SECTION 4
RISK MITIGATION: STANDARD PRECAUTIONS

CONTENTS

4 Standard precautions

"…. Standard precautions is the first line of defence in infection control and assumes that all blood and body fluids are potential infectious."

Sonya Osborne, 2002 (67)

Standard precautions are the minimum precautions required when providing care to a patient at any time and in any care setting (32).

Standard precautions are meant to reduce the risk of transmission of blood borne and other pathogens from both recognised and unrecognised sources.

Hand hygiene is a major component of standard precautions and one of the most effective methods to prevent transmission of pathogens associated with health care. In addition to hand hygiene, the use of personal protective equipment (PPE) should be guided by risk assessment and the extent of contact anticipated with body substance or pathogens.

A risk management approach must be adhered to at all times to protect patients, healthcare workers and the healthcare setting more broadly.

Health Practitioner Regulation (NSW) Regulation 2010

WHO Standard precautions in healthcare

Standard precautions comprise the following measures:-

- Hand Hygiene
- Respiratory Hygiene (Cough Etiquette)
- Personal Protective Equipment (PPE)
- Aseptic Technique
- Needle-stick and Sharps Injury Prevention
- Cleaning and Disinfection
- Waste Disposal

Each of these measures will be described in this section in further detail.

Case study 6: Norman's story - when standard precautions aren't used

A 70 year old gentleman, Norman, presented to the hospital's emergency department with chest pain. An IV cannula was inserted in his right forearm for pain relief and intravenous fluids. Norman has experienced a lot of discomfort since arriving at the emergency department and he has been sweating. He is transferred to a ward bed on the same day. The ward appears to be very busy as HWs are moving from patient to patient without performing hand hygiene. The nurse caring for Norman introduces herself and checks his IV, she finds that the dressing has lifted and there is old blood around the cannula. The nurse has a new IV dressing in her pocket. She removes the old dressing and replaces with a new dressing. The nurse did not perform hand hygiene before or after the procedure nor did she put on gloves.

It is now day four of Norman's admission, he has a temperature of 38.7^{0}C and the cannula site on his right forearm is inflamed and swollen. The nurse removes the cannula. Blood cultures are collected and intravenous antibiotics are commenced. Forty eight hours later the microbiology results are available and indicate that Staphylococcus aureus had grown in the blood cultures.

What happened?
Norman developed a preventable hospital-associated inpatient infection which resulted in increasing his length of stay in hospital by ten days.

The nurse caring for Norman had not performed hand hygiene before and after touching him or before and after performing a procedure. This omission potentially resulted in transmission of microorganisms, including *S. aureus,* possibly from the nurse's unwashed hands and or poor asepsis during the procedure. The nurse also did not use gloves when in contact with the old blood around the cannula. This potentially could cause an occupational exposure. Carrying a sterile dressing in the nurse's pocket compromised the integrity of the packaging which could have contaminated the dressing. The nurse did not use aseptic technique when changing the IV dressing and therefore contaminated the IV cannula site.

How could it have been prevented?
If the nurse had performed hand hygiene in accordance with the five moments and maintained asepsis of a key site, cross transmission may have been avoided. Had the nurse applied the principles of aseptic technique and cleaned the IV site before the application of a clean and intact dressing to the IV site, in addition, it is recommended that HWs perform hand hygiene prior to contact with sterile stock, the risk of infection would have been minimised. Wearing a pair of gloves would reduce her exposure to Norman's blood.

4.1 Hand hygiene

Hand hygiene is recognised as the cornerstone of infection prevention. Hand hygiene is the act of cleaning hands with alcohol based hand rub (ABHR) in either liquid, foam or gel form; antiseptic liquid hand wash and running water; or (plain) liquid soap and running water and dry with single use towels. Wearing gloves should not be considered a substitute for hand hygiene (32).

NSQHS - VERSION 2 NATIONAL STANDARDS Standard 3

4.1.1 Hand hygiene principles

HWs are required to perform hand hygiene:

- Before and after patient contact;
- Before and after a procedure;
- After a body fluid exposure;
- Immediately before and after glove use;
- Between individual patients;
- Between dirty and clean sites on the same patient (in the continuum of care for the patient, the HW should attend to clean sites before dirty sites);
- Before handling sterile products/packs; and
- After touching patient surroundings.

For surveillance and auditing purposes these are referred to as the **'5 Moments for Hand Hygiene'** - see Section 10, *Auditing for the National Hand Hygiene Initiative*

National Hand Hygiene Initiative
5 Moments for Hand Hygiene

In addition, it is recommended that HWs perform hand hygiene:

- Upon entering and leaving a ward (for example, at start of shift or going on a break);
- Before eating;
- Before handling patient food;
- After coughing or sneezing or blowing nose;
- After going to the toilet;
- After cleaning shared patient care equipment;
- After contact with animals (e.g. companion therapy); and
- Before and after smoking, including e-cigarettes

Australian Guidelines for the Prevention and Control of Infection in Healthcare

Effective hand hygiene relies on the following mechanisms of action (68, 69):

- The rubbing action, or friction, that enables the mechanical removal of microorganisms;
- The antimicrobial properties of the hand cleansing product (e.g. ABHR, soap) killing remaining microorganisms;
- The volume of applied ABHR needs to be adapted to hand size (70) to sufficiently cover palm and dorsum and
- The drying of hands after hand cleaning and before putting gloves on as residual moisture left on the hands may harbour bacteria (71).
- The entire surface of the hands should be covered with hand hygiene product when performing hand hygiene (72).
- Use ABHR on dry, non-soiled hands and rub hands vigorously until the ABHR has evaporated (follow manufacturers recommendation on amount); or
- Use a liquid antiseptic hand wash or plain liquid soap with running water, and dry with single use towels (paper or cloth); or

- Surgical scrub using soap and water requires a sterile towel for hand drying; or Surgical scrub using waterless method requires use of Alcohol Based Surgical Hand Rub (ABSHR) in accordance with specific manufacturer's instructions

Hands should be washed with soap and water:

- When hands are visibly soiled, which includes body substances;
- After contact with known or suspected bacterial spores such as *C. difficile*; and
- After contact with known or suspected non-enveloped viruses such as norovirus, rotavirus or hepatitis A.

When hands are visibly soiled:

- Use liquid soap and running water which helps to dissolve and lift soiling (fats and proteins) from the skin (22, 73-75); and
- If soap and water are not available, ABHR should be used.

ABHR has some reported limitations in spore penetration and may be less effective against removing and killing bacterial spores e.g. *clostridium difficile* and non-enveloped viruses e.g. rotavirus, norovirus. Soap and water would be the more effective method of Hand Hygiene in these situations especially after care with symptomatic patients where hands may be visibly soiled. In these situations where soap and water is not available ABHR should be utilised.

4.1.2 Hand wash basin

- There is growing evidence around hand wash basin and sink drains increasingly implicated as potential reservoir of antibiotic resistant bacteria.
- Hand wash basins should be strategically placed to reduce the risk of splashing in areas where direct patient care is provided. Placement of hand wash basins within close proximity to a patient may potentially increase the bioburden and transmission risk.
- Hand wash basins must comply with the requirements of the Australasian Health Facility Guidelines.
- Hand wash basins in clinical areas should be dedicated for its intended purpose. Non-hand hygiene activities such as squirting used medication, empting leftover fluids or disposing NG aspirate etc. may provide a mechanism for promotion of microbial growth in the drain(76).
- Water being present around hand wash basins or sinks encourages the development of mould and bacteria in any substrate material.
- Regular cleaning and maintenance should be instigated to reduce the bioburden.

The installation and use of high speed hot air dryers is not appropriate for clinical areas of HO's as there are risks that these dryers will spread pathogens in the clinical setting and therefore increase the risk of cross transmission of organisms (77). Hot air hand dryers may be considered in non-clinical areas, such as public toilets if evidence supports their instillation.

Australasian Health Facility Guidelines
Part D Infection Control

4.1.3 Hand hygiene product selection

All selected products should be registered with the TGA and have an Australian Register of Therapeutic Goods (ARTG) number.

When purchasing hand hygiene products, the following selection strategy is recommended:

- The HO's product selection committee (or delegate committee) should determine the preferred product from the NSW Health contract; and
  The HO's product selection committee (or delegate committee) should include representation/advice from infection prevention and control when making purchasing decisions for hand hygiene products.

See **Section 2**, *Purchasing new equipment* for further advice on the purchase of new equipment

ABHR is more effective in reducing microbial load compared to antiseptic hand wash or soap and water when hands are not visibly soiled (78, 79). ABHR is better tolerated by hands, is quicker to use and can be placed at point -of-care locations which makes it more accessible than other hand hygiene products.

National Hand Hygiene Initiative
Product selection

Each HO should consider the following factors when purchasing hand hygiene products:

- Alcohol solutions containing 60-80% (80) alcohol or 77%ethanol (Volume/Volume) is recommended (22);
- Aesthetic preferences such as fragrance, colour, texture and ease of use;
- Practical considerations such as availability, convenience and functioning of dispenser and ability to prevent contamination;
- Compatibility with other hand hygiene products;
- Dermal tolerance;
- Value for money; And
- Company support for instillation, resources provided and education programs.

The clinical activity to be performed should dictate the product and technique used. Table 5 provides advice on the hand hygiene product to use for common clinical activity sets

WHO
Guidelines on Hand Hygiene in Health Care

Alcohol free hand rub is not as effective as ABHR (22, 81) and use of alcohol free hand rub should be limited to non-clinical areas and places where alcohol based products are prohibited, such as Justice Health and Forensic Mental Health settings refer to *Section 4.1.9 Hand hygiene in Justice Health and Forensic Mental Health Network settings*.

Table 5. Hand hygiene procedures

Activity		Skin cleansing product*	Action	Duration of hand wash or handrub*
Routine (Social) situations		Plain liquid soap and running water	Wet hands using running water, apply recommended dose of liquid directly onto hands and work up lather on all areas of the fingers, hands and wrists. Rinse. Dry hands with single use towel.	15-20 seconds
Standard patient care activities[82]	e.g. taking pulse/BP, assembly of needle and syringe , prior to collecting and opening sterile consumables or preparing an aseptic field, and after touching patient surroundings	ABHR	Dispense manufacturer's recommended amount of solution into cupped dry hands. Rub vigorously over all areas of the fingers, hands and wrists until the solution has evaporated and hands are dry.	Until dry (usually 15-20 seconds)
		Plain liquid soap and running water	Wet hands using running water, apply recommended dose of liquid directly onto hands and work up lather on all areas of the fingers, hands and wrists. Rinse. Dry hands with single use towel.	15-20 seconds
		Antiseptic hand wash and running water	Wet hands using running water, apply recommended dose of liquid directly onto hands and work up lather on all areas of the fingers, hands and wrists. Rinse. Dry hands with single use towel.	15-20 seconds
	e.g. following care of patients (including contact with their surroundings) where *C. difficile* or non-enveloped viruses are suspected AND gloves were not worn	Plain liquid soap and running water	Wet hands using running water, apply recommended dose of liquid directly onto hands and work up lather on all areas of the fingers, hands and wrists. Rinse. Dry hands with single use towel.	15-20 seconds
Aseptic procedures	e.g. wound dressing, invasive device maintenance or insertion of IDC, PIVC, epidural and other procedures where maximum barrier precautions are not required	ABHR	Dispense manufacturer's recommended amount of solution into cupped dry hands. Rub vigorously over all areas of the fingers, hands and wrists until the solution has evaporated and hands are dry.	30-60 seconds
		Antiseptic hand wash and running water	Wet hands using running water, apply recommended dose of liquid directly onto hands and work up lather on all areas of the fingers, hands and wrists. Rinse. Dry hands with single use towel.	30-60 seconds

	Insertion of CVAD and other procedures where maximum barrier precautions (mask, cap, eyewear, sterile gown, sterile gloves) are required.	ABSHR (83)	Use alcohol based surgical hand rub (ABSHR) for surgical hand scrub strictly in accordance with the product manufacturer's instructions for amount, technique and duration. Note: The first surgical scrub of the day, wash hands, forearms and nails using a non-medicated soap and running water, followed by ABSHR. Important to ensure all surfaces to elbow are covered.	In accordance with specific manufacturer's instructions 2 minutes
		Antiseptic hand wash with running water	Wet hands using running water, apply recommended dose of liquid directly onto hands and work up lather on all areas of the fingers, hands and wrists, paying attention to the finger nails.	2 minutes
Surgical procedures	**i) Surgical pre wash** (Conducted before the first surgical hand scrub or surgical ABSHR of the list, to ensure the hands are free of soil and debris, and fingernails are clean)	Plain liquid soap and running water	Wet hands using running water, apply recommended dose of liquid directly onto hands and work up lather on all areas of the fingers, hands and wrists, paying attention to finger nails. Rinse. Dry hands with single use towel.	1minute
	ii) Surgical hand scrub	Antiseptic hand wash and running water	Wet hands using running water, apply recommended dose of liquid directly onto hands and work up lather on all areas of the fingers, hands, wrists and forearms for 2 minutes then rinse and repeat for a further 2 minutes for first scrub and 1 minute for subsequent scrubs of the list. Rinse. Dry hands with a sterile towel.	5 minutes for first operative procedure of the day 3 minutes for subsequent operative procedures
	ii) Surgical hand rub	ABSHR	Use alcohol based surgical hand rub (ABSHR) for surgical hand scrub strictly in accordance with the product manufacturer's instructions for amount, technique and duration	In accordance with specific manufacturer's instructions

*Manufacturer's recommendations should be followed for the amount of solution and duration

4.1.4 Jewellery and access to forearms

Several studies have shown that skin underneath rings is more heavily colonised than comparable areas of skin on fingers without rings (84).

- Hand, wrist or forearm jewellery (e.g. piercings, rings, watches, bracelets, bands, movement trackers, embedded jewellery) must not be worn by healthcare professionals in the clinical environment and where providing direct patient care, unless required for patient care (e.g. watch) or medically essential (e.g. medical alert bracelet). These must be removable, able to be cleaned and not be able to cause injury to patients during direct clinical care.
- Wearing of rings in clinical areas must be limited to a plain band on the finger and this should be moved about on the finger during hand hygiene.
- To allow for adequate antiseptic scrubbing of hands and forearms prior to a high risk aseptic or surgical procedure all hand, wrist and forearm jewellery must be removed.
- Long sleeve articles of clothing should not be worn in clinical environments. If worn sleeves must be rolled above the elbow during clinical/direct patient care.
- The only forearm attire permitted within the clinical area is PPE (impervious gowns, sterile gowns, gloves).

The ability to perform effective hand hygiene for the clinical care required must not be impeded by the wearing of long sleeved garments or forearm jewellery (for example religious bangles, medical bracelets or bandages). HOs should perform a case by case risk assessment in consideration to the risk to patients versus the HW.

4.1.5 Fingernails

- Artificial nails, Nail varnish, Nail art and technology must not to be worn by healthcare professionals providing direct patient care (85).
- HWs should have short fingernails

Chipped nail varnish supports the growth of larger numbers of organisms on the fingernails.
Nail art and technology and artificial nails are a potential reservoir of microorganisms may promote transmission and prevent effective hand hygiene (84-87). Recent evidence supports that shorter nail length minimises risk of potential microorganism transmission (88). Shorter nail length does not impede effective hand hygiene and is less likely to puncture gloves. An easy guide to appropriate fingernail length is to keep the nail shorter than the end of the finger.

4.1.6 Hand care and skin integrity

Selected ABHRs, antiseptic hand washes, surgical hand scrubs and moisturising lotions should be chemically compatible and pH neutral (pH 5.5 to 7) to minimise skin reactions and to ensure that the decontaminating properties of the hand hygiene product are not deactivated (80).

- ABHR should be dispensed onto dry hands while liquid soaps and antiseptics should be applied to hands already wet with water (see Table 5).
- Good skin integrity is aided by good hand hygiene technique.
- HWs should check their hands and forearms regularly to ensure they have good skin integrity. ABHR is a good marker of skin integrity as a sting from ABHR application indicates broken skin. All broken skin should be covered with an impervious dressing.
- HW with compromised skin integrity involved in direct patient care or in the direct patient environment, should have a risk assessment to determine whether the HW can undertake clinical duties without compromising patient safety and their own safety or may need to consider redeployment from clinical area until the issue is resolved (see Section 2.5.1, *Risk assessing HWs*).

- Given the potential for the contamination and infection transmission, it may be inappropriate for a HW to work clinically if they require multiple impervious dressings, hand splints or are unable to wear impervious dressings for certain medical conditions and cannot perform adequate hand hygiene.
- Hand care problems such as dryness, dermatitis and/or sensitivity should be reported to the manager/supervisor for action or referral to address hand care problems (see Section 2.5, *Staff health and HAI risk*).

4.1.7 Hand hygiene in oral health settings

Oral Health settings must comply with hand hygiene during the delivery of patient care as described in Section 4.1.1, Hand hygiene principles.

If providing oral health care within an operating theatre (e.g. complex oral surgery), HWs should comply with the hand hygiene principles expected for surgical environments (see Table 5).

4.1.8 Hand hygiene in community and home settings

HWs must comply with hand hygiene during the delivery of patient care in community and home settings as described in Section 4.1.1, Hand hygiene principles.

HOs must supply HWs with adequate product to undertake appropriate hand hygiene.

Hand hygiene products, cloths and towels (paper or otherwise) supplied by patients can potentially be compromised. HWs are recommended to use products supplied by the HO or in the case where no other option is available a risk assessment should be undertaken to determine risk versus benefit.

4.1.9 Hand hygiene in Justice Health and Forensic Mental Health Network settings

NSW legislation prohibits the supply and use of alcohol-containing products in Corrective Services NSW facilities. According to legislation:

- ABHR products must not be used in any HO that operates within these facilities; and
- HOs operating within Corrective Services NSW facilities must provide an alternative hand hygiene product that is alcohol-free, non-intoxicating and non-flammable for the use of HWs, patients and visitors in this setting.

Crimes (Administration of Sentences) Regulation 2014 - Reg 148

Summary Offences Act 1988 – Sect 27B
Trafficking

NSW Justice Corrective Services
Visiting a Correctional Centre

4.1.10 Patient and visitor hand hygiene

Patients and visitors are to be encouraged to perform hand hygiene on entry to a healthcare facility, a ward or a community health outpatient setting and prior to visiting patients.

- In line with Section 2.7, Consumer education, educational resources should be made available to encourage the practice and technique of hand hygiene.
- Placement of signs and posters in key locations, such as entry and exit points, to act as visual triggers for patients and visitors.
- Availability of Hand Hygiene products should be readily accessible, consistent and mutually available for patients, visitors and HWs.
- The HO should ensure that HWs have the means and resources to enable patients to perform hand hygiene (i.e. providing ABHR or hand cleaning wipe for a bed-bound patient).

HWs should also encourage patients to perform hand hygiene prior to eating, after going to the bathroom, before leaving and on entry to their room.

4.2 Respiratory hygiene and cough etiquette

To minimise the risk of transmission of infection to others, everyone entering, visiting or working within a HO presenting with the signs and symptoms of respiratory infection should practise respiratory

hygiene and cough etiquette(see Appendix 5) (89). A HO should encourage and enable patients, visitors and HWs to perform respiratory hygiene and cough etiquette and provide appropriate resources to support these behaviours (90). Specific responsibilities for the HO and individuals visiting or working within a HO are detailed in Table 6.

Refer to Appendix 5 NSW Health Respiratory Hygiene poster

Table 6. Individual and HO responsibilities for respiratory hygiene and cough etiquette

Responsibilities of the individual	Responsibilities of the HO
• Do not cough into bare hands. Instead, cough into a tissue or elbow. • Perform hand hygiene after contact with respiratory secretions and contaminated objects or materials. • If a patient is coughing or sneezing during transportation or in common waiting areas, a surgical mask should be worn if clinically possible. • If coughing, sit ≥ 1m from others in common areas. • Inform clinicians about any respiratory signs or symptoms. • HW with a persistent cough or signs and symptoms of a respiratory infection should: - seek medical advice; - practise respiratory hygiene and cough etiquette; - absent themselves from work as necessary (see Section 2, *Staff health and HAI risk*)	• Reinforce the importance of hand hygiene and provide access to hand hygiene amenities. • Display signage that instructs patients and visitors on respiratory hygiene and cough etiquette. • To minimise transmission to high risk patients, a HO may prohibit a coughing or sneezing visitor from attending certain areas of the HO. • Ensure the availability of resources to support respiratory hygiene and cough etiquette in waiting areas for patients and visitors (e.g. tissues, waste bins) • Provide surgical masks to persons who are coughing in waiting areas. • If a visitor is coughing or sneezing, the visitor should be discouraged from attending the HO or should wear a surgical mask. • Ensure that HWs have access to appropriate PPE and are provided training in the use of PPE. • Employ a risk assessment system for the management of coughing HWs, particularly those HWs working in areas with vulnerable patients, such as neonatal intensive care units (NICUs), paediatric units, transplant unit and haematology units.

4.3 Personal Protective Equipment

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection prevention and control precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

Appropriate PPE should be selected to prevent contamination of skin and/or clothing. Selections should be guided by the anticipated type and amount of exposure to blood and body substances and the likely transmission route of microorganisms.

When you are selecting PPE, consider three key things.

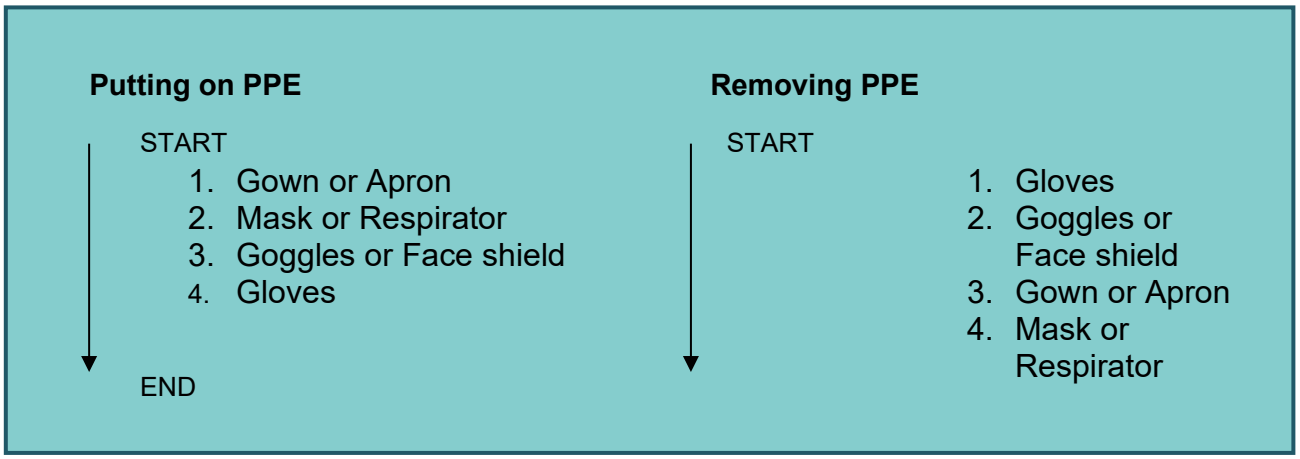
First is the type of anticipated exposure. This is determined by the type of anticipated exposure, such as touch, splashes or sprays, or large volumes of blood or body substance that might penetrate the clothing. PPE selection, in particular the combination of PPE, also is determined by the category of isolation precautions a patient is on.

Second is the durability and appropriateness of the PPE for the task. This will affect, for example, whether a gown or apron is selected for PPE, or, if a gown is selected, whether it needs to be fluid resistant, fluid proof, or neither.

Third is fit. PPE must fit the individual user, and it is up to the employer to ensure that all PPE are available in sizes appropriate for the workforce that must be protected.

The following sequences are recommended practice for putting on and removing PPE for all clinical settings outside the operating room (see Figure 2).

Figure 2. Sequence for putting on and removal of PPE



Putting on PPE

Always perform hand hygiene immediately before donning gloves, keep hands away from face after PPE donning, Limit surface touched with gloved hands, change gloves when torn or contaminated and perform hand hygiene between episodes of care.

Removing PPE

There are a variety of ways to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. See two examples below:

Example 1.

1. Gloves
2. Goggles or Face shield
3. Gown or Apron
4. Mask or Respirator

Example 2

1. Gown and Gloves
2. Goggles or Face shield
3. Mask or Respirator

PPE Sequence CDC

Australian Infection Prevention and Control Guidelines

Remove all PPE before exiting the patient room except a respirator, if worn. Remove the respirator after leaving the patient room and closing the door. Hand hygiene is to be performed if hands become contaminated at any step, and always before and after removing gloves.

Perform hand hygiene immediately after glove removal, before removing face protection and after removal of any contaminated item (1).

In certain circumstances, where there may be a heightened risk for HWs and patients (e.g. during the 2014 Ebola Virus alert), additional PPE requirements may apply (91). Where an emergency response e.g. pandemic influenza, significant outbreak situation, hospitals may receive PPE that looks or feels different from their usual supplies. The available PPE will have been assessed to meet the level of protection required.

HWs working inside operating room or in a sterile environment should refer to local procedures that detail the correct putting on and removal sequences for this particular setting.

At any time, if a HW's clothing becomes contaminated with body substance, the clothing should be removed as soon as possible and before the HW attends to other patients:

- If skin is contaminated with body substance, the HW must remove contaminated clothing/uniform or PPE and wash any affected skin, then perform hand hygiene;
- If broken skin has been contaminated by body substance , the occupational exposure must be reported to the HO using local procedures; and
- Each HO must procure and provide appropriately designed and sized PPE for HWs working in the HO.

NSQHS - VERSION 2 NATIONAL STANDARDS Standard 3

NSW Health PD
HIV, Hepatitis B and Hepatitis C - Management of Healthcare Workers Potentially Exposed

NSW Health PD
Infection Prevention and Control Policy

4.3.1 Gloves

Gloves are worn as a barrier to protect the wearer's hands from contamination or to prevent the transfer of organisms already on the hands (32). Intact gloves must be worn on both hands and must be used in situations where the HW is potentially exposed to body substance; in particular:

- During any procedure where direct contact is anticipated with a patient's body substance , mucous membrane or non-intact skin;
- While handling items or surfaces that have come into contact with body substance ; and
- While performing an invasive procedure, venepuncture or a finger or heel prick.

Gloves should fit the user's hands comfortably – they should not be too loose or too tight. They also should not tear or damage easily.
Unless exposure to blood is anticipated HWs do not need to wear gloves (82) when performing subcutaneous, intramuscular, intravenous or intradermal injections.

Gloves should not be worn as a personal safety strategy as contaminated gloves may be a significant cause of cross-contamination of pathogens in healthcare environment (92). Therefore, the way YOU use gloves can influence the risk of disease transmission in the healthcare setting.

Prolonged glove use can lead to lack of hand hygiene, risk of contact dermatitis and increased risk of contamination of HWs hands. Hand hygiene must always be performed prior to donning gloves and after removal (22).

Gloves should always be put on immediately before the procedure or contact with body substance.

When wearing gloves, change or remove gloves in the following situations: during patient care if moving from a contaminated body site to another body site (including a mucous membrane, non-intact skin or a medical device within the same patient or the environment). Work from clean to dirty site i.e. touch clean body sites before you touch dirty sites or heavily contaminated areas.

Limit opportunities for 'touch contamination' i.e. surfaces such as light switches, door handles and cabinet knobs can become contaminated if touched by used or soiled gloves.

Gloves should be handled and stored to avoid contamination before use.

Both gloves must be removed and discarded:

- As soon as a tear or puncture appears or when the integrity has been otherwise compromised;
- After patient contact has been completed when performing separate procedures on the same patient;
- After completing a task not involving patients but requiring gloves;
- Before touching environmental items and surfaces;

AS/NZS 4179:2014
Single-use sterile surgical rubber gloves - Specification (ISO 10282:2014, MOD)

AS/NZS 4011.1:2014
Single-use medical examination gloves - Part 1: Specification for gloves made from rubber latex or rubber solution (ISO 11193-1:2008, MOD)

AS/NZS 4011.2:2014
Single-use medical examination gloves – Part 2: Specification for gloves made from poly(vinyl chloride) (ISO 11193-2:2006, MOD)

NSW Health PD
Infection Prevention and Control Policy

NSW Health PD
Environmental Cleaning Policy

Environmental Cleaning SOP
Module 3.2 Furnishings and Fixtures

NSW Health PD
Procurement

- Before or on leaving a patient's room/zone. This may be risk assessed if required to remove contaminated or soiled equipment from the patient zone; and
- Before writing in the medical notes, answering the telephone/pages and using a computer
- Before moving or touching equipment.

Wearing gloves does not eliminate the need for hand hygiene and in all circumstances, hand hygiene must be performed immediately (82):

- Before putting on gloves to avoid contamination of the outer surface of the gloves; and
- After removing gloves to avoid transfer of microorganisms to another person, patients environment, clinical equipment and to protect the HWs.

The type of glove selected should be appropriate to the type and risk of the procedure (see Table 7) and of a suitable size for the user (1). The HO should refer to the listed gloves on the NSW Health Procurement. Use of general purpose gloves, such as reusable washing up gloves, should be limited to kitchen areas and environmental cleaning. Within sterilization services/areas, only disposable single use gloves that have been approved should be worn e.g. gauntlet gloves that have a longer cuff. Medical examination gloves or other disposable, single use gloves are not to be reused. If gloves become soiled, HWs are to remove and discard the gloves, and perform hand hygiene. Gloves must not be washed or have ABHR applied to them in between patient contact (exception may apply during high consequence Infectious diseases removal of PPE).

Table 7. Glove selection guide for Infection Prevention and Control

Glove type (as per 2018 State Contract)	Suggested Use
Gauntlets – Examination, Powder Free, Textured	Longer cuff - midwives, sterilizing staff for reprocessing and animal research
Gloves - Latex, Non-Sterile, Examination, Powder Free, Textured	All clinical and non-clinical staff
Gloves - Non-Latex (including Polychloroprene and nitrile), Non-Sterile, Examination	All clinical and non-clinical staff with an allergy/sensitivity to latex
Gloves - Cytotoxicological Handling	Handling of cytotoxic medications NOTE: these gloves come in a range of colours
Gloves - Sterile, Surgical, Underglove, Powder Free, Pairs	Surgical staff who require a double glove
Gloves - Non-latex (including Polychloroprene, nitrile, and natural rubber latex free), Sterile, Surgeons, Pairs	Surgical and other clinical staff who perform procedures that require sterile gloves who have an allergy/sensitivity to latex
Gloves - Latex, Sterile, Surgeons, Pairs	Surgical and other clinical staff who perform procedures that require sterile gloves Touching tissue which would be sterile under normal circumstances
Glove, Patient Examining & Treatment, Sterile, Powder Free, Standard Cuff	Clinical staff who perform standard aseptic procedures or examinations that require sterile gloves

4.3.2 Facial protection

Facial protection is used to protect the mucous membranes of the face (eyes, nose and mouth) from exposure to body substance splash or spray. The level of protection required should be determined by the volume and distribution of body substance likely to be encountered during patient care (AS 4381:2015 Single use face mask for use in healthcare).

For standard precautions, the types of facial protection include:

- Face shield/visor;
- Protective eyewear; and
- Fluid-resistant surgical mask

Face shield/visor or protective eyewear is to be worn:

- For all invasive procedures where the risk of exposure has been identified, including, but not limited to, surgery, intravascular access devices (IVAD), endoscopies and haemodialysis line management;
- For the disposal of liquid body substances;
- When changing and emptying urinary catheter drainage devices; and other drains
- When cleaning reusable medical devices contaminated with body substance and using running water;
- During cleaning of areas such as toilets/urinals/shower etc. where body fluid splash may occur.
- During procedures that induce the patient to cough e.g. chest physiotherapy; and
- When performing aerosolising generating procedures

Protective eyewear is to conform to Australian Standards and be optically clear, anti-fog, distortion free, close fitting and shielded at the sides.

- Reusable facial protection is to be worn, fitted and cleaned in accordance with the manufacturer's instructions and should be stored clean and dry.
- Any protective eyewear that is labelled 'single use' must not be reused.
- General prescription glasses alone do not comply with the relevant national standards and protective eyewear must be worn with prescription glasses if there is a risk of being splashed with body substance.
- Disposable single use facial protection must be discarded after use.

NSW Health PD
Infection Prevention and Control Policy

AS/NZS 1336:2014
Eye and face protection - Guidelines

AS/NZS 1337.1:2010
Personal eye protection - Part 1: Eye and face protectors for occupational applications

A fluid resistant surgical mask is to be worn:

- Within the operating room during surgery, or for invasive or dental procedures and whenever sterile supplies are open to protect HWs and the patient; and
- to prevent body substance exposure to HWs and
- to protect the patient against respiratory microorganisms which may be expelled by the HW.

AS4381:2015
Single use face masks for use in healthcare

ACORN Standards 14th edition

The level of surgical mask should match the procedure performed or the level of protection required (refer to Table 9)

A fluid resistant surgical mask is to be worn by HW:

- Be fitted in accordance with the manufacturer's instructions;
- Not be touched by hands or gloves while worn;
- Cover both the mouth and nose while worn;
- Not be worn loosely or folded down around the neck; and
- Be removed and discarded immediately after leaving the patient-zone/room.
- And are not to be worn for care of consecutive patients

When the mask becomes moist from the wearer or from contamination, the barrier has been breached and the mask is no longer effective. It should then be discarded and not used again. The mask is to be removed by touching the strings/ties or loops only.

Use of surgical masks by patients and visitors is covered under Section 4.2, *Respiratory hygiene and cough etiquette,* and Section 5.5, *Personal Protective Equipment (PPE) requirements.*

Table 8 Type of face protection and recommended use

Type of care	Examples	Face protection required
Routine	General examination (e.g. medical, physiotherapy, nursing) Routine observations	Not required unless caring for a patient on droplet precautions
Procedures that generate splashes or sprays	Dental procedures Nasopharyngeal aspiration Emptying wound or catheter bag	Protective eyewear/full-length face shield Surgical mask
Procedures involving the respiratory tract (including the mouth)	Intubation Nasopharyngeal suction	Protective eyewear Surgical mask

Table 9 AS 4381: 2015 Single use surgical face mask standard

AS 4381:2015 SINGLE USE FACE MASK				
Characteristics	**Level 1 Applications**	**Level 2 Applications**	**Level 3 Applications**	**Test method**
	For general purpose medical procedures, where the wearer is not at risk of blood or bodily fluid splash or to protect staff and/or the patient from droplet exposure to microorganisms (e.g. patient with upper respiratory tract infection visits GP)	For use in emergency departments, dentistry, changing dressings on small or healing wounds where minimal blood droplet exposure may possibly occur (e.g. endoscopy procedures)	For all surgical procedures, major trauma first aid or in any area where the health care worker is at risk of blood or bodily fluid splash (e.g. orthopaedic, cardiovascular procedures)	

	Level 1 Barrier	Level 2 Barrier	Level 3 Barrier	
	Medical face mask materials are evaluated for resistance to penetration by synthetic blood at the minimum velocity specified in row 2, bacterial filtration efficiency and differential pressure.	Medical face mask materials are evaluated for resistance to penetration by synthetic blood at the middle velocity specified in row 2, bacterial filtration efficiency and differential pressure.	Medical face mask materials are evaluated for resistance to penetration by synthetic blood at the maximum velocity specified in row 2, bacterial filtration efficiency and differential pressure.	
Bacterial Filtration Efficiency (BFE) %	≥ 95%	≥ 98%	≥ 98%	ASTM F2101-14 or EN 14683:2014
Particulate Filtration Efficiency (PFE) % (0.1 µm)	< 4.0	< 5.0	< 5.0	EN 14683:2014
Resistance to penetration by synthetic blood (fluid resistance) min pressure in mm Hg for pass result	80mm Hg	120mm Hg	160mm Hg	ASTM F1862 / F1862M-13 or ISO 22609

Extracted from AS 4381: 2015 Single use surgical face mask standard

4.3.3 Gowns and aprons

A single use fluid-resistant gown, or apron, made of impervious material, provides a barrier to reduce opportunities for contact transmission in healthcare settings.

Factors influencing PPE selection

- Type of exposure anticipated
  - Splash/spray versus touch
  - Category of isolation precautions
- Durability and appropriateness for the task
- Fit

An apron or gown must be worn:

- During any procedures where there is a risk of splashes or contamination with body substances;
- As a protective layer under a permeable sterile gown when performing invasive procedures, especially if the procedure involves the likelihood of splashes or contamination with body substances; and
- Alternatively, a disposable sterile, impervious gown can be worn when performing invasive procedures.

Cloth (patient) gowns do not provide any level of protection for HWs undertaking procedures and they are not to be worn in clinical areas, including oral health, maternity units and medical imaging, and during patient care. In the operating room HWs should wear an impervious plastic apron or gown underneath the sterile cloth gown to provide protection from strike through. This section does not address the sterile apparel worn during operative procedure (see ACORN Standards for further information).

The choice and the type of apron or gown required depends on the degree of risk, including the anticipated degree of contact with infectious material and the potential for blood and body substances to penetrate through to clothes or skin. Gowns and aprons used in clinical areas should be fluid impervious (1).

- Be appropriate to the task being undertaken
- Be worn for a single procedure or episode of patient care where contamination with body substances is likely.
- The used apron/gown should be removed in the area where the episode of patient care takes place.

Table 10 Plastic aprons/gowns recommended use and characteristics

Type	Recommended use	Characteristics
Apron	Worn for general use when there is the possibility of sprays or spills or exposure to blood or body substances during low risk procedures. Worn during contact precautions when patient contact is likely.	○ Fluid impervious ○ Single-use, for one procedure or episode of patient care ○ Disposable
Gown	Worn to protect HWs exposed body areas and prevent contamination of clothing with blood, body substances, and other potentially infectious material	○ Fluid impervious ○ Single-use ○ Disposable Choice of sleeve length depends on the procedure being undertaken, the extent of risk of exposure of the healthcare worker's arms, the volume of body substances likely to be encountered, and the probable time and route of transmission of infectious agents

The Association for the Advancement of Medical Instrumentation (AAMI) standards introduced the voluntary standard ANSI/AAMI PB70:2012, Liquid Barrier Performance and Classification of Protective Apparel and Drapes Intended for Use in Health Care Facilities, to determine key identification measures for the appropriate selection of protective apparel and drapes for use in healthcare facilities. Defining the best level of protection for the standard ANSI/AAMI PB70:2012 involves an understanding of the critical zones of a gown and what each level of barrier performance entails.

The critical zones of a gown comprise of the front of the gown and the sleeves, which are both primary areas with the greatest risk of exposure to fluids and blood-borne pathogens. As the level increases, so does the need for greater barrier protection for the entire critical zone. See table 6 for level of protection needed for intended task.

Table 11 AAMI Level Standards for Gowns

Barrier Performance	Barrier Protection	Resistance Measure	Description
Level 1	Minimal	Liquid penetration	Used for **MINIMA**L risk situations Provides a slight barrier to small amounts of fluid penetration Single test of water impacting the surface of the gown material is conducted to assess barrier protection performance.
Level 2	Low	Liquid penetration	Used in **LOW** risk situations Provides a barrier to larger amounts of fluid penetration through splatter and some fluid exposure through soaking Two tests are conducted to assess barrier protection performance: Water impacting the surface of the gown material Pressurizing the material
Level 3	Moderate	Liquid penetration	Used in **MODERATE** risk situations Provides a barrier to larger amounts of fluid penetration through splatter and more fluid exposure through soaking than Level 2 Two tests are conducted to test barrier protection performance: Water impacting the surface of the gown material Pressurizing the material
Level 4	High	Liquid and viral penetration	Used in **HIGH** risk situations Prevents all fluid penetration for up to 1 hour May prevent VIRUS penetration for up to 1 hour In addition to the other tests conducted under levels 1-3, barrier level performance is tested with a simulated blood containing a virus. If no virus is found at the end of the test, the gown passes.

Extracted from Standard ASTM F1670 / F1670M

Aprons and gowns are to be removed in a manner that prevents contamination of clothing, skin or the environment (see Section 4.3, Personal protective equipment). The outer, 'contaminated', side of the apron or gown is turned inward and rolled into a bundle, and then discarded into a designated container for waste or linen to contain contamination.

Case study 7: Case study for risk assessing PPE requirement

Mr Smith a 68yr old man was admitted to a regional hospital intensive care unit (ICU) with SOB, cough and fever. Along with other treatments his treating doctor advised for chest physio with percussion and airway clearance along with sputum expectoration. The nurse contacted the physiotherapist and requested a consult. When Sally (physio) approached Mr Smith he was in great distress and needed urgent percussion to clear the sputum.

The magnitude and direction of risk of infection to a HW may be influenced by the role of the HW in the workplace, and the types of patient contact and how the HW interacts. Sally, a well experienced physio identified her risk of exposure to potential droplet and aerosol transmission of microorganisms following respiratory manoeuvres such as chest physiotherapy and spirometry etc. Sally who is new to the organisation requested the nurse to assist her in gathering the appropriate PPE for the task. Sally performed hand hygiene with ABHR and donned a surgical mask and a face shield to protect her from potential exposure to droplets and donned a pair of gloves to prevent direct contact with body substance. Sally is now equipped with her PPE to proceed with the requested procedure.

Mr Smith complied with Sally's instructions and completed the procedure without any issues.
Sally collected a sputum specimen as per doctor's request and finished her episode of care by removing gloves first followed by hand hygiene, then face shield and mask, items were disposed into general waste bin and Sally cleaned her hands with soap and water. The procedure and findings were documented in the notes and a quick handover to the nurse before Sally left the department.

4.4 Aseptic technique

Aseptic technique is a set of practices aimed at minimising contamination and is used to protect the patient from infection during procedures (1, 93). Sterile single-use equipment or instruments must be used according to manufacturer's instructions and in such a way that the sterility of the item is maintained. Asepsis can be explained in different levels: e.g.

Standard Aseptic technique and Medical Asepsis
Reducing pathological organisms by using non-touch technique (clean technique)
Surgical Asepsis
Exclusion of all microorganisms
Standard aseptic fields that promote asepsis are used when-

- key parts are easily protected by critical micro aseptic fields and non-touch technique
- the main aseptic field does not have to be managed as a key part

Management of the general aseptic field requires key parts be protected by Critical Micro Aseptic field (critical micro aseptic fields are those key parts

NSQHS - VERSION 2 NATIONAL STANDARDS Standard 3

HETI online
Aseptic technique

protected by syringe caps, sheathed needles, covers or packaging). Asepsis of the immediate procedure environment is therefore promoted by general aseptic field management.

Critical aseptic fields are used when-

- key parts/sites are large or numerous and can't be easily protected by covers or caps or can't be handled with a non-touch technique
- invasive procedures require a large aseptic working area

Management of the critical aseptic field requires only sterilized equipment to be placed in the aseptic field; sterile gloves are required to maintain asepsis

The five essential principles of aseptic technique are (19):

1. **Sequencing:**
    - Performing a risk assessment
    - Pre-procedure preparation
    - Performing the procedure
    - Post procedure practices, handover and documentation

When performing a procedure steps must be sequenced to ensure an efficient, logical and safe order of procedure and clinicians should be familiar with the sequence of the procedure to ensure asepsis is maintained.

2. **Environmental control:**
    - Prior to aseptic procedures, HWs must ensure there are no avoidable nearby environmental risk factors, such as bed making, patients using commodes, use of fans, cleaning of the nearby environment or patient privacy curtains across work area.
    - A sterile field should be set up on an adequate surface that has already been cleaned.
    - If a sterile item is dropped on the floor the package integrity is compromised and it MUST be either thrown away (single use) or re-processed (if reusable). It is never appropriate to reuse this item.
    - To prevent accidental contamination, HW's hair should be tied back, and lanyards removed or tucked in prior to commencing the procedure.
3. **Hand hygiene:**
    - Perform hand hygiene immediately before and after a procedure or after body fluid exposure, in compliance with the *five moments for hand hygiene.*
    - Depending on the procedure about to be performed either routine or surgical hand hygiene is required.
4. **Maintenance of aseptic fields:**
    - Cleaning and/or disinfection of key site(s) and key part(s) prior to procedure(s)
    - Establishing an aseptic field
    - Use of sterile equipment
    - Maintenance of the aseptic field, including protecting the key sites and key parts
    - Use of a non-touch technique
    - Gloves must not touch any item or surface outside of the aseptic field.

5. **PPE:**
    - Correct selection and use of sterile and non-sterile PPE
    - Sterile gloves should be worn if key sites or key parts needs to be touched
    - If key sites or key parts are not touched then non-sterile gloves may need to be worn to protect the clinician from body substance exposure
    - Other PPE should be worn in line with standard precautions to reduce the risk of body substance exposure to the HW such as mask and eye protection.

Each HO is to undertake a local risk assessment to identify medium and high risk procedures that require the use of aseptic technique or maximum barrier protection. The HO is to regularly audit the use of aseptic technique and evaluate audit data locally to identify opportunities for compliance improvement.

ACSQHC
Aseptic Technique Risk Matrix

Each HO should provide its clinical workforce with, or access to, aseptic technique education. HWs that perform procedures that require aseptic technique are to be trained in aseptic technique and are responsible for maintaining aseptic technique competencies. The HO is to maintain a central record describing the aseptic technique education and competencies of its clinical workforce.

4.4.1 Aseptic technique in oral health

The five essential principles for aseptic technique (see Section 4.4, *Aseptic technique*) are to be used for chair-side procedures in oral health. The patient's submucosal oral tissues are the key sites - that is, they are the susceptible body sites that should be protected from microorganisms on hands, gloves, surfaces and equipment.

NSW Health PD
Oral Health: Post-Operative Care for Dental Extractions

NSW Health PD
Oral Health: Cleaning, Disinfecting and Sterilizing

Most of the instruments and equipment used routinely in oral health, such as probes and scalers, are classified as invasive devices, and therefore should be handled aseptically. The key parts of those instruments are, for example, the tip of a probe or the tip of a scaler. The key parts of a local anaesthetic set-up using an aspirating syringe are both ends of the sterile needle and the sterile bung of the anaesthetic cartridge that will be pierced by the needle. These key parts - and others identified for other instruments and devices - should also be protected from microorganisms on hands, gloves, surfaces and equipment.

The aseptic field for a routine dental procedure can be prepared by either using the instrument cassette in which the instruments were sterilized, or placing a clean single-use cloth on the clean bracket table. The cap of the local anaesthetic needle is used as a critical micro-aseptic field to protect the needle from contamination.

4.4.2 Invasive devices

According to the NSW Health *Infection Prevention and Control Policy*, each HO must have written policies and/or procedures to instruct on the management of all types of invasive devices, including intravascular devices.

NSQHS - VERSION 2 NATIONAL STANDARDS Standard 3

For specific guidance on invasive devices, HWs should consult the NSW Health *Adult Urethral Catheterisation for Acute Care Settings, the* NSW health Policy Directive Intravascular Access Devices-Infection prevention and Control, the ACI *Central Venous Access Device Post Insertion Management Guidelines.*

NSW Health PD
Intravascular Access Devices-Infection prevention and Control

NSW Health GL
Adult Urethral Catheterisation for Acute Care Settings

Documentation of procedures requiring aseptic technique should include indications for the procedure(s), any clinical misadventures that occurred during the procedure, and any follow up or review requirements.

ACI (Intensive Care NSW)
Central venous access device - Post insertion management
HETI online
Invasive Device Protocols

4.4.3 Skin antisepsis

Where skin antisepsis is required in preparation for an aseptic procedure (e.g. central line insertion, peripheral intravenous cannulation, lumbar puncture, drain insertion, surgical procedure), a single-use antiseptic skin preparation should be used (94, 95). After use, the skin preparation and any remaining contents should be discarded.
The following should be taken into consideration when applying skin antiseptics:

- Hair at the insertion site should be removed using clippers to improve adherence of the dressing.
- The skin should be physically cleaned with soap and water (if necessary) prior to applying the antiseptic solution before inserting the device.
- The same antimicrobial agent must be used for all phases of the patient's skin preparation, to ensure full residual benefit and consistent action.
- All solutions must be allowed to dry before beginning insertion, do not wipe, pat or fan blot prior to commencement of procedure.
- Sterile saline or water solutions alone are not acceptable antiseptic solutions and should only be used to clean the skin of gross contaminants prior to applying any antiseptic solution.
- Take care when applying liquid solutions to minimise the risk of eye injury to the patient due to splashes.

NSW Health Safety Information 001/13
Safe Use of Alcohol Based Skin Preparations for Surgical and Anaesthetic Procedures

Global guidelines on the prevention of surgical site infection

4.4.5 The Use of Alcohol Based Skin Preparations in Operating Theatres

Alcohol based skin preparations have been shown to significantly reduce the incidence of surgical site infection (96). Where alcohol based skin preparations are used, procedures must be in place to minimise associated risks to the patient. The following information is to remind operating theatre staff of the potential flammability of alcohol based skin preparations.

- Use skin preparation with coloured dye to assist in identifying what part of the body has been skin prepped and identify easily any pooling.
- The quantity of the flammable skin preparation used to prepare the skin should be kept to a minimum in order to avoid overspill and pooling either on or around the patient.
- The size of the sponge/gauze applicator used for painting the skin should be assessed. Applicators which soak up large volumes of the skin preparation fluid should be avoided to minimise the risk of pooling.
- Any overspill that occurs should be removed before the drapes are applied.
- Time should be allowed for the alcohol to evaporate and disperse prior to applying the drapes

4.4.6 Skin disinfection before Injection

Alcohol should be used to disinfect the skin prior to injections in order to prevent introduction of bacteria on the skin being injected within tissue. Alcohol has been shown to be a good disinfectant, reducing the number of bacteria on skin by 47-91%.

- At a minimum swabbing the injection site with a saturated 70% alcohol swab for 30 seconds and allow the skin to dry.
- Ensure that the skin is visibly clean before applying alcohol.

For vaccination administration refer to the Australian Immunisation Handbook

4.5 Needle-stick and sharps injury prevention

Breaches in safe injection, infusion and medication vial handling practices has resulted in transmission of HIV and viral hepatitis and in some cases caused outbreaks of disease (3, 97, 98). Standard precautions, particularly aseptic technique, form the basis of safe injection practices. This section focuses on the safe injection practices required to ensure patient and healthcare worker safety

The following practices are recommended in the context of injecting devices and safe injection practices:

- Open the sterile needle, cannula, syringe or Epi-pen from packaging immediately prior to use.
- Use safety engineered sharps devices whenever possible.
- Discard syringes, needles and cannula at the point of care in an approved sharps container.
- Perform hand hygiene prior to accessing supplies, handling vials and intravenous (IV) solutions, and preparing or administering medications.
- Ensure that reusable shared equipment used for aseptic technique procedures are cleaned in between use.
- Use aseptic technique in all aspects of parenteral medication administration, medication vial use and injections.
- Store and prepare medications and supplies in a clean area on a clean surface.
- Never store needles and syringes unwrapped as sterility cannot be assured.
- Discard all opened vials (including multi-dose vials), IV solutions and prepared or opened syringes that were involved in an emergency situation

NSW Health PD
Pharmaceuticals – Preparation in NSW Public Health Facility Pharmacy Services

NSW Health PD
Community Sharps Disposal by Area Health Services

NSW Health GL
Work Health and Safety - Blood and Body Substances Occupational Exposure Prevention

4.5.1 Safe use and disposal of sharps

The potential for exposure to blood borne viruses is greatest when medical devices, such as needles, scalpels and other sharp instruments, are used (99-105). Therefore, the use of sharps should be minimised wherever possible and, when used, be disposed of immediately after use at the point of use.

In accordance with the NSW Health *Infection Prevention and Control Policy*, each HO must have a written policy and/or procedure in place for the safe handling, transportation and reprocessing and disposal of sharps. A HO must also provide training to HWs on sharps handling, disposal and, where appropriate, cleaning and reprocessing.

Where possible, a HO should purchase and ensure the use of safety equipment for sharps handling, particularly in areas where there is high sharps use and/or in areas where there has been a number of occupational

NSQHS - VERSION 2 NATIONAL STANDARDS Standard 3

NSW Health PD
Community Sharps Disposal by Area Health Services

Australian Guidelines for the Prevention and Control of Infection in Healthcare

exposures relating to sharps handling. Each HW is responsible for the management and safe disposal of any sharp that they use.

Re-sheathing a needle

Needles must not be re-sheathed, except in special circumstances such as dental practice where no other alternative process is available.

The rationale is that most dental practices, when administering a local anaesthetic, do not use 'a single-use syringe with needle' that can be 'discarded as one unit after administering the injection'.

Where possible alternative processes that remove the requirement to re-sheath should be explored.

Dental facilities that use a re-usable dental aspirating syringe, with a single-use needle attached, after administering the local anaesthetic, the used needle must be removed from the reusable syringe.

If re-sheathing is required in these special circumstances:

- the needle must be properly recapped
- the sheath must not be held in the fingers
- either a single-handed technique, forceps, or a suitable protective guard designed for re-sheathing must be used.

4.5.2 Sharps in community and home settings

In clinical community settings, such as community health centres or multi-purpose services, sharps should be handled consistent with standard precautions.

In non-clinical community settings, such as within a patient's home, used sharps generated during the provision of care must be safely disposed of into a sharps container. The container must be closed, securely stored and transported within a compartment in the car and separated from the driver's compartment, in line with work health safety requirements. The container should be transported to a hospital, community health centre or multi-purpose service for final disposal.

NSW Health PD
Community Sharps Disposal by Area Health Services

4.5.3 Blood glucose monitoring devices

The following practices are recommended when using blood glucose monitoring devices:

- When performing glucose monitoring procedures, HWs should use aseptic technique.
- The glucometer and its protective casing is to be cleaned and disinfected after use and between patients, regardless of visible soiling.
- Restrict use of finger-stick capillary blood sampling devices to individual patients (98).
- Use single-use lancets that permanently retract upon puncture. Never reuse finger-stick devices and lancets.
- Dispose of finger-stick devices and lancets at the point-of-use in an approved sharps container (see Section 4.5.1, *Safe use and disposal of sharps*).
- Where feasible patients should be encouraged and supported to undertake their own skin prick and blood glucose monitoring.

4.5.4 Intravenous solutions

The following practices are recommended in the context of intravenous solutions:

- Protective packaging should not be removed until immediately prior to use.
- Intravenous solution containers (e.g. bags or bottles) are not to be used to obtain flush solutions for more than one patient.
- Infusion supplies such as needles, syringes, flush solutions, administration sets or intravenous fluids are single use or single patient use only and not to be used on more than one patient.
- Additions to intravenous fluids should be made under controlled conditions where possible or prepare immediately prior to administration using aseptic technique.
- Begin/initiate administration of spiked IV solutions (IV bag entered by the tubing spike) within one hour of preparation. If administration has not begun within one hour of spiking, the IV bag and tubing shall be promptly discarded.
- Check the expiry date on IV solution; do not use if it is expired.
- Disinfect IV ports using friction and 70% (v/v) alcohol, and allow to air dry prior to accessing.
- All intravenous access ports should be meticulously cleaned (scrub the hub) for at least 15 seconds generating friction by scrubbing in a twisting motion with a single-use 70% (v/v) alcohol-impregnated swab.
- If alcoholic chlorhexidine or if allergic 10% povidone-iodine is used the drying time may vary (20 second or more) depending on the product and allowed to air dry prior to accessing the system (106).
- Except for transient controlled disconnections such as changing IV infusions, removing a sling or sleeve, or access in Operating Theatres, Medical Imaging or Radiology Departments, if the IV giving set is disconnected, replace the entire IV tubing.

NSQHS - VERSION 2 NATIONAL STANDARDS Standard 4

NSW Health PD
Medication Handling in NSW Public Health Facilities

APIC Position Paper: Safe Injection, Infusion, And Medication Vial Practices In Health Care (2016)

NSW Health PD
Intravascular Access Devices (IVAD) - Infection Prevention & Control

4.5.5 Flushing

If an intravascular access device is accessed intermittently for the administration of medications or fluids, the device should be flushed prior to infusion or at least once a shift.
Flushing is recommended to promote and maintain patency and prevent the mixing of incompatible medical solutions. Sterile 0.9% sodium chloride for injection must be used by clinicians, unless the manufacturer recommends flushing with an alternate solution. Single dose syringes should be used for flush solutions.

- Clinicians must flush catheters immediately:
  - After placement
  - Before and after each fluid infusion or injection
  - Prior to and after drawing blood
- Flush in a pulsatile (push-pause) motion.
- PIVCs must be flushed at least every 8hrs, for hospital patients or every 24 hours for patients in the community, if not on a continuous infusion.

- Central venous access devices (CVADs) not being accessed must be flushed and locked every 7 days. CVAD lumens that are used intermittently should be flushed no more frequently than 8 hours
- Implantable venous port (Ports/IVP) not being accessed must be flushed and locked every four to six weeks.

Use aseptic techniques including cleaning the access port (scrub the hub) with a disinfectant agent (e.g. alcohol and/or chlorhexidine) for at least 15 seconds and allow to dry prior to accessing the system.

Use aseptic technique when preparing and administering intravenous medications (IV), flush solutions or other parenteral solutions.

Aseptic technique includes hand hygiene before and after preparation and administration of medications or solutions; disinfection of the medication access diaphragm on a vial, IV access port, needleless connector and use of appropriate PPE.

Protect the key site and key part during procedure. If a drawing up needle is used to drawing up a normal saline flush-do not attach the syringe directly to the normal saline ampule or bag.

4.5.6 Medication vials and ampoules

The following practices are recommended in the context of medication vials and ampoules

- Follow the manufacturer's instructions for storage and use.
- Use single-use ampoules or single-dose vials. Always use a sterile syringe and needle/cannula when entering a vial.
- Never enter a vial with a syringe or needle/cannula that has been used on a patient.
- Cleanse the rubber stopper/bung of the vial using friction and 70% (v/v) alcohol and allow to air dry before inserting a device into the vial.
- Discard single dose vials after use. Do not use them again for another patient.
- Unwanted portions of ampoules must be discarded at the time the dose is prepared.
- Never store medication vials in clothing or pockets.
  - Inspect vials and discard if sterility has been compromised, or is thought to be compromised.
  - Examine the vial for any particulate matter, discoloration or turbidity. If present, do not use and discard immediately. All vials used during an emergency should be discarded as sterility cannot be guaranteed.

NSQHS - VERSION 2 NATIONAL STANDARDS Standard 4

NSW Health PD
Medication Handling in NSW Public Health Facilities

4.5.7 Multi-dose vials

A multi-dose vial is a vial of liquid medication intended for parenteral administration (injection or infusion) that contains more than one dose of medication.

Multi-dose vials must only be used between multiple patients where there is no other alternative product available on the Australian market.

Multi-dose vials are labelled as such by the manufacturer and typically contain an antimicrobial preservative to help prevent the growth of bacteria. The preservative has no effect on viruses and does not protect against contamination when HWs fail to follow aseptic technique. An example of multi-dose vials include, insulin vials, botox, tuberculin skin test vials, allergy testing vials.

The following practices are required in the context of multi-dose vials and safe injection practices, in accordance with the NSW Health *Infection Prevention and Control Policy* and NSW Health *Medication Handling in NSW Public Health Facilities* Policy Directive.

- If a multi-dose vial must be used, it should be used for a single patient whenever possible and discarded immediately after use (3, 98).
- Each entry into the multi-dose vial must be with a new unused sterile needle and syringe, even if the vial is dedicated to a single patient.
- If multi-dose vials must be used for more than one patient, they should only be kept and accessed in a dedicated medication preparation area (e.g., nurses station), away from immediate patient treatment areas. This is to prevent inadvertent contamination of the vial through direct or indirect contact with potentially contaminated surfaces or equipment that could then lead to infections in subsequent patients.
- If a multi-dose vial enters an immediate patient treatment area, it should be dedicated for single-patient use only (107).
- Keep multi-dose vials away from the immediate patient environment (98).
- Dispose of opened multi-dose medication vials 28 days after opening, unless specified otherwise by the manufacturer, or sooner if sterility is questioned or compromised.
- Date opened multi-dose vials to reflect date opened and/or date of expiration.
- An organization may choose to establish a system wide opened multi-dose discard schedule, i.e., one date a month established to discard all opened multi-dose vials no matter when the vial was opened during the month.

AHPRA Legislation

NSQHS - VERSION 2 NATIONAL STANDARDS Standard 4

NSW Health PD
Medication Handling in NSW Public Health Facilities

NSW Health PD
Infection Prevention and Control Policy

There are some delivery systems within the Australian healthcare market that provide multi-dosing administration where a drug, fluid, radiation treatment or contrast medium is given from a primary vial to multiple patients.

Delivery using such systems (not routinely recommended) must ensure that there is no cross contamination with any device/consumable/solution/medications between patients. These should only be considered if no other alternative product is available on the Australian market.

These products and devices must be registered with the TGA and HOs must identify them and develop clear local protocols for their management.

4.6 Cleaning and Disinfection

4.6.1 Patient equipment - Reprocessing

NSQHS - VERSION 2 NATIONAL STANDARDS Standard 3

Advice on reprocessing is provided in Section 8, *Reprocessing*. Reusable non-critical equipment used in the assessment and delivery of patient care should be reprocessed before use.

Principles of cleaning and disinfection:-

- Any reusable equipment and accessories that comes into contact with a patient must be reprocessed in between use. The level of process is dependent on the intended use.
- Any single use items must be discarded following use.
- Single patient items may need to be cleaned before reuse (IFU to be followed).
- HW that uses or transfers the item between patients should be responsible for reprocessing.
- All reusable equipment must be cleaned immediately if it becomes visibly soiled.
- Product selection should include assessment on ease of cleaning such as smooth impervious surfaces, material and product compatibility.
- Adhesive tape should not be applied to patient care equipment as it harbours microorganisms and serves as a vehicle for cross-transmission and inhibits ability to clean.
- Appropriate risk assessments, including a review of available manufacturer's IFU and local procedures must be carried out prior to the disinfection of equipment with the correct detergent/disinfectant regardless of the use of cover or sheath to protect the item.
- Where there is no manufacturer's IFUs available e.g. reusable tape measures, consult with local infection prevention and control team or delegate to determine required product cleaning method and frequency of cleaning.

Non-critical items such as commode chair, temperature probe etc. should be cleaned with a neutral detergent and if disinfection is required a TGA approved hospital grade disinfectant preferably with label claims against specific organisms should be used, OR a chlorine-based product such as sodium hypochlorite in accordance with manufacturer's recommendations.

Some items or parts, particularly electronic equipment such as monitors and keyboards may be damaged by the use of certain chemical disinfectants, and the manufacturer's IFU should always be consulted prior to selecting a disinfectant for these items.

The use of cleanable keyboard or fully washable type keyboards should be considered.

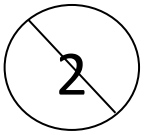
One the most important aspects regarding the effectiveness of a disinfectant is the contact time. Contact time refers to the amount of time

necessary for the disinfectant to be in contact with the surface to inactivate micro-organisms. HWs should always adhere to the manufacturer's IFU regarding contact time to ensure maximal disinfection effectiveness.

4.6.2 Single use or single patient use equipment

Single use equipment is either indicated on its packaging by the text 'Single use' or by the international symbol for single use:

Single patient use equipment is indicated on its packaging by text stating 'Single patient use'.



Australian Regulatory Guidelines for Medical Devices Version 1.1
Part 2, Chapter 19 Single use devices (SUDs) and the reuse of SUDS

Equipment which is labelled by the manufacturer for single patient use, including insulin pens and asthma spacers, must not be used for more than one patient or individual user. Cleaning and reprocessing of such devices is to be performed in accordance with the manufacturer's instructions and Section 8, *Reprocessing*. Single patient use equipment should be cleaned and stored as per the manufacturer's instructions between periods of use.

Any sterile single use or single patient use equipment is to be used according to the manufacturer's instructions and in such a way that the sterility of the item is maintained before patient use. Subsequent use of the same item on same patient may not guarantee sterility.

If single use equipment and single patient use equipment is soiled, it should be immediately discarded.

4.6.3 Storage of sterile, clean and reprocessed stock and equipment

Sterile items are to be stored and handled in a manner that is in accordance with manufacturers' IFU and that maintains the integrity of the packaging material and prevents contamination of the contents.

Packaging of sterile items should not be disfigured, left opened or be held together with tape, elastic or paper clips. Sterile stock which may have opened and not used must be discarded. Refer to section 8 for further information.

Sterile stock is to be stored out of direct sunlight, in dedicated sterile stock storage areas that are cleaned to a routine schedule and are free from dust, insects and vermin.
New or reprocessed stock is to be stored in a designated clean and dry room/area and stored in such a way that prevents contamination and maintains the level of any prior reprocessing.

AS/NZS 4187
Reprocessing of reusable medical devices in health service organizations

AS/NZS 4815:2006
Office-based health care facilities - Reprocessing of reusable medical and surgical instruments and equipment, and maintenance of the associated environment

See **Section 8**, *Reprocessing.*

Section 8 Figure 5 Factors affecting sterility of a reprocessed item

Storage of stock should be in receptacles that reduce the risk of dust entrapment. In the absence of these receptacles processes should be in place for their routine cleaning.

If the packaging of a sterile item becomes compromised by moisture or damage, the stock must be considered unsterile.
If unsterile stock cannot be reprocessed, stock should be disposed of immediately. If unsterile stock can be reprocessed, the stock should be repackaged and reprocessed again before any use.

Decision to use or dispose the items after a potential contamination event should be based on your risk rating and the potential level of contamination. The HO is responsible for ensuring that a stock rotation procedure and policy is in place. Stock levels should be maintained to meet the needs of the clinical area while not compromising stock sterility or wastage.

Semi-critical items should be stored appropriately to prevent environmental contamination. All endoscopic instruments (except those in sterile packaging) should be stored in an appropriate cabinet or reprocessed within set timeframes prior to use.

Non-critical items must be cleaned and or disinfected as per IFU and local procedure in between use and stored in a clean, dry place to prevent environmental contamination (1).

National Health and Medical Research Council

Australian Guidelines for the Prevention and Control of Infection in Healthcare

Table 12. Examples of items to be stored in designated clean storage rooms and dirty utility rooms

Examples of clean items to be stored in designated clean rooms or areas	Examples of clean items to be stored in designated dirty utility or clean up rooms
• Medical equipment • (e.g. infusion pumps, blood pressure machines, computer on wheels) • Medical and administrative supplies • Wheelchairs • Walking aids • Plastic bed sheets or 'blueys' (disposable water proof sheets) • Indwelling urinary or suprapubic catheter holders • Spare beds • Incontinence pads • Bed slings (if not stored with clean linen) • Patient personal hygiene products • Unused sharps containers • Emesis bags • Surgical hair removal clippers	• Bedpans & Urinals • Patient wash bowls • Urine testing equipment • Linen skips and waste bins • Access to PPE for the purpose of the tasks performed in the dirty utility (this area is not for storage of PPE) • Pan covers • Vases • Rubbish bags

4.7 Clean linen

Clean linen is to be stored:

- in a clean, dry place that prevents inadvertent handling, contamination by aerosols, dust, moisture or vermin and other soiled or contaminated items during sorting, packaging, transport and storage.
- on clean, washable shelves and, if necessary, wrapped in a protective covering;
- separately from used linen; and
- in a manner that will allow for stock rotation.

Clean linen should not be stored in patient bathrooms or places where there is a potential for moisture contamination.

AS/NZS 4146:2000
Laundry practice

If clean linen is decanted from the linen trolley for bed making rounds, this linen should be discarded and not returned to the linen cupboard or clean linen trolley

During transport externally to the hospital clean linen should be protected from the elements or potential environmental contamination (e.g. covered trolleys).

Clean linen and used linen are not be transported together unless separated by a suitable barrier.

4.7.1 Handling, disposal and transport of used linen

All used linen should be handled with care to avoid dispersal of microorganisms into the environment and to avoid contact with HW clothing (108, 109). Each HO is to have a written policy and/or procedures on the collection, transport, and storage of linen. Furthermore, a HO that processes or launders linen in-house will also have documented policies and/or procedures consistent with AS/NZS 4146:2000 Laundry Practice.

The following principles apply when handling linen used for all patients: i.e. whether or not transmission based precautions are required.

- Handle soiled laundry with minimum agitation to avoid contamination of the air, surfaces and persons (e.g., roll up).
- Used, soiled or wet linen should be placed into appropriate laundry receptacle at the point of generation; water-soluble bags and double-bagging are not necessary and are not recommended.
- Clear leak-proof bags are to be used to contain linen that is heavily soiled with blood, other body substances or other fluids (including wet with water).
- Linen bags should be tied securely and not be filled completely as this will increase the risk of rupture in transit and injury to bag handlers.
- Reusable linen bags must be laundered before re-use.
- Hand hygiene must be performed following the handling of used linen.

Used or soiled linen are **not** to be rinsed or sorted in patient care areas or washed in domestic washing machines.
Domestic type washing machines are only to be used to launder a patient's personal items and only one patient's personal items can be washed per cycle.

All patient care items and facility linen is to be washed using non-domestic (commercial) washing machines. Washing machines are to be housed in suitably designed rooms with a clean and dirty workflow. Clothes dryers should be used for drying.

NSQHS - VERSION 2 NATIONAL STANDARDS Standard 3

AS/NZS 4146:2000
Laundry practice

- Laundry carts or hampers used to collect or transport soiled linen need not be covered.
- Containers (including carts, bags, and plastic bins) for collecting, storing, or transporting soiled linen should be waterproof, leak-proof, nonporous, and in good repair, and should be decontaminated after use.
- The vehicles which transport linen to and from the laundry should be clean. Soiled and clean textiles should not be transported in the same vehicle, unless they are separated by a suitable barrier e.g. containers with suitable closures, moisture impermeable bags that would prevent contamination between the soiled and clean linen. If a compartment has carried soiled laundry, that compartment should be thoroughly cleaned before it is used to carry clean linen.
- Special handling of linen for clients/patients/residents on Additional Precautions is not routinely required. Routine practices for handling and laundering are sufficient, regardless of the source of the linen.
- Linen bags should be held away from the body to avoid potential risks of contamination and injuries due to possible sharps.
- Disposable linen is the first choice preference for patients with a high consequence infectious disease. Reusable linen should be discarded as clinical waste.

4.8 Environmental cleaning

Health care organisations are complex environments where the provision of care to large numbers of clients results in increased microbial burden and contamination of surfaces and equipment with microorganisms. Contaminated surfaces and equipment may potentially contribute to the transmission of microorganisms and health care-associated infection.

Each HO must use a risk management framework when considering cleaning of the health care environment. The aim of determining risk is to ensure appropriate controls are implemented due to the variety of problems that inadequate cleaning can cause.
The accountability for all aspects of cleaning lies with the HOs management.

Health facilities require a continuous comprehensive approach to monitoring the cleanliness of the healthcare environment. Internal audits of a HOs cleanliness must be performed in all functional areas across all risk categories. This systematic program of internal auditing (including results achieved) must be clearly documented. Feedback must be provided to the individual areas along with a plan to rectify any highlighted problems.

At a minimum, routine environmental management in each HO should include :

- High-touch surfaces in patient zone must be cleaned and disinfected (frequency may vary depending on the functional risk rating of the area)
- Reusable non-critical devices must be cleaned and disinfected in between patient use
- Cleaning practices must be periodically monitored and audited with feedback and education (frequency may vary depending on the functional risk rating of the area)
- Ensure floors and baseboards are free of stains, visible dust, spills and streaks
- Ensure walls, ceilings and doors are free of visible dust or gross soil
- All horizontal surfaces are free of visible dust or streaks (includes furniture, window ledges, overhead lights, phones etc.)
- Bathroom fixtures including toilets, sinks, tubs and showers are free of streaks, soil, stains and soap scum.
- Mirrors and windows are free of dust and streaks.
- Dispensers are free of dust, soiling and residue and replaced/replenished when empty
- Appliances are free of dust, soiling and stains.
- Waste is disposed of appropriately.
- Items that are broken, torn, cracked or malfunctioning are replaced.
- Prompt disposal of used single use items
- Prompt cleaning and disinfection of all blood and body substance spills

NSW Health PD
Environmental Cleaning Policy

- Minimal clutter in shared administrative and clinical areas, such as workstations, store rooms and utility rooms

The following principles should be followed when exploring new technologies such as hydrogen peroxide aerosols and ultraviolet (UV) lights to enhance routine cleaning:

- Cleaning robots or touchless technologies offer an alternative to overcome some challenges faced by traditional manual cleaning. However, the available evidence are modest and inconclusive and the expectation of a dramatic clinical benefit is currently not supported by available data (110).
- The touchless devices are not a substitute to manual cleaning
- The touchless devices require the removal of most of the bioburden and soil from the surfaces before its use to optimise its function
- The room or patient space should be empty anywhere between 15 minutes to a couple of hours depending upon the device and technology
- The financial cost should be taken into account before local decision making

4.8.1 Utility room

Designated dirty utility (pan) rooms are to have clear separation of clean and dirty workflows to avoid contamination of cleaned equipment and to prevent contaminated equipment from being placed in the clean work area (111).

- The dirty utility room should be physically separate from other areas, including clean supply/storage areas
- Be adequately sized within the unit and located near the point-of-care
- Have a work counter and flushing-rim clinical sink (sluice sink) with a hot and cold water mixing faucet.
- Spray hoses are not recommended due to risk of aerosolisation.
- Have a dedicated hand washing basin with both hot and cold running water
- A separate utility sink is also required if the soiled utility room will be used for rinsing or removal of gross soiling of medical instruments or equipment
- Have adequate space to permit the use of equipment required for the disposal of waste
- Have PPE available to protect staff during disposal/cleaning and disinfecting procedures
- The ideal dirty utility (pan) room will have purpose built storage spaces to store clean stock and equipment to avoid any contamination (refer table 12).
- Dirty utility (pan) rooms are to be maintained in a clean dry state with uncluttered work surfaces and with all items stored off the floor. Towels or sheets are not to be used as covers for the benchtops.
- A program for the routine cleaning of shelves and storage compartments is to be established and records maintained. HWs should be made aware of the local routine cleaning program, including correct use of general cleaning products (e.g. neutral detergent impregnated wipes) and an awareness of who is responsible for ordering stock when they are low.
- Unauthorised people should not have access to the dirty utility room.

- Dirty utility room/s should not be used to store unused medical equipment or sterile stock (refer table 12).

A clean utility/supply room for storing sterile supplies and equipment should:

- Be separate from and have no direct connection with dirty utility or soiled holding areas
- Be able to keep supplies free from dust and moisture, and stored off the floor
- Be adjacent to usage areas and easily available to staff
- Be equipped with a work counter and dedicated hand washing basin if used for preparing patientcare items (111).

4.8.2 Patient zone privacy curtains

A HO may use privacy curtains to separate individual patients, provide an easily identifiable perimeter and play an important role in defining the patient zone. Such curtains should be installed to ensure that there is total coverage when the curtains are drawn closed (i.e. no open gaps are present). External windows or partition curtains are not recommended. Patient curtains should be washable or disposable, easy to remove and to hang, and when pulled around the bed, ensure there is room for HWs to carry out procedures.

- Patient bed curtains are outside the patient zone and are frequently contaminated with micro-organisms foreign to the patient inside.
- Touching the curtains after caring for a patient is considered to be equivalent to leaving the patient zone.
- Hand hygiene must be performed between touching the curtains and touching the patient and vice versa.

Patient zone privacy curtains are to be either made of a washable or disposable material. Washable privacy curtains should be changed and washed according to the Environmental Cleaning SOP (module 3: 2.3.10).

The frequency of washing is to be determined by applying the functional risk rating of the clinical area, as outlined in the NSW Health *Environmental Cleaning Policy Directive.* Refer to table 13 for recommended changeover /cleaning frequency for patient privacy curtains.

If the curtain (washable or disposable) is visibly soiled, it should be changed as soon as practical. If disposable curtains are soiled, particularly with body substance they should be replaced irrespective of the curtain expiry date.

In high risk areas washable bed curtains should be changed weekly and upon discharge, increase frequency of cleaning or change during outbreak situations, when managing patients with new and emerging pathogen (e.g. Candia auris).

Disposable privacy curtains are marked with an expiry date and should be disposed of in accordance with manufacturer's IFU, local procedure and NSW waste management guidelines.

NSW Health PD
Environmental cleaning policy

Environmental Cleaning SOP
Module 3.2 Furnishings and Fixtures

Non-disposable privacy curtains are to be changed as part of terminal cleaning

The HO should have a process/ program in place for regular review of disposable curtains for soiling and replacement.

Table 13 Recommended changeover /cleaning frequency for patient privacy curtains

Area	Disposable Curtains	Washable Curtains
Very High Risk Outbreaks of infectious disease or gastroenteritis Patients with active Clostridioides (clostridium) Difficile New and emerging pathogens (Candida auris)	Change when visibly soiled or torn Change immediately on patient discharge	Change when visibly soiled or torn Change weekly and upon patient discharge
High Risk Intensive Care (ICU) High Dependency Unit (HDU) Burns Unit, Renal Unit Operating suites Day surgery Emergency Departments Wards with patients requiring transmission based precautions	Change when visibly soiled or torn Follow manufacturer's instructions for use (IFU)	Change when visibly soiled or torn Change monthly to three monthly based on risk assessment
Significant Risk General wards	Change when visibly soiled or torn Follow manufacturer's instructions for use (IFU)	Change when visibly soiled or torn Change three monthly to bi-annually based on risk assessment
Low risk Rehabilitation Long term care/Nursing Homes Office based practice Medical centre, radiography	Change when visibly soiled or torn Follow manufacturer's instructions for use (IFU)	Change when visibly soiled or torn Change three monthly to bi-annually based on risk assessment

4.8.3 Dedicated window curtains and blinds in clinical areas

Fixtures and fittings such as window curtains should be designed to allow easy cleaning and to discourage the accumulation of dust.
Blinds contained in double glazing, curtains and roller-type blinds made of fabric that can be removed and laundered are preferable to louvered and vertical blinds that are extremely difficult to clean.
Before purchasing and installing window curtains (with or without additional backing) and blinds in clinical areas, the HO should consider the cleaning requirements for these furnishings (see Section 2.4.1, *Purchasing new equipment*).

The HO must clean these furnishings in accordance with the NSW Health *Environmental Cleaning* policy.

NSW Health PD
Environmental cleaning policy

Australian Health Facility Guidelines
Part D Infection Prevention and Control

Environmental Cleaning SOP
Module 3.2 Furnishings and Fixtures

4.9 Waste disposal

Proper containment of waste can minimise the transmission of infection (112). See NSW Health *Clinical and Related Waste Management for Health Services* Policy Directive.

- Waste must be placed in appropriate containers at the point-of-care/use and stored in a designated enclosed room with access limited to authorised staff
- Anatomical waste must be refrigerated at or below 4°C of if stored for more than four days.
- Biomedical waste storage areas shall be locked, except where authorized staff are on hand
- Segregated waste should be removed to central holding areas at frequent intervals and be stored in rigid, secondary leak-proof bins that are cleaned and disinfected prior to re-use.
- Waste bags should never be stored directly on the floor.
- A dedicated hand washing basin must be available to waste handlers.
- HOs should provide, and waste handlers should wear, PPE appropriate for the risk of the tasks when handling waste.
- Waste should be transported in leak-proof and covered carts which are cleaned on a regular basis.
- Waste should not be transported in the same lift at the same time as clients/patients/residents or clean/sterile instruments /supplies/linen.

NSQHS - VERSION 2 NATIONAL STANDARDS Standard 3

NSW Health PD
Clinical and Related Waste Management for Health Services

4.9.1 Clinical waste disposal in the community

Clinical waste should be handled in a manner consistent with standard precautions (see Section 4, *Risk mitigation: Standard precautions*).

- In a client's home, clinical waste generated should be disposed of at the point of use.
- Sharps are to be disposed of in sharps containers and returned to suitable collection point.

NSW Health PD
Clinical and Related Waste Management for Health Services

NSW Health PD
Community Sharps Disposal by Area Health Services

Used aprons, gowns and gloves in both clinical and non-clinical community health settings are classified as general waste. Any bulk fluids should be emptied into domestic sewerage systems.

Other clinical waste, such as closed system surgical drains, wound exudate collection canisters from vacuum-sealed systems and self-contained chest drainage collection systems that cannot be emptied into domestic sewerage systems, is to be double-bagged and disposed of at point of use.

4.9.2 Safe handling and transport of patient specimens

When transporting and handling pathology specimens, HWs should ensure that the specimens are packaged and transported in such a way to ensure the safety of anyone required to handle the package and/or specimen and that the specimen is maintained under suitable conditions (15).

National Pathology Accreditation Advisory Council
Requirements for the Packaging and Transport of Pathology Specimens and Associated Materials (Fourth Edition 2013)

As a minimum, the following infection prevention and control principles are to be observed during the transportation of specimens:

- transport specimens to the pathology laboratory as soon as possible;
- if transporting specimens by foot or trolley, double packaging of the specimen is required, e.g. the primary receptacle placed in a secondary packaging of appropriate shape, leak-proof and of sufficient volume to contain a spill;
- contain specimens in a canister/capsule prior to sending via a pneumatic tube specimen delivery system; and
- do not use pneumatic tube specimen delivery systems when transporting highly pathogenic or novel infectious specimens.

In the event of a novel infectious disease, HOs should refer to specific pathology specimen handling and transporting advice provided by NSW Health or other delegate agencies (e.g. NSW Contingency Plan for Viral Haemorrhagic Fevers, The Australian Dangerous Goods Code Edition 7.5, Requirements for the Packaging and Transport of Pathology Specimens and Associated Materials (Fourth Edition 2013).

4.9.3 Transport between locations

Where a HO is required to transport specimens to a pathology laboratory by road, rail or air transport, triple packaging is to be used. Specimen packaging is to comply with the relevant standards and requirements for the mode of transport being used (refer to section 4.45)

AS 4834-2007
Packaging for surface transport of biological material that may cause disease in humans, animals and plants

Civil Aviation Safety Regulation Part 92
Consignment and carriage of dangerous goods by air

4.10 Other controls required in all patient settings

4.10.1 Food

The HO that admits patients overnight has systems for the preparation and distribution of food and fluids that include nutrition care plans based on current evidence and best practice.

It is important that the principles of food hygiene are followed by all those who are involved in the preparation, handling and serving of food.

All HOs are regulated by the NSW Food Act 2003 and are to be licensed by the NSW Food Authority. HOs must comply with the Food Standards

Food Act 2003 No 43 (NSW)

NSW Health PD
Nutrition Care

Australia New Zealand Food Standards Code - Standard 3.3.1
Food safety programs for food service to vulnerable persons

ACI Nutrition Network
Nutrition Standards and Diet Specifications

Australia New Zealand Standard Code 3.3.1 Food Safety Programs for Food Service to Vulnerable People.

ACI Nutrition Network
Food and Nutrition in NSW Hospitals

NSW Food Authority
Guidelines for food service to vulnerable persons

NSQHS Standards
Second edition

High risk patient groups

High risk patients in healthcare facilities may be at risk of acquiring a foodborne illness if food safety standards are not maintained. Even if food safety is not compromised, certain patients are more vulnerable to serious infection from certain foods. These patients include: pregnant women, young children, the elderly and the immunocompromised (e.g. diabetes, immunosuppressive treatments or leukaemia). Seek dietary advice from local dietetics services prior to providing food to these individuals.

4.10.2 Food provided by the hospital (or other HOs)

Food Standards Australia New Zealand Standard Code 3.3.1 outlines the local governance structures and processes required for:

- Food storage requirements and temperature control;
- Food sanitation;
- Stock rotation and food expiry;
- Cleaning of food preparation areas and equipment; and
- Documentation.

At the ward level, the following practices are advised for implementation:

- Serve hospital-provided food immediately after its preparation.
- Storage of uneaten or partially uneaten meals is prohibited. Uneaten meals are to be disposed of after the meal service.
- Use enteric feeds immediately after opening. Dispose of any feeds that have been exposed to the environment (e.g. left sitting open on benchtops).
- Store hospital-provided food in a designated patient food storage refrigerator (See below for advice on storing externally brought food).
- The ward-based kitchen and beverage preparation areas (including designated patient food storage refrigerators) should not be considered or treated as a main access thoroughfare for clinicians, patients or visitors. Before implementing any access restrictions, HOs should consider the need for patient and/or visitor access. For example:
    - Settings where patient access to the kitchen is imperative for their health and recovery (e.g. mental health settings, occupational therapy, rehabilitation)
    - Settings and/or occasions where patients, particularly those hospitalised for a long period, may communally gather in the kitchen (e.g. celebrations)
- Good hand hygiene practice should always be employed when preparing and handling food.
- Safe and appropriate handling practices should be used when preparing eggs, raw meat, poultry, noodles, cheeses and fruit and vegetables.

NSW Food Authority
Special Care Foods

- Dedicated refrigerators should be available to separately store:

- Patient food and beverages
- Staff food
- Medication and vaccines (Refrigerator should be outside of food preparation areas)
- If required, medical equipment (Refrigerator should be outside of food
- preparation areas)

- Refer to the NSW Health *Maternity - Breast Milk: Safe Management* Policy Directive for advice on the storage of breast milk.

NSW Health PD
Maternity - Breast Milk: Safe Management

4.10.3 Food not provided by the hospital (or other HOs)

Food brought into hospitals by patients and their families and carers is outside the scope of this handbook. This includes foods brought from commercial food outlets on the hospital campus (e.g. takeaway shops and convenience stores). However, HWs should inform patients, families and carers that wards do not have the capacity to store food that has not been provided by the hospital and cannot guarantee the integrity and preservation of externally bought foods. HWs should seek dietetic advice regarding the risks associated with consuming externally brought food.

ACI Nutrition Network
Food and Nutrition in NSW Hospitals

HWs should not purchase, reheat, prepare or serve any externally brought food on behalf of patients.

4.10.4 Oral nutritional supplements

To prevent contamination, portion controlled nutritional supplements should be dispensed in a clean environment. The full portion should be consumed when given. If the full portion is not consumed within 2 hours, it is to be discarded.

Opened supplement containers or cans must be labelled with the date and time opened, covered and stored in a patient food storage refrigerator. Use the contents or discard within 24 hours of opening.

4.10.5 Food consumption by HWs

HWs are not to eat or drink in clinical areas, including the perioperative settings. Food in clinical areas and the perioperative units has the potential for cross contamination between staff and may also attract vermin and insects. Food and drink should be consumed in designated staff tea rooms. Adherence to hand hygiene is important prior to any food consumption.

4.10.6 Ice for Human Consumption

Heat generated by a water chiller or ice machine's compressor may create optimal growth temperatures for Legionella in the water supplying the ice machine, chilled water dispenser or ice. Immunocompromised patients are particularly susceptible to this risk if exposed to ice or chilled water contaminated with Legionella.

It is recommended that activated carbon filtration is not used in ice machines and water coolers in health and aged care facilities because of the increased opportunity for Legionella to colonise the device downstream of the carbon filter.

The following should be considered when purchasing ice machines:

- Advice must be sought from the Infection Prevention and Control Team, Facilities Maintenance and the local procurement as appropriate
- Machines that dispense ice directly into portable containers at the touch of a control or "Hands Free" should be purchased to reduce potential for contamination.

- Recycling of excess water onto a reservoir or ice compartment is not recommended. Machines must be plumbed into the main water supply.
- Machines must be installed in accordance with the manufactures guidance and instructions.
- A U-bend and break in the drain is desirable to prevent reflux.
- There should be adequate separation of air inlet and air outlet in the heat exchange mechanism to permit efficient cooling. The placement of the machine should be such that these areas are not obstructed.
- Ability to implement necessary maintenance schedules should be addressed during the purchasing process

The following should be considered for ongoing maintenance of ice machines (1):

- Adequate maintenance schedules should be developed, to ensure the machine can be maintained as per manufacturer's instructions and records are audited at least annually.
- HOs should develop a process on regular cleaning and monitoring of the machines

4.11 Flowers and plants

For the vast majority of patients in hospitals and other healthcare facilities, fresh flowers or potted plants do not represent a risk of infection (113).

Cut flowers left standing in water and soil from plants and dried arrangements can be heavily contaminated with microorganisms that are pathogenic to immunocompromised patients, such as *Aspergillus* sp. (114). While there is limited evidence that links the presence of these organisms to infection in these patients (113), it is strongly recommended that plants and dried or fresh flowers are not allowed in the hospital rooms of haematopoietic stem cell transplant recipients given the potential for severe infection in these patients (3, 115, 116).

Poorly maintained flowers or potted plants can increase the risk of attracting insects. Widespread positioning of plants should be avoided in clinical/ support and laboratory areas.

4.12 Staff attire

HWs are to wear clean garments for each shift.

- HWs who wear long sleeved clothing should roll up long sleeves or remove long sleeved clothing during clinical procedures and must be able to perform adequate hand hygiene.
- Requests from HWs to wear long sleeved garments for religious or medical reasons (e.g. compression bandages) should be assessed by the HO on a case by case basis.
- Clinical procedures require a bare below the elbow approach to comply with asepsis and Infection Prevention and Control PD. Refer to Section 4.1.4, *Jewellery,* for information regarding jewellery.

NSW Health PD
Uniforms Policy

Hair

- Hair should be clean at all times and in the clinical environment should be contained.
- Hair below collar length should be tied back at all times in a manner which does not allow contact with the patient
- Head/ hair protection is mandatory in certain areas including; kitchens and operating theatres.
- Facial hair is best kept tidy, neat and trimmed and should be covered with a hood when undertaking aseptic procedures

HWs must wear fluid repellent, fully enclosed shoes in the clinical environment.

The wearing of ties and lanyards in the clinical setting is not recommended.

Evidence suggests that ties and lanyards can be contaminated during patient care, and in turn can carry infectious material between patients (117-119).

4.12.1 Perioperative attire

HWs must replace all outer garments with the prescribed perioperative attire in the designated changing facilities before entering the semi-restricted and restricted areas.
Perioperative attire should not be worn outside of the perioperative environment (120), unless emergency attendance of a patient is required within the facility. If scrubs are worn outside of the perioperative setting, surgical attire is to be changed before re-entry into theatre.
Use of outer gowns to protect surgical attire is not recommended, due to the limited benefit in reducing the contamination of surgical attire (121, 122).

- Change into clean perioperative attire daily, or when wet or soiled. Visibly soiled scrubs are to be changed before leaving the theatre
- Ensure any body hair on the back or at the neckline is covered
- Prevent perioperative attire coming into contact with the floor when changing
- Not wear a lanyard, pouch or other potential vectors for infection
- Apply a head cover that encloses all hair, including sideburns and facial hair, and covers the nape of the neck
- Change head covers daily and when soiled

There is limited evidence for the use of shoe covers to reduce microbial load in the theatre environment (123). Fluid resistant shoe covers may provide protection against the risk of body substance contamination of the shoes. Where the use of shoe covers is indicated, HWs perform hand hygiene after putting on and removing shoe covers.

Shoes used for the perioperative environment should be dedicated for that use and routinely cleaned

4.13 Use of portable fans

In health care settings, the use of portable fans can promote the spread of dust, debris and microorganisms through the air and can pose a risk to patients, staff, and visitors. Organisms dispersed through the air can contaminate patient wounds, open areas, and environmental surfaces. Fans can disturb the normal air flow within a room or patient clinical area, altering the expected air flow pattern (e.g. disturbance in negative pressure room air exchanges).

Ceiling or portable fans are not recommended in the high risk clinical settings because the indoor air can be an important vehicle for a variety of human pathogens and the bioaerosol deposition can be a potential source of hospital-acquired infections(124, 125).

Bladeless fans while they may be considered easier to clean; may promote environmental contamination through their operating mechanisms. The blades are hidden inside the pedestal stand in bladeless fans and the air flows through the channel in the pedestal through the curved path, the surrounding air become drawn into the fan from multiple areas around the fan(125). Given that the internal component of bladeless fans may not be able to be cleaned thoroughly, clinically significant microorganisms can harbour inside the cowl.

While use of portable fans has not been proven to transmit infection, lack of appropriate cleaning procedures for portable fans, are an infection control concern. Portable fans can be considered in waiting areas and non-clinical settings providing regular cleaning, maintenance and appropriate regulation of the speed is maintained.

IPC recommendations for use of fans in patient care areas:

Healthcare staff should perform a risk assessment before using fans in patient rooms on a case-by-case basis.

- Portable fans should be used within a single patient room, or if used in a multi-patient room, within the patient's bed space with the curtains drawn
- Consult IPC for use of fans for patients on additional isolation precautions other than airborne isolation precautions (e.g. contact or droplet precautions).
- Consult IPC for use of fans in food preparation and food service areas.
- Fans with blades should be accessible for cleaning.
- Bladeless fans may need to have internal components cleaned between uses
- Fans should be used only as a temporary measure
- Fans should only be used at the lowest speed for less disruption of dust and debris and with least disruption to airflow such as non-oscillating.

Fans should be turned off in the room for the following, including, but not limited to:

- When a sterile field is required.
- When a sterile/aseptic medical procedure is being performed (such as a wound dressing change).
- When a procedure is performed that might generate a splashing of body fluids, fluid aspiration, emptying urinary catheter etc.

Fans are considered non-critical devices and must be regularly cleaned:

- Weekly cleaning according to manufacturer's IFU and local procedure or as required.
- HO should develop a written schedule that documents when the device is cleaned and by whom.
- Portable fans when not in use must be stored covered post cleaning.

Fans must not be used in:

- Rooms/areas with directed airflow.
- Rooms with patients on airborne precautions or where there is a risk of airborne transmission such as when an aerosol generating medical procedure might be performed.

- Reusable Medical Device (RMD) reprocessing departments, any area outside RMD reprocessing area that performs reprocessing and areas where sterile supplies are stored.
- Adult Intensive Care Unit (ICU)
- High Acuity Units
- Neonatal Intensive Care Unit (ICU)
- Operating Room (OR)
- Dialysis Unit
- Endoscopy Suite
- Laboratory
- Oncology Unit
- Haematology Units
- Transplant units