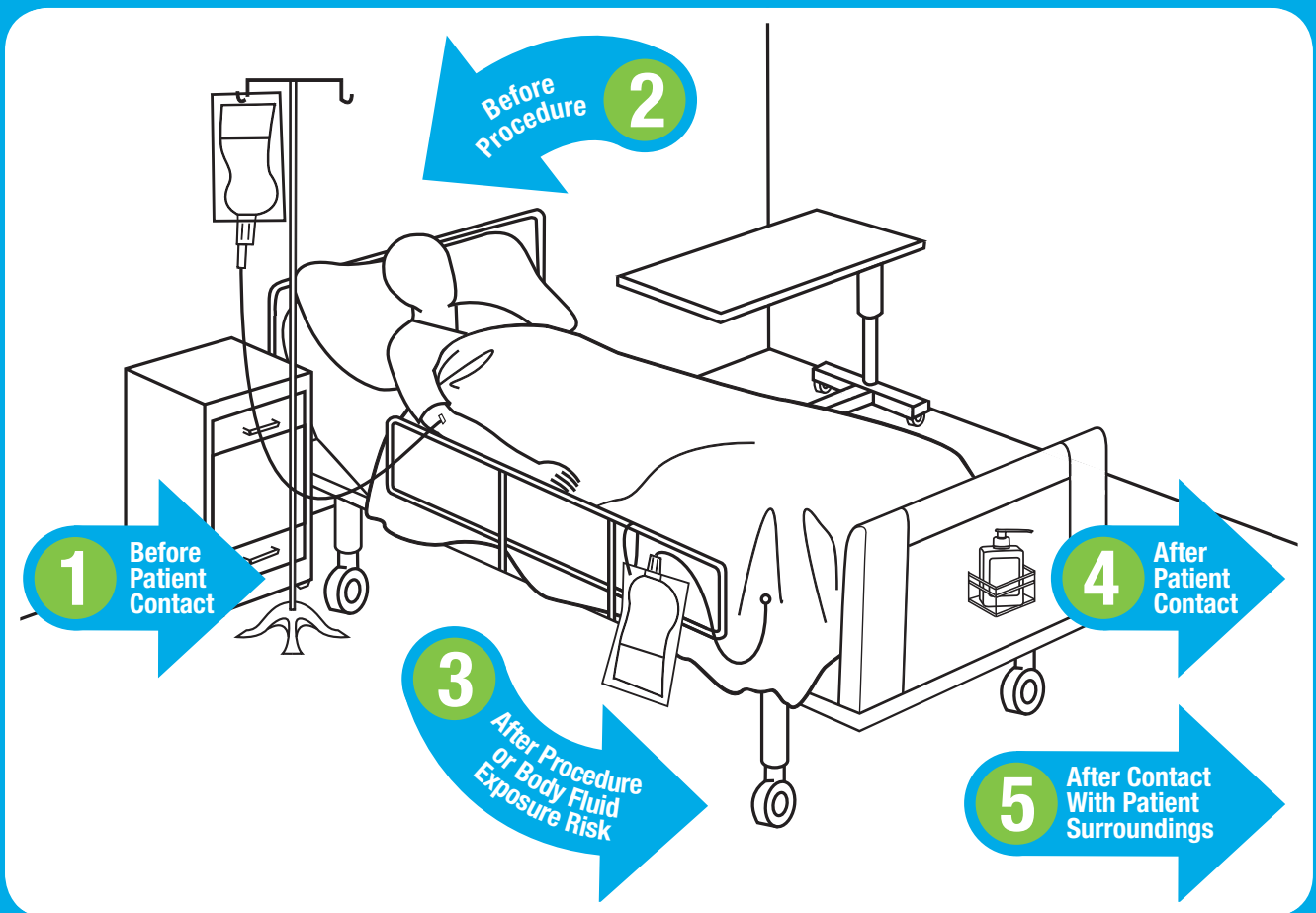


HAND HYGIENE NEW ZEALAND IMPLEMENTATION GUIDELINES

A practical guide to implementing the Hand Hygiene New Zealand programme in District Health Boards throughout New Zealand.



THE 5 MOMENTS FOR HAND HYGIENE



**CLEAN HANDS
SAVE LIVES**

www.handhygiene.org.nz



INFECTION PREVENTION & CONTROL

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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 upon the approach that is most appropriate for their particular circumstances.

CONTENTS

Acknowledgements	4
Foreword	5
Executive summary	6
Background	7
HHNZ Objectives	10
CHAPTER ONE: Build and sustain a patient safety culture	12
CHAPTER TWO: Identify key individuals, assign responsibilities and select pilot wards	20
CHAPTER THREE: Procure an appropriate alcohol-based hand rub	24
CHAPTER FOUR: Ensure product placement at the point of care	25
CHAPTER FIVE: Establish an educational programme for all healthcare workers	28
CHAPTER SIX: Promote hand hygiene	31
CHAPTER SEVEN: Evaluate hand hygiene practice and provide feedback	34
Glossary of terms	40
Skin care	42
Evaluating tolerability and acceptability of alcohol-based hand rub among healthcare workers	44
Glove use	46
Resources and links	47
References	48

TABLES AND FIGURES

TABLE 1. Suggested steering group members	21
TABLE 2. Number of auditing wards and number of required sites according to hospital bed numbers	35
FIGURE 1. The model for improvement	13
FIGURE 2. Example procedure for managing occupational health concerns related to alcohol-based hand rub	43

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- 'WHO Guidelines on Hand Hygiene in Health Care' (World Health Organization, August 2009)
- 'Hand Hygiene Australia 5 Moments for Hand Hygiene, Advanced Draft August 2008' (Australian Commission on Safety and Quality in Healthcare).

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FOREWORD

Healthcare associated infections (HAI) such as post-operative wound infections, pneumonias, and device-related infections are a major cause of morbidity, mortality and healthcare expenditure.¹ In 2003 it was estimated that the annual cost of HAI in New Zealand was approximately \$140m.² Fortunately, a substantial proportion of these infections can actually be prevented, very simply and cheaply, by improving hand hygiene practice among healthcare workers.³⁻⁵

Hand Hygiene New Zealand (HHNZ) is a national quality improvement programme that aims to improve hand hygiene practice in New Zealand hospitals. In 2008, the HHNZ programme was established by the Quality Improvement Committee (QIC) and delivered by Auckland District Health Board (ADHB) to district health boards (DHBs) throughout the country. This project was one of three initiatives comprising the Infection Prevention and Control Programme, which aimed to reduce HAI within public hospitals.

The HHNZ transitioned from the national development phase to local implementation by DHBs in 2010. In 2011, the QIC was superseded by the Health Quality & Safety Commission New Zealand (the Commission). The Commission now holds overall responsibility for the Infection Prevention and Control programme, which includes Hand Hygiene New Zealand, the Central Line Associated Bacteraemia Project (CLAB Zero) and the Surgical Site Infection Surveillance Programme. As quality improvement initiatives, these programmes have at their heart a drive to improve patient safety and patient outcomes during their stay in hospital.

To deliver phase two of the HHNZ programme, the Commission again partnered with a programme team based at ADHB. In addition, HHNZ works closely with the highly successful Hand Hygiene Australia (HHA) programme and shares the same highly standardised approach to auditing and reporting.³⁻⁵

Participation in the HHNZ programme provides numerous benefits to DHBs in their efforts to reduce HAI. HHNZ provides centralised, specialised support and resources for those involved in implementing local programmes. In addition, a central website (www.handhygiene.org.nz) facilitates the sharing of resources, experience and expertise between DHBs. Moreover, a nationally standardised auditing system managed by HHNZ enables high quality hand hygiene performance data to be compared between DHBs, creating a validated foundation for each DHB to design a quality improvement programme centred on auditing hand hygiene compliance, reporting, feedback and education. These steps have been shown to be a powerful tool to drive improvements in hand hygiene practice.⁶

HHNZ aims to establish hand hygiene in the consciousness of healthcare workers in New Zealand as a key measure to improve patient safety. It is hoped that as a result of the HHNZ programme, internationally recommended standards of hand hygiene best practice will become business as usual in New Zealand hospitals.

If this is achieved, it is expected that the burden of healthcare associated infections in New Zealand will be significantly reduced. In turn, patients will experience safer care and improved outcomes.

Yours sincerely,

Dr Joshua Freeman

Clinical Lead

Hand Hygiene New Zealand

EXECUTIVE SUMMARY

The Hand Hygiene New Zealand Implementation Guidelines provide a practical 'how-to' guide for establishing a hand hygiene programme within a DHB. The guidelines provide a generic template for implementation by outlining the core components of programmes that have successfully driven culture change. Detailed technical information about HHNZ's requirements for auditing, data collection and data submission can be found in the Hand Hygiene New Zealand Auditing Manual (which can be downloaded from the resource library on the HHNZ website – www.handhygiene.org.nz).

The HHNZ programme utilises the World Health Organization's 5 moments for hand hygiene approach, which has also been adopted successfully by HHA. This approach accounts for the fact that hand hygiene with alcohol-based hand rub (ABHR) is not only useful to prevent transmission of pathogens between patients, but also to prevent transfer of pathogens from contaminated to clean sites within the individual patient. Thus hand hygiene should not only be performed before and after patient contact, but also before and after a procedure, and after contact with patient surroundings.

The first step for any hand hygiene programme is to identify key individuals and groups in the DHB to form a multi-disciplinary steering committee responsible for implementation of the programme. Each DHB should have an adequately resourced hand hygiene coordinator and a medical spokesperson that are part of a steering committee and are fully supported by DHB senior management. Within each clinical area there should be hand hygiene champions to encourage and oversee implementation of the programme within that clinical area.

These guidelines are divided into seven chapters outlining the key components of a successful hand hygiene programme:

- 1 Build and sustain a patient safety culture**
- 2 Identify key individuals, assign responsibilities and select pilot wards**
- 3 Procure an appropriate alcohol-based hand rub**
- 4 Ensure product placement at the point of care**
- 5 Establish an education programme for all healthcare workers**
- 6 Promote hand hygiene**
- 7 Evaluate hand hygiene compliance and feedback to key stakeholders.**

A key component of the HHNZ programme is a nationally standardised process for auditing hand hygiene compliance according to the World Health Organization's 5 moments approach. HHNZ coordinates auditing three times a year, which is carried out by trained and certified gold auditors in each DHB.

Gold auditors use electronic handheld devices that allow data to be conveniently and securely submitted to the national database. The data provided by this process is communicated back to stakeholders and clinical groups through timely and easily understandable reports. This approach is also used to great effect by HHA and other programmes to drive improvements in hand hygiene practice.

The HHNZ website provides a central hub for the sharing of information and resources relating to the programme. The website will provide a rich source of support for hand hygiene coordinators, ward champions, gold auditors and others involved in hand hygiene programmes at DHB level.

While HHNZ advocates an intensive implementation phase for local hand hygiene programmes, overseas experience shows that to maintain high standards of hand hygiene, an ongoing programme is required with continuing education and regular performance evaluation.⁷

BACKGROUND

THE HAND HYGIENE PROBLEM

Poor hand hygiene practice among healthcare workers (HCW) is associated with transmission of antibiotic-resistant pathogens and high rates of healthcare associated infections (HAI).⁸⁻⁹

There is convincing evidence that rates of HAI can be improved by increasing hand hygiene compliance among healthcare workers. More than twenty hospital-based studies (including systematic reviews) of the impact of hand hygiene on HAI have been published between 1977 and 2011.¹³ Almost all reports demonstrate that improved hand hygiene was associated with reduced infection and cross transmission rates. It is important to note that although the introduction of an alcohol-based hand rub (ABHR) was a key intervention, in nearly all of the studies, educational, promotional and culture change programmes were also necessary to reduce HAI.¹⁴

Numerous barriers to performing appropriate hand hygiene have been reported.¹⁰⁻¹² These include:

- Hand hygiene agents causing skin irritation and dryness
- Patient needs are perceived to take priority over hand hygiene
- Hand washing sinks/basins inconveniently located and/or not available
- The perception that glove use removes the need for additional hand hygiene
- Insufficient time for hand hygiene, due to high workload and understaffing
- Inadequate knowledge of guidelines or protocols for hand hygiene (the 5 moments approach)
- Lack of positive role models and social norms

- Lack of recognition of the risk of cross-transmission of microbial pathogens
- Until recently, lack of scientific information showing a definitive impact of improved hand hygiene compliance on HAI rates
- Simple forgetfulness.

Why has HHNZ adopted the World Health Organization's 5 moments for hand hygiene approach?

By adopting the 5 moments approach, DHBs in New Zealand will be able to benchmark their hand hygiene performance not only against one another but also against hospitals in a number of other countries including Australia. Importantly, adopting the 5 moments approach allows HHNZ to work collaboratively with HHA and to share their existing data management infrastructure and extensive practical experience. It also allows HHNZ to tap into the huge educational and promotional resource base that has already been built up around this system worldwide. Most importantly, however, the concept of 'two moments' for hand hygiene may be conveniently simple, however it is inadequate to ensure patient safety. The 5 moments approach acknowledges that the rationale for hand hygiene is not only to reduce transmission between patients, but also between contaminated and clean sites when caring for the individual patient.

The WHO 5 moments approach to auditing hand hygiene practice has been tried, tested and applied with great success by HHA and a number of other national programmes. Several key studies have applied this approach and have demonstrated corresponding improvements in hand hygiene practice and rates of HAI.⁽³⁻⁵⁾

WHAT ARE THE 5 MOMENTS FOR HAND HYGIENE?

The following moments should be performed by healthcare workers when clinically indicated:

1 Before patient contact

2 Before a procedure

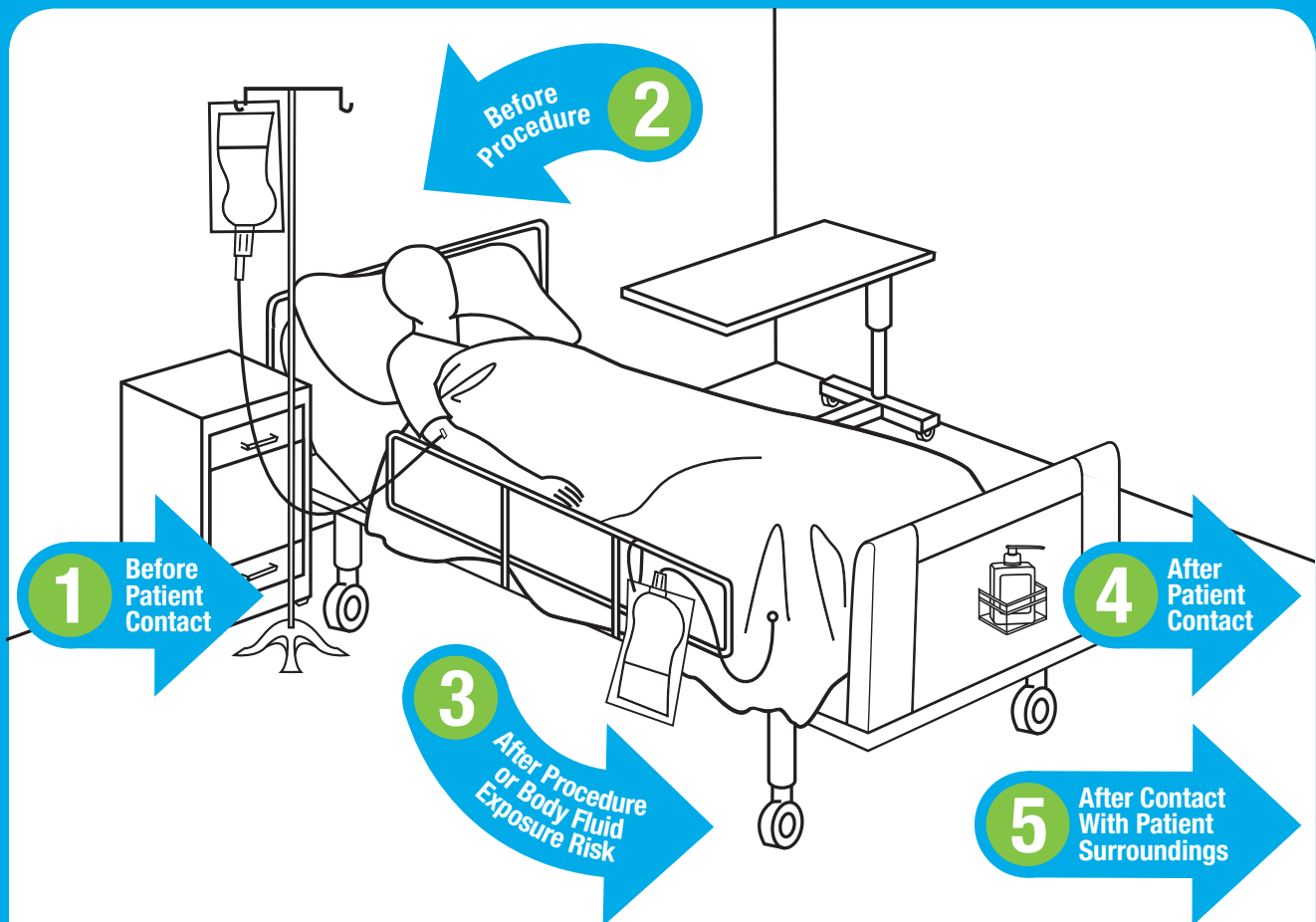
3 After a procedure or body fluid exposure risk

4 After patient contact

5 After contact with patient surroundings.

For more detail about what each moment entails please see the 5 moments for hand hygiene diagram on the next page. You can also find further information about the 5 moments for hand hygiene in the education centre on the HHNZ website.

YOUR 5 MOMENTS FOR HAND HYGIENE



1 Before Patient Contact	WHEN? Clean your hands before touching a patient when approaching him/her. WHY? To protect the patient against harmful germs carried on your hands.
2 Before Procedure	WHEN? Clean your hands immediately before any procedure. WHY? To protect the patient against harmful germs, including the patient's own, from entering his/her body.
3 After Procedure or Body Fluid Exposure Risk	WHEN? Clean your hands immediately after an exposure risk to body fluids (and after glove removal). WHY? To protect yourself and the health-care environment from harmful patient germs.
4 After Patient Contact	WHEN? Clean your hands after touching a patient and her/his immediate surroundings, when leaving the patient's side. WHY? To protect yourself and the health-care environment from harmful patient germs.
5 After Contact with Patient Surroundings	WHEN? 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. WHY? To protect yourself and the health-care environment from harmful patient germs.



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HHNZ OBJECTIVES

The overarching goal of HHNZ is to reduce healthcare associated infections and, therefore, increase patient safety by improving hand hygiene practice among healthcare workers in New Zealand.

The HHNZ programme seeks to achieve the following objectives:

- 1** A high level of leadership from DHB executives to their local hand hygiene programmes demonstrated by active participation in the Hand Hygiene New Zealand programme. This will be demonstrated by consistent collection, submission and reporting of hand hygiene compliance data, according to the HHNZ audit schedule and through the establishment of hand hygiene culture change initiatives.
 - 2** District health board hospital-based healthcare workers are able to demonstrate a high level of understanding about the importance of hand hygiene to patient safety.
 - 3** District health board hospital-based healthcare workers can explain when each of the 5 moments for hand hygiene should occur during patient care.
 - 4** Consistent collection and submission to HHNZ of healthcare-associated *Staphylococcus aureus* bacteraemia rates across all participating DHBs.
-

IMPLEMENTATION GUIDE

The following section of this document outlines the recommended step-by-step approach to implementing the Hand Hygiene New Zealand programme within your DHB.

For local hand hygiene programmes to be successful, it must have support and long term commitment from the DHB chief executive officer and other senior managers. Financial investment at a DHB level is required to implement the HHNZ programme. This ranges from the procurement of alcohol-based hand rubs, to the purchase of promotional resources, and the funding of key hand hygiene posts such as a hand hygiene coordinator and personnel with quality improvement and project management skills.

Throughout the lifespan of this programme, HHNZ and the Commission will engage with senior DHB management throughout the country to encourage and enhance the level of support given to the HHNZ programme at an individual DHB level. Securing senior management commitment for a local hand hygiene campaign, however, also requires dedication from local DHB personnel, most likely the local infection control teams.

CHAPTER ONE: BUILD AND SUSTAIN A PATIENT SAFETY CULTURE

Good hand hygiene practice by healthcare workers results in safer patient care. While this is the aim of any hand hygiene improvement strategy, achieving good hand hygiene practice consistently, at the appropriate times by all types of healthcare workers is more than a logistical challenge. Creating an environment of hand hygiene excellence not only requires changes to the physical practice of hand hygiene, but it involves changing the culture around hand hygiene and patient safety.

When embarking upon a hand hygiene improvement programme it is vital to consider culture change improvement strategies from the outset. Rather than an optional add-on, culture change is a core component of any hand hygiene programme that seeks to make sustainable improvements.

In an organisational culture that recognises hand hygiene as the foundation of patient safety, good practice is considered the responsibility of every healthcare worker, not just those involved in infection control or those directly involved in hand hygiene or other patient safety programmes.

The first step to building a culture that is supportive of hand hygiene and patient safety is to understand what defines a culture.

With this definition in mind it is evident that culture is multi-faceted. For hand hygiene improvement programmes, the overall goal of improvement is to reduce harm caused to patients through the reduction of healthcare associated infections that are caused by poor hand hygiene. This involves making changes that will position hand hygiene as a business-as-usual practice among all categories of healthcare workers in all healthcare services. While increasing hand hygiene compliance is

“Culture is the way we think, our values, our attitudes, our perceptions, and our beliefs. It’s also about how we act, our habits, and our typical behaviours. It’s not about one person. Culture is about our shared beliefs, what we expect of each other, what’s considered normal, and our shared patterns of behaviour that determine how our organization functions. It’s “the way we do things around here.””

BRITISH COLUMBIA PATIENT SAFETY & QUALITY COUNCIL (2013)¹⁶

important, sustaining the increase on an ongoing basis is the most challenging problem to address as it requires changing embedded attitudes, beliefs and behaviours.

WHAT CAN I DO ABOUT IT?

To begin, you need to assess the culture that currently exists in your organisation, department, or service. Monitoring hand hygiene compliance in a variety of clinical settings will tell you a lot about behaviours and how well you are doing, but it won’t tell you what values, attitudes or beliefs exist and why. To determine what needs to improve you need to assess all these components together.

Take time to find out what is being done well, and what can be improved – across healthcare worker groups and services. This will assist you to determine what culture-based barriers exist so you can address them from the start, or what positive platforms you have to

work from. A great way to gather this information is via a combination of surveys, interviews and hand hygiene compliance auditing.

Using a tool such as the Model for Improvement may be useful in helping you to make improvements to the hand hygiene culture that exists within your

organisation. Apply this process to each idea or change you have identified and test it to see if it leads to improvement on a small scale. Once you know whether it has been successful you can begin to rollout the change on a wider scale, continuing to test as you go.

Figure 1. The Model for Improvement: Developed by Associates in Process Improvement



Langley GL, Nolan KM, Nolan TW, Norman CL, Provost LP. *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance* (2nd edition). San Francisco: Jossey-Bass Publishers; 2009.

CHANGE ACTIVITIES

The following section of this chapter highlights some key change activities that can be used to support and improve the overall culture towards hand hygiene practice and patient safety. Using the PDSA model on page 13 each of these activities can be planned, implemented, tested and improved upon in a continuous cycle of quality improvement.

Leadership

A study by Saint et al (2010)¹⁷ determined that leadership plays an important role in infection prevention activities. The research found that successful leaders demonstrate the following qualities:

- 1 Cultivating a culture of clinical excellence and effectively communicating it to staff
- 2 A focus on overcoming barriers and dealing directly with resistant staff or process issues that impede prevention of healthcare associated infections
- 3 Inspiring their employees
- 4 Strategic thinking while acting locally, which involved campaigning before crucial committee votes, leveraging personal prestige to move initiatives forward, and forming partnerships across disciplines.

These are the qualities that are important to seek from those who are central to championing the programme within your DHB. This includes senior and clinical leadership, ward level leadership and IPC leadership. When individuals ask you how they can support the programme, highlight these qualities as the starting point for what you are looking for – think of it as a job description!

Transformational leaders may influence their followers by being inspirational, providing a vision, raising expectations, and behaving in a manner that serves as an example.

ROBBINS S. ESSENTIALS OF ORGANIZATIONAL BEHAVIOR. 8TH ED. UPPER SADDLE RIVER, NJ: PEARSON EDUCATION, 2005.

The Institute for Healthcare Improvement has some useful tools and information on healthcare leadership, including a framework for leadership for improvement.

Visit: www.ihl.org/knowledge/Pages/Tools/IHIFrameworkforLeadershipforImprovement.aspx to read more on the topic.

Executive leadership

Drawing upon the leadership discussion above, how supportive is your senior executive team when it comes to hand hygiene improvement? Is it regarded as a priority within your DHB?

Improving the hand hygiene and patient safety culture starts from the top. To maximise the chance of successfully driving culture change throughout the whole organisation, it is essential to obtain the support and commitment of your chief executive officer and senior management team. This will help to demonstrate to staff that hand hygiene is regarded as a vital component of patient safety and is, therefore, one of the most important measures in the fight against healthcare associated infections. It helps to set the tone that performing hand hygiene at the appropriate clinical times is not optional, but rather an expected part of the role of a healthcare worker.

Hand hygiene performance should be regularly reported at executive meetings and to the hospital board as an important quality indicator. Executive leadership is also essential to ensure adequate resourcing that will support awareness raising and sustainable improvements for long term gain.

CASE STUDY

Training executive staff to be auditors



Executive engagement is not only vital when implementing a hand hygiene programme, it is also critical for sustainability. If the executive team is not on board, then a long and futile journey can lie ahead.

In Australia, several healthcare facilities have trained executive staff to conduct hand hygiene compliance audits. While the training delivered to executive staff is abridged and not as intense as gold standard auditor training (and so data collected is not actually submitted to the national database), anecdotally there are several positive outcomes from this activity.

The response from executive teams has been very encouraging. Being taught how to audit provides a good understanding about the five moments for hand hygiene and the challenges (and barriers) that healthcare workers face when trying to be compliant. Whether it be poorly placed product or outdated workflows, this is not something executive team members would normally witness. Executive staff have also reported it has provided a unique insight into the challenges of auditing and improved their understanding of the resources required to implement

and maintain a hand hygiene programme.

Healthcare workers and patients who witness executive staff undertaking hand hygiene audits are often amused and curious. That executive staff are noted to be engaging with clinical staff, listening, talking, and observing, outwardly demonstrates the importance that executives place on hand hygiene.

The presence of an executive is of course an intervention in itself. Is a healthcare worker likely to be defiantly non-compliant as the chief executive officer observes their activity? How impressive for patients and visitors to see executive staff in the wards checking up on healthcare worker practices?

Above all, the key message that executive staff consider hand hygiene as a high priority patient safety and quality issue, comes across loud and clear to all.

CLINICAL LEADERSHIP

Medical staff and senior doctors are a vital ally in the fight to improve hand hygiene behaviour and reduce healthcare associated infections. They are generally regarded as opinion leaders, whose attitudes and beliefs help to shape the attitudes and beliefs of those around them. This means they can have a significant and positive impact on the hand hygiene practice of other healthcare workers by actively demonstrating compliance with each of the five moments themselves. It is vitally important, therefore, to gain their support whenever possible and to seek a clearly identified

medical leader/spokesperson as well as a clearly identified nursing leader/spokesperson. The November 2012 issue of The Clean Hands Chronicle (go to: www.handhygiene.org.nz, under the news tab), highlights some useful tips for developing a strategy to engage opinion leaders in your hand hygiene programme.

Don't forget that staff from the departments of infection control, infectious diseases, microbiology and pharmacy (where possible) should be members of the hand hygiene steering group and key drivers of the programme throughout the DHB.

FOSTER OWNERSHIP AT SERVICE AND WARD LEVEL

Staff ownership of the programme is essential for sustainable culture change to occur. Not only is it impractical for a few individuals such as the hand hygiene coordinator to drive the programme forward and manage it at service or ward level, it is detrimental if hand hygiene is considered the responsibility of only a few individuals (e.g. the infection prevention and control team) as may often be the case.

Staff ownership may be encouraged by:

- Gaining support and commitment from the senior clinical, nursing staff and opinion leaders for each service and ward
- Providing regular and timely feedback to ward staff of compliance rates
- Clearly assigning responsibility and accountability to ward or service medical and nursing leadership for hand hygiene performance
- Establishing realistic targets for each service or ward and a time frame for achieving them
- Providing positive reinforcement and rewards for good performance at service and ward level and for meeting performance targets
- Fostering a healthy and productive sense of competition/peer pressure between wards and services to encourage them to perform well.

HAND HYGIENE CHAMPIONS

Hand hygiene champions can play a key role in encouraging change to take place. Healthcare workers from a range of professional groups should be identified and encouraged to be hand hygiene champions. Ideally these individuals should be opinion leaders and/or individuals that are well respected by their colleagues. It is helpful if these champions publically express their commitment to hand hygiene best practice and its importance to patient safety.

A study by Damschroder et al (2008)¹⁸ showed that although behaviour change may appear inexpensive and simple, implementation is often complicated because behavioural changes require interprofessional coalitions working together. This highlights the need that to change behaviour on a wide scale, it is important to develop a 'pool' of hand hygiene champions in each DHB at differing levels. For example champions at a ward level are perfectly placed to have a real feel for what is going on within the ward. This grassroots knowledge can assist in working out the best ways to advance the programme and promote the hand hygiene message to ward based colleagues.

According to Damschroder et al (2008)¹⁸ simply giving the title hand hygiene champion is ineffective. Instead successful champions are inclined to be inherently motivated and passionate about improving hand hygiene practice. They are usually determined to make change and even when they face challenges on a broad level, they continue to make changes within their own circle of influence.

Read the February 2012 issue of *The Clean Hands Chronicle* to get tips on how to get the most out of becoming a hand hygiene ward champion. Go to: www.handhygiene.org.nz and you will find *The Clean Hands Chronicle* page under the news tab.

PATIENT ENGAGEMENT

While the responsibility for hand hygiene always lies with the healthcare worker (HCW), patients can also play an important role in driving culture change and improving hand hygiene practice.

The WHO Guidelines on Hand Hygiene in Health Care (2009) and Hand Hygiene New Zealand's Patient Participation Guidelines encourage partnerships between patients, their families, and healthcare workers to promote hand hygiene in healthcare settings.

Patient engagement can play an important role in culture change and hand hygiene compliance ^(16, 17). Results from hospitals overseas suggest that empowering the patient to ask their healthcare workers to practice hand hygiene can increase compliance. Working in partnership with the patient is respectful and provides another avenue through which healthcare workers can be encouraged to perform good hand hygiene.

Supporting and encouraging patients to be part of improving hand hygiene practice promotes behaviour change in a number of ways. Hand hygiene auditors cannot always be present but patients and their whanau/family are. This more consistent attention assists in raising the issue of hand hygiene among more HCWs, more frequently. Information provided for patients and whanau/family also provides additional visual reminders in the hospital. In other words, extending the hand hygiene programme to include patient engagement/participation adds to the profile of the programme within the DHB. The mere fact that healthcare workers are aware that patients have certain expectations of their hand hygiene practice, may in itself, have an impact.

It is vital to acknowledge patient engagement as a partnership between the patient, healthcare workers and the DHB. Any patient engagement programme should not only aim to educate and empower the patient and their whanau/family, but should also incorporate a strategy to ensure that HCWs are fully informed about and involved in the programme. A patient engagement strategy must, therefore, provide advice and support for healthcare workers on how to respond in the event they are reminded by patients or family to perform hand hygiene. It must be stressed this process is not intended to highlight the failure of healthcare workers to carry out hand hygiene, but rather an additional means by which healthcare workers can be reminded to perform hand hygiene at the appropriate times.

PATIENT ENGAGEMENT GUIDANCE

If you are thinking of developing a patient engagement/participation programme to further support hand hygiene improvement, take a look at the following documents that provide useful guidance on developing a patient engagement strategy:

Hand Hygiene New Zealand (2013). Patient participation guidelines for district health boards. www.handhygiene.org.nz under the resources tab.

World Health Organization. (2013). Patients have a voice too! http://www.who.int/gpsc/5may/5may2013_patient-participation/en/index.html

World Health Organization. (2013). Guidance on engaging patients and patient organizations in hand hygiene initiatives. http://www.who.int/entity/gpsc/5may/Guidance_Organizations.doc

World Health Organization. (2013). Tips for implementing a successful patient participation programme. <http://www.who.int/entity/gpsc/5may/Tips-for-patient-participation.pdf>

OTHER CULTURE CHANGE ACTIVITIES

To some extent culture change can be driven through all the steps above. However, additional strategies may also be required, in particular to target difficult healthcare worker groups such as doctors. Here are a few examples:

- Look for opportunities to collaborate and coordinate with other infection control and patient safety initiatives. There are a number of patient safety oriented programmes in New Zealand hospitals, including programmes to reduce central line infections and surgical site infections, and to prevent falls and medication errors. Use these as an opportunity to develop:
 - Common slogans/messaging
 - Common generic teaching and promotional resources focused on principles of a patient safety/do no harm culture
 - Common accountability structures.
- Brainstorm barriers to improvement and seek to address them. Seek input from healthcare workers, as well as senior executive and clinical leaders to gain different perspectives and solutions. Read the May 2012 issue of HHNZ's magazine The Clean Hands Chronicle for an article about identifying barriers to good hand hygiene compliance (visit www.handhygiene.org.nz, and you will find The Clean Hands Chronicle page under the news section of the site)
- Seek to establish organisational accountability structures for staff who flatly refuse to perform hand hygiene at the appropriate times despite being reminded to do so
- Maintain a visible presence at medical ward rounds, and other forums where hand hygiene education can be reinforced to junior and senior medical staff (interns/RMOs)
- Tailor strategies according to the different groups of healthcare workers. Different healthcare worker groups are likely to respond to different approaches.

HOLDING THE GAINS OF IMPROVEMENT

Maintaining the gains and keeping healthcare workers engaged in continuously improving their hand hygiene practice is vital to the long term sustainability of a hand hygiene programme.

Research suggests that organisations that sustain improvements in healthcare, put as much effort and commitment into maintaining momentum, as they direct into the initial project launch. At the start of its 5 Million Lives campaign, for example, the Institute for Healthcare Improvement identified six key components of sustainability to help maintain gains in improvement:

- 1 SUPPORTIVE MANAGEMENT STRUCTURES:** the organisational leadership prioritises quality of care, paying attention to it regularly, creating accountability systems, and recognising successes.
- 2 STRUCTURES TO “FOOL PROOF” CHANGE:** the organisation builds structures (for example, IT systems, resources and tools to support a particular intervention) that make it difficult, if not impossible, for care providers to revert to old ways of doing things.
- 3 ROBUST, TRANSPARENT FEEDBACK SYSTEMS:** people know how their organisation is performing on key indicators, are able to review information and compare it with clear standards set by management, and take part in improvements developed in response to this information.
- 4 A SHARED SENSE OF THE SYSTEMS TO BE IMPROVED:** people understand the processes and systems they are trying to improve, and how they can contribute.

5 CULTURE OF IMPROVEMENT AND DEEPLY ENGAGED STAFF:

the organisation shares a sense of pride around performance and improvement skill, and many enjoy their work in this area.

6 FORMAL CAPACITY-BUILDING PROGRAMMES:

the organisation prioritises training of executives and staff, building skill in appropriate fiscal or clinical disciplines as well as organisation-wide skills in the application of modern quality improvement methods and creating a culture where improvement work is seamlessly integrated into day-to-day activity in the unit or facility.

The United Kingdom National Health Service Institute for Innovation and Improvement also has a number of online sustainability resources. See their website for more information on 'holding the gains', which can be found at:

www.institute.nhs.uk/sustainability_model/introduction/find_out_more_about_the_model.html

CHAPTER TWO: IDENTIFY KEY INDIVIDUALS, ASSIGN RESPONSIBILITIES AND SELECT PILOT WARDS

To implement the HHNZ programme at a local level, a coordinated approach with a well defined organisational structure is required.

The following actions to achieve this are recommended:

1 Form a multidisciplinary steering group

2 Appoint a hand hygiene coordinator

3 Establish roles and responsibilities

4 Select pilot wards

5 Appoint ward champions to coordinate the programme at ward level.

1. FORM A MULTIDISCIPLINARY STEERING GROUP

Within each DHB, a multidisciplinary steering group will be required to oversee local implementation of the programme. Changing hand hygiene practice among diverse healthcare worker groups and clinical services within a hospital or DHB is a major challenge that requires a systematic and strategic approach at organisational level. It is essential, therefore, that the steering group for the programme includes key representatives from throughout the organisation (See Table 1 for examples of steering group members).

The steering group will be responsible for rolling out the programme and fostering the culture change necessary to improve hand hygiene throughout the DHB. For example, the group will be responsible for introducing the alcohol-based hand rub at the point of care, establishing the educational programme, and ensuring that auditing and feedback occur. The team should include a programme coordinator, clinicians, and members of the infection control team. It is also important to identify from the outset an executive sponsor who will be included in the steering group and who can manage and facilitate the necessary resourcing for the programme.

It is particularly challenging to drive culture change among doctors. For this reason it is important to identify high profile hand hygiene champions among medical staff who can act as role models for hand hygiene compliance. Resources for medical spokespersons, including PowerPoint presentations outlining the evidence for hand hygiene having an impact on HAIs, are available on the HHNZ website.

OPINION LEADER STRATEGY

Some handy tips on how to develop an opinion leader engagement strategy can also be found in the November 2012 issue of *The Clean Hands Chronicle*, which is available via the HHNZ website under the news tab.

Table 1. Suggested steering group members

Programme officer/ Programme coordinator	Microbiology laboratory representative	Clinical education representative
Executive member/sponsor	Medical and/or surgical representative	Patient representative/consumer
Medical champion	Quality improvement representative	Supply/stores department
Infection control consultant(s)	Human resources	Allied health
Pharmacist	Occupational health and safety representative	Environmental services representative
Infectious diseases physician(s)	Hand hygiene programme representative from each pilot ward (ward champion)	Public relations/communications consultant

2. APPOINT A HAND HYGIENE COORDINATOR

The hand hygiene coordinator role is an operational leadership role that is critical to the success of a DHB hand hygiene programme. The coordinator, with the support of the DHB's hand hygiene steering group, will assume a leadership role in delivering the programme.

The hand hygiene coordinator is the main point of contact for hand hygiene related matters within the DHB and should, ideally, have an understanding about hand hygiene and infection control. The hand hygiene coordinator may also have professional experience of quality and safety practices in healthcare provision.

It is also useful if the hand hygiene coordinator has marketing and strong communication skills or that this resource is available to them. One of the hardest parts of such a culture change programme

is the engagement of a wide range of HCWs across a variety of clinical places.

The coordinator role will include facilitating the appointment of and overseeing staff acting as hand hygiene ward champions, supporting them to promote their local DHB programme and assist with behaviour change.

The hand hygiene coordinator role also includes:

- Establishing education tools for use by clinical educators
- Establishing a mechanism for monitoring online education uptake
- Ensuring that there is an adequate supply and flow of ABHR product to the point of care
- Generating and implementing hand hygiene promotional activities. For example, poster design competitions, newsletters, giving presentations, World Hand Hygiene Day

- Providing and receiving regular and timely feedback on progress and compliance to the hand hygiene steering group, senior management and the national HHNZ programme team
- Formally recognising the hand hygiene achievements of DHB staff
- Recruiting and organising the training of gold auditors by a validated gold auditor trainer
- Ongoing monitoring of gold auditor trainer status, ensuring that it meets the HHNZ standard
- Accessing and using the HHNZ hand hygiene compliance database to view and assess audit information
- Liaising with HHNZ and communicating updates to auditors, steering committees and other stakeholders.

3. ESTABLISH ROLES AND RESPONSIBILITIES

Once you have established a steering group and have a hand hygiene coordinator in place, you need to allocate specific roles and responsibilities to members who have the most appropriate skill sets and knowledge. Potential roles and responsibilities include:

- Line of reporting for group members
- Establishing education/orientation resources
- Communication
- Data collection
- Compiling DHB compliance and other reports as required
- ABHR selection
- Product placement – a well organised and executed plan for the installation and continuing replenishment of hand hygiene products at the point of care is an essential

step in any program to enhance hand hygiene compliance. It needs to be somebody's allocated job – or service allocated job, e.g. cleaning service to check the product on a daily basis

- Hand hygiene policy that reflects the 5 moments approach
- Occupational health and safety management of ABHR
- Medical champion/spokesperson
- Auditor network management.

4. SELECT PILOT WARDS

HHNZ recommend the initial selection of one ward to begin a pilot implementation for the hand hygiene programme. Wards known to have greater potential for high rates of HAI should be targeted. Improvements in hand hygiene compliance rates in these wards will have the greatest impact on the prevention of infection and provide a safer environment for patients.

It is also important to choose a ward where motivation and interest are high, and the health gain is likely to be substantial, thus motivating implementation on subsequent wards.

By piloting the hand hygiene programme on one ward, any initial problems with product placement and supply, or staff motivation and education, for example, can be addressed prior to commencing the programme on other wards, and eventually to the rest of the hospital.

The selection of pilot wards should be made with executive approval and in conjunction with the appropriate committee at the hospital (e.g. Infection Control Committee, Hand Hygiene Steering Group, Quality Improvement Committee). Strong senior nurse input is also required for pilot ward selection, along with collaborative consultation with charge nurses and managers. Engagement at this level will help to ensure the success and sustainability of the programme.

5. APPOINT WARD CHAMPIONS TO COORDINATE THE PROGRAMME AT WARD LEVEL

Enthusiastic staff should be appointed as hand hygiene ward champions to take responsibility for leading hand hygiene promotion in their ward, including uptake of the online hand hygiene learning package.

Ideally, ward champions should be individuals who are already in a position of influence within their service and are well respected by colleagues. The role of ward champion involves:

- Having an in-depth understanding of the 5 moments and all the definitions pertaining to it, (e.g. what is a procedure, what is the patient zone)
- Acting as a role model for all staff
- Motivating staff
- Facilitating involvement and ownership of the project by HCWs in each ward
- Presenting compliance data to staff
- Monitoring product placement and availability by conducting audits
- Assisting with promotional activities in their ward
- Teaching and assisting HCWs to complete the online learning package
- Educating new staff in hand hygiene and ABHR use
- Ward orientation to all new staff regarding hand hygiene product
- Advising patients about the hand hygiene programme and explaining why it is important
- Being an informal auditor, reporting findings back to ward meetings for improvement (optional).

The role of ward champion should be recognised by senior DHB management and the hand hygiene steering group as an important role that should be well supported.

CHAPTER THREE: PROCURE AN APPROPRIATE ALCOHOL-BASED HAND RUB

When hands are not visibly soiled, alcohol-based hand rub (ABHR) solutions are almost always preferred over soaps for hand hygiene in healthcare settings. There are several reasons for this preference:

- ABHR have greater efficacy in terms of reducing bacterial load on hands¹⁰⁻¹¹
- ABHR can be used repeatedly at the point of care and do not require the additional time to find and use a basin
- The availability of ABHR at the point of care has been repeatedly associated with improvement in hand hygiene compliance¹⁵.

There are several ABHR formulations available on the market in New Zealand. The following information is intended to assist with product selection and is a recommendation only. The ultimate choice of product lies with each individual DHB. There is no intention to favour any particular product formulation or brand.

- HHNZ recommends that ABHR solutions should meet the EN1500 testing standard for bactericidal effect
- Generally, products meeting this standard have an ethanol concentration of at least 70% volume / volume (v/v) or a 60% concentration of isopropyl alcohol.

Other important considerations when choosing a product:

- It is essential that the dispenser is user friendly and easy to make available at the bedside and in other patient care areas
- Products with added fragrance and colour are best avoided due to the added risk of adverse skin reactions

- Products should contain an emollient that is well tolerated and prevents drying of the skin without leaving a sticky residue on the hands
- Products should dry quickly. In general, ABHR solutions dry more quickly than gels and are preferred by healthcare workers for this reason
- Dispensers that conveniently dispense 1-3ml of product
- Have a well fitted bracket available for placement at the end of beds. Bracket availability and installation is important to consider (see chapter 4).
- If a bottle is clear it can make it easier to establish replenishment needs
- Ask the company supplying the product about their ongoing product support (providing replacement brackets, assistance with World Hand Hygiene Day).

ABHR WITH CHLORHEXIDINE

Some ABHR preparations include a chlorhexidine component, which is generally well tolerated.³⁻⁵ The rationale behind the inclusion of chlorhexidine in these products is to provide more prolonged antibacterial activity after the solution has dried, than is provided by alcohol alone.⁵ However, alcohol remains the most potent antibacterial agent, and is the essential component. While ABHR products are essential for any hand hygiene programme, the addition of chlorhexidine to these products should be considered optional.

The ABHR that is selected must be acceptable to healthcare workers. For this reason, before deciding upon a product it is essential to trial it. Acceptability to healthcare workers is a far more important consideration than price. Please refer to page 44 for guidance on how to trial product tolerability and acceptability.

CHAPTER FOUR: ENSURE PRODUCT PLACEMENT AT THE POINT OF CARE

The success of a hand hygiene programme is dependent on the ready availability of alcohol-based hand rub products in the work area and near the patient. Dispensers must be placed strategically in the most convenient locations to provide minimal disruption and make it as easy as possible for healthcare workers to perform hand hygiene at each of the 5 moments. Clinical staff should help decide the best positions for placement of dispensers in their work areas.

Examples of areas for ABHR dispensers include (but are not limited to):

- Within the patient zone, at the end of every patient bed (fixed or removable brackets)
- On mobile work trolleys for easy accessibility (e.g. intravenous, drug and dressing trolleys)
- In high staff traffic areas (e.g. nurse stations, 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.

As a starting point, ABHR should be placed at the end of every bed, and/or within each patient cubicle, as well as outside of each patient room. Note that it is generally best to avoid placing dispensers next to sinks as this can cause confusion.

Some patient zones may need more than two or even three dispensers. For example, in an intensive care unit setting it may be necessary to also place a dispenser near the head of each bed to facilitate hand hygiene between tasks, as well as at the foot of the bed, and/or on the work station.

SPAGHETTI DIAGRAMS

A useful way to determine best placement of ABHR is to use a spaghetti diagram. A spaghetti diagram is a tool that can assist you to ensure the best possible placement of ABHR within a ward by demonstrating existing inefficient placement on a ward.

In particular it will help you to see unnecessary or unhelpful movement of staff. For example, are staff criss-crossing over each other, or over patients to reach the ABHR? Are they cleaning their hands and then having to open curtains (e.g. no ABHR inside the curtains), are staff and patients sharing tables for equipment and personal items?

To draw a spaghetti diagram you will need to draw the overhead layout of the area you are observing, then draw lines on the diagram that represent the flow of individual staff members as they move between patients and ABHR product.

Make note of any awkward elements in the line flows, or any regular interruptions, ask why certain trips are made, discuss the diagram with staff on the ward and seek their input into improving the placement of ABHR, by showing them the current flow within the ward.

Source: Spaghetti Diagram, NHS Institute for Innovation and Improvement (2008). See also 'The New Lean Toolbox' by John Bicheno (2006) and 'The Toyota Field Book' by Jeff Liker (2004).

Once sites of placement have been determined, the ABHR dispensers should be consistently and predictably placed at those sites so healthcare workers in that area can locate the ABHR with minimal effort. Accompanying signage for appropriate use of ABHR is also helpful. The decision for placement should be made in conjunction with the hand hygiene champion staff in those areas and preferably after they have had 5 moments education.

For placement at the bed end, most commercially available dispensers of ABHR will require brackets. Bracket design is important for optimal placement of dispensers and thus is an important practical consideration (e.g. some brackets may not be able to be attached to bed rails of varying sizes).

Special consideration is necessary when placing ABHR in clinical areas where oral consumption or accidental splashing is a particular risk. Areas requiring special consideration include:

- **PAEDIATRICS** – ABHR should be located with care near children, in supervised areas and out of reach of small children
- **MENTAL HEALTH** – ABHR should be located with care near patients that have a mental illness, patients undergoing alcohol or drug withdrawal, or where there are cognitively impaired patients
- **PUBLIC AREAS** – ABHR needs placement in high traffic areas with clear signage regarding appropriate use and the need for parents to supervise their children.

In paediatric and mental health settings, the carrying of personal ABHR dispensers by healthcare workers may be a helpful adjunctive measure to ensure that ABHR is readily available to healthcare workers when required.

OCCUPATIONAL HEALTH AND SAFETY

Although the fire hazard reporting for incidence with ABHR product is rare, the following recommendations are made by the WHO:

- ABHR should not be used immediately before handling medical gas cylinders because of the risk of ignition
- Hand gel dispensers should not be placed above or in close proximity to sources of ignition, such as light switches and electrical sockets or next to oxygen cylinders or other medical gas outlets due to the risk of the vapours igniting
- If hand gels are stored in large amounts then this information should be passed onto the emergency management services (EMS) and placed on the fire register. EMS may be required to pass this information on to the local fire authority
- Identify correct disposal methods of empty containers as these could also become a fire hazard
- ABHR is only suitable for the cleansing of hands and should not be used by HCWs or patients for the cleaning of any other surfaces such as patient tables or medical equipment.

CASE STUDY

Examining staff movement leads to improved patient safety

HAEMATOLOGY DAY STAY, AUCKLAND DISTRICT HEALTH BOARD

A lower than anticipated hand hygiene compliance rate sparked the day stay haematology team at Auckland District Health Board (ADHB) into action; resulting in a complete overhaul in their approach to hand hygiene and big changes to their patient environment.

After standing back and examining the movement of staff as they performed hand hygiene and tended to patients, Pip Brown, Haematology Nurse Educator, and her team saw a “terrible mess” and immediately set about making changes to improve patient safety.

“We realised that the layout of our day stay environment was impacting upon our hand hygiene practice and on improving infection prevention as a whole,” said Pip.

The ward, which has capacity for 22 patients, either in lazy boy chairs or patient beds, has limited physical space. For the day stay team, defining the patient zone in the three rooms that housed 10 lazy boy chairs was difficult.

“Patients were sitting close together and we were all sharing the patient tables. Patients would put their items on the table and we would put our equipment on them too because there was no room for extra tables,” says Pip.

“If a patient’s machine started beeping, whoever was closest would just reach across and attend to it, then go back to their patient. We also had one central area where we kept all our equipment and hand gel, which meant we were constantly criss-crossing around and between rooms to get to one hub.

“In the patient rooms we had glove dispensers outside of the curtains. This meant that if we put on gloves and opened the curtains we would contaminate the gloves”, adds Pip.

Nurses are now allocated specific patient areas to attend to and each room has its own equipment zone. This reduces the amount of cross-traffic between patients and to get supplies. Gloves are now fixed inside the patient zone to avoid contamination and the team is improving their approach to glove use.

“We no longer share tables with patients. Each patient has their own table and we have purchased special equipment trolleys that wheel over the top over the patient table” says Pip.

“This means we can put all our equipment and hand gel onto the trolley and the trolley stays in the patient zone permanently. This way there is less contamination with trolleys moving between patients and we are not touching their surroundings or belongings as often”, she adds.

“These changes have made a really big difference to our practice, both from a hand hygiene perspective and an overall infection control perspective.

“Most importantly we are improving the care we provide to our patients”, says Pip.

CHAPTER FIVE: ESTABLISH AN EDUCATIONAL PROGRAMME FOR ALL HEALTHCARE WORKERS

EDUCATIONAL MODULES

Education is an essential component of a successful hand hygiene programme. To achieve improvements in hand hygiene practice, it is essential for healthcare workers to clearly understand and remember when each of the 5 moments for hand hygiene is appropriate.

Unless the HCW is an auditor, it is not critical to remember the actual number associated with a moment. It is more important for the HCW to identify the specific hand hygiene occasion for each task they perform. This will ensure the HCW can perform the best hand hygiene practice at the correct time.

Online modules have been shown to be effective as an educational tool. Typical modules (such as those accessible via www.handhygiene.org.nz) include a series of educational slides followed by a self-assessment questionnaire designed so that immediate feedback is provided after each answer. Users can only move on to the next slide after they have selected the correct answer.

Reaching every healthcare worker with the educational modules

Ideally, successful completion of a hand hygiene educational module would become a condition of employment for all new healthcare workers. Employment contracts and student agreements would, therefore, include a requirement to score 100 per cent in the hand hygiene education package within a specified time period. For healthcare workers already employed by the DHB, the education package could become a mandatory component of their annual performance appraisal.

Orientation programmes for new staff should include hand hygiene education and resources

that explain the 5 moments for hand hygiene. Staff orientating new HCWs should be excellent role models for hand hygiene and should remind new staff when and where to perform hand hygiene practice as part of the orientation experience.

On the HHNZ website, we have provided a link to the educational modules that have been used successfully by the HHA programme (go to www.handhygiene.org.nz, click on the Education Centre tab and then Online Learning Packages). Tailored modules are provided for different healthcare worker groups. A user is considered to have sufficient knowledge and understanding of effective hand hygiene if they achieve a score of 100 per cent. A personalised certificate can be printed as a record of having completed the training. These modules will also allow authorised persons to access a record of those individuals in their service who have successfully completed the course.

Where DHBs already have their own hand hygiene educational modules, these should ideally allow user identification and responses to be recorded (user name, type of healthcare worker, department, employment status, answers selected and final score) and allow certificates to be generated on successful completion. These functions enable designated infection control staff and ward managers to identify staff that have not yet completed the module, or work areas that may require further assistance.

OTHER EDUCATIONAL OPPORTUNITIES

Other educational forums and opportunities should be used to reinforce, consolidate and build on the teaching points covered in the online educational module. These opportunities should be formal and informal.

Examples of formal teaching opportunities include:

- Medical and nursing grand rounds
- As part of in-service education
- Nurse unit managers meetings
- Workplace orientations
- Student intake sessions
- House officer and registrar orientation days.

Examples of informal education opportunities include:

- Providing immediate feedback on hand hygiene practice observed when working alongside the healthcare worker, or on a work area walkabout. This is very effective to assist the HCW in changing hand hygiene habits
Informal chats with staff (e.g. in the corridor or tea room)
- Provision of easily accessible, highly visible resources for staff (such as access to hand hygiene programme staff, or infection control staff).

A key principle is that education requires appropriate targeting to the numerous different professional groups of healthcare workers in the hospital setting.

Studies suggest that medical staff consistently under perform in hand hygiene compliance and are difficult to reach with standard educational approaches to generate behaviour change.¹⁴

EDUCATIONAL CONTENT

We suggest that the following should be key components of any hand hygiene educational programme:

- Definition, impact and financial burden of HAI
- The role of hands in pathogen transmission and HAI
- The role of hand hygiene in preventing HAI
- 5 moments of hand hygiene – with key messages
 - When to perform hand hygiene
 - Use of alcohol based hand rubs
 - Use at point of care
 - Appropriate and inappropriate glove use.

TOOLS AND TEACHING OPPORTUNITIES

There are many opportunities available for educating healthcare workers about hand hygiene. Suggestions for ways that you can incorporate hand hygiene education and training include:

Web based tools, for example, screensavers and games	<ul style="list-style-type: none"> ■ On all computers ■ Staff training programme
Fact sheets	<ul style="list-style-type: none"> ■ New staff ■ Promotional weeks
Peer-reviewed journal publications regarding hand hygiene	<ul style="list-style-type: none"> ■ Management meetings ■ Grand Rounds
Hand hygiene brochures	<ul style="list-style-type: none"> ■ Informal observation of poor practice ■ Students
Role play sessions	<ul style="list-style-type: none"> ■ One-on-one training ■ Staff training programme
Regular newsletters	<ul style="list-style-type: none"> ■ Results of output and outcome measures ■ Feedback on audits ■ Update on programme, and any changes
Black light box and 'glo gel'	<ul style="list-style-type: none"> ■ This is an effective tool to reveal the effect of hand washing habits, the effect of putting gloves on and off, and resulting contamination.

CHAPTER SIX: PROMOTE HAND HYGIENE

There are many ways to promote good hand hygiene practice. Providing ongoing reminders about hand hygiene will help to raise awareness about the importance of this practice to patient safety. This may include planning events in support of World Hand Hygiene Day (05 May each year), developing a hand hygiene newsletter for your DHB, or holding hand hygiene education presentations or workshops.

You may also like to develop hand hygiene promotional posters for your DHB, or use the variety of existing HHNZ promotional posters that can be freely accessed under the Resource Library tab on the HHNZ website. Promotional posters, including how-to hand wash, hand-rub and the 5 moments for hand hygiene posters should be displayed prominently throughout the hospital, particularly at the point of care (in wards, above sinks, by beds). Be sure to clarify your DHB's policy of poster placement – a good place to start with this is often the communications department within your DHB.

You can also use the opportunity to develop hand hygiene promotional posters for your DHB as a way to engage and incorporate the views of healthcare workers within your hospital. One idea may be to hold a poster design competition, which could be incentivised. 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. You may also like to consider using photos of local staff in your posters.

HHNZ encourages DHBs to showcase their locally developed resources on the HHNZ website – simply email them to info@handhygiene.org.nz. The DHB contributing the resource will be clearly acknowledged.

WORLD HAND HYGIENE DAY

Resources to inspire and support World Hand Hygiene Day activities can be found at www.handhygiene.org.nz under the Events tab and World Hand Hygiene Day.

Also take a look at the World Health Organization for regular World Hand Hygiene Day updates: www.who.int/gpsc/5may/en/.

OTHER PROMOTIONAL ACTIVITIES

There are a variety of ways in which you can promote messages about hand hygiene throughout your DHB. Think about including a variety of practical and quirky ideas, as well as ideas that gather groups of healthcare workers together so that you have an opportunity to educate them directly, for example, an afternoon tea designed as a how-to hand wash/rub workshop.

You could also consider holding competitions and awards programmes to celebrate individuals and wards that are performing particularly well when it comes to hand hygiene.

CASE STUDY

Hawke's Bay District Health Board (HBDHB) Emergency Department

In preparation for the 2012 gastro season, Paula Draper, clinical nurse coordinator at Hawke's Bay DHB emergency department (ED) took it upon herself to implement the 5 moments approach to hand hygiene within the emergency department.

Since then she has been dedicated to spreading positive messages and education about hand hygiene throughout the ward.

Some of the promotional initiatives Paula developed for the ED include having the 'Friends of the Emergency Department' replace empty alcohol gel products, and creating a 'gel patrol' to remind patients, visitors and staff to use hand gel on entering and leaving the department.

Paula has also developed posters and used notice boards to promote hand hygiene. Her slogan 'glo and tell' was used to encourage use of the light box in the tea room, challenging staff to practice correct hand hygiene techniques. Stickers were awarded to those who successfully completed this challenge.

Presentations also featured along the way, talking about the difficulties of maintaining effective infection prevention and control in a busy ED environment, as a way to raise awareness about the importance of hand hygiene.

The following suggestions may spark some ideas for different ways to promote hand hygiene throughout your hospital:

- Give away promotional merchandise (e.g. pens, sticky note pads)
- Spot prizes
- Stickers/badges/pens/sticky note pads (with hand hygiene slogans on them)
- Slogan competitions
- Quizzes, crosswords, word search
- Pay slip notices
- Internal magazines/newsletters
- Computer screen savers.

The HHNZ website (www.handhygiene.org.nz) provides a number of resources and information to support DHBs in promoting hand hygiene locally – take a few moments to have a look around to see what is available. There is also a lot of useful material on international websites, see page 47 for useful hand hygiene related links.



Tairawhiti District Health Board

Over the past three years Ray Pickles, clinical nurse specialist in the infection prevention control team, has worked his way around Tairawhiti DHB, making sure all healthcare worker and hospital disciplines including cleaning staff, have received training in the 5 moments for hand hygiene approach.

To raise awareness, Ray has spent time dressed as a bug on World Hand Hygiene Day encouraging staff to use hand rub, as well as making posters that feature agar cultures grown from the bacteria on the hands of volunteers.

Likewise, he has activated a number of other awareness raising initiatives throughout the DHB, such as placing pink hand stickers on the floor at the entrance of every ward and unit to remind people to perform hand hygiene.

He has enthusiastically waved foam hands in the air to promote each of the 5 moments for hand hygiene,

and is proactive at keeping the hand hygiene message alive through the DHB's communications team.

Ray also ensures that a lack of access to hand rub cannot be an excuse. He regularly distributes hand rub to every bedside, ward, and hospital entrance and ensures that Tairawhiti's district nursing and inpatient mental health unit are provided with pocket sized bottles of hand rub. What's more, all Tairawhiti DHB patients receive a card that explains the programme and encourages them to keep their hands clean. It also tells them that it's okay to ask clinical staff to clean their hands.

CHAPTER SEVEN: EVALUATE HAND HYGIENE PRACTICE AND PROVIDE FEEDBACK

The impact of your hand hygiene programme should be measured with both a performance and an outcome measure. Measurement is conducted by trained HHNZ gold auditors who carry out auditing based on these two measures, within individual DHBs as highlighted below:

PERFORMANCE MEASURES

Hand hygiene performance rates are measured through:

- The total number of hand hygiene moments observed during a specified monitoring period
- The total number of appropriately performed hand hygiene moments
- The corresponding rate of compliance.

OUTCOME MEASURES

The outcome of hand hygiene performance is measured through the rate of healthcare associated *Staphylococcus aureus* bacteraemia.

Each DHB has a gold auditor(s), trained according to the 5 moments for hand hygiene as recommended by the WHO. Gold auditors are trained and certified by DHB gold auditor trainers that have undertaken additional HHNZ training.

Each participating DHB, through their gold auditor, is required to audit and submit data to HHNZ by the required submission dates as outlined under the auditing tab on the HHNZ website. 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.

THE PERFORMANCE MEASURE: HAND HYGIENE PERFORMANCE RATES

To achieve statistically meaningful results, hand hygiene compliance should be assessed by a defined minimum number of hand hygiene observations (moments). The time taken to complete the required number of observations will vary depending on the level of clinical activity in the observed area, the experience of the auditor, and the time of day the audit is conducted. Nevertheless, the key determinate of adequate hand hygiene compliance assessment is the use of hand hygiene moments, not the time taken.

The data collection schedule will be influenced by the number of acute beds in each DHB (see Table 2), the number of trained staff available to undertake hand hygiene observations (gold

Table 2. Number of auditing wards and number of required sites according to DHB bed number

Number of acute inpatient beds at the DHB site	Required number of hand hygiene audits per year	Required number of wards/areas per hand hygiene audit	Minimum required number of hand hygiene observations per ward area	Total minimum hand hygiene moments for DHB per audit
>400	3	7	350	2450
300-400	3	6	350	2100
200-300	3	5	350	1750
100-200	3	4	200	800
50-100	3	2	100	200
25-50	3	1	100	100
< 25	3	1	50	50

auditors), and the option taken for the selection of wards. Hand hygiene compliance rates should be reflective of a cross-section of the DHB's HCWs, rather than just repeated or prolonged observations on a small number of HCWs.

The time taken to complete all observation sessions will depend upon the number of hand hygiene moments observed for each session, the number of observation sessions completed each day and the number of field observers available (see Table 2. above).

SELECTION OF AUDITING WARDS

Several factors need to be considered when deciding which representative wards/areas should be audited. Wards known to have greater potential for high healthcare-associated infection rates should be targeted because these are the wards where improvements in hand hygiene compliance will have the greatest impact on infection rates. Generally, these wards will also have the greatest staff/patient activity and interaction, which results in higher numbers of hand hygiene moments being audited in shorter time periods.

Such high risk wards include (but are not limited to) all intensive care units, haematology/oncology wards, transplant wards, renal dialysis wards, wards with immunocompromised patients, and wards with a high prevalence of multi-resistant organisms. Other wards should be considered standard risk wards.

The selection of wards should be made in conjunction with the appropriate committee at the hospital (e.g. infection control committee, hand hygiene steering group, quality improvement committee) and with chief executive approval.

Each facility should have a hand hygiene compliance audit cycle plan endorsed by the appropriate committee/steering group at the DHB (as above). The hand hygiene compliance audit cycle plan should clearly identify high risk wards and standard risk wards.

High risk wards should always be audited in each audit period. If there are still moments to collect after auditing high risk wards, then there are three options for auditing standard risk wards so that you can meet your DHB's quota of moments (please refer to the HHNZ Auditing Manual for more detailed information about auditing of high risk and standard risk wards).

GETTING YOUR HAND HYGIENE COMPLIANCE RESULTS TO HHNZ

Data must be submitted by every participating DHB to HHNZ according to the submission dates published on the HHNZ website under the auditing tab. Auditing currently takes place three times a year. All data submitted is analysed by HHNZ, reported to the Commission and to each DHB.

Overall rates of hand hygiene compliance (including 95% confidence intervals) are reported for each DHB and nationally. Individual DHBs will have direct access to their own data and a set of standard reports that enable them to examine the detail of their results to inform the ongoing implementation and continuous improvement of their particular hand hygiene programme.

REPORTING RESULTS

Feedback of results to those concerned can be a very powerful motivational tool. It is important that feedback of results is given as soon after the results are available as possible. In the eventuality of unchanging bad results, it is important that the tone and context of reporting is thoughtfully considered to avoid loss of interest. In such circumstances, it is important to identify the key barriers/factors that may be impacting upon unchanging bad results to determine whether there are any practical solutions that can be implemented to improve hand hygiene compliance rates.

USING REPORTS FOR FURTHER EDUCATION ABOUT HAND HYGIENE COMPLIANCE

Hand hygiene compliance rates are both a useful outcome measure for a hand hygiene culture change programme, and a very useful educational tool for HCWs. Reporting results of hand hygiene observation to HCWs is an essential element of multi-modal strategies to improve hand hygiene practices. Early feedback of hand hygiene compliance rates to audited HCWs is a crucial and effective component to achieving improvements in hand hygiene compliance and to engaging HCWs in effective cultural change. The hand hygiene coordinator, along with the hand hygiene steering group, should oversee such education and feedback.

Ward reports should be given to managers of the wards in a timely manner, ideally within one month of data collection, with subsequent reporting to all ward staff and further training as required from the audit. Hospital reports should be presented to hospital management at regular intervals, and should become a standard agenda point on hospital board and quality meetings.

CASE STUDY

Personalised feedback doubles hand hygiene compliance

A major trial conducted by researchers at the University College London (UCL) and the Health Protection Agency in the United Kingdom found that personalised feedback can double hand hygiene compliance among healthcare workers.

The three year Feedback Intervention Trial (FIT), which is the largest of its type in the world, was carried out in 16 hospitals across 60 wards that were participating in England and Wales' Clean Your Hands campaign. It is also the first such trial to use behavioural science as a way to change hand hygiene behaviour among healthcare workers, say the researchers.

The study demonstrated that a combined approach of individual feedback and a personalised action plan improved hand hygiene compliance by up to 18 per cent in Intensive Therapy Units (ITUs) and 13 per cent in Acute Care of the Elderly (ACE) wards. Soap use also increased by 30 per cent.

The intervention process involved a four-week audit cycle, with healthcare workers observed for 20 minutes. Immediate feedback was given after the period of observation, and the individual was then helped to form a personal action plan for better hand hygiene. The effect was stronger on ITUs than ACEs, where it was easier to implement. The more frequently wards carried out the intervention, the stronger its effect.

According to Louise Dawson, National Coordinator for the HHNZ programme and Auckland DHB's Hand Hygiene Coordinator, the benefits of providing individual feedback have been noticed at ADHB.

"We have noticed that staff perform much better on audit once they have had a period of personal feedback from a hand hygiene educator, particularly dealing with common procedures like giving IV medication and before and after patient contact," says Louise.

Source: Fuller C, Michie S, Savage J, McAteer J, Besser S, et al. (2012) The Feedback Intervention Trial (FIT) — Improving Hand-Hygiene Compliance in UK Healthcare Workers: A Stepped Wedge Cluster Randomised Controlled Trial. PLoS ONE 7(10): e41617. doi:10.1371/journal.pone.0041617

THE OUTCOME MEASURE: HEALTHCARE ASSOCIATED *STAPHYLOCOCCUS AUREUS* BACTERAEMIA RATES

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 healthcare associated *Staphylococcus aureus* bacteraemia per 1000 inpatient days is a good outcome measure to monitor the impact of improvements in hand hygiene practice. This definition is also the same surveillance definition used nationally in Australia.

DHBs should submit *Staphylococcus aureus* data to HHNZ by the required submission dates as outlined on the HHNZ website, via the SAB outcome data spread sheet form. The form can be found at www.handhygiene.org.nz – go to the auditing tab and then click on *Staphylococcus aureus* bacteraemia outcome data. Data should be submitted to HHNZ one month after the hand hygiene compliance audit period, for each of the months within the audit period. For example, for a 30 June audit period, DHBs should submit SAB data for April, May and June at the end of July.

RETROSPECTIVE ASSESSMENT OF *STAPHYLOCOCCUS AUREUS* RATES

To provide relevant baseline data regarding *Staphylococcus aureus* rates prior to commencement of the hand hygiene culture change programme, all DHBs are requested to provide monthly healthcare-associated *Staphylococcus aureus* bloodstream infection rates for the 24 months prior to programme commencement.

MONITORING HAND HYGIENE FOR IMPROVEMENT

The following documents are useful reference points prior to commencing your hand hygiene auditing programme:

- **HHNZ Auditing Manual** – provides a step-by-step guide to implementing an auditing programme within your DHB.
- **World Health Organization – WHO Guidelines on hand hygiene in healthcare** discusses hand hygiene as a performance indicator and outlines monitoring methods.

CASE STUDY

Timely feedback makes a difference at Capital and Coast DHB

As hand hygiene coordinator at Capital and Coast DHB (CCDHB), James Robertson not only promotes the importance of good hand hygiene and the 5 moments approach, but plans and manages all aspects of hand hygiene compliance auditing, including feedback of results.

“Reporting compliance data back to each ward and to the wider DHB is one of the most important parts of my role,” says James.

“Auditing must be a cyclical process with feedback. People want to know what their result is and how they can improve it,” says James.

“The reports we generate show which wards, groups of healthcare workers, and moments require further attention. This is then fed back to the appropriate wards and we discuss suggestions about how they can improve rates.

“From my experience this is a hugely beneficial part of the process as it can make a real difference to engagement with the ward and to how well they do,” he says.

James also presents hand hygiene compliance data via presentations at relevant DHB meetings such as Grand Rounds or at clinical governance committee meetings.



According to James the feedback of compliance results to wards and the wider DHB has also resulted in growing interest from clinicians.

“Over time they have seen the results that are coming through for our DHB. They are also familiar with the positive impact that our counterparts in Australia have had with their hand hygiene programme.

“There is a definite warming in the level of support we are seeing from them,” says James.

GLOSSARY OF TERMS

Alcohol-based hand rub (ABHR)	An alcohol-containing preparation designed for application to the hands in order to reduce the number of viable organisms with maximum efficacy and speed.
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	Any body fluid/ substance, with the exception of sweat, including: <ul style="list-style-type: none"> ■ ascites fluid ■ biliary fluid ■ blood ■ breast milk ■ cerebrospinal fluid ■ faeces ■ gastric and respiratory secretions ■ organic body samples – e.g. biopsy samples, organs and cell samples ■ pleural fluid ■ saliva ■ secretions from mucous membranes ■ sperm ■ tears ■ urine ■ vomitus ■ wax.
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.
Decontaminate hands	Application of either an antimicrobial soap/solution and water or an alcohol-based hand product, to the surface of the hands. This process reduces microbial counts on hands.
Emollient	Ingredient(s) added to hand hygiene products to moisturise and protect the skin from frequent product use.
Gold auditor	A hand hygiene auditor whose data collection and entry has been validated by a platinum auditor.
Gold auditor trainer	A validated gold auditor that has undertaken and passed an additional HHNZ 'train the trainer' workshop in order to train and manage a pool of gold auditors within their DHB.
Grand rounds	Regular meetings to promote excellence and quality in clinical care and to introduce clinicians/nurses to recent developments in medical care.
Hand care	Actions to reduce the risk of skin damage or irritation. For example, using a moisturiser regularly throughout the day.

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 based hand rub).
Hand hygiene compliance	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. The denominator is the number of moments for assessing hand hygiene compliance. The rate of hand hygiene compliance is the actual number of hand hygiene actions undertaken divided by the number of moments observed.
Hand hygiene coordinator	A person who is assigned the operational position to lead and manage the hand hygiene programme for a DHB and is the link for communication between HHNZ and the DHB.
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.
Healthcare associated infection (HAI)	Infections that originate from, or are related to, a healthcare setting or the delivery of healthcare.
Healthcare worker (HCW)	Any employee of a healthcare institution who has patient care responsibilities and contact.
Healthcare zone	Includes all areas outside of the patient zone.
Invasive medical device	Any piece of equipment that enters a patient's skin or body cavity. This encompasses the entire device (e.g. IV line, IV pump, IV pole).
Outcome measure	A feature used to describe the effects of care on the health status of patients and populations (e.g. infection rate).
Patient	Includes any part of the body of the patient and their clothes or any medical device that is connected to the patient.
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).
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.
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.
WHO	The World Health Organisation.

SKIN CARE

The incidence of skin problems as a result of widespread increased use of alcohol-based hand rub (ABHR) will be very low but may not be zero. The majority of skin problems among healthcare workers related to hand hygiene consist of irritant contact dermatitis although the incidence of this problem in a recent study of Victorian healthcare workers was extremely low (0.47 percent).¹⁵

Complaints from healthcare workers about skin problems should be taken seriously and a review process instigated. All hospitals should have a referral protocol so that healthcare workers with persistent skin problems thought to be related to ABHR can be referred to the Occupational Health Service within your DHB.

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 not been reported. Factors that may increase risk of irritant dermatitis include:

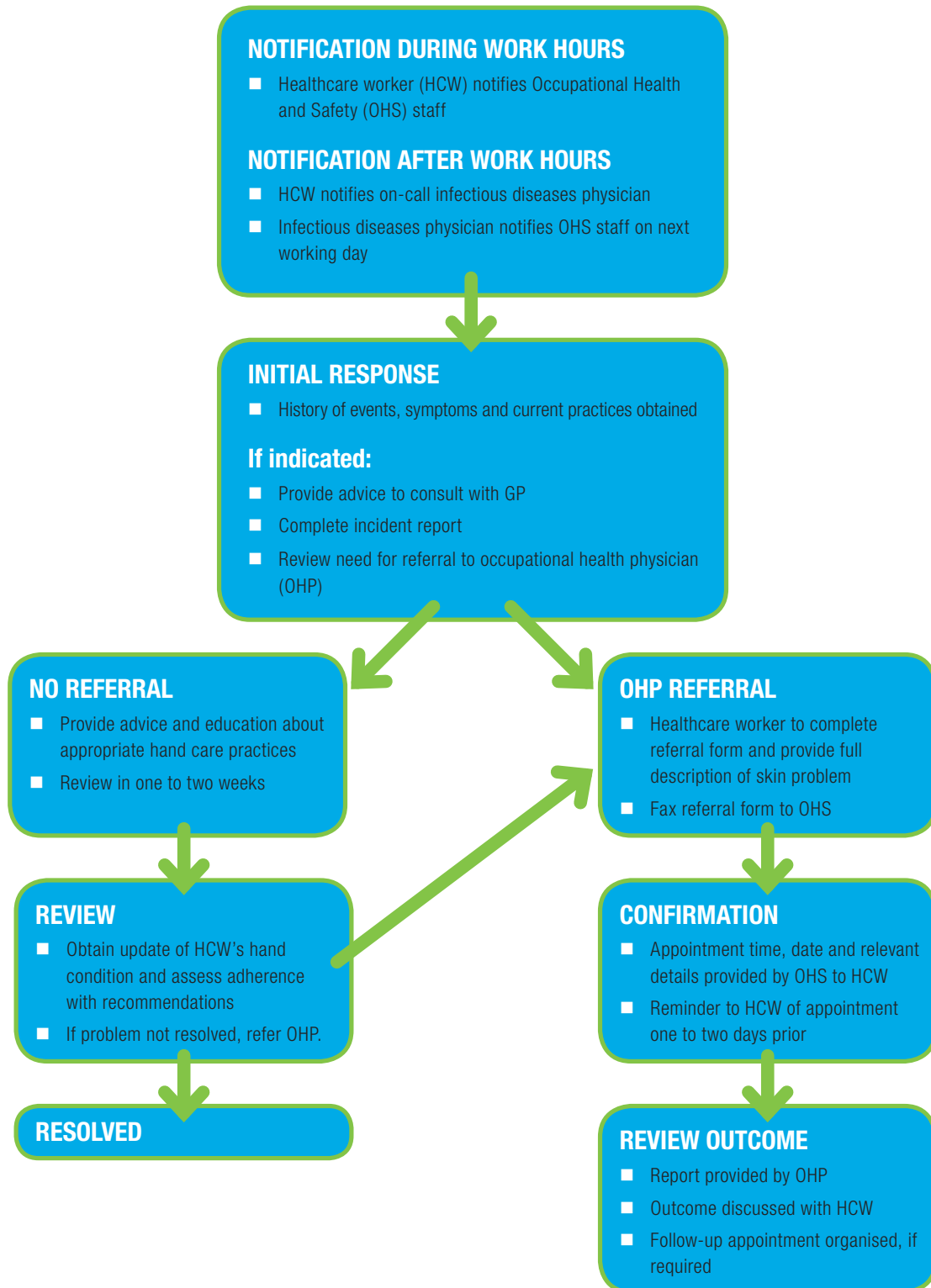
- ABHR products containing fragrances and preservatives; it is recommended that these are kept to a minimum or eliminated
- Washing hands regularly with soap and water immediately before or after using an ABHR
- Donning gloves while hands are still wet from either hand washing or applying ABHR ¹
- Using hot water for hand washing.

STRATEGIES TO MINIMISE OCCUPATIONAL HAND DERMATITIS

The following recommendations may assist in the reduction of occupational hand dermatitis:

- Use a hand hygiene product that contains skin emollient
- Provide alternative hand hygiene products for HCWs with confirmed allergies or adverse reactions to the standard ABHR product. These products could be carried by the affected healthcare worker
- Educate staff on practices to reduce risk of irritant contact dermatitis 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
- Provide a supportive attitude towards staff with skin problems
- Provide HCWs with hand lotions or creams to minimise the occurrence of irritant contact dermatitis associated with hand antisepsis or hand washing.

Figure 2. Example procedure for managing occupational health concerns related to ABHR



EVALUATING THE TOLERABILITY AND ACCEPTABILITY OF ABHR PRODUCT AMONG HEALTHCARE WORKERS

It is important to assess its acceptability and tolerability of an ABHR among healthcare workers at your hospital. The following approach may be helpful in making this assessment:

- Approximately forty volunteer participants using at least 30 ml of product per day.
- Evaluation includes the following two components:

1 **OBJECTIVE EVALUATION:** the observer uses validated scales' 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 tolerance¹. 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.

INFORMATION AND INSTRUCTIONS:

- The study concerns one 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 (one 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 three to five consecutive days of product use and after one month of product use
- The participant must complete a questionnaire after the first three to five consecutive days of product use and after one month of product use

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- The amount of test product distributed for the first three to five days is recorded and compared with the first three to five 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 three to five consecutive days of product use
 - The participant is requested not to use hand lotion or cream during the first three to five consecutive days of product use
 - The participant must inform the observer if he/she stops the test prematurely.

Questionnaires to assess healthcare worker tolerability and acceptability of the selected ABHR can be found in the resource library on the HHNZ website.

¹⁾ Larson E. and col. Prevalence and correlates of skin damage on the hands of nurses. Heart & Lung 1997; 26:404-412.

GLOVE USE

Disposable, non-sterile gloves are recommended to be worn during routine patient care for two main reasons:¹

1 To reduce the risk of HCWs hands being exposed to blood and other body fluids

2 To reduce the risk of spreading germs between patients in the setting of contact precautions.

Gloves are not a substitute for hand hygiene as they do not provide complete protection against hand contamination. Pathogens may gain access to the hands via small defects in gloves or by contamination of the hands during glove removal. Bacterial flora colonising patients may be recovered from the hands of < 30% of HCWs who wear gloves during patient contact².

Wearing gloves while caring for a patient in contact precautions, without removing them at appropriate times to perform hand hygiene, could lead to the transmission of germs between contaminated and clean sites in the individual patient.

- Hand hygiene is required **immediately before** donning gloves and **immediately after** glove removal.

It is important to emphasize that gloves should be removed to perform hand hygiene as indicated by the 5 moments for hand hygiene during the care of a single patient (see moments 2 and 3).

Glove usage should be audited and statistics should be reported to each ward/unit. This information can be found in the HHNZ compliance database on the reporting pages for both the HCW and under 'the moments'.

¹⁾ World Alliance for Patient Safety. Who Guidelines on Hand Hygiene in Healthcare (Advanced Draft): Global patient safety challenge 2005-2006: Clean care is safer care. World Health Organisation; 2005.

²⁾ Centres for Disease Control and Prevention. "Guideline for Hand Hygiene in health-care settings: Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force". Morbidity and Mortality Weekly Report. 2002; 51 (No. RR-16).

USEFUL RESOURCES AND LINKS

RESOURCES

The HHNZ website contains a number of practical and useful resources to assist hand hygiene coordinators with the implementation of the HHNZ programme in their DHB. This includes:

- Promotional materials (posters, leaflets)
- Research
- Guidelines, manuals and technical documents
- Examples of recommended hand hygiene policies
- Questionnaires and forms.

In particular, you may find the following forms and questionnaires useful when establishing your hand hygiene programme:

- Hospital level situation analysis form
- Ward structure survey
- Tolerability and acceptability of ABHR product questionnaires.

To keep up-to-date with HHNZ programme news, sign up to the HHNZ mailing list and receive our eBulletin, newsletter and other HHNZ programme updates straight to your inbox. [Go to www.handhygiene.org.nz](http://www.handhygiene.org.nz) and click on the news tab to find our mailing list form.

LINKS

Hand Hygiene New Zealand website
www.handhygiene.org.nz

Health Quality and Safety Commission
www.hqsc.govt.nz

**World Health Organisation:
Clean care is safer care**
www.who.int/gpsc/en/

Hand Hygiene Australia
www.hha.org.au

Institute for Healthcare Improvement
www.ihl.org

NHS National Patient Safety Agency (NPSA)
www.npsa.nhs.uk/cleanyourhands

Health Protection Scotland
www.washyourhandsofthem.com

CONTACT US

If you have any questions about the implementation of the HHNZ programme within your DHB, take a look at the frequently asked questions section of the HHNZ website, or contact the HHNZ programme team. Email info@handhygiene.org.nz or visit www.handhygiene.org.nz

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