hospital are to be submitted monthly. Hand hygiene compliance assessments must be undertaken at least every four months. The required dates for each monthly submission will be published on the HHNZ website [www.handhygiene.org.nz](http://www.handhygiene.org.nz).

### **Output 1: Compliance with hand hygiene guidelines**

Hand hygiene compliance should be assessed in accordance with published guidelines using a standardised hand hygiene observation assessment tool<sup>[12, 13]</sup> based on the five 'moments' (discussed in more detail later) namely:

1. Before patient contact.
2. Before a procedure.
3. After a procedure or body fluid exposure risk.
4. After patient contact.
5. After contact with patient surroundings.

Hand hygiene compliance should be measured at specified intervals during the programme, with the number of acute in-patient beds at each facility dictating the number of areas required to be audited and the number of observations to be undertaken (refer Table 8 below).

**Table 8: Number of audits**

Number of acute inpatient beds at the hospital site	Required number of hand hygiene audits per year	Required number of wards/areas per hand hygiene audit	Required number of hand hygiene observations per ward area
>400	3	7	350
300-400	3	6	350
200-300	3	5	350
100-200	3	4	200
50-100	3	2	100
25-50	3	1	100
< 25	3	1	50

Training in the hand hygiene compliance assessment tool, data collection, data cleaning, data entry and data analysis will be provided for all participating hospitals by HHNZ. Further assistance is available by contacting HHNZ (contact details will be published on the HHNZ website [www.handhygiene.org.nz](http://www.handhygiene.org.nz)).

Rates of hand hygiene compliance will be assessed and reported according to a number of specified criteria, including by professional category, hand hygiene product used, type of activity performed and risk stratification.

### **Training, analysis and reporting**

Training in the hand hygiene compliance assessment tool, data entry and data analysis will be provided at training workshops conducted by HHNZ. Further support is available to all hospitals by contacting the HHNZ helpline. Each organisation must establish a hand hygiene team responsible for co-ordinating their own programme.

Hand hygiene compliance can be analysed and reported in a variety of ways depending on your target audience. For example, rates can be reported according to professional category, hand hygiene product used, type of activity performed and risk stratification. Feedback and, where required, education should be provided to the healthcare worker groups under observation.

### **Observing behaviour and collecting data**

The hand hygiene team will consist of 2 to 5 healthcare workers who have been validated as trained to observe and report on hand hygiene in accordance with the hand hygiene programme. These trained observers are called Gold Auditors. In choosing the team, it is more likely that active participation of Infection Control staff will assist in obtaining desired changes in behaviour.

The training will be carried out by a small number of highly skilled and experienced auditors known as Platinum Auditors. The Platinum Auditors will also be available to provide advice and support to the DHBs' Gold Auditors after they have been trained.

The Programme Coordinator maintains overall responsibility for coordination of the field team and data collection. All members of the hand hygiene team should participate in all aspects of hand hygiene observations, including training, conducting observations, data cleaning, data entry, data analysis, data presentation and dissemination of results.

Hand hygiene compliance should be assessed on all healthcare workers who enter selected patient rooms. The selection of a particular patient room for observation will depend on if there is a convenient location from which to observe the patient bed(s) and hand hygiene facilities.

Factors to consider when planning hand hygiene observation sessions are listed in the table below.

**Table 9: Factors to consider in hand hygiene observation sessions**

<p>Survey population</p>	<p>Hand hygiene compliance rates should be reflective of a cross-section of the institutions' healthcare workers, rather than just repeated or prolonged observations on a small number of healthcare workers</p> <p>Information regarding the observation session should be provided to the appropriate manager and permission obtained from them to observe the healthcare workers</p>
<p>Data collection schedule</p>	<p>Will be influenced by the number of acute beds in the facility and the number of trained staff available to undertake hand hygiene observations</p> <p>Sessions should be undertaken at random times during both morning and afternoon shifts</p> <p>Busy periods are the best time for hand hygiene observations</p> <p>As day-to-day variation in hand hygiene compliance may occur, observation sessions are best run over several days or weeks</p>
<p>Moderating behaviour</p>	<p>When healthcare workers know hand hygiene compliance is being measured, they may pay greater attention to hand hygiene and thereby positively skewing the data to higher than expected rates of hand hygiene compliance. Repeated observations should provide a more accurate picture of compliance</p> <p>Observation sessions conducted over a number of days are more likely to be representative of the healthcare worker's usual hand hygiene behaviour than when all observations are conducted on one day</p> <p>Inter-auditor reliability sessions (refer below) should be</p>

	conducted the week before commencing the observations to allow healthcare workers to become familiar with the process and presence of auditors
Answering questions from staff	Hand hygiene auditors should have a generic response to enquiries from staff about the observation sessions
Feedback of results	Timely feedback of results to healthcare workers helps to bring about improvements in hand hygiene compliance

### Inter-auditor reliability

Intra-auditor reliability (individual auditors) and inter-auditor reliability (more than one auditor) is essential if the observations are to be correctly and consistently recorded by all auditors.

Inter-auditor reliability can be assessed by combining hand hygiene auditors for observations of the same session and then comparing observations recorded. All Gold Auditors should be standardised by a Platinum Auditor to ensure inter-auditor reliability. Each hand hygiene auditor should be paired with each of the other validated auditors. No less than 80 percent inter-auditor agreement in all recordings is required before the formal data collection process can commence.

Intra-auditor reliability can be improved by video training. A training video (copies available from HHNZ) should be observed by the auditor on at least two occasions, a few days apart. Data should be recorded on the standard data collection form. The rate of agreement for all recordings is then calculated, and where agreement is less than 90 percent, further training is required.

Practice sessions may be necessary for hand hygiene auditors prior to each data collection period to ensure reliable results.

### Data collection form and data codes

All hand hygiene compliance data should be recorded for each of the 5 moments (see below) in the standard data collection format and entered into the database for analysis. Table 10 lists the variables and codes to be used for recording hand hygiene compliance.

**Table 10: Data variables and codes**

Session details	Session number
	Ward
	Date
	Field auditor name
	Duration of Session
	Health Service

	Data base record number
The type of healthcare worker being observed	RN Registered nurse DR Medical doctor HCA Health Care Assistant AH Allied Health Care Worker BL Blood collecting staff - phlebotomists S Student Healthcare worker (e.g. SRN, SAH, SDR) O Other (e.g. Ward clerk, pastoral care, food services assistant)
Hand hygiene product used	Rub (alcohol-based hand product only) Wash (washes with soap and water) Missed (No hand hygiene performed)
Glove use	Leave section clear if no gloves worn On (puts on gloves) Off (removes gloves) Cont. (continues wearing same gloves)
Inter-patient healthcare worker activities	When a healthcare worker provides care for a patient and then moves to a new patient (new <i>Moment</i> ), this requires notation on the data collection form by starting a new line  When a healthcare worker is providing care for a patient and then leaves the room (without touching a second patient) this is the end of that <i>Moment</i> and will also require a new line to be completed for any further activities undertaken

### Assessing compliance and the five moments of hand hygiene

The hand hygiene auditor team should remain alert to reliability problems and devise strategies to reduce them. During the first few days of data collection, the hand hygiene Programme Coordinator should review data collection forms for consistency and query inconsistencies or illegible recordings. Hand hygiene auditors should discuss and resolve observational process or recording difficulties.

The Programme Coordinator should tally the total number of hand hygiene moments recorded for each session on a regular basis to monitor progress.

When commencing an observation session, hand hygiene auditors need to check that there is at least one patient present in the chosen area, and that a bottle of the alcohol hand hygiene product is available on the end of the patient beds and in other standard areas such as room entries and exits.

Auditors need to position themselves to view the patient beds and sink area. When patient's bed curtains are drawn, permission should be sought from the relevant healthcare worker and the patient to allow auditors to continue to view activities in the area. There may be some occasions when this is not appropriate. It is necessary in intensive care units to observe the healthcare worker hand hygiene activities behind the closed curtains.

A hand hygiene moment is only documented when the field auditor can accurately observe the healthcare worker and the moment has been completed. If an auditor is unsure whether the observed healthcare worker performed hand hygiene, then such moments should not be recorded.

The number of healthcare workers observed at one time depends on their level of activity. More than one healthcare worker can be observed at the same time, provided their hand hygiene moments can be accurately observed and recorded. If this is not possible, then the compliance of additional healthcare workers should not be recorded until the index healthcare worker has left the patient room. It is better to record fewer moments accurately than many moments inaccurately.

If no activity occurs, hand hygiene auditors should proceed to another room. No hand hygiene activity may be because no healthcare worker entered the room after 2 minutes of observation, or the healthcare worker's hand hygiene activities were performed unobserved behind closed curtains for greater than 2 minutes, or all patients left the area during the observation session.

### **Moment by moment examples**

**1. Healthcare worker walks in, silences IV alarm, then leaves**

- 1 – prior to touching patient
- 4 – after touching patient

**2. Healthcare worker changes IV fluid bag, then leaves**

- 2 – prior to disconnecting IV
- 3 – after reconnecting IV

**3. Healthcare worker prepares oral medications with medications sitting on patient medical chart, then signs chart whilst giving medications to patient, then moves curtain aside**

- 1 – pre giving medications to patient
- 4 – prior to moving curtain

**4. Healthcare worker walks in, touches the patient, moves the over bed table, adjusts the sheets, moves the chair, gets the patient out of bed then leaves**

- 1 – prior to touching patient
- 4 – after touching the patient

**5. Healthcare worker walks in, picks up IDC to read it, puts it down, then leaves**

- 1 – pre IDC as IDC is considered to be a part of the patient

- 3 – after IDC (potential body fluid risk)
- 6. Healthcare worker walks into the room, picks up IDC to read it, puts it down, writes on the medical chart then leaves**
- 1 – pre IDC as IDC is considered to be a part of the patient
  - 3 – after IDC (potential body fluid risk)
  - 4 – after chart – after continuum of patient care
- 7. Healthcare worker walks in, cleans up urine from the floor, then leaves**
- 3 – after clean up as body fluid exposure risk
- 8. Healthcare worker walks in, cleans up vomit from the floor, moves patient furniture, then leaves**
- 3 – after clean up as body fluid exposure risk
  - 5 – after touching patient surroundings
- 9. Healthcare worker walks into patient room, touches patient, then picks up IDC to read it, then touches patient again then leaves the room**
- 1 – pre patient
  - 3 – after touching IDC (body fluid exposure risk)
  - 1 – pre patient
  - 4 – after patient
- 10. Healthcare worker walks into the room, picks up IDC and empties it, puts it down, writes on the medical chart at the foot of the bed, then leaves**
- 2 – pre IDC
  - 3 – after IDC (potential body fluid risk)
  - 4 – after chart – after continuum of patient care
- 11. Healthcare worker picks up medication chart, gets medications out of patient draw, prepares medication, gives medication via NGT, signs chart then leaves**
- 2 – immediately prior to preparing medications
  - 3 – after giving medications
  - 4 – after chart – after continuum of patient care
- 12. Healthcare worker walks into patient room, touches patient, then moves curtain, then touches patient**
- 1 – pre patient
  - 4 – after patient pre curtain
  - 1 – after curtain pre patient
  - No Moment 4 is recorded as Healthcare worker has not left the room
- 13. Healthcare worker walks into patient room, touches patient, then moves curtain, then moves the over bed table, then leaves.**
- 1 – pre patient
  - 4 – after patient pre curtain (by touching the curtain the Healthcare worker has left the patient zone)
  - 5 – after patient surroundings (new moment as re-entered room)

4

**14. Healthcare worker walks into patient room moves curtain back then walks out again**

- Nil as curtain is external to the patient zone.

**15. Healthcare worker picks up medication chart, puts it down and walks out**

- 5 – after chart – contact with patient environment

**16. Healthcare worker picks up medication chart and walks out with it**

- Nil as the moment has not finished

**17. Healthcare worker walks in, touches patient, does hand hygiene, touches the chart, then leaves**

- 1 – prior to touching patient
- 4 – on leaving (after chart – after continuum of patient care)

The hand hygiene that was done in the scenario was not required.

**Table 11: Rules for auditing the 5 Moments**

<b>Moment 1</b>	Moment 1 should be performed prior to touching the patient  Only record moment 1 once the Healthcare worker touches the patient
<b>Moment 2</b>	Moment 2 must be performed immediately prior to any procedure
<b>Moment 3</b>	Moment 3 must be performed <u>immediately</u> after a procedure or body fluid exposure risk  Touching the outside of a drain or drainage bag (eg, urinary catheter, wound drain, chest tube drain, CSF drain), even when the circuit is not broken, is considered a moment 3 since there is a risk of body fluid exposure (see example 5)  Moment 3 will usually be paired with a moment 2 except that moment 3 may be recorded as a stand alone moment when there is a body fluid exposure risk, but the healthcare worker has not touched the patient (eg, cleaning a spill of vomit, urine or faeces)
<b>Moment 4</b>	Moment 4 should be performed after touching the patient moment 4 will usually be paired with a moment 1  Touching the patient surroundings after touching the patient is recorded as a single moment 4. (see example 4)  If after a moment 3 there is touching of patient surroundings this is recorded as a moment 4 (see

	examples 6 and 10).
<b>Moment 5</b>	<p>Moment 5 is performed when there has been no touching of the patient but there has been touching of the patient's immediate surroundings. (see example 15)</p> <p>When multiple items in the patient surroundings are touched, only one moment 5 is recorded</p>

## Notes

Note 1	<p>Generally for every 'before' moment there should be an 'after' moment recorded, unless the auditor does not witness the action.</p> <ul style="list-style-type: none"> <li>• moment 1 is generally paired with moment 4</li> <li>• moment 2 is generally paired with moment 3</li> <li>• moment 5 is not paired with other moments</li> <li>• There are very few situations when two 'afters' may be recorded sequentially (see examples 6, 8, 10, 11 and 13)</li> </ul>
Note 2	For every procedure there should be a moment 2 and moment 3 recorded
Note 3	The term 'patient' refers to any part of the patient, their clothes or any medical device connected to them (i.e. infusion pump, ventilator, dialysis machine, intravenous line, or indwelling urinary catheter).
Note 4	Patient bed curtains are outside the patient zone and are frequently contaminated. Touching the curtains is leaving the patient zone. Hand hygiene should be performed between touching the curtains and touching the patient. (see example 13 and 14)

## Documentation

Data sheets must be stored in a safe and secure place. Following each observation session, the forms should be secured together and numbered (e.g. 'page 1 of 2').

A cumulative tally of the number of hand hygiene moments observed should be recorded on the audit schedule to ensure that the target number of observations has been achieved. This can be analysed by the hand hygiene Programme Coordinator at the end of each day. Before commencing data entry, each data collection form should be accounted for by cross-checking with the audit schedule.

## Managing the data

It is recommended that, to ensure accuracy and ease of data entry, two hand hygiene staff are available for data entry into the database, so that one hand hygiene auditor reads out the records for the other to input the data. Each observation entered should be double-checked.

## Data analysis

To calculate the rate of hand hygiene compliance for each area, the following data are required:

Y = total number of moments observed

X = Total number of appropriately performed hand hygiene moments

The rate of hand hygiene compliance is  $X/Y$ .

The percent compliance is  $X/Y$  multiplied by 100.

If analysis of specific moments is required, then a similar calculation is performed, with Y the number of specified moments and X the number of appropriately performed hand hygiene actions for that specific moment.

## Output 2: Reduced rates/maintenance of zero infection of *Staphylococcus aureus* disease

Since *Staphylococcus aureus* is the most common healthcare acquired pathogen in most New Zealand hospitals, its rate of isolation and the number of patients with hospital-associated *Staphylococcus aureus* bacteraemia per 100 discharges is to be measured and reported monthly at each hospital. The rate of *Staphylococcus aureus* will be assessed using similar methodology to previously published hand hygiene studies<sup>[14, 17]</sup>.

### Retrospective assessment of *Staphylococcus aureus* rates

To provide relevant comparative data regarding *Staphylococcus aureus* rates prior to commencement of the hand hygiene culture change programme, all DHB's are requested to provide monthly *Staphylococcus aureus* rates for 12 months prior to programme commencement.

### Collecting data

Two measures of *Staphylococcus aureus* disease are to be recorded each month:

1. The number of patients with *Staphylococcus aureus* clinical isolates per 100 discharges
2. The number of patients with healthcare-associated *Staphylococcus aureus* bacteraemia per 100 discharges

To meet this output the rates of *Staphylococcus aureus* disease must be

accurately and routinely recorded. This is achieved by obtaining monthly data for the organisation on:

- A. Total number of *Staphylococcus aureus* isolates cultured from clinical specimens each month, excluding all results from screening swabs.

These data can be obtained from the relevant microbiology laboratory attached to each DHB.

- B. Total number of patients with healthcare-associated *Staphylococcus aureus* bacteraemia each month.

The Ministry of Health currently collects benchmarking data which includes the total number of patients with healthcare-associated *Staphylococcus aureus* bacteraemia. These data should be available from the Infection Control Team or the equivalent in each DHB.

- C. Total number of patients discharged from the organisation each month.

These data can be obtained from the Medical Records Unit or the equivalent in each DHB.

The rate of *Staphylococcus aureus* clinical isolates is the total number of *Staphylococcus aureus* isolates cultured from clinical specimens (A) divided by the number of monthly discharges (C). The percentage rate (ie  $A/C$  multiplied by 100) is the percentage of clinical isolates for that month.

The rate of healthcare-associated *Staphylococcus aureus* bacteraemia is the total number of patients with *Staphylococcus aureus* isolates cultured from blood (B) divided by the number of patients discharged that month (C). The percentage rate (ie  $B/C$  multiplied by 100) is the percentage of patients with *Staphylococcus aureus* bacteraemia that month.

### **Submission of monthly output data**

The percentage rates should be submitted each month to HHNZ as per instructions on the HHNZ website ([www.handhygiene.org.nz](http://www.handhygiene.org.nz)) together with the organisation's hand hygiene compliance assessment data (in the required format).

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## Glossary

The following terms used in this manual have their meaning outlined below:

Admissions and Discharges	<p>“<i>Admissions</i>” are defined as all formal hospital admissions, including admissions to Emergency Department (over 3 hours from time of registration) and outpatient day dialysis.</p> <p>“<i>Discharges</i>” are defined as all hospital discharges (including those from Emergency Department (over 3 hours from time of registration) and outpatient day dialysis, plus the number of inpatient deaths for any given time period.</p>
Alcohol-based hand product	An alcohol-containing preparation designed for application to the hands in order to reduce with maximum efficacy and speed the number of viable organisms.
Aseptic	Free from microbial contamination (i.e. ‘sterile’)
Aseptic/sterile task	A task performed in a way that avoids microbial contamination or inoculation (i.e. a sterile task)
Bacteraemia	The presence of bacteria in the blood
Body fluids	<p>Any body fluid/ substance, with the exception of sweat, including:</p> <ul style="list-style-type: none"> <li>• ascites fluid</li> <li>• biliary fluid</li> <li>• blood</li> <li>• breast milk</li> <li>• cerebrospinal fluid</li> <li>• faeces</li> <li>• gastric and respiratory secretions</li> <li>• organic body samples – e.g. biopsy samples, organs and cell samples</li> <li>• pleural fluid</li> <li>• saliva</li> <li>• secretions from mucous membranes</li> <li>• sperm</li> <li>• tears</li> <li>• urine</li> <li>• vomitus</li> <li>• wax</li> </ul>
Body fluid exposure risk	Any situation where contact with body fluids may occur. Such contact may pose a contamination risk to either the healthcare worker or the environment.
Contact	The touching of any patient, their immediate surroundings or performing any procedure.
Gold auditor	A hand hygiene auditor who’s data collection and entry has been validated by a Platinum auditor.
Hand hygiene	A process that reduces the number of organisms on

	hands. Hand hygiene is a general term applying to the use of soap/solution (non-antimicrobial or antimicrobial) and water or a waterless antimicrobial agent to the surface of the hands (e.g. alcohol hand product).
Hand hygiene compliance	<p>Where hand hygiene is considered necessary and is classified according to one of the “5 moments”. If the action is performed when there is no indication and it has no impact in terms of preventing microbial transmission, then it is not considered to be an act of hand hygiene compliance.</p> <p>The denominator is the number of <i>moments</i> is for assessing hand hygiene compliance.</p> <p>The rate of hand hygiene compliance is the actual number of hand hygiene actions undertaken divided by the number of <i>moments</i> observed.</p>
Hand hygiene inter-auditor reliability	A measure of the agreement or consistency of ratings between two or more hand hygiene auditors, after observing the hand hygiene compliance of a series of healthcare workers.
Hand hygiene intra-auditor reliability	A measure of agreement or consistency of two or more ratings by a single observer on a series of subjects.
Hand hygiene <i>moments</i>	<p>A perceived or actual risk of pathogen transmission from one surface to another via the hands. Healthcare workers’ hands will come in contact with many different types of surfaces while undertaking a succession of tasks. The order of these contacts will determine the <i>moments</i> for hand hygiene.</p> <p>Moment 1: Before patient contact</p> <p>Moment 2: Before a procedure</p> <p>Moment 3: After a procedure or body fluid exposure risk</p> <p>Moment 4: After patient contact</p> <p>Moment 5: After contact with patient surroundings</p>
Hand hygiene product	Any product used for the purpose of hand hygiene, including soap and water.
Hand washing	The application of non-antimicrobial soap and water to the surface of the hands.
Health care acquired infection	Infections that originate from, or are related to, a healthcare setting or the delivery of healthcare.
Health care worker	Any employee of a healthcare institution who has patient care responsibilities and contact.
Invasive medical device	Any piece of equipment that enters a patient’s skin or body cavity. This encompasses the entire device (eg, IV line, IV pump, IV pole).

Medical 'Grand Rounds'	Regular meetings to promote excellence and quality in clinical care and to introduce clinicians to recent developments in medical care.
Nursing 'Grand Rounds'	Regular meetings to promote excellence and quality in nursing care and to introduce nurses to recent developments in nursing care.
Outcome measure	A feature used to describe the effects of care on the health status of patients and populations (eg, infection rate).
Pathogen	An infectious agent that causes disease or illness in its host.
Patient	Includes any part of the body of the patient and their clothes.
Patient contact	Contact by the hands of any healthcare worker, includes nurses, doctors, allied healthcare workers, cleaners, orderlies etc, with any part of the patient (as defined above).
Platinum auditor	A hand hygiene auditor whose data collection and entry has been validated by a method or process endorsed by Hand Hygiene New Zealand.
Procedure	An act of care for a patient where there is a risk of direct introduction of a pathogen into the patient's body
Risk of exposure	Refers to either an actual or perceived risk of exposure to any body fluid.
Reliability	Repeatability or consistency of data collected using a measurement tool.
Structured observation	<p>A method to quantify or measure healthcare worker behaviour using a format that is structured in a manner that is likely to avoid bias and improve consistency.</p> <p>Observations are considered structured when an observation list (e.g. patient room allocation schedule) is used with a fixed number of points to observe (e.g. type of healthcare worker, hand hygiene and activity performance recorded) and when this list is applied in a predetermined number of situations (e.g. target number of hand hygiene <i>moments</i> to observe).</p> <p>Structured observations provide information on what people actually do, rather than on what they say they do or did. They also provide information on the associated activities and behaviours that precede and follow hand hygiene compliance<sup>[9]</sup></p>
Patient Zone	The space temporarily dedicated to an individual patient for that patient's stay.

	It consists of all those elements that make up the immediate patient surroundings. This includes furniture, medical equipment and personal belongings that are touched by the patient and healthcare workers whilst caring for that patient.
Healthcare Zone	Includes all areas outside of the Patient Zone.
Validity	Refers to the accuracy of a measure. It is the extent to which a measuring instrument actually measures what it is supposed to measure.

# Appendix 1: Blank compliance data collection form

<b>District Health Board:</b>			
<b>Hospital:</b>			
<b>Ward:</b>			
<b>Date:</b>	/ /		
<b>Observer:</b>		<b>Session No:</b>	
<b>Start Time:</b>		<b>Finish Time:</b>	
<b>Duration of Session:</b>		mins	
<b>Database Record No.</b>			

Health care worker	Moment	Action	Gloves	Health care worker	Moment	Action	Gloves	Health care worker	Moment	Action	Gloves
	<input type="radio"/> 1 <input type="radio"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> Rub <input type="checkbox"/> Wash <input type="checkbox"/> Missed	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> Cont.		<input type="radio"/> 1 <input type="radio"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> Rub <input type="checkbox"/> Wash <input type="checkbox"/> Missed	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> Cont.		<input type="radio"/> 1 <input type="radio"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> Rub <input type="checkbox"/> Wash <input type="checkbox"/> Missed	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> Cont.
	<input type="radio"/> 1 <input type="radio"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> Rub <input type="checkbox"/> Wash <input type="checkbox"/> Missed	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> Cont.		<input type="radio"/> 1 <input type="radio"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> Rub <input type="checkbox"/> Wash <input type="checkbox"/> Missed	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> Cont.		<input type="radio"/> 1 <input type="radio"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> Rub <input type="checkbox"/> Wash <input type="checkbox"/> Missed	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> Cont.
	<input type="radio"/> 1 <input type="radio"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> Rub <input type="checkbox"/> Wash <input type="checkbox"/> Missed	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> Cont.		<input type="radio"/> 1 <input type="radio"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> Rub <input type="checkbox"/> Wash <input type="checkbox"/> Missed	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> Cont.		<input type="radio"/> 1 <input type="radio"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> Rub <input type="checkbox"/> Wash <input type="checkbox"/> Missed	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> Cont.
	<input type="radio"/> 1 <input type="radio"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> Rub <input type="checkbox"/> Wash <input type="checkbox"/> Missed	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> Cont.		<input type="radio"/> 1 <input type="radio"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> Rub <input type="checkbox"/> Wash <input type="checkbox"/> Missed	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> Cont.		<input type="radio"/> 1 <input type="radio"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> Rub <input type="checkbox"/> Wash <input type="checkbox"/> Missed	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> Cont.
	<input type="radio"/> 1 <input type="radio"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> Rub <input type="checkbox"/> Wash <input type="checkbox"/> Missed	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> Cont.		<input type="radio"/> 1 <input type="radio"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> Rub <input type="checkbox"/> Wash <input type="checkbox"/> Missed	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> Cont.		<input type="radio"/> 1 <input type="radio"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> Rub <input type="checkbox"/> Wash <input type="checkbox"/> Missed	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> Cont.
	<input type="radio"/> 1 <input type="radio"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> Rub <input type="checkbox"/> Wash <input type="checkbox"/> Missed	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> Cont.		<input type="radio"/> 1 <input type="radio"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> Rub <input type="checkbox"/> Wash <input type="checkbox"/> Missed	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> Cont.		<input type="radio"/> 1 <input type="radio"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> Rub <input type="checkbox"/> Wash <input type="checkbox"/> Missed	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> Cont.
	<input type="radio"/> 1 <input type="radio"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> Rub <input type="checkbox"/> Wash <input type="checkbox"/> Missed	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> Cont.		<input type="radio"/> 1 <input type="radio"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> Rub <input type="checkbox"/> Wash <input type="checkbox"/> Missed	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> Cont.		<input type="radio"/> 1 <input type="radio"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	<input type="checkbox"/> Rub <input type="checkbox"/> Wash <input type="checkbox"/> Missed	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> Cont.

## Appendix 2: Example of completed data collection form

<b>District Health Board:</b>	<i>South Pacific District Health Board</i>		
<b>Hospital:</b>	<i>Mid-city Peoples' Hospital</i>		
<b>Ward:</b>	14		
<b>Date:</b>	30 / 02 / 2010		
<b>Observer:</b>	<i>Andy OB Server</i>	<b>Session No:</b>	
<b>Start Time:</b>	<i>1000 hours</i>	<b>Finish Time:</b>	<i>1020 hours</i>
<b>Duration of Session:</b>		20	mins
<b>Database Record No.</b>	1-02-2010		

HOW	Moment	Action	Gloves	HOW	Moment	Action	Gloves	HOW	Moment	Action	Gloves
SRN	<input type="radio"/> 1				<input type="radio"/> 1				<input type="radio"/> 1		
	<input type="radio"/> 2	<input type="checkbox"/> Rub	<input type="checkbox"/> On		<input type="radio"/> 2	<input checked="" type="checkbox"/> Rub	<input type="checkbox"/> On		<input type="radio"/> 2	<input checked="" type="checkbox"/> Rub	<input type="checkbox"/> On
	<input type="checkbox"/> 3	<input type="checkbox"/> Wash	<input type="checkbox"/> Off		<input type="checkbox"/> 3	<input type="checkbox"/> Wash	<input type="checkbox"/> Off		<input type="checkbox"/> 3	<input type="checkbox"/> Wash	<input type="checkbox"/> Off
	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> Missed	<input type="checkbox"/> Cont.		<input type="checkbox"/> 4	<input type="checkbox"/> Missed	<input type="checkbox"/> Cont.		<input type="checkbox"/> 4	<input checked="" type="checkbox"/> Missed	<input type="checkbox"/> Cont.
	<input checked="" type="checkbox"/> 5				<input checked="" type="checkbox"/> 5				<input type="checkbox"/> 5		
RN	<input type="radio"/> 1			AH	<input type="radio"/> 1				<input type="radio"/> 1		
	<input type="radio"/> 2	<input checked="" type="checkbox"/> Rub	<input type="checkbox"/> On		<input type="radio"/> 2	<input type="checkbox"/> Rub	<input type="checkbox"/> On		<input type="radio"/> 2	<input type="checkbox"/> Rub	<input type="checkbox"/> On
	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> Wash	<input checked="" type="checkbox"/> Off		<input type="checkbox"/> 3	<input type="checkbox"/> Wash	<input type="checkbox"/> Off		<input type="checkbox"/> 3	<input type="checkbox"/> Wash	<input type="checkbox"/> Off
	<input type="checkbox"/> 4	<input type="checkbox"/> Missed	<input type="checkbox"/> Cont.		<input type="checkbox"/> 4	<input type="checkbox"/> Missed	<input type="checkbox"/> Cont.		<input type="checkbox"/> 4	<input checked="" type="checkbox"/> Missed	<input type="checkbox"/> Cont.
	<input type="checkbox"/> 5				<input type="checkbox"/> 5				<input type="checkbox"/> 5		
RN	<input type="radio"/> 1			RN	<input type="radio"/> 1				<input type="radio"/> 1		
	<input type="radio"/> 2	<input checked="" type="checkbox"/> Rub	<input type="checkbox"/> On		<input type="radio"/> 2	<input checked="" type="checkbox"/> Rub	<input type="checkbox"/> On		<input type="radio"/> 2	<input type="checkbox"/> Rub	<input type="checkbox"/> On
	<input type="checkbox"/> 3	<input type="checkbox"/> Wash	<input type="checkbox"/> Off		<input type="checkbox"/> 3	<input type="checkbox"/> Wash	<input checked="" type="checkbox"/> Off		<input type="checkbox"/> 3	<input type="checkbox"/> Wash	<input type="checkbox"/> Off
	<input type="checkbox"/> 4	<input type="checkbox"/> Missed	<input type="checkbox"/> Cont.		<input type="checkbox"/> 4	<input type="checkbox"/> Missed	<input type="checkbox"/> Cont.		<input type="checkbox"/> 4	<input checked="" type="checkbox"/> Missed	<input type="checkbox"/> Cont.
	<input checked="" type="checkbox"/> 5				<input type="checkbox"/> 5				<input checked="" type="checkbox"/> 5		
RN	<input type="radio"/> 1			SAH	<input type="radio"/> 1			DR	<input type="radio"/> 1		
	<input type="radio"/> 2	<input checked="" type="checkbox"/> Rub	<input type="checkbox"/> On		<input type="radio"/> 2	<input type="checkbox"/> Rub	<input type="checkbox"/> On		<input type="radio"/> 2	<input checked="" type="checkbox"/> Rub	<input type="checkbox"/> On
	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> Wash	<input type="checkbox"/> Off		<input type="checkbox"/> 3	<input type="checkbox"/> Wash	<input type="checkbox"/> Off		<input type="checkbox"/> 3	<input type="checkbox"/> Wash	<input type="checkbox"/> Off
	<input type="checkbox"/> 4	<input type="checkbox"/> Missed	<input type="checkbox"/> Cont.		<input checked="" type="checkbox"/> 4	<input checked="" type="checkbox"/> Missed	<input type="checkbox"/> Cont.		<input type="checkbox"/> 4	<input checked="" type="checkbox"/> Missed	<input type="checkbox"/> Cont.
	<input type="checkbox"/> 5				<input type="checkbox"/> 5				<input type="checkbox"/> 5		
Rn	<input type="radio"/> 1				<input type="radio"/> 1				<input type="radio"/> 1		
	<input checked="" type="checkbox"/> 2	<input checked="" type="checkbox"/> Rub	<input type="checkbox"/> On		<input type="radio"/> 2	<input type="checkbox"/> Rub	<input type="checkbox"/> On		<input type="radio"/> 2	<input type="checkbox"/> Rub	<input type="checkbox"/> On
	<input type="checkbox"/> 3	<input type="checkbox"/> Wash	<input checked="" type="checkbox"/> Off		<input type="checkbox"/> 3	<input type="checkbox"/> Wash	<input type="checkbox"/> Off		<input type="checkbox"/> 3	<input type="checkbox"/> Wash	<input type="checkbox"/> Off
	<input type="checkbox"/> 4	<input type="checkbox"/> Missed	<input type="checkbox"/> Cont.		<input type="checkbox"/> 4	<input checked="" type="checkbox"/> Missed	<input type="checkbox"/> Cont.		<input type="checkbox"/> 4	<input type="checkbox"/> Missed	<input type="checkbox"/> Cont.
	<input type="checkbox"/> 5				<input checked="" type="checkbox"/> 5				<input type="checkbox"/> 5		
SAH	<input type="radio"/> 1			RN	<input type="radio"/> 1				<input type="radio"/> 1		
	<input type="radio"/> 2	<input type="checkbox"/> Rub	<input type="checkbox"/> On		<input type="radio"/> 2	<input type="checkbox"/> Rub	<input type="checkbox"/> On		<input type="radio"/> 2	<input type="checkbox"/> Rub	<input type="checkbox"/> On
	<input type="checkbox"/> 3	<input type="checkbox"/> Wash	<input type="checkbox"/> Off		<input checked="" type="checkbox"/> 3	<input type="checkbox"/> Wash	<input checked="" type="checkbox"/> Off		<input type="checkbox"/> 3	<input checked="" type="checkbox"/> Wash	<input type="checkbox"/> Off
	<input type="checkbox"/> 4	<input type="checkbox"/> Missed	<input type="checkbox"/> Cont.		<input type="checkbox"/> 4	<input checked="" type="checkbox"/> Missed	<input type="checkbox"/> Cont.		<input type="checkbox"/> 4	<input type="checkbox"/> Missed	<input type="checkbox"/> Cont.
	<input type="checkbox"/> 5				<input type="checkbox"/> 5				<input checked="" type="checkbox"/> 5		
RN	<input type="radio"/> 1				<input checked="" type="checkbox"/> 1			RN	<input type="radio"/> 1		
	<input type="radio"/> 2	<input checked="" type="checkbox"/> Rub	<input type="checkbox"/> On		<input type="radio"/> 2	<input type="checkbox"/> Rub	<input type="checkbox"/> On		<input type="radio"/> 2	<input type="checkbox"/> Rub	<input type="checkbox"/> On
	<input type="checkbox"/> 3	<input type="checkbox"/> Wash	<input type="checkbox"/> Off		<input type="checkbox"/> 3	<input type="checkbox"/> Wash	<input type="checkbox"/> Off		<input checked="" type="checkbox"/> 3	<input checked="" type="checkbox"/> Wash	<input checked="" type="checkbox"/> Off
	<input type="checkbox"/> 4	<input type="checkbox"/> Missed	<input type="checkbox"/> Cont.		<input type="checkbox"/> 4	<input checked="" type="checkbox"/> Missed	<input type="checkbox"/> Cont.		<input type="checkbox"/> 4	<input type="checkbox"/> Missed	<input type="checkbox"/> Cont.
	<input checked="" type="checkbox"/> 5				<input type="checkbox"/> 5				<input type="checkbox"/> 5		

### Appendix 3: Example of an allocation schedule

An allocation schedule, such as the example provided here, is probably more useful to larger hospitals that have to undertaken numerous sessions to obtain their quota of observations.

#### Hand hygiene audit allocation schedule

Ward: *Acute*

Session No.	Date	Observer Initials	Duration of Session (mins)	Correct Moments Observed (n)	Total Moments Observed (n)	Running Total
1	2/3	MS	40 mins	20	35	20/35
2	2/3	MS	10 mins	5	8	25/43
3	4/3	JT	20 mins	15	20	40/63
4	4/3	PJ	60 mins	35	50	75/113
5	5/3	JT	60 mins	28	65	103/178

## **Appendix 4: Example of a policy on placement of alcohol-based hand products in public areas**

### **Introduction**

We aim to protect our patients, visitors and staff from colds, flu, gastroenteritis and from the transmission of microorganisms that cause other infections. We know that even if hands look clean they can harbour potentially dangerous microorganisms.

The use of an alcohol-based hand product by visitors when they enter and leave the hospital can help reduce the risk of disease transmission. Alcohol-based hand products are a quick and effective hand hygiene method. Products should be freely available for use by all.

Many hospitals have already been using alcohol-based hand product in patient care areas to help reduce healthcare-acquired infections. We now strongly recommend that all visitors to the hospital use it.

### **Infection control is everybody's business**

There are many issues to be considered before a facility places the alcohol-based hand product in public areas. This includes adherence to the material safety data sheet, fire regulations, hospital engineering, and occupational health and safety requirements.

The following guidelines are an example of what might be appropriate for a New Zealand hospital.<sup>8</sup>

- a. The maximum size of an individual alcohol-based hand product dispenser should not exceed 500mls.
- b. No more than 80 individual alcohol-based hand product dispensers (each with a maximum capacity of 500ml) should be installed within a single smoke compartment.
- c. Corridors should be at least 1.8m wide with at least 1.5m between each alcohol-based hand product dispenser.
- d. Dispensers should not project more than 150mm into corridor egress.
- e. Wall mounted brackets should be located at a height of between 920mm and 1.22m above the floor (avoid placing at eye level).
- f. Dispensers should not be located over carpeted areas, unless the area is protected by active sprinklers.
- g. Dispensers should not be located over, or directly adjacent to ignition sources (eg, electrical receptacles, switches, power points, call buttons, monitoring equipment or devices).

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<sup>8</sup> It will be necessary to check with the relevant local experts and authorities to confirm whether the example provided here is in fact appropriate for your particular hospital.

- h. Alcohol-based hand product dispensers should be separated from heat sources and electric motors.
- i. Dispensers should be installed according to manufacturers' recommendations and to minimise leaks or spills.
- j. Regular maintenance of dispensers and brackets should occur in accordance with manufacturers' guidelines.
- k. Product usage signs should be clearly visible and laminated.
- l. Dispensers should be easy to clean and be part of a routine cleaning schedule.
- m. Regular monitoring of each area is recommended for misuse of product or removal of product.
- n. Each facility should take adequate care regarding the placement of each dispenser so as to protect vulnerable populations, for example in psychiatric units, drug and alcohol units, paediatric units and units caring for demented patients.
- o. Alcohol-based hand product bottles should not be decanted.
- p. Alcohol-based hand product bottles should be designed so as to minimise evaporation due to the volatile nature of alcohols.
- q. Site-specific instructions should be developed to manage adverse events, such as alcohol-based hand product ingestion, eye splashes or allergic reactions.
- r. Unique to each site will be how the products are supplied, the type of brackets, the cost centre/s involved and storage of the products.
- s. The overall risk of fires associated with alcohol-based hand product is extremely low – a recent United States study of 766 healthcare facilities demonstrated that after a combined experience of 1430 years of alcohol-based hand product use, there had not been a single fire attributed to alcohol-based hand product.

***References used in developing the example policy (based on a Victorian, Australia, policy):***

1. Thomas W. Jaeger, P.E.; Christopher M Leaver, P.E; Rick Glenn, P.E
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4. <http://www.healthunit.com/article.aspx?ID=12684>
5. <http://www.cdc.gov/handhygiene/firesafety/ahameeting.htm>
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7. Department of Health & Human Services, Maryland. Centre for Medicaid and State Operations/Survey and Certification Group, 2005
8. Hand Hygiene Policy Queensland Health-Clean Hands are Life Savers. October 2007
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11. Infection Control & Hospital Epidemiology 2003;24:618
12. Kramer. A, MD. Kampf G.MD. Hand rub-Associated Fire Incidents During 25,038 Hospital-Years in Germany. Infection control and Hospital Epidemiology June 2007,vol. 28, No 6

## Appendix 5: Frequently asked questions

**Q: How do I use an alcohol hand product?**

A: Read the instructions on the posters. Push the pump to get the metered amount, rub over all surfaces of your hands until evaporated. No need to wash your hands after use, this is a waterless system.

**Q. When should I not use an alcohol hand product?**

A. If your hands are visibly soiled we strongly recommend you wash them in the nearest hand basin. The same is advised following known or suspected exposure to *Clostridium difficile*. Washing the hands with soap and water is preferred because it is the best method of physically removing spores from the hands.

In an outbreak of viral gastroenteritis, each DHB should have specific policies for hand hygiene and these should be followed.

**Q: Will it matter if my hands are wet when I apply the alcohol hand product?**

A: Yes, having wet hands dilutes the solution thus decreasing its effectiveness. The product must be applied to dry hands.

**Q: What if I don't use an alcohol hand product?**

A: The use of an alcohol hand product reduces the risk of spreading infection. We are all seen as role models so it is important not only for you to use the alcohol hand product to help reduce the risk of infections, but for others to see you use it.

**Q: Can I use too much?**

A: No. The bottles used provide a metered amount with one pump, which should be sufficient to clean your hands.

**Q: What if my visit is only going to be quick?**

A: It does not matter how long you will be in the hospital. Each time you enter and leave an area, it is recommended you perform hand hygiene.

**Q: Will the alcohol hand product harm my family or me?**

A: No, not if used correctly. The alcohol content of this product will completely evaporate as it dries.

**Q: What happens if someone accidentally drinks the alcohol hand product?**

A: Most products on the market are made up of very unpleasant tasting products, which make drinking it unlikely. The risk of poisoning from ingestion of alcohol hand products is relatively uncommon, but there has been diarrhoea and vomiting reported where accidental ingestion has occurred. It is recommended that care be taken with the placement of alcohol hand product in high risk areas (such as paediatrics, psychiatric units, and psychogeriatric units).

**Q: What if it gets in my eyes?**

A: The bottles should be placed at a height where the risk of eye splashes is minimised, but in cases of accidental splashing, don't rub your eye but carefully irrigate your eye with sterile saline solution (0.9% sodium chloride – if readily available) or clean water; and seek help as soon as possible from another healthcare professional.

**Q: Will the alcohol hand product dry my hands out if I use it too often?**

A: No. The products used in the hospital have a moisturiser incorporated into them, but it is also recommended that a moisturiser be used at other times during the day.

**Q: Can I bring in my own moisturising cream from home?**

A: No. Some hand creams may reduce the effectiveness of the alcohol hand product. The other hand products used by your hospital will have been chosen specifically for their compatibility with the alcohol hand product.

**Q: Why do my hands sting when I apply an alcohol hand product?**

A: Stinging demonstrates pre-damaged epidermal tissue, most commonly caused by the frequent use of soap and water. The use of an alcohol hand product may lead to an improvement in the condition of your hands because it contains an emollient, does not remove skin lipids and does not require a paper towel for drying. However, if symptoms persist, medical opinion should be sought.

**Q: Can the alcohol be absorbed through my skin?**

A: Tests undertaken have shown that if used correctly intensive use of alcohol hand products have not been associated with legally or clinically relevant levels of cutaneous alcohol absorption.

**Q: Why do I have to decontaminate my hands after removing gloves? I thought the gloves stopped 'bugs' getting on my hands?**

A: The use of gloves does not replace the need for hand decontamination. Gloves will decrease the number of 'bugs' you acquire on your hands, but will not totally prevent them.

**Q: Can I wear artificial fingernails or extenders when having direct contact with patients?**

A: Healthcare workers with this type of nails are more likely than those with natural nails to harbour gram-negative pathogens on their fingertips. Centre for Disease Control (CDC) guidelines strongly advise against wearing artificial fingernails when having direct contact with patients.

**Q: Will alcohol hand product stain my clothes?**

A: Check with manufacturers guidelines for any specific recommendations but usually a quick spot rinse with water immediately will help.

**Q: Where is it best to position the alcohol hand product in a hospital?**

A: Ideally, alcohol hand product should be located in high traffic flow areas or common areas such as near reception, outside lift wells, entrance to wards/clinics.

**Q: Can we recycle or top up the bottles?**

A: No, as the outside of the alcohol hand product bottles often becomes contaminated, they should be discarded and not re-used.

## Appendix 6: Hospital-level situation analysis form

Hospital Name \_\_\_\_\_

<b>RESPONSE KEY</b>	
Fully implemented	<b>5</b>
Given priority and there is clear evidence of action	<b>4</b>
Given priority but no action taken	<b>3</b>
Under discussion but there is no decision to act	<b>2</b>
No discussion around this activity	<b>1</b>

<b>LEADERSHIP STRATEGY</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
Among senior DHB management someone is clearly in charge of patient safety					
Patient safety is clearly articulated in the organisation's strategy					
There is an infection control committee existing					
The infection control committee regularly meets (at least every 2 months)					
Improved hand hygiene adherence is a priority within the hospital					
<b>RESOURCES AND FINANCES</b>					
The DHB has implemented infection control guidelines					
The infection control guidelines are based on overseas guidelines including but not limited to CDC and WHO or national guidelines					
The DHB has implemented hand hygiene guidelines					
The hand hygiene guidelines are based on WHO guidelines					
There is a dedicated clinical team for infection control	<b>YES</b>		<b>NO</b>		
There is an appropriate number of infection control nurse specialists within the DHB	<b>YES</b>		<b>NO</b>		
A single provider, either hospital or community-based provides microbiology support for the DHB	<b>YES</b>		<b>NO</b>		
The microbiology laboratory is used for infection control activities (screening, outbreak investigation, antimicrobial resistance detection)					
A dedicated budget has been allocated to quality activities	<b>YES</b>		<b>NO</b>		
If yes, the budget is used for education and training on quality issues					
The budget for quality is used for educational material for staff such as posters and stickers					
The budget for quality is used for a campaign to involve patients in patient safety (eg, patient education material)					
A dedicated budget has been allocated to infection control activities	<b>YES</b>		<b>NO</b>		
If yes, the infection control budget includes salaries for infection control personnel					
The budget includes costs for education and training on infection control of staff					
The budget cover additional costs for infection control lead initiatives such as hand hygiene campaigns and consumables required for such initiatives are funded by the DHB					

## Appendix 7: Ward Structure Survey

Site ID: \_\_\_\_\_

1. Date: \_\_\_\_\_ 2. Hospital: \_\_\_\_\_

3. Ward: \_\_\_\_\_ 4. Service: \_\_\_\_\_

**5. Department (please select one department closest to yours):**

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> General medicine  | <input type="checkbox"/> General Surgery    | <input type="checkbox"/> Intensive care unit |
| <input type="checkbox"/> Medical specialty | <input type="checkbox"/> Emergency unit     | <input type="checkbox"/> Obstetrics          |
| <input type="checkbox"/> Paediatrics       | <input type="checkbox"/> Long-term/ rehab   | <input type="checkbox"/> Outpatient clinic   |
| <input type="checkbox"/> Other             | <input type="checkbox"/> Surgical specialty |  |

**6. Position of the person completing this questionnaire:**

- |   |  |   |
|---|--|---|
| <input type="checkbox"/> Charge nurse manager | <input type="checkbox"/> Clinical head     | <input type="checkbox"/> Project co-ordinator |
| <input type="checkbox"/> Service manager      | <input type="checkbox"/> Other team member |   |

**7. Number of health-care workers on this ward: (include students)**

Nurses: \_\_\_\_\_ Physicians: \_\_\_\_\_ Allied Health: \_\_\_\_\_  
Health-care assistance: \_\_\_\_\_

**8. Is an alcohol-based hand product available?**

- Always                       Intermittently                       Rarely                       Never

**9. If yes, what type of hand product dispensers are available? (Multiple choice)**

- Pocket bottle                       Bottle affixed to bed                       Bottle affixed to trolley  
 Wall dispenser

**10. If wall dispensers are available, are they placed within an arm's reach from point of care? (eg, around the patient's bed)?**

- Yes                       No

**11. Is there an assigned person responsible for the refilling or replacement of empty dispensers?**

- Yes                       No

**12. If available, does every health-care worker have easy access to hand product pocket bottles?**

- Always                       Intermittently                       Rarely                       Never

**13. Are posters illustrating hand wash technique displayed beside each sink?**

- Yes                       No

**14. Are posters illustrating hand rub technique displayed at the point of care?**

- Yes                       No

15. Are posters illustrating indications for hand hygiene displayed at the point of care?\*

Yes  No

16. Are hand hygiene promotional posters displayed on this ward?

Yes  No

17. Are written/ electronic guidelines with recommendations on hand hygiene accessible on this ward?

Yes  No

18. Are disposable gloves available on this ward?

Always  Intermittently  Rarely  Never

19. Are stocks of gloves stored on this ward?

Yes  No

20. Are audits on hand hygiene compliance periodically performed on this ward?

Yes  No

21. If yes, how frequently?

Once a year  Once every 2 years  less frequently

22. Have nurses on this ward received specific education on hand hygiene in the last two years?

Yes  No

23. Have medical staff on this ward received specific education on hand hygiene in the last two years?

Yes  No

Please now walk to each room or area where patient care/ treatment takes place in this ward (i.e. the point of care\*) and complete the table below.

	Room Number	Total No. of beds in this room / area	No. of beds with hand product within arm's reach	No. of sinks in this room/ area	Total No. of hand product dispensers in this room / area	No. of fully functioning and filled dispensers	No. of health-care workers encountered
A) PATIENT ROOMS ON THIS WARD							
	1						
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						

13							
14							
15							
B) TREATMENT ROOMS (AMBULATORY, DAY HOSPITAL, ETC).							
1							
2							
3							
4							
5							
C) CORRIDORS AND OTHER AREAS WITH POINTS OF CARE*							
1							
2							
3							
4							
5							
TOT							

TOT: total; No. = number

\* Point of care: the place where three elements occur together: the patient, the health-care work, care or treatment involving patient contact

## Appendix 8: Hand Hygiene Knowledge Test

- The knowledge required for this test is available on the (written out website) offered to you to read.
- Tick **only one answer** to each question
- Please read the questions carefully before answering. Your answers will be kept confidential.
- SHORT GLOSSARY:

**Alcohol-based product formulation [ABP]:** An alcohol-containing preparation (liquid, gel or foam) designed for application to the hands to kill pathogens.

**Hand rubbing:** Treatment of hands with an antiseptic hand product (alcohol-based formulation).

**Hand washing:** Washing hands with plain or antimicrobial soap and water.

1. **Personal ID:** \_\_\_\_\_
2. **Date:** \_\_\_\_\_
3. **Hospital:** \_\_\_\_\_
4. **Ward:** \_\_\_\_\_
5. **Service:** \_\_\_\_\_
6. **City:** \_\_\_\_\_
7. **Gender:**  Female  Male
8. **Age:** \_\_\_\_\_ years
9. **Profession\*:**
  - Nurse  Healthcare Assistants  Midwife
  - Medical Doctor  Laboratory  Allied Health
  - Radiology  Clerical  Other

*\* Students must be included among nurse/ midwife or medical doctor, according to the different professions.*

*Allied Health: physiotherapist, occupational therapist, speech therapist.  
Others: dieticians, dentist, social worker.*

10. **Department (Please select one department which is closest to yours):**
  - General  General Surgery  Intensive care unit
  - Medical Specialty  Emergency Unit  Obstetrics
  - Paediatrics  Long-term/rehabilitation  Outpatient clinic
  - Other  Surgical Specialty
11. **Did you receive a formal training in hand hygiene?**
  - Yes  No

12. Is an alcohol-based hand product readily available at your hospital?

- Yes  No

13. Which of the following is the main route of cross-transmission of potentially harmful bacteria between patients in a health-care setting?

(tick one answer only)

- a.  Healthcare worker's hands when not clean  
b.  Air circulating in the hospital  
c.  Patient's exposure to colonised surfaces (i.e. beds, chairs, tables, floors)  
d.  Sharing non-invasive objects (i.e. stethoscopes, pressure cuffs, etc.) between patients

14. What is the most frequent source of bacteria responsible for health care associated infections? (tick one answer only)

- a.  Bacteria in the hospital's water system  
b.  Bacteria in the hospital air  
c.  Bacteria already present on or within the patient.  
d.  Bacteria in the hospital environment

15. What is the minimal time needed for alcohol-based handrub to kill most germs on your hands? (tick one answer only)

- a.  20 seconds  
b.  3 seconds  
c.  1 minute  
d.  10 seconds

16. Which of the following statements on the technique of hand hygiene with an alcohol-based hand product are "True"?

- |   | True                     | False                    |
|---|--------------------------|--------------------------|
| a. The hand product has to cover the entire surface of both hands | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Hands have to be dry before care                               | <input type="checkbox"/> | <input type="checkbox"/> |
| c. You can dry your hands with a towel after hand rubbing         | <input type="checkbox"/> | <input type="checkbox"/> |

17. Which of the following should be avoided as associated with a likelihood of hand colonisation?

- |                                | True                     | False                    |
|--------------------------------|--------------------------|--------------------------|
| a. Wearing jewellery           | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Damaged skin                | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Artificial fingernails      | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Regular use of a hand cream | <input type="checkbox"/> | <input type="checkbox"/> |

18. Which type of hand hygiene method is required in the following situations?

- a. Before writing in the patient record  ABP  Washing  None  
b. Before touching a patient  ABP  Washing  None  
c. When arriving on the ward after lunch  ABP  Washing  None  
d. Before giving an injection  ABP  Washing  None  
e. Before emptying a urinal  ABP  Washing  None  
f. Before opening a door to a patient room  ABP  Washing  None

(\*ABP = Alcohol Based Product)

## Appendix 9: Evaluation of tolerability and acceptability of alcohol-based hand product in use

- Approximately 40 volunteer participants using at least 30 ml of product per day.
- Evaluation includes the following 2 components: 1) objective evaluation: the observer uses validated scales<sup>1</sup> to evaluate healthcare worker's skin state; 2) subjective evaluation: healthcare workers answer to a questionnaire designed to assess all risk factors for skin damage (and not only those related to product use) together with product acceptability and dermal tolerance<sup>2</sup>. This protocol may be applied at different stages, at least before using the test product, after 3-5 consecutive working days and after 1 month.
  - 1) Frosch PJ, Kligman AM. The soap chamber test. *Journal of the American Academy of Dermatology* 1979; 1:35-41
  - 2) Larson E. and col. Prevalence and correlates of skin damage on the hands of nurses. *Heart & Lung* 1997; 26:404-412

### Information and instructions

- The study concerns 1 hand hygiene product.
- The healthcare workers must meet the observer on the first day and collect the bottles containing the test product; after the first 2-5 consecutive days of use and after one month of use they must meet again.
- For the test period (1 month), only the test product must be used for hand antisepsis.
- An evaluation of skin integrity by the observer is required before, after the first 3-5 consecutive days of product use and after one month of product use.
- The participant must complete a questionnaire after the first 3-5 consecutive days of product use and after one month of product use.
- The amount of test product distributed for the first 3-5 days is recorded and compared with the first 3-5 days amount left over.
- Opened bottles, either empty or partially full, must be returned for weighing to the observer at the end of the first 3-5 consecutive days of product use.
- The participant is requested not to use hand lotion or cream during the first 3-5 consecutive days of product use.
- The participant must inform the observer if he/ she stops the test prematurely.

## QUESTIONNAIRE - PART 1

(to complete once per participant, after one month)

Participant No. \_\_\_\_\_

Date of questionnaire's return .... / .... / ....

### **Evaluation of Factors Influencing Skin Tolerance**

Age: \_\_\_\_\_

Sex:  Female  Male

#### **Professional Group:**

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Nurse                | <input type="checkbox"/> Midwife        | <input type="checkbox"/> Student         |
| <input type="checkbox"/> Healthcare Assistant | <input type="checkbox"/> Medical Doctor | <input type="checkbox"/> Medical Student |
| <input type="checkbox"/> Allied Health        | <input type="checkbox"/> Laboratory     | <input type="checkbox"/> Other           |

#### **Skin:**

- |  |   |                                      |
|--|---|--------------------------------------|
| <input type="checkbox"/> Very fair with freckles | <input type="checkbox"/> Fair with $\pm$ freckles | <input type="checkbox"/> Light brown |
| <input type="checkbox"/> Brown                   | <input type="checkbox"/> Dark brown               | <input type="checkbox"/> Black       |

#### **Present Season:**

- |                              |                                       |                               |
|------------------------------|---------------------------------------|-------------------------------|
| <input type="checkbox"/> Dry | <input type="checkbox"/> Humid        | <input type="checkbox"/> Cold |
| <input type="checkbox"/> Hot | <input type="checkbox"/> Intermediate |                               |

**Do you have non work-related activity(ies) likely to cause damage to your skin?**

- Yes  No

**Do you normally use a protective hand lotion/ cream (outside the test period)?**

- |  |   |                                  |
|--|---|----------------------------------|
| <input type="checkbox"/> As often as possible                          | <input type="checkbox"/> Several times/ day | <input type="checkbox"/> 1/2 day |
| <input type="checkbox"/> Sometimes, depending on the season (activity) | <input type="checkbox"/> Always Medical     |                                  |

**Do you develop atopic dermatitis?**

- Yes  No

**Do you develop rhinitis/allergic conjunctivitis?**

- Yes  No

**Are you asthmatic?**

- Yes  No

**Do you have a known intolerance to alcohol?**

- Yes  No

**Do you develop atopic dermatitis?**

- Yes  No

**Evaluation of frequency of hand hygiene practices.**

**Do you work full time?**

- Yes  No

**If part-time, please indicate which of the following best first your work**

- <50%  50%  60%  70%  80%  90%

**For how long have you been using an alcohol-based hand hygiene product at work?**

- It's the first time  Since < 1 year  
 Since > 1 year and < 5 years  Since > 5 years

**Do you think you can improve your own hand hygiene compliance?**

- Yes  No  Perhaps

**It may be difficult for you to use an alcohol-based hand hygiene product because of:**

- |               |        |                          |                          |                          |                          |                          |                          |       |
|---------------|--------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------|
| Forgetfulness | Always | <input type="checkbox"/> | Never |
| Lack of time  | Always | <input type="checkbox"/> | Never |
| Damaged skin  | Always | <input type="checkbox"/> | Never |

## QUESTIONNAIRE - PART 2

(to be completed after the 3-5 first consecutive days of product use  
and after one month of product use)

Participant No: ..... Product:..... Date of questionnaire's return ....../....../.....

Participant name:.....Number of distributed bottles: .....

Amount of product used (ml): .....

### Evaluation of Frequency of Hand Hygiene Practices

**During how many consecutive working days have you used the test product?**

3 days     4 days     5 days     6 days     7 days     > 7 days

**How often do you have direct contact with patients during your working day (during the test period)?**

< 1 contact     Between 1 & 5     Between 6 & 10  
 Between 11 & 15     > 15 contacts

**In what percentage of times where hand hygiene is recommended, do you really clean your hands?**

0%     10%     20%     30%     40%     50%  
 60%     70%     80%     90%     100%

**Has the present study changed your hand hygiene practice?**

Yes     No

**During your last 5 opportunities for hand hygiene, how many times did you use hand rubbing to clean your hands?**

0     1     2     3     4     5

**How often do you practise hand hygiene during an average working hour (during the test period)?**

< 1     1-5     6-10     11-15     > 15

### Evaluation of the Test Product

**What is your opinion of the test product for hand hygiene?**

- |                            |                 |                          |                          |                          |                          |                          |                          |                          |                          |                   |
|----------------------------|-----------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------|
| • Colour.....              | Unpleasant      | <input type="checkbox"/> | Pleasant          |
| • Smell .....              | Unpleasant      | <input type="checkbox"/> | Pleasant          |
| • Texture .....            | Very sticky     | <input type="checkbox"/> | Not sticky at all |
| • Irritation (stinging)... | Very irritating | <input type="checkbox"/> | Not irritating    |
| • Drying effect .....      | Very much       | <input type="checkbox"/> | Not at all        |
| • Ease of use.....         | Very difficult  | <input type="checkbox"/> | Very easy         |
| • Speed of drying .....    | Very slow       | <input type="checkbox"/> | Very fast         |
| • Application.....         | Very unpleasant | <input type="checkbox"/> | Very pleasant     |
| • Overall evaluation...    | Dissatisfied    | <input type="checkbox"/> | Very satisfied    |

**Are there differences between the test product and the product used in your hospital?**

Major         No

**Which product do you prefer?**

Usual product  Test Product  No preference

**Do you think that the test product could improve your hand hygiene compliance?**

Yes, absolutely         Not at all

**Evaluation of Skin Condition**

**Self assessment of the skin on your hands (after use of the test product):**

Appearance (supple, red, blotchy, rash) .... Abnormal         Normal  
Intactness (abrasions, fissures) ..... Abnormal         Normal  
Moisture content (dryness) ..... Abnormal         Normal  
Sensation (itching, burning, soreness) ..... Abnormal         Normal

**How would you assess the overall integrity of the skin on your hands?**

Very altered         Perfect

**THANK YOU FOR YOUR PARTICIPATION**

### SKIN OBJECTIVE EVALUATION - PART 3

(to be completed three times: before the product use, after the 3-5 first consecutive days of product and use and after one month of product use)

Participant No.....

Date of 1<sup>st</sup> evaluation ....../....../....

Date of 2<sup>nd</sup> evaluation ....../....../....

Date of 3<sup>rd</sup> evaluation ....../....../....

#### **Scales to Evaluate Skin Condition by the Observer** (objective evaluation)

	Before					After 3-5 days					After 1 month				
<u>Redness</u> <i>0=no redness, 1=slight redness or blotchiness, 2=moderate redness, uniformly distributed, 3=bright red, widespread, 4=very bright red with oedema present.</i>	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
<u>Scaliness</u> <i>0=non scaliness, 1=very slight and occasional, 2=moderate, 3=very pronounced separation of scale edges from skin</i>	0	1	2	3	0	1	2	3	0	1	2	3			
<u>Fissures</u> <i>0=no fissure, 1=very fine, 2=large, either single or multiple, 3=extensive cracks with bleeding or seeping</i>	0	1	2	3	0	1	2	3	0	1	2	3			
<u>Visual Scoring of Skin Scale</u>															
No observable scale or irritation of any kind	0					0					0				
Occasional scale that is not necessarily uniformly distributed	1					1					1				
Dry skin and/ or redness	2					2					2				
Very dry skin with whitish appearance, rough to touch and/ or redness but without fissures	3					3					3				
Cracked skin surface but without bleeding / seeping	4					4					4				
Extensive cracking of skin surface with bleeding / seeping	5					5					5				

## Appendix 10: Healthcare worker campaign evaluation survey

- It should take you no more than 20 minutes to complete this questionnaire.
- Each question has **one answer only**.
- Please read the questions carefully and then respond spontaneously. Your answers are anonymous and will be kept confidential.

### SHORT GLOSSARY:

**Alcohol-based formulation:** An alcohol-containing preparation (liquid, gel or foam) designed for application to the hands to kill germs.

**Hand rubbing:** Treatment of hands with an antiseptic hand product (alcohol-based formulation).

**Hand washing:** Washing hands with plain or antimicrobial soap and water.

### PART 1

1. **Date:** \_\_\_\_\_ 2. **Hospital:** \_\_\_\_\_

3. **Ward:** \_\_\_\_\_ 4. **Service:** \_\_\_\_\_

5. **City:** \_\_\_\_\_

6. **Gender:**  Female  Male

7. **Age:** \_\_\_\_\_ years

9. **Profession\*:**

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Nurse          | <input type="checkbox"/> Healthcare Assistants | <input type="checkbox"/> Midwife       |
| <input type="checkbox"/> Medical Doctor | <input type="checkbox"/> Laboratory            | <input type="checkbox"/> Allied Health |
| <input type="checkbox"/> Radiology      | <input type="checkbox"/> Clerical              | <input type="checkbox"/> Other         |

\* *Students must be included among nurse/ midwife or medical doctor, according to the different professions.*

*Allied Health: physiotherapist, occupational therapist, speech therapist.  
Others: dieticians, dentist, social worker.*

10. **Department (Please select one department which is closest to yours):**

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> General           | <input type="checkbox"/> General Surgery          | <input type="checkbox"/> Intensive care unit |
| <input type="checkbox"/> Medical Specialty | <input type="checkbox"/> Emergency Unit           | <input type="checkbox"/> Obstetrics          |
| <input type="checkbox"/> Paediatrics       | <input type="checkbox"/> Long-term/rehabilitation | <input type="checkbox"/> Outpatient clinic   |
| <input type="checkbox"/> Other             | <input type="checkbox"/> Surgical Specialty       |  |

11. **Did you receive formal training in hand hygiene?**

- Yes  No

12. In general, what is the impact of a health care-associated infection on patient outcome?  
 Very low     Low                       High             Very high
13. What is the effectiveness of hand hygiene in preventing health care-associated infection?  
 Very low     Low                       High             Very high
14. Among all patient safety issues, how important is hand hygiene for the directorate of your institution?  
 Low priority     Moderate priority     High priority     Very high priority

## **PART 2**

1. Has an alcohol-based hand product been made always available in your ward at the patient point of care?  
 Always     Intermittently     Rarely     Never
2. Has the use of an alcohol-based hand product been important to make hand hygiene easier to practice in your daily work?  
 Not at all               Very important
3. Are your ward alcohol-based hand product dispensers easy to use?  
 Not at all               Very easy
4. Is the use of alcohol-based hand products well tolerated by your hands?  
 Not at all               Very well
5. Did knowing the results of hand hygiene observation in your ward help you and your colleagues to improve your hand hygiene practices?  
 Not at all               Very much
6. Were the educational activities that you participated in important to your personal understanding of the risk of transmitting germs to patients through your hands and thus causing infection?  
 Not at all               Very important
7. Were the educational activities that you participated in important to your personal understanding of your risk of acquiring an infection from patients?  
           Not at all                                      Very important
8. Were the educational activities that you participated in important to improve your hand hygiene practices?  
 Not at all               Very important
9. Do you consider that the CEO and the Senior Management in your DHB are supporting hand hygiene improvement?  
 Not at all               Very much

**10. Has an improvement in the safety climate occurred in your DHB as a result of the recent implementation of the hand hygiene promotion strategy?**

Not at all              Very much

**11. If any improvement in the safety climate has taken place in your DHB, has it helped you personally to improve your hand hygiene practices?**

Not at all              Very much

**12. Has your awareness of your role in preventing health-care-associated infection by improving your hand hygiene practices increased during the current hand hygiene promotional campaign?**

Not at all              Very much

**THANK YOU VERY MUCH FOR YOUR TIME!**

## **Appendix 11: Summary of Hand Hygiene Programme Coordinator role**

Each DHB will develop a Hand Hygiene Coordinator job description to suit their particular circumstances and recruitment policies. The following, however, is presented to assist DHBs by providing a starting point for the development of a job description.

The Hand Hygiene Programme Coordinator is a member of the DHB multi-disciplinary team. It is an operational leadership role; and is critical to the success of a DHB hand hygiene programme. The Coordinator, with the support of the DHB multi-disciplinary team, will assume a leadership role in delivering against the DHB implementation activity timeline summarised in the HHNZ draft Guidelines.

The Coordinator role includes ensuring that key success factors referred to in the WHO Guidelines are addressed in implementing the programme.

These success factors include:

- the promotion and proper use of alcohol-based hand rub at the point of care
- repeated and high quality audit/monitoring of compliance and timely performance feedback
- communication and education tools
- constant reminders in the work environment
- active participation and feedback at both individual and organisational levels
- senior management support and involvement of sector leaders.

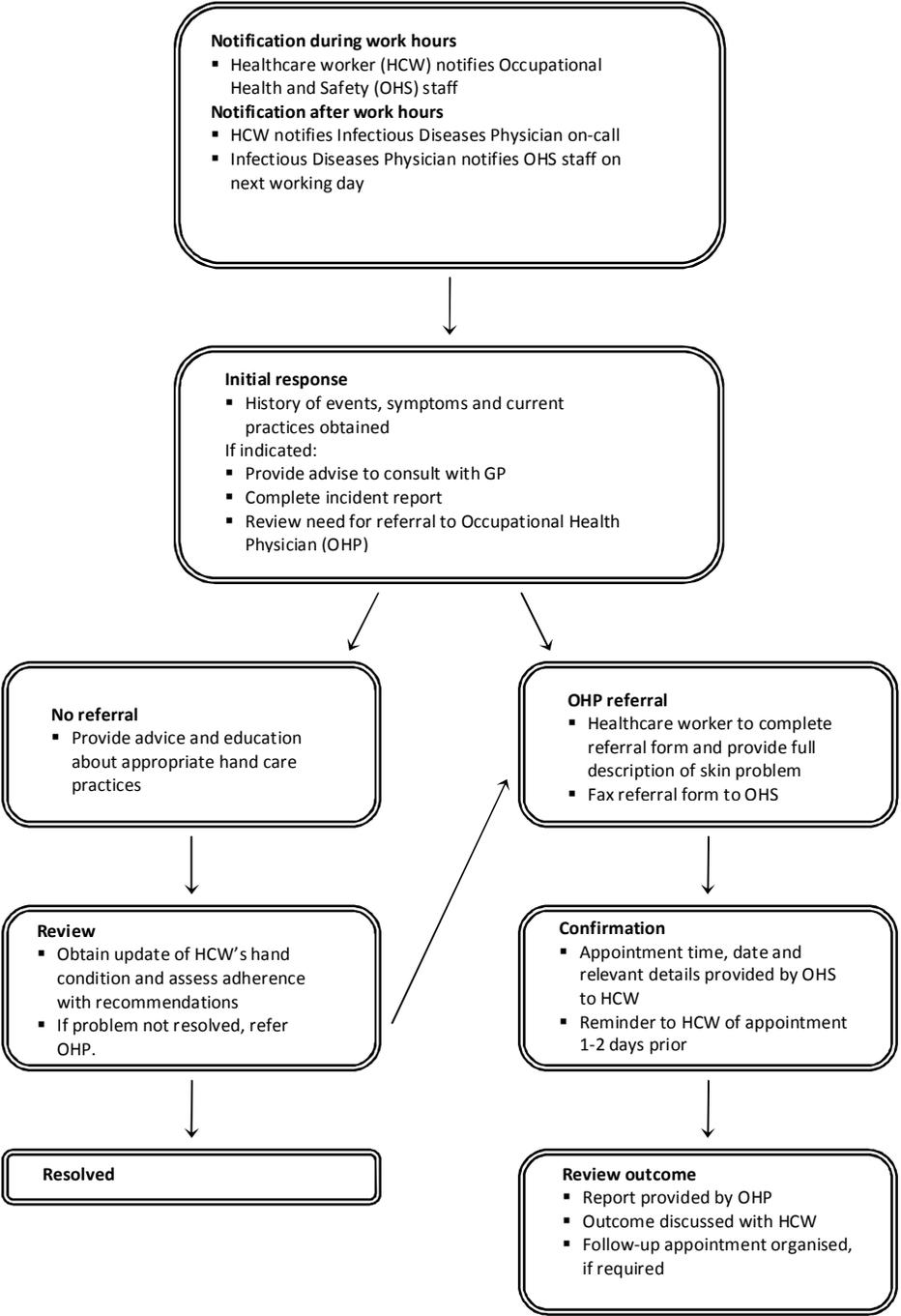
The Coordinator role will include appointing (or arranging for the appointment of), supporting and overseeing staff acting as hand hygiene 'liaison officers' or 'ward champions' to promote the hand hygiene programme and assist with changing behaviour by:

- motivation of individuals and teams
- facilitation between staff groups
- promoting the programme
- modelling good hand hygiene practices
- presenting output and outcome results to staff
- auditing alcohol hand product placement and availability
- teaching and assisting healthcare workers to reach competency in hand hygiene practices
- educating new staff in hand hygiene and alcohol hand product use.

The Coordinator role will also include taking actions, as appropriate, in relation to:

- ensuring education tools are visible at point of use for hand hygiene facilities
- completing audits of product availability and staff completion of hand hygiene education package
- supporting promotional activities such as competitions, crosswords, launches, 'Talking Walls', feedback sessions, afternoon teas and newsletters
- advocating the programme using kits such as alcohol hand hygiene product T-shirts and hat which can be worn by the hand hygiene programme team during educational sessions, presentations and launches
- supplying merchandise to staff as prizes, if appropriate
- providing and receiving regular and timely feedback on progress and compliance
- formally recognising achievements by staff.

# Appendix 12: Example flow chart for management of occupational health and safety concerns related to use of alcohol-based hand products



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