

Chapter 5 Risk mitigation

5.1 Introduction

Infection prevention and control utilise a risk mitigation approach to reduce or prevent the transmission of infections. The two-tiered approach of standard and transmission-based precautions provides a high level of protection to patients, health workers, consumers, and other people in Health Organisations. In this chapter healthcare consumers include patients, clients and residents.

5.2 Standard precautions

Standard precautions represent the minimum infection prevention measures that apply to all patient care, regardless of suspected or confirmed infection status of the patient in any setting where healthcare is delivered. These evidence-based practices are designed to minimise, and where possible, eliminate the risk of transmission of infection among patients, consumers, and health workers.

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

Standard precautions must be used in the handling of:

- blood (including dried blood)
- all other body fluids or substances (except sweat), regardless of whether they contain visible blood
- non-intact skin
- mucous membranes.

Standard precautions comprise of the following practices:

- Performing hand hygiene
- Appropriate and correct use of personal protective equipment (PPE)
- Respiratory hygiene and cough etiquette
- Use of aseptic technique
- Safe use and disposal of sharps
- Performing routine environmental cleaning
- Cleaning and disinfection of shared patient equipment
- Reprocessing of reusable medical devices
- Safe handling and disposal of waste used linen and laboratory specimens.

Each of these measures will be described in further detail in this section. Appropriate patient placement further supports standard precautions. For more information refer to 6.5 Supporting bed allocation and patient flow.

5.3 Hand hygiene

Human skin is a dynamic ecosystem home to millions of bacteria, fungi and viruses. These microbes are referred to as skin microbiota. Similar to those in the gastrointestinal (GI) system, skin microorganisms have essential roles in the protection against invading pathogens, the education of our immune system and the breakdown of natural products (Byrd et al., 2018).

The microorganisms present on hands could be divided into two categories, namely resident or transient.

The resident flora (resident microbiota) consists of microorganisms residing under the superficial cells of the stratum corneum and can also be found on the surface of the skin (for example, *Staphylococcus epidermidis*, *S. hominis*, propionibacteria, corynebacteria). Resident flora has two main protective functions: microbial antagonism and the competition for nutrients in the ecosystem. In general, resident flora is less likely to be associated with infections, but may cause infections in sterile body cavities, the eyes, or on non-intact skin (World Health Organization, 2009).

Transient flora which colonises the superficial layers of the skin, are microorganisms that may be present in or on the body under certain conditions and for certain lengths of time; they are easier to remove by mechanical friction than resident flora (World Health Organization, 2009). Transient microorganisms do not usually multiply on the skin, but they survive and sporadically multiply on the skin surface. They are often acquired by health workers during direct contact with patients or contaminated environmental surfaces adjacent to the patient and are the organisms most frequently associated with HAIs.

Hand hygiene is a major component of standard precautions and is recognised as the cornerstone of infection prevention and control, also one of the most effective methods to prevent transmission of microorganisms in healthcare. Hand hygiene is the act of cleaning hands with either alcohol-based hand rub (ABHR) in liquid, foam, or gel form; antiseptic liquid hand wash with running water; or (plain) liquid soap and running water and drying with single use towels.

Routine hand hygiene

For most hand hygiene activities, ABHR is to be used. Visibly soiled hands must be washed with liquid soap and running water.

Use of alcohol-based hand rub:

- Apply the amount of ABHR recommended by the manufacturer onto dry hands
- Rub hands thoroughly, ensuring the hand hygiene solution covers all areas, especially the fingertips, thumbs, and space between the fingers to achieve effective disinfection
- Continue rubbing until the solution has evaporated and the hands are dry (approximately 20-30 seconds).

Using soap (including antimicrobial soap) and water:

- Wet hands under running water and apply the recommended amount of liquid soap
- Rub hands thoroughly for at least 15 seconds, ensuring the hand hygiene solution reaches all areas especially the fingertips, thumbs, and spaces between the fingers for effective coverage and disinfection
- Rinse hands thoroughly under running water, pat dry with single use towels (approximately 40-60 seconds).

Surgical hand hygiene

Routine hand hygiene reduces the transient flora on health workers hands and surgical hand preparation should eliminate the transient and reduce the resident flora. Refer to Table 10 hand hygiene procedures, for more information.

In addition to hand hygiene, the use of PPE should be guided by risk assessment and the extent of contact anticipated with body substances or microorganisms. Wearing gloves must not be considered a substitute for hand hygiene.

5.3.1 Hand hygiene principles

Health workers are required to perform hand hygiene as per the [World Health Organization's 5 moments for hand hygiene](#) (refer to Figure 9 Five moments for hand hygiene):

- Before and after patient contact
- Before and after a procedure
- After a body substance exposure risk
- 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 health workers are to attend to clean sites before dirty sites)
- Before handling sterile products/packs
- After touching patient surroundings.

In addition, it is recommended that health workers perform hand hygiene:

- Upon entering and leaving a ward or a unit (for example, at start of shift or going on a break)
- Before and after 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 (for example, companion therapy)
- Before and after smoking, including e-cigarettes/vapes.

Figure 9 Five moments for hand hygiene



Source: [National Hand Hygiene Initiative – NHHI](#)

Effective hand hygiene relies on appropriate techniques and selection of the correct product. Incorrect hand hygiene technique can result in the failure to effectively remove or kill microorganisms on the hands.

Effective hand hygiene relies on the following mechanisms of action:

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

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*
- 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. This helps to dissolve and lift soiling (fats and proteins) from the skin
- If soap and water are not available, ABHR should be used.

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.

ABHR has some reported limitations in spore penetration and may be less effective against removing and killing bacterial spores, for example, *C. difficile* and non-enveloped viruses, for example, rotavirus, norovirus. Hand hygiene with soap and water would be the most effective method in these situations, especially after care with symptomatic patients where hands may be potentially soiled. In situations where soap and water are not available ABHR should be utilised.

For more information refer to [World Health Organization-Five Moments for Hand Hygiene](#), [National Hand Hygiene Initiative](#), [Australian Guidelines for the Prevention and Control of Infection in Healthcare](#) and [Preventing and Controlling Infections Standard](#).

5.3.2 Hand hygiene product accessibility

Appropriately placed ABHR dispensers, sinks and basins can facilitate health worker compliance with hand hygiene requirements, generally within arm's reach of where patient care or treatment is taking place. Hand hygiene compliance may increase if ABHR dispensers, are placed in appropriate locations (where clinical care is provided/point of care, for example, bedside, within the patient zone or where direct care is performed. For more information refer to [National Hand Hygiene Initiative Implementation Guide](#) and [Australasian Health Facility Guidelines Part D – Infection prevention and control](#).

Where possible, ABHR should be placed:

- at the foot of every bed or within each patient zone using either a fixed or removable bracket
- attached to mobile work trolleys, for example, workstation on wheels, pharmacy on wheels, intravenous, drug and dressing trolleys,
- high traffic areas such as a nurses' station, pan room, medication room and patient room entrance
- all other clinical and patient care areas, such as examination rooms and outpatient consultation rooms
- entrances to each ward, outpatient clinic or department
- public areas such as waiting rooms, reception areas, hospital foyers, near elevator doors in high-traffic areas. Consider tamper proof ABHR dispensers for in these areas.

ABHR dispensers need to be suitably located out of the reach of children, or in supervised locations. Placement of dispensers must be carefully considered in mental health facilities and alcohol withdrawal units.

ABHR dispensers should not be placed at sinks or next to sinks, as this can cause confusion for health workers about which hand hygiene product to use except for mental health and any other supervised locations.

Signage about the appropriate use of ABHR should be prominently displayed in all clinical areas in all health service facilities.

Use of ABHRs in high-risk clinical environments

Alcohol-based hand rubs (ABHRs) are recommended by the ACSQHC and the WHO as the first-line choice for hand hygiene, due to their proven efficacy in reducing HAIs.

However, in high-risk environments such as psychiatric units and alcohol withdrawal settings, the use of ABHRs may pose safety concerns. In these contexts:

- ABHRs should only be used where safe and appropriate, based on a local risk assessment.
- Non-alcohol-based alternatives may be considered where the risk of misuse or harm outweighs the benefits.
- Product selection and dispenser placement must be guided by clinical safety, patient risk profiles, and environmental supervision.
- Local assessments should involve infection prevention teams, clinical staff, and facilities management to determine the safest product and placement strategy.

For more information refer to [NHS hand hygiene product literature review Jan 2024](#), the [Australian Commission on Safety and Quality in Health Care](#) and [World Health Organization](#).

Hand washing basins

Hand washing basins are required in all patient care areas and in areas where careful attention to hygiene is essential such as kitchens, laundry, pharmacies, laboratories and amenities for patients, visitors, or staff. Reticulated, free-flowing warm and cold water will be provided. Plugs and wastewater diffusers should not be provided other than hand wash basins in patient ensuites (for example, vanity basins). Hand wash basins must comply with the requirements in the [Australasian Health Facility Guidelines Part D – Infection prevention and control](#).

Clinical hand wash basins within clinical areas:

- Should be dedicated for their intended purpose. Non-hand hygiene activities such as disposing of used medication, emptying leftover fluids or nasogastric aspirate, sugary drinks, tea, or coffee for example, may promote microbial growth in drains and cross contamination of taps, pipes and hands
- Are identified by a signage for the purpose of hand hygiene only, not as a disposal route
- Should not be used for drinking water, washing any patient equipment, storing any equipment such as toothbrushes or dentures, additional paper towel or PPE
- Splash backs are required behind all basins. The splash back should be large enough to contain splashes and prevent moisture seepage. The surface should be water resistant and easy to clean
- Water present around hand wash basins or sinks encourages the growth of mould and bacteria in any substrate material. Regular cleaning and scheduled maintenance are needed to reduce the bioburden.

The installation and use of hot air hand dryers is not appropriate for clinical areas in Health facilities as there are risks that these dryers will spread microorganisms in the clinical setting and therefore increase the risk of cross transmission of organisms. Hot air hand dryers may be considered in non-clinical areas, such as public toilets if evidence supports their installation. Careful consideration for combined water and dryer systems given possible increase to aerosolisation of water particles.

For more information refer to [Australasian Health Facility Guidelines](#) Part D - Infection prevention and control D.0002 - Building Elements.

5.3.3 Hand hygiene product selection

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

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

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

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

- A chemical composition of alcohol with a range between 60% to 80% (volume by volume) is recommended
- 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
- Manufacturers or supplier support for instillation, ongoing maintenance, resources provided and education programs.

For more information refer to [TGA - Meeting requirements for manufacturers, supply or advertise hand sanitisers](#).

The clinical activity to be performed should dictate the product and technique used. Table 10 provides advice on the hand hygiene product to use and the duration for common clinical activity sets. For more information refer to WHO [Hand Hygiene Technical Reference Manual](#) and NSW Health policy directive [Intravascular Access Devices \(IVAD\) - Infection Prevention & Control](#).

Table 10 Hand hygiene procedures

Activity		Skin cleansing product*	Action	Duration of hand wash or hand rub*
Routine/social hand hygiene		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 towels.	40-60 seconds (includes wetting, lather and scrub hands for at least 20 seconds and drying) (WHO 2009)
	For example, taking pulse/BP,	ABHR	Dispense manufacturer's recommended amount of	Until dry

Standard patient care activities	assembly of needle and syringe, prior to collecting and opening sterile consumables or preparing an aseptic field, and after touching patient surroundings		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.	(Usually 20-30 seconds) (WHO 2009)
		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 towels.	40-60 seconds (includes wetting, lather and scrub hands for at least 20 seconds and drying) (WHO 2009)
		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 towels.	40-60 seconds (includes wetting, lather and scrub hands for at least 20 seconds and drying)
	For example, 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 towels.	40-60 seconds (includes wetting, lather and scrub hands for at least 20 seconds and drying)
Aseptic procedures	For example, wound dressing, invasive device maintenance or insertion of IDC, PIVC, epidural and other procedures where maximum	ABHR	Dispense manufacturer's recommended amount of solution into cupped dry hands. Rub vigorously over all areas of the fingers, hands, wrists and forearms until the solution has evaporated and hands are dry.	30-60 seconds

	barrier precautions are not required	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. Rinse. Dry hands with single use towels.	40-60 seconds (includes wetting, lather and scrub hands for at least 20 seconds and drying)
	Insertion of CVAD and other procedures where maximum barrier precautions (mask, cap, eyewear, sterile gown, sterile gloves) are required.	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. Note: The first surgical scrub of the day, wash hands, forearms and nails using a non-medicated soap and running water, followed by ABSHR. It is 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 fingernails.	2 minutes
Surgical procedures	i) Surgical prewash (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 fingernails. Rinse. Dry hands with single use towels.	1 minute
	ii) Surgical hand scrub	Antiseptic hand wash	Wet hands using running water, apply recommended dose of liquid directly onto	5 minutes for first operative

		and running water	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 the first scrub and 1 minute for subsequent scrubs of the list. Rinse. Dry hands with a sterile towel.	procedure of the day 3 minutes for subsequent operative procedures
	iii) 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 dosage and duration. According to the [WHO hand hygiene guidelines](#), the duration of the entire hand washing procedure is 40-60 seconds while that of the entire hand rub procedure (with hand sanitizer) is 20-30 seconds.

Alcohol free hand rub is not as effective as ABHR (Australian Commission on Safety and Quality in Health Care, 2020, Pittet and Boyce, 2001) 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 5.3.9 Hand hygiene in specialty settings.

5.3.4 Jewellery and access to forearms

To ensure the safe care provision to every patient, all health workers engaged in direct patient care must comply with hand hygiene requirements as outlined in the NSW Health Infection Prevention and Control Policy and the National Hand Hygiene Initiative. An agreement must be established between the Health Organisation and all health workers, outlining the mandatory requirements for hand hygiene, including the "Bare Below the Elbows" (BBE).

Several studies have shown that skin underneath rings are more heavily colonised than comparable areas of skin on fingers without rings (World Health Organization, 2009). Health workers working clinically are to ensure that:

- Hand, wrist or forearm jewellery (for example, piercings, rings, watches, bracelets, bands, movement trackers, embedded jewellery) must not be worn in the clinical environment when providing direct patient care, unless required for patient care (for example, wristwatch) or if medically essential (for example, 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 while hand hygiene is being performed
- To allow for adequate antiseptic scrubbing of hands and forearms prior to an aseptic clinical procedure or surgical procedure all hand, wrist and forearm jewellery must be removed
- Long sleeved clothing, for example cardigans and long sleeve undergarments, should not be worn in clinical areas. If worn, sleeves must be rolled/pushed above the elbow during clinical/direct patient care

- The only forearm attire permitted while providing clinical care within the clinical area is PPE (impervious gowns, sterile gowns, gloves).

The ability to perform effective hand hygiene for clinical care required must not be impeded by the wearing of long-sleeved garments or forearm jewellery (for example, religious dress or bangles, bandages or slings). Health Organisations are to perform a case-by-case risk assessment in consideration of the risk to patients versus the health worker.

Religious attire considerations: NSW Health recognise and respects the religious practices of its health worker. However, religious attire must not impede effective hand hygiene. In line with NSW Health guidance:

- Long sleeves worn for religious reasons must be rolled above the elbows during direct patient care
- Staff may re-cover their forearms outside of clinical duties
- Hand hygiene must be able to be performed as required.

Risk assessment and support: Where concerns arise regarding religious attire and hand hygiene compliance, a risk assessment may be conducted in consultation with their manager, work health and safety and infection prevention and control to ensure compliance with safe patient care.

All outcomes and agreed-upon measures must be documented as part of local procedures, ensuring consistency and accountability.

A risk-based approach is supported by clinical handbooks and infection control policies. While patient safety is paramount, flexibility should be applied to enable continued learning and contribution through non-contact roles where appropriate.

Risk assessment for health workers with physical limitations

Participation in clinical activities by individuals with a physical limitation (for example cast, braces or arm support devices) must be guided by a risk assessment focused on infection prevention. Key considerations include the ability to perform hand hygiene, comply with BBE, and the contamination risk posed by the cast.

If hand hygiene or BBE cannot be maintained, the individual must not engage in direct patient care or enter high-risk areas (for example, theatres, ICU).

Permitted activities may include observing ward rounds (no direct patient contact), using a computer on wheels (if hand hygiene is possible), documentation, audits, and education sessions.

A flexible, risk-based approach is encouraged, but patient safety remains the priority.

Risk assessment for clinical placement involving students with physical limitations

The checklist below is to be used as a guide in assessing whether a student with a cast or arm support devices can safely participate in clinical activities, with a focus on infection prevention and control principles.

Table 11 Clinical placements involving students with physical limitations

Assessment area	Yes/No	Notes/actions
Can the student perform hand hygiene effectively?		
Is the student compliant with bare below the elbow?		
Is the student required to have direct patient contact?		
Is the student able to use shared equipment safely? For example, computers on wheels		
Is the student excluded from high-risk areas? For example, theatres		
Is the student aware of infection prevention and control expectations and limitations?		
Has a supervisor reviewed and approved the placement plan?		

Note: A record of 'no' for any of the above indicates noncompliance with the infection prevention and control requirements. Where this occurs, a risk assessment must be carried out in relation to what tasks the student is able to carry out as part of clinical placement that does not result in direct patient care. If this cannot be achieved alternative arrangements or deferment of placement should be considered.

5.3.5 Fingernails

Health workers with artificial nails are more likely than those with natural nails to harbour gram-negative pathogens on their fingertips. Nail art and artificial nails are a potential reservoir of microorganisms which may prevent effective hand hygiene and promote microorganism transmission (Pittet and Boyce, 2001, Hedderwick et al., 2000). Chipped nail varnish supports the growth of larger numbers of organisms on the fingernails (Gupta et al., 2004, Parry et al., 2001).

Recent evidence supports that shorter nail length minimises risk of potential microorganism transmission (McNeil et al., 2001). 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 (<2mm long) (Fargernes and Lingaas, 2011). For more information refer to [WHO Guidelines on Hand Hygiene in Health Care: First Global Patient Safety Challenge Clean Care Is Safer Care](#).

Health workers are to ensure that:

- Artificial nails, extenders, nail varnish, nail art and technology must not to be worn when providing direct patient care
- They have short fingernails.

5.3.6 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 products are not deactivated (Girou et al., 2002). The following should be considered when performing hand hygiene:

- ABHR should be dispensed onto dry hands while liquid and antiseptics soaps/preparations should be applied to hands already wet with water (see Table 10)
- Good skin integrity is aided by good hand hygiene technique and regular moisturising
- Health workers 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. Any broken skin should be covered with impervious dressing
- Health workers with compromised skin integrity (eczema and dermatitis) involved in direct patient care or in the direct patient environment, should have a risk assessment to determine whether they 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
- Given the potential for contamination and microorganism transmission, it may be inappropriate for a health worker to work clinically if they require multiple impervious dressings, have hand splints or are unable to wear impervious dressing for certain medical conditions and cannot perform adequate hand hygiene
- Hand care issues such as dryness, dermatitis, eczema and/or sensitivity should be reported to the manager/supervisor for action or referral to address appropriate hand care products.

5.3.7 Hand hygiene in oral health settings

Oral Health settings must comply with hand hygiene during the delivery of patient care as described above.

If providing oral health care within an operating theatre (for example, complex oral surgery), health workers should comply with the hand hygiene principles expected for surgical environments (see Table 10).

5.3.8 Hand hygiene in community and home settings

Health workers must comply with hand hygiene during the delivery of patient care in community and home settings as per table 10.

Health Organisations must supply health workers with adequate products to undertake appropriate hand hygiene.

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

5.3.9 Hand hygiene in specialty settings

NSW legislation prohibits the supply and use of alcohol-containing products in Mental Health Facilities, alcohol withdrawal units, Justice Health and Forensic Mental Health Network settings and Corrective Services NSW facilities. According to legislation:

- ABHR products must not be used in any Health Organisation that operate within these facilities; and
- Health Organisations operating within these facilities must provide an alternative hand hygiene product that is alcohol-free, non-intoxicating and non-flammable for health workers, inmates, and visitors to use.

For more information refer to [Custodial Operations Policy and Procedures 6.5 Infections and communicable diseases](#).

5.3.10 Patient and visitor hand hygiene

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

Health Organisations are to ensure that consumer education and educational resources should be made available to promote the practice and hand hygiene technique.

The consumer/visitor should be reminded of the following [hand hygiene opportunities](#):

- entering a health facility
- after touching shared items
- entering and exiting patient/client room and/or zone
- on exit of the health facility
- before and after involvement in any direct care.

The following should be considered to promote hand hygiene for patients and visitors:

- Placement of signs and posters in key locations, such as entry and exit points, to act as visual triggers for patients and visitors
- Hand hygiene products should be readily available and accessible, for patients, visitors, and health workers
- The Health Organisation should ensure that resources and means are available to patients to perform hand hygiene (such as providing ABHR or hand cleaning wipe for a bed-bound patient).

Health workers should also offer and encourage patients to perform hand hygiene prior to eating, after eating, after going to the bathroom, on entry and before leaving their room/zone.

5.4 Respiratory hygiene and cough etiquette

To minimise the risk of transmission of infection to others, everyone entering, visiting or working within a Health Organisation presenting with signs and symptoms of respiratory infection should practice respiratory hygiene and cough etiquette (Australian Commission on Safety and Quality in Health Care, 2024). A Health Organisation should encourage and enable patients, visitors and health workers to perform respiratory hygiene and cough etiquette safely and provide appropriate resources to support these behaviours. Specific responsibilities for the Health Organisation and individuals visiting or working within a Health Organisation are detailed in Table 12 and the NSW Health poster on the [NSW Health website](#).

Table 12 Individual and Health Organisations responsibilities for respiratory hygiene and cough etiquette

Responsibilities of the individual	Responsibilities of the Health Organisation
- Health workers with a persistent cough or signs and symptoms of a respiratory infection should: - stay home if symptomatic - absent themselves from work as necessary (refer to Section 3.12 Staff health and HAI risk) - seek medical advice - practice respiratory hygiene and cough etiquette - Cover the mouth and nose with a tissue when coughing or sneezing. If a tissue is not available, cough or sneeze into the elbow. - Use the nearest bin to dispose of the tissue after use. - Perform hand hygiene, for example, hand washing with soap and water or use ABHR after coughing or sneezing or if contaminated objects, materials, or equipment are touched. - If a patient is coughing or sneezing during transportation or in common waiting areas, a surgical mask should be worn if able. - If coughing, sit $\geq 1.5\text{m}$ from others in common areas. - Inform clinicians about any respiratory signs or symptoms.	- Reinforce the importance of hand hygiene and provide access to hand hygiene amenities, surgical masks, tissues and no-touch receptacles for used tissue disposal. - Conveniently located dispensers of ABHR, where sinks are available, ensure that supplies for hand washing (such as soap, disposable towels) are always available. - Display signage that instructs health workers, patients and visitors on respiratory hygiene and cough etiquette. - To reduce the risk of transmission to vulnerable patients, a Health Organisation may restrict access to certain areas for visitors who are coughing or sneezing. - Provide surgical masks to people who are coughing in waiting areas. - Ensure that health workers have access to appropriate PPE and are provided training in the use of PPE. - Employ a risk assessment process for the management of symptomatic health workers, visitors, or consumers, particularly those working or visiting areas with vulnerable patients, such as neonatal intensive care units (NICUs), paediatric transplant and haematology units.

5.5 Personal protective equipment

Using appropriate personal protective equipment (PPE) is important for health workers and patient safety. This means selecting appropriate PPE at the right time, in the right setting, for the right patient and then applying (donning) and removing (doffing) PPE in line with evidence-based practice is utmost important (National Health and Medical Research Council, 2019a).

General principles when using PPE include:

- Health workers should be trained in the correct use of PPE including donning and doffing. Training should include when hand hygiene and glove changes are required during different procedures or tasks on the same patient/client
- PPE labelled 'reusable' should be cleaned, disinfected, and reused according to the manufacturer's instructions IFUs; all other PPE must be disposed of after use

- Isolation aprons/gowns which are impervious, or fluid resistant are suitable for standard, and transmission-based precautions
- Sterile surgical gowns should only be used in surgical environments and for sterile procedures
- Eye protection is to be worn for standard precautions when there is a risk of body substance exposure, for example removal of a drain
- When caring for patients in droplet and airborne precautions, eye protection is required along with a surgical mask or P2/N95 respirator
- Fluid resistant surgical masks are suitable for standard and droplet precautions
- Fluid resistant P2/N95 respirators are used when providing care to patients in airborne precautions, with suspected or confirmed acute respiratory infections
- P2/N95 respirators should be fit checked at every use
- Incorrect removal of PPE is associated with an increased risk of self-contamination.

5.5.1 PPE training

Training on the appropriate selection, use and disposal of PPE is required to ensure safe use of PPE. Some of the potential issues to consider are:

- How to minimise unnecessary contact with a mask and eye protection while wearing/in use
- Importance of adherence to hand hygiene before donning PPE and during the PPE doffing process
- When and how to change gloves between different procedures or tasks
- Correct removal (doffing) of PPE
- Cleaning and disinfection of reusable items
- How to ensure adherence to correct PPE donning and doffing technique/sequence to reduce self-contamination.

Refer to [My Health Learning](#) training modules for further information.

5.5.2 PPE selection

Appropriate PPE should be selected to prevent contamination of skin, mucous membranes and/or clothing. Selection should be guided by patient status:

- Wet patient - conditions that potentially increase the risk of organism dispersal include diarrhoea, incontinence or uncontained wounds, or symptoms of acute respiratory infection (ARI). For example, cough, sneezing
- Dry patients –are those who present with symptoms that pose a low risk of organism dispersal for example, patients who are continent, have contained wounds, and are not coughing or sneezing
- 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:

1. **The anticipated type of 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.

Circumstances where there is an increased risk of transmission include:

- Enclosed spaces - an infectious person exposes people at the same time or people were exposed shortly after the infectious person had left the space
- Increased exposure to respiratory particles - often generated with expiratory exertion (for example, coughing, shouting, singing, exercising) that increase the concentration of suspended respiratory particles in the air space
- Inadequate ventilation or air handling - suspended small respiratory particles and particles from the air that were not adequately removed.

PPE selection, in particular the combination of PPE, also is determined by the category of transmission-based precautions a patient is on.

2. **The appropriateness of the PPE for the task being undertaken.** If there is likely splash/spray, then a fluid resistant gown is required.
3. **PPE fit.** PPE must fit the individual user. Health Organisations are to ensure that PPE is available in various sizes to protect the workforce.

5.5.3 Standard and transmission-based precautions

Health workers are to perform a risk assessment for PPE requirements based on the type of patient contact (contact with blood or a body substance), if a multi-drug resistant organism (MRO) is present, communicable disease (how and where it is transmitted from the patient), patients' status (wet or dry, cognitive status).

Risk assessment for PPE should be based on:

1. Standard precautions – use PPE when there is an anticipated or likely risk of contamination with splashes of blood or body substances and based on the nature of care or the task being undertaken
2. Transmission-based precautions – consider the need for contact, droplet and airborne precautions based on the mode of transmission when caring for patients with epidemiologically important or transmissible pathogens with high-risk consequences that can transmit or cause infection.

The selection of PPE should be based on type of precautions and patient status.

Table 13 PPE selection based on type of precaution

Type of precautions	Patient status	PPE selection	Patient placement
Respiratory	Airborne	Respirator + eye protection	Single room
	Droplet	Surgical mask + eye protection	Single room or cohort
Contact	Wet	Impervious apron/gown + gloves	Single room
	Dry	Standard precautions	Single room or cohort

Standard	Wet	Risk assess based on the task performed
	Dry	Risk assess based on the task performed
Patients and visitors are to wear surgical masks as appropriate		

Based on risk assessment individual components of the PPE or a combined approach (level 1 PPE) may be needed to protect health workers. Patients suspected or confirmed to have a high consequence infectious disease level 2 PPE is recommended.

Table 14 PPE level

PPE level 1 Combined standard and transmission-based precautions	PPE level 2 High consequence infectious diseases (combined)
Long sleeved fluid-resistant gown where the wrist is covered by gloves	Long sleeved fluid-resistant gown where the wrist is covered by gloves
Fitted fluid-resistant disposable surgical mask or P25/N95 respirator	Fitted fluid-resistant disposable P2/N95 respirator or PAPR (if available)
Eye protection	Surgical hood
Non-sterile gloves	Non-sterile gloves – two pairs (long cuff if available)
Closed in shoes	Eye protection (face shield recommended)
	Closed-in shoes and below knee booties to cover shoes
Health workers in NBC are required to follow NBC specific PPE procedures when providing care to patients with an HCID	

Based on risk assessment (patient status and the level of care anticipated):

- **Before entering patients' room**
 - Perform hand hygiene
 - Select PPE based on risk assessment (refer to Table 15 PPE selection based on risk assessment).
- **After entering patients' room**
 - Perform a risk assessment on the need for gloves based on what you will be in contact with when providing care, the task you are performing, assistance, or a procedure on the patient
 - Change or remove gloves (if worn) and perform hand hygiene in between different procedures on the patient and between dirty and clean tasks. For example, changing a dressing then changing an incontinence pad
 - Remove gown and gloves (below neck PPE) if worn and perform hand hygiene before leaving the room or at the exit. In certain situations, such as emptying bed pans or urinals, health worker may continue to wear the PPE outside the patient zone and dispose at the end of the episode of care (For example, health workers may doff

- gown and gloves in the dirty utility room after placing urinal, pans, and jugs in the pan sanitiser) and perform hand hygiene
- Remove eye protection, surgical mask/respirator (above neck PPE) if worn after leaving the room
- Clean and disinfect reusable items (if used)
- Perform hand hygiene.

Table 15 PPE selection based on risk assessment

Type of precautions	Patient status	PPE selection	Risk assessment
Standard	All patients	Risk assessment based on the task performed	
Respiratory-Airborne	Known or suspected to be infected with pathogens transmitted by the airborne route (for example, tuberculosis, measles, chickenpox, disseminated herpes zoster, COVID-19)	Respirator + eye protection	Signs and symptoms Infectivity period Proximity of care Intensity of exposure Ventilation
Droplet	Known or suspected to be infected with pathogens transmitted by respiratory droplets that are generated by a patient who is coughing, sneezing, or talking (for example, Influenza, Pertussis)	Surgical mask + eye protection	Signs and symptoms Infectivity period Proximity of care Intensity of exposure Ventilation (Air exchange)
Contact	Known or suspected infections that represent an increased risk for contact transmission (for example, CPE, <i>Candida auris</i> , symptomatic <i>Clostridioides difficile</i>)	Impervious apron/gown + gloves	Signs and symptoms, task performing, assistance, or a procedure on the patient.
	Care of patients colonised with MRO (MRSA, VRE)	PPE based on risk assessment	Signs and symptoms, task performing, assistance, or a procedure on the patient.
Combined precautions	Organisms with multiple mode of transmission, for example, disseminated shingles	Impervious gown, surgical mask or P2 respirator, eye protection and gloves	Risk assessment based on the task performed.

PPE donning and doffing (level 1)

The following sequences are recommended practice for donning and doffing PPE for all clinical settings outside the operating room (refer to Table 16). Always perform hand hygiene immediately

before commencing donning sequence and donning gloves. Keep hands away from face after donning PPE, limit surfaces touched with gloved hands, change gloves when torn or visibly soiled and perform hand hygiene between episodes of care and tasks performed.

Table 16 Sequence for donning and doffing PPE

Donning sequence		Doffing sequence	
START	1. Hand hygiene	START	1. Gloves (if worn)
	2. Gown or apron		2. Hand hygiene
	3. Surgical mask or respirator		3. Gown or apron
	4. Eye protection		4. Hand hygiene
	5. Hand hygiene		5. Eye protection*
	6. Gloves (immediately before touching the patient)		6. Mask or respirator
END		END	7. Hand hygiene

*Perform hand hygiene after cleaning reusable eye protection if used and before removing mask or respirator

Doffing PPE

Perform hand hygiene immediately after glove removal, before removing face protection and after removal of any visibly soiled item/s.

In certain circumstances, where there may be a heightened risk for health workers and patients (for example, during high consequence infectious disease alert), additional PPE requirements may apply (Poller et al., 2018).

At any time, if a health worker's clothing becomes visibly soiled with body substance, the clothing should be changed as soon as possible and before the health worker attends to other patients:

- If skin is contaminated with body substances, the health worker must remove contaminated clothing/uniform or PPE and wash any affected skin, then perform hand hygiene
- If broken skin has been contaminated by a body substance, this is an occupational exposure and must be reported to the Health Organisation using local procedures.

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

For more information on level 1 PPE donning and doffing refer to [CEC Education, training, and videos](#).

5.5.4 Suspected high consequence infectious diseases – local facility (level 2 PPE)

Refer to High consequence infectious diseases - Infection prevention and control Principles and for level 2 PPE donning and doffing refer to [CEC High Consequence Infectious Diseases](#).

5.5.5 NSW Specialist service for high consequence infectious diseases

Contact NSW Biocontainment Centre (NBC) on 1800 HCID 00 (1800 424 300) for guidance.

The type of PPE used will vary based on the level of precautions required, such as standard, contact, droplet, airborne or combined precautions. The type of PPE selection is consistent with

level 2 with the possible addition of enhanced products and processes specific to NBC. 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, mucous membranes and/or clothing. Selection should be guided by the anticipated type and amount of exposure to blood and body substances and the likely transmission route of microorganisms.

5.6 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. Gloves must be used in situations where the health worker is potentially exposed to body substances (NSW Health, PD 2023_025). When gloves are determined to be necessary, they must be worn on both hands (World Health Organization, 2009).

Intact gloves must be used in situations where the health worker 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
- When handling items or surfaces that have been in contact with bodily substances
- While performing an invasive procedure, venepuncture or a finger or heel prick.

Gloves are not to be worn in non-patient zones unless directly handling blood or body substance such as pathology specimens or cleaning up a blood or body substance spill or when in contact with cleaning chemicals when cleaning the healthcare environment.

Sterile gloves must be worn when it is necessary or unavoidable to touch key sites and key parts. The wearing of sterile gloves for any specific aseptic technique or sterile procedure may be at the discretion or mandate of the NSW Health Organisation.

Gloves must be changed and discarded, and hand hygiene performed:

- As soon as they are torn or punctured
- Immediately after patient contact and task are completed and before care is provided to another patient
- When performing separate procedures/tasks on the same patient
- After handling blood and body substances
- Before handling or opening sterile consumables and devices
- Before touching environmental items and surfaces
- 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
- Before writing in the healthcare record, answering telephones, pagers, mobile phones, using computers and other social environmental actions.

When risk assessing the need for glove use, consider the following:

- Gloves should always be put on both hands immediately before the procedure or contact with body substance
- 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
- Hand hygiene must be immediately and always performed before and after use of gloves

- Glove use is not recommended as a protective measure against microorganism acquisition due to the increased incidence of dermatologic side effects including irritant dermatitis and eczema, excessive skin soakage with sweat and skin chapping
- Double gloving is only recommended in operating theatre to allow a seamless transition during a procedure from 'dirty' to 'clean(er)' steps or to reduce the impact of sharps injuries for the surgeon
- Limit opportunities for 'touch contamination', such as, surfaces such as light switches, door handles and cabinet knobs can become contaminated if touched by used or soiled gloves
- No part of the glove is to be tampered with or altered at any time before during or after use, such as fingertip cut off to feel a vein when undertaking cannulation or venepuncture
- Gloves are not to be worn as a personal safety strategy as contaminated gloves may be a significant cause of cross-contamination of pathogens in healthcare environment. Inappropriate gloves use 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 health worker hands
- ABHR must not be used on gloves as the effects of hand sanitisers are tested on the skin and application on gloved hands may affect gloves' integrity and mechanical properties. In addition, alcohol is inactivated in the presence of organic matter, which can easily remain on used gloves, thus potentially driving microorganism transmission. Use of ABHR on the outside of gloves can affect the porosity of gloves, causing them to become more porous, create pinholes or cause the gloves to rupture after a short period of time (exception may apply during high consequence infectious diseases removal of PPE)
- Unless exposure to blood is anticipated, health workers do not need to wear gloves when performing subcutaneous, intramuscular, intravenous, or intradermal injections
- Gloves should be handled and stored to avoid contamination before use
- Gloves should always be put on immediately before:
 - a procedure
 - cleaning shared patient care equipment
 - contact with blood or body substance
 - when cleaning the healthcare environment
- Gloves should not be worn in non-patient zones unless directly handling blood or body substance such as pathology specimens or cleaning up a blood or body substance spill or when in contact with cleaning chemicals.

Wearing gloves does not negate the need for hand hygiene. Hand hygiene must be performed immediately:

- Before putting on gloves to avoid contamination of the outer surface of the gloves
- After removing gloves to avoid transfer of microorganisms to another person, patient's environment, clinical equipment and to protect the health worker.

Inappropriate glove use can result in transmission of pathogenic organisms:

- between different surfaces

- between the wearer and their face (eyes, nose, mouth)
- from the patient to biomedical or other equipment and furnishings.

The type of glove selected should be appropriate to the type and risk of the procedure/task (refer to table 17) and of a suitable size for the user. The Health Organisation should refer to the listed gloves on the [NSW Health Procurement](#). Within sterilization services/areas, only disposable single use gloves that have been approved should be worn, for example, gauntlet gloves that have a longer cuff. Medical examination gloves or other disposable, single use gloves are not to be reused.

Polyvinyl chloride (PVC) gloves provide poor barrier protection, are the weakest film for strength and durability, they have very limited elasticity, and poorer fit and comfort. The molecular structure of vinyl gloves is rigid and more susceptible to tearing when stressed, also vinyl gloves are highly permeable to microorganisms and their use in high-risk tasks over long durations, will potentially increase the risk of cross contamination. Some vinyl gloves do not provide a snug fit on the hand, especially around the wrist, and therefore should not be used if patient contact is likely (Herkins and Cornish, 2023).

5.6.1 Sustainable glove use in healthcare

Environmental and financial sustainability are key reform areas in the NSW Health [Future Health Strategy \(2022-32\)](#). Health Organisation should reduce unnecessary PPE use especially non-sterile glove use and improving hand hygiene practices in clinical areas. Gloves are one of the most common single-use plastic items in health care. Glove use contributes to climate change through carbon emissions from manufacturing and transport, more plastic waste in landfill, also pollutes water systems (Cubas et al., 2023, Jain et al., 2017, Jain et al., 2018).

Health Organisations are to consider strategies to ensure sustainable and safe glove use for clinicians when caring for patients under standard and transmission-based precautions.

Innovation in glove material selection, manufacturing, appropriate use, and disposal is needed to reduce material and energy consumption, reduce waste, and protect health and the environment.

Table 17 Glove selection guide for infection prevention and control

Glove type (non-sterile)	Suggested use
Gauntlets – examination, powder free, textured	Longer cuff – midwives, health workers reprocessing RMDs and other devices, HCID
Gloves – latex, examination, powder free, textured	All clinical and non-clinical staff
Gloves – non-latex (including polychloroprene and nitrile), examination	All clinical and non-clinical staff with an allergy/sensitivity to latex
Gloves – cytotoxic medication handling	Handling of cytotoxic medications Note: these gloves come in a range of colours
Glove type (sterile)	Suggested use
Gloves – surgical, under glove, powder free	Surgical staff who require double gloving
Gloves – non-latex (including polychloroprene, nitrile and natural rubber latex free), surgeons, pairs	Surgical and other clinical staff who perform procedures that require sterile gloves or an allergy/sensitivity to latex

Gloves – latex, 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, powder free, standard cuff	Clinical staff who perform aseptic procedures or examinations that require sterile gloves

For more information refer to:

- [NSW Health Procurement \(Goods and Services\)](#) policy directive
- NSW Health [Cleaning of the Healthcare Environment](#) policy directive
- NSW Health [Infection prevention and control in Healthcare Settings](#) policy directive
- AS/NZS 4179:2014 Single-use sterile rubber surgical gloves - Specification
- AS/NZS 4011.1:2014 Single-use medical examination gloves Specification for gloves made from rubber latex or rubber solution
- AS/NZS 4011.2:2014 Single-use medical examination gloves Specification for gloves made from poly (vinyl chloride).

5.7 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
- Fluid-resistant surgical mask.

5.7.1 Eye protection

Eye protection (face shield/visor or goggles) must be worn when there is risk of body substances splashing or spraying into the conjunctiva (Roberge, 2016). Personal eyeglasses, prescription glasses and contact lenses are not considered adequate eye protection and are not a substitute for eye protection unless they are specified as safety glasses (Coia et al., 2013).

Goggles with a manufacturer's anti-fog coating provide reliable, eye protection from splashes, sprays, and respiratory particles from multiple angles (Siegel et al., 2007).

Visors are transparent personal protective devices intended to shield the face and eyes of a health worker and are suitable for use with prescription glasses and masks. Use a mask visor or a face shield if there is potential exposure to an excessive amount of blood or body substance splash or spray.

If reusable eye protection is used, it should be cleaned and disinfected in accordance with the manufacturer's instructions for use (National Health and Medical Research Council, 2019a).

Prescription eyewear is considered to provide appropriate eye protection for blood or body substance splash or droplet exposure if:

- the eyewear is close fitting, particularly at the corners of the eye and across the brow

- includes side protection that is indirectly vented
- can be cleaned and disinfected between use.

Additional protective eyewear does not need to be worn with prescription eyewear that has these features. For more information refer to AS/NZS 1337.6.2012 – Personal eye protection prescription eye protectors against low and medium impact.

Health workers are to wear eye protection 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
- 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 using running water
- during cleaning of areas such as toilets/urinals/shower, where body substance splash may occur
- during procedures that induce the patient to cough, for example, chest physiotherapy
- when performing aerosolising generating procedures and when providing care to patients with aerosol generating behaviours (for example, shouting, screaming or yelling)
- single use eye protection can be worn for an extended period unless moist, wet or contaminated, and disposed of at the end of the session
- reusable facial protection is to be worn, fitted and cleaned in accordance with the manufacturer's instructions and should be stored clean and dry
- there must be a clear described procedure in place for the cleaning, disinfection, drying and storage of reusable eye protection to reduce the risk of a HW donning an item that has not been effectively reprocessed since its last use
- any facial protection that is labelled 'single use' must not be cleaned and reused
- disposable single use facial protection must be discarded after use.

5.8 Respiratory and facial protective equipment

Respiratory and facial protection is required for those organisms that are usually transmitted via the droplet or airborne route, including when particles have been artificially created, such as during AGPs. Respiratory protective devices (RPDs) are designed to protect the wearer from inhalation hazards such as airborne infectious agents and in some cases, dust, and other particles.

Respiratory protection is one aspect of both infection prevention and control as well as work health and safety (WHS) strategies for ensuring health worker safety at work. Health Organisations are required to implement a comprehensive respiratory protection program (RPP) and depending on the RPD design, guidance should be developed on the selection, facepiece fit testing and use of RPDs. For more information refer to the [Respiratory protection manual](#).

5.8.1 Surgical mask

A well-fitted surgical mask provide a barrier to splashes and can help block particles from reaching the nose and mouth of the wearer (wearer protection) and, if someone is ill, help block particles

coming out of their nose and mouth from reaching others (source control) (Arora and Majumdar, 2022).

They do not provide protection against airborne particles and are not classed as an RPD. Some surgical masks have an integrated eye protection shield (mask visor). Surgical face masks used by health workers for protection against microorganisms must be fluid resistant and disposable.

Surgical masks are for use in clinical care, dental settings, and surgery as per standard precautions. Surgical masks should be worn for the duration of the relevant exposure, task, or procedure.

Masks have different properties and colours depending on the manufacturer. Each mask barrier level will provide varying levels of fluid penetration resistance and protection against respiratory particles and body fluid splashes or spray.

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 health workers and the patient
- to prevent body substance exposure to health workers and to protect the patient against respiratory microorganisms which may be expelled by the health worker.

The level of surgical mask should match the procedure performed or the level of protection required (refer to Table 18).

A fluid resistant surgical mask is to be worn by health workers:

- and fitted in accordance with the manufacturer's instructions
- must not be touched by hands or gloves while worn
- are to cover both the mouth and nose while worn
- are not worn loosely or folded down around the neck; and
- are to be removed and discarded immediately after leaving the patient-zone/room
- and perform hand hygiene after removing
- and report any pressure injuries to the supervisor or manager, following local reporting processes and usual WHS processes.

When the mask becomes moist or damp/wet, it is no longer effective and should be discarded. The mask is to be removed by touching the strings/ties or loops only.

When wearing a mask, it is important to remember the following:

Do not:

- touch the mask or face as this may contaminate the wearer
- pull the mask below the nose or chin
- hang the mask around the neck, ear or top of the head.

Do:

- change the mask if it becomes moist or damp
- change the mask if it is sprayed or splashed on
- change the mask if contaminated with blood or body substances
- immediately perform hand hygiene if the mask is accidentally touched

- perform hand hygiene after removing a mask
- place the mask into a general waste bin, perform hand hygiene and replace with a new mask
- report mask pressure injuries to the supervisor or manager, following local reporting processes and usual WHS processes
- remove a mask outside of patient care areas or patients requiring other precautions (for example, between rooms or patient zones, break room, reception area) and before proceeding to care for patients that are not isolated for ARI.

Table 18 Type of face protection and recommended use

Type of care	Examples	Face protection required
Routine	General examinations (for example, medical, physiotherapy, nursing) Routine observations	Not required unless caring for a patient with respiratory symptoms
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 Chest physiotherapy Nasopharyngeal or tracheostomy suction	Protective eyewear Surgical mask or P2/N95 respirator, based on risk assessment

As per the Therapeutic Goods Administration (TGA) when assessing the suitability of surgical masks, the manufacturers are expected to provide test evidence of conformity for fluid resistance, bacterial filtration efficiency and breathability. Refer to [Guidance on medical/surgical face masks and respirator standards - key performance aspects](#) for more information.

The Australian Standards (AS 4381:2015) for single-use face masks for use in healthcare sets out standards for surgical masks used in healthcare and is divided into three levels of performance for materials used in surgical masks to protect against fluid strike-through. Fluid resistance rates the performance of the material to contain blood and bodily fluid splashes before filtering through the mask. Therefore, its level of limitations determines the healthcare setting it is most suited to depending on the risk factors of the procedures. Refer to Table 19 for more information.

Level 1: Fluid Resistance: 80mm Hg, low fluid exposure - low barrier protection.

Level 2: Fluid Resistance: 120mm Hg, moderate fluid exposure - moderate barrier protection.

Level 3: Fluid Resistance: 160mm Hg, high fluid exposure - maximum barrier protection.

Table 19 AS 4381:2015 Single-use surgical face mask standard

Characteristics	Level 1	Level 2	Level 3
Application	For general purpose medical procedures, where the wearer is not at risk of blood or body fluid splash or to protect staff and/or the patient from droplet exposure to microorganisms (for example, patient with ARI visits GP)	For use in emergency departments, dentistry, changing dressings on small or healing wounds where minimal blood droplet exposure may possibly occur (for example, endoscopy procedures)	For all surgical procedures, major trauma first aid or in any area where the health worker is at risk of blood or bodily fluid splash (for example, orthopaedic, cardiovascular procedures)
Barrier	Mask materials are evaluated for resistance to penetration by synthetic blood at the minimum velocity specified in bacterial filtration efficiency and differential pressure.	Mask materials are evaluated for resistance to penetration by synthetic blood at the middle velocity specified in bacterial filtration efficiency and differential pressure.	Mask materials are evaluated for resistance to penetration by synthetic blood at the maximum velocity specified in bacterial filtration efficiency and differential pressure
Bacterial Filtration Efficiency (BFE) %	≥ 95%	≥ 98%	≥ 98%
Particulate Filtration Efficiency (PFE) % (0.1µm)	< 4.0	< 5.0	< 5.0
Resistance to penetration by synthetic blood (fluid resistance) min pressure in mm Hg for pass result	80mm Hg	120mm Hg	160mm Hg

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

5.8.2 Respirators

Respirators intended for use in a healthcare environment, are medical devices and are regulated by the TGA under the Therapeutic Goods Act 1989. Unless exempt, medical devices must be included in the ARTG before being imported into or supplied in Australia, exported from Australia, or advertised in Australia. For more information refer to the [Face masks and respirators that are regulated by the TGA](#).

There are many types of respirators available which include:

- Air-purifying respirators which protect the wearer by filtering inhaled air. These types of respirators can be disposable or reusable and are either:
 - non-powered – uses inhalation to draw air through a filter
 - powered – uses a fan to draw air through a filter
- Supplied-air respirators which protect the wearer by supplying clean breathing air from an independent source such as an air compressor or compressed air cylinder.

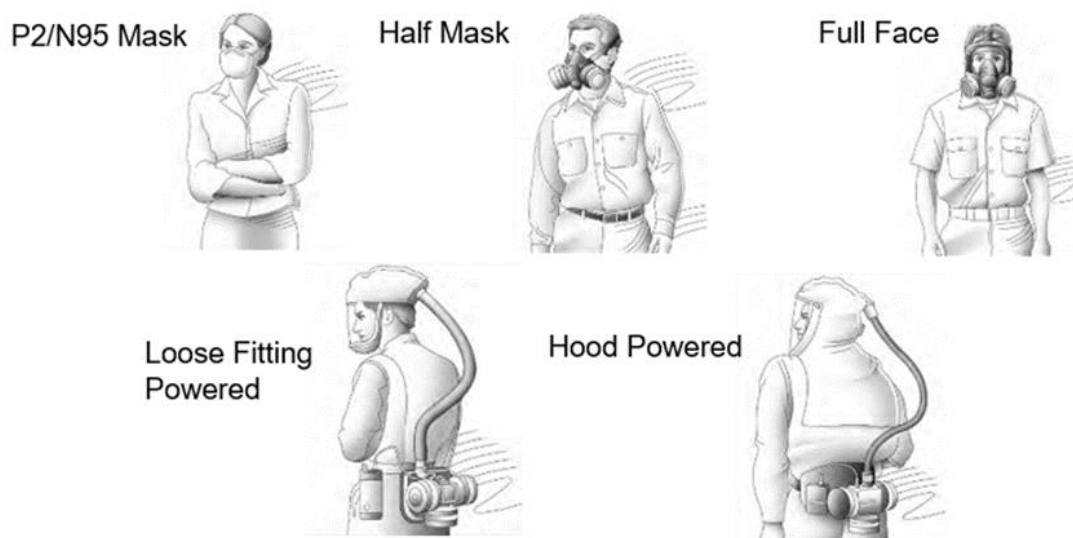
The category of particulate filtering respirators can be further divided into:

- **Disposable particulate filtering respirators**, where the entire respirator is discarded at the end of a session of care, or when it becomes unsuitable for further use due to excessive resistance, sorbent exhaustion, or physical damage
- **Reusable particulate filtering respirators**, also called elastomeric respirators, may take the form of a reusable full-face or half-face respirator and harness fitted with particulate P2 or P3 filters that are activated passively by inhalation
- **Powered Air Purifying Respirators (PAPRs)** full-face or half-face PAPRS actively supply filtered air to the wearer and deliver positive air pressure via a battery-operated blower unit.

Reusable respirator facepieces are cleaned and reused but the filter cartridges are discarded and replaced when they become unsuitable for further use. All reusable items must be cleaned and disinfected in accordance with the manufacturer's recommendations and [AS 5369:2023 Reprocessing of reusable medical devices and other devices in health and non-health related facilities](#). For more information respirator use, fit checking, fit testing, education and training refer to the [CEC Respiratory protection program](#).

In the healthcare setting, an air-purifying respirator (or particulate filtering respirator) most commonly relates to the disposable filtering half face respirator also known as a P2 or N95 mask. There are a variety of respirators available, and these may differ between healthcare facilities (refer to figure 10 as an example).

Figure 10 Major types of respirators (adapted from OSHA)



Disposable (single use) particulate filter respirators (also known as a P2 or N95 mask) are devices that are discarded on completion of an episode of care, or when they become unsuitable for further use due to excessive resistance, physical damage, or contamination. Reusable respirators are designed to be used multiple times after appropriate reprocessing in between use as per manufacturer's instructions for use (IFU).

Disposable respirators are the most common devices used in healthcare settings for respiratory protection. Each time these items are used, they must be checked for defects, for example, elastic head pieces unevenly attached, marks on the respirators and tears. Disposable respirators found to be defective are to be discarded and replaced.

Filter efficiency

Disposable P2/N95 face masks or respirators can filter out very fine particles (less than 0.5 micron) from the air when worn correctly.

[AS/NZS 1716:2012 Respiratory protective devices](#) use a classification system to identify the different types of particulate filters which are P1, P2 and P3. The 'P' refers to the particle size of the particulate matter that the respirator is designed to protect against.

Particulate filters are classified and marked as P1, P2 or P3, with P3 providing the highest level of protection. However, P3 protection can only be achieved if the P3 filter is used in a full-face respirator. P3 filters are currently not part of the Standards or readily available for use in Australian healthcare. The filtration efficiency of different particulate filters is:

- P1 = 80% Filter efficiency
- P2 = 94% Filter efficiency
- P3 = 99% Filter efficiency.

Assigned protection factor

A respiratory protective device is considered adequate if it has the capacity to reduce the wearer's exposure to a hazardous substance to acceptable levels. Assigned protection factor (APF) refers to the level of respiratory protection that a respirator or class of respirators is expected to provide to users. The APF is the ratio of the airborne concentration of the substance outside the device to that inside the device (Table 20).

Table 20 Filter types and assigned protection factors

Conformité Européen marked particle filter type	Assigned protection factor (what is likely to be attained in practice)
P1	4
P2	10
P3	20

Elastomeric and PAPRs are regarded as having high levels of APF, particularly when used with full-face protection. The typical APF for a disposable N95 respirator and a half facepiece elastomeric is 10 and full facepiece elastomeric is 50. An APF of 10 means that the respirator (if used properly) can be safely used in an atmosphere that has a hazardous concentration of up to 10 times the Permissible Exposure Limit (PEL) or other exposure limit for that hazard.

N95 respirators and P2 respirators are similar and applied interchangeably to the same conditions. There are, however, differences in testing and certification practices between Australia and the USA (Table 21).

Table 21 Difference between testing of P2 and N95 respirators

	P2 respirator (Australia & New Zealand Standard)	N95 respirator (USA NIOSH Standard)
Filter efficiency	at least 94%	at least 95%
Testing substance	Sodium Chloride Aerosol	Sodium Chloride Aerosol
Aerosol flow rate	95 litres per minute	85 litres per minute
Aerosol particle size	0.3 to 0.6 microns	0.3 microns

Surgical and standard P2/N95 respirators

There are two types of P2/N95 respirators:

- Surgical P2/N95 respirators that are fluid resistant
- Standard or non-surgical P2/N95 respirators are not tested against fluid resistant specifications and therefore not considered as fluid resistant.

Use a surgical P2/N95 respirator when:

- Performing tasks such as surgery, that may expose health workers to high pressure streams that produce particles of blood or body substance
- Providing care for suspected or confirmed COVID-19 patients.

Standard P2/N95 respirators can be used for dry airborne situations where minimal exposure to wet particles is expected such as caring for patients with suspected or confirmed tuberculosis, measles or chickenpox. Standard P2/N95 respirators can be used together with a face shield, surgical mask or a visor (these additions must be approved by the product manufacturer) if fluid resistance is required.

Considerations before selecting respiratory protection devices

Before selecting RPD, the following should be considered:

- Identify hazards (for example, the respiratory hazards to which HWs will be potentially exposed during routine and emergency situations)
- Appropriate donning, doffing and use of respirators
- Fit check (user seal check) at point of use every time a respirator is applied. Refer to the donning and fit checking of P2/N95 respirators in NSW healthcare settings video series available through HETI My Health Learning (Course code 319438161) for more information
- Fit testing of respirators (risk assessed)
- HWs are to ensure that they have the physiological ability to wear a respirator.

A respiratory protection program (RPP) should be in place including fit testing after fit (seal) checking is fully implemented. Fit testing provides additional information to determine the suitable type(s) of P2/N95 respirators for an individual. In situations where fit testing has not yet been carried out, and a P2/N95 respirator is recommended for use, a fit-checked P2/N95 respirator is preferred over a surgical mask. Refer to the [Respiratory protection manual](#) for more information.

Alternatives to disposable P2/N95 respirators

There are a variety of respirators used by health workers when caring for patients with a respiratory infection. In situations where there is a risk of airborne spread the recommended RPD is a particulate filter respirator. For some HWs and in some conditions, the available disposable P2/N95 respirators may not provide optimal fit.

A reusable respirator should be considered for HWs who are unable to achieve a facial seal (fit check) with available disposable P2/N95 respirators and/or have not passed a fit test and cannot be re-deployed to a lower risk clinical area due to their specialist skills. In this situation, alternatives to consider include reusable elastomeric respirators and PAPR.

Considering the complexities and challenges surrounding the use of reusable respirators in healthcare, the decisions on the selection and purchase of elastomeric respirators or PAPRs for use in healthcare facilities must involve specialists in infection prevention and control, work health and safety, biomedical engineering, reprocessing and the procurement or product evaluation committee.

Elastomeric respirators

Elastomeric respirators have historically had limited use in healthcare and their design may not comply with requirements of the healthcare environment, and they are not recommended for routine use in healthcare. The illustrations in figure 11 is not an endorsement but as an illustration of different types for consideration. Decisions on the selection and purchase of these respirators for use in healthcare should follow the process for procurement including certification where required on ARTG.

For more information refer to [CEC Respiratory protection program manual](#).

Powered air-purifying respirators

A PAPR is a battery-powered device that provides filtered air under positive pressure into either a loose-fitting hood or helmet or a tight-fitting facepiece. Because the filtered air is delivered under positive pressure, the device can compensate for an imperfect seal. For this reason, a PAPR is regarded as potentially providing a higher level of protection than other RPD but is more complex to use and maintain.

For more information refer to [CEC Respiratory Protection Program resources](#).

Difference between disposable P2/N95 respirators, reusable elastomeric respirators and PAPRs

The most significant difference between disposable respirators, reusable elastomeric respirators and PAPRs is that reusable respirators must be maintained and inspected after each use, including cleaning and disinfection of the reusable components such as facepiece valves, valve covers and straps.

Figure 11 Examples of different types of respirators

Half-Face Disposable	Half-Face Reusable	Full-Face Reusable
		
		
		

Table 22 Properties of P2 and N95 respirators

Properties	P2 respirator	N95 respirator
Other names	N95 masks, respiratory protection device, particulate respirator	P2 respirator, respiratory protection device, particulate respirator
Characteristics	P2 particulate filtering respirators/masks must have a filter efficiency of at least 94% when tested with sodium chloride aerosol at a flow rate of 95 litres/minute Under the European Norms system, aerosol testing is similar to Standard AS/ NZS 1716: 2012 but has additional filter efficiency testing with paraffin oil aerosol that must also meet the minimum 94% filter efficiency to be classified as P2. The particle size of this aerosol has a median diameter of 0.3 to 0.6 microns with a range of particles in the 0.02 to 2-micron size range	NIOSH classified N95 particulate filtering respirators/masks must have a filter efficiency of at least 95% when tested with sodium chloride aerosol at a flow rate of 85 litres/minute
	• Raised dome or duckbill • 4–5 layers (outer polypropylene, central layers electret [charged polypropylene]) • Filtration through mechanical impaction and electrostatic capture • Designed to provide a good facial fit to minimise aerosol contamination of the mucous membranes of the nose and mouth	
Sealing	• Ties or straps at crown and bottom of head, pliable metal nose bridge • Recommend fit checking all respirators, fit testing based on risk category	
Australian Standards	Standard AS/NZS 1715:2009 Standard AS/NZS 1716:2012	Set by the US NIOSH classification (NIOSH Guidelines – Procedure No. TEB-APR-STP-0059)
Intended use	• Routine care of patients on airborne precautions • High-risk procedures (or AGPs) such as bronchoscopy when the patient's infectious status is unknown, or the patient has suspected or confirmed COVID-19 • Procedures that involve aerosolisation of particles that may contain specific known pathogens (AGPs)	

Source: Australian Guidelines for the Prevention and Control of Infection in Healthcare, 2019

5.9 Aprons and gowns

Disposable fluid resistant aprons or gowns are designed to protect uniforms or clothing from moisture or soiling from blood, body substances and/or transmissible microorganisms during direct patient care. They also protect the patient during direct contact.

There are two main types of gowns available: isolation gowns and surgical gowns.

Isolation gowns offer varying resistance to blood and body substances depending on the type of the material, permeability and wear and tear. Isolation gowns may be classified as 'disposable/single use' or 'reusable/multi-use'.

Single use surgical gowns are sterile, fluid-resistant, disposable garments made of natural and/or synthetic materials worn over uniform 'scrubs' and operating theatre attire during surgical and aseptic procedures. Surgical gowns help protect the patient, health workers performing the procedure and operating room personnel from the transfer of microorganisms, body substances and particulate material (Kilinc, 2015).

The Association for the Advancement of Medical Instrumentation (AAMI) is a recognised and collaborative organisation that develops international standards, information and guidance to achieve safe use of medical devices (Chan, 2011). According to AAMI classification a surgical gown with a level 1 classification provides the lowest level of protection and level 4 provides the highest level of protection. For more information refer to Table 24 AAMI level standards for gowns.

Risk assessment and gown selection in procedural areas and operating suites

Risk assessment considers the anticipated risk of exposure to blood, body fluids/substances and irrigation fluid, the procedure itself, and the patient. Regardless of gown level, once fluid has penetrated the gown, the integrity of the protective barrier and sterility is compromised. It is recommended the gown is then changed (National Health and Medical Research Council, 2019a). Some common procedures are provided as examples in the tables below, to guide sterile gown selection based on the AAMI standard.

Table 23 Aprons/gowns recommended use and characteristics

Type	Recommended use	Characteristics
	Disposable aprons are worn to protect uniforms and clothing from moisture, body fluids or soiling during direct patient care or contact with the patient's environment or their equipment. An apron is usually applied when risk assessment of contact or exposure is minimal.	• Fluid impervious • Single use, for one procedure or episode of patient care • Disposable
	Disposable gowns are worn to protect arms, shoulders, uniforms and clothing from moisture, body fluids or soiling during direct patient care or contact with the patient's environment/equipment. A gown is usually applied when risk assessment of contact or exposure is greater in time and/or volume.	

A risk assessment approach must be used to choose between an apron or a gown for standard and/or transmission-based precautions.

The following points should be considered when conducting the risk assessment:

- level of direct contact with the patient
- tasks or procedures the health worker will undertake
- anticipated exposure to body substances
- if transmission-based precautions are required
- patient factors such as their ability to practise respiratory hygiene and hand hygiene
- the patient's ability to wear a disposable mask (source control)
- procedural requirements.

If the health worker anticipates exposure to blood or body substances on an uncovered part of their skin or uniform, then the risk assessment will direct them to an apron or gown for standard and/or transmission-based precautions.

When an apron or a gown is worn, it should be changed between patients. Extended use of a gown or apron is not routinely recommended. It may only be acceptable in exceptional circumstances and where minimal contact is anticipated, for example, COVID-19 testing centres.

Cloth (patient) gowns do not provide any level of protection for health workers 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 health workers 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 (refer to [ACORN standards](#) for further information).

Defining the best level of protection for the [American National Standards Institute \(ANSI\) /Advancement of Medical Instrumentation \(AAMI\) standards](#) PB70:2022 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 25 for level of protection needed for intended task.

Table 24 AAMI level standards for gowns

Barrier performance	Barrier protection	Resistance measure	Description
Level 1	Minimal	Liquid penetration	Used for MINIMAL 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. • Pressurising 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. • Pressurising 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 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. The outer 'contaminated', side of the apron or gown is turned inward and rolled into a bundle and then discarded into a designated receptacle for waste or linen to contain contamination.

Table 25 Sterile surgical gown selection for routine surgery

Examples of procedures drawn from industry supplier (this list is not exhaustive)	Barrier performance	Risk of exposure	Description
- Regional anaesthesia (epidural/spinal) - Biopsies, excision of superficial lesions - Minor gynaecological procedures (for example, dilatation and curettage) - Minor orthopaedic surgery (for example, carpal tunnel, wedge resection toenails)	Level 1 Use sterile Level 2 gowns if Level 1 gowns are not available	Minimal fluid	Used for situations where risk of exposure to blood, body fluids or irrigation fluids is MINIMAL Provides a barrier to small volumes of fluid Single test of water impacting the surface of the gown material is conducted to assess barrier protection performance
- Minimally invasive surgery (for example, laparoscopic, endoscopic) - Hernia repair - Breast reduction, plastic/cosmetic surgery - Orthopaedic arthroscopy (ankle) - Open reduction internal fixation - Dental surgery - Chest drain insertion	Level 2	Low fluid	Used for situations where risk of exposure to blood, body substances or irrigation fluids is LOW Provides a barrier to larger amounts of fluid penetration Two tests are conducted to assess barrier protection performance: - Water impacting the surface of the gown material - Pressurising the material
- Mastectomy - Urological procedures and hysteroscopy - Laparoscopic assisted hysterectomy/bowel resection - Joint replacement surgery - Neurosurgery & vascular surgery - Orthopaedic arthroscopy (shoulder/knees) - Burns	Level 3	Moderate fluid	Used for situations where risk of exposure to blood, body substances or irrigation fluids is MODERATE Provides a barrier to larger amounts of fluid penetration Two tests are conducted to test barrier protection performance: - Water impacting the surface of the gown material - Pressurising the material

Examples of procedures drawn from industry supplier <i>(this list is not exhaustive)</i>	Barrier performance	Risk of exposure	Description
• Major trauma • Knee/shoulder reconstruction • Lower segment caesarean section • Cardiac/thoracic – open procedures where the surgeon's hands/arms are in a body cavity throughout the procedure	Level 4	Highest fluid and microbial barrier	Used for situations where risk of exposure to blood, body substances or irrigation fluids is HIGH Provides a barrier to large volumes of fluid penetration and greater resistance to fluid soaking than level 3

(ASTM International 2017). Note reusable surgical gowns used to support sustainability should be assessed for fluid resistance properties. Where protection against strike through is not provided an impervious apron/gown should be worn underneath to provide the required level of protection and prevent exposure to health workers.

5.10 Aseptic technique

Aseptic technique is a set of practices aimed at minimising contamination and is used to protect the patient from infection during procedures (National Health and Medical Research Council, 2019a). Components of standard precautions are required for aseptic technique, however, adherence to these practices alone does not constitute aseptic technique.

Aseptic technique protects patients during invasive clinical procedures by employing infection prevention and control measures that minimise, as far as practicably possible, the presence of pathogenic microorganisms.

Aseptic technique reduces the risk of infection. It is required for all invasive procedures.

Correct aseptic technique prevents contamination and transfer of pathogens from hands, surfaces, and equipment to the patient during procedures. This is achieved by:

- Identifying key parts and key sites and always protecting them
- Key parts must only contact with other key parts and/or key sites.

Asepsis can be explained in different levels:

Aseptic technique and Medical Asepsis

Reducing microorganisms by using non-touch technique (clean technique)

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 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.

Key sites include any non-intact skin and insertion or access sites for medical devices connected to the patient (for example, insertion/access sites of intravenous devices, urinary devices, open wounds).

Key parts are the sterile components of equipment used during the procedure (for example, bungs, needle hubs, syringe tips, dressing packs).

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.

Non-touch technique is a technique where key parts and key sites are not touched and therefore not contaminated by clinician's hands. The most effective way to protect a key part is not to touch it even if sterile gloves are used.

Each Health Organisation 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. Maximum sterile barrier (MSB) precautions are defined as wearing a sterile gown, sterile gloves, and cap and using a full body drape (similar to the drapes used in the operating room) during a procedure (for example, insertion of a central line).

The Health Organisation is to regularly audit the use of aseptic technique and evaluate audit data locally to identify opportunities for compliance improvement.

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

Aseptic technique, when performed correctly will:

- Minimise contamination of key sites
- Protect patients from their own pathogenic microorganisms that may cause infection
- Reduce the transmission of microorganisms
- Maintain the sterility of equipment and key parts used for aseptic procedures.

As per the [NSQHS Standards Implementation guide for Action](#), the Health Organisations must have processes to:

- a. Identify the procedures where aseptic technique applies
- b. Assess the competence of the workforce in performing aseptic technique
- c. Provide training to address gaps in competency
- d. Monitor compliance with the organisation's policies on aseptic technique.

When performing a procedure step 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. For more information on steps for sequencing refer to ACSQHC [Principles of aseptic technique: Information for healthcare workers](#).

The five essential principles of aseptic technique are:

1. Sequencing

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

2. Environmental control:

- Prior to aseptic procedures, health workers must ensure the environment is free of obstacles that could potentially pose a risk, 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, health worker's hair should be tied back, bare below the elbow and lanyards (if worn) removed or tucked in prior to commencing the procedure.

3. Hand hygiene:

- Effective hand hygiene is an essential component of aseptic technique. Dependant on the procedure about to be performed either routine or surgical hand hygiene is required
- Routine hand hygiene refers to the use of neutral pH soap/solution and running water or an alcohol-based hand rub (ABHR)
- Surgical hand scrub requires the use of an approved antimicrobial skin cleanser or waterless hand rub formulation
- Perform hand hygiene immediately before and after a procedure or after body substance exposure, in compliance with the National Hand Hygiene Initiative (NNHI) hand hygiene requirements.

4. Maintenance of aseptic fields:

- Prior to commencing a procedure, it is imperative the clinician determines the aseptic field required and how that field will need to be managed
- 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 need 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.

For more information refer to [My Health Learning](#) Aseptic Technique.

Surgical Asepsis

Preventing or minimising microorganisms entering sterile body areas (for example, through surgical incisions).

Surgical aseptic technique is required when procedures are technically complex, involve extended periods of time, large open key sites or large or numerous key parts. To counter these risks, a main

critical aseptic field and sterile gloves are required and often maximum barrier precautions. Critical micro aseptic fields and non-touch technique should also be practiced and maintained.

Surgical aseptic technique involves:

- Establishment of a sterile operating field - a clearly defined area within which all surfaces, instruments, and materials are sterile. This field must be maintained throughout the procedure.
- Hand hygiene - performed using a surgical alcohol-based hand rub or a surgical cleanser registered by the TGA for surgical hand preparation.
- Skin antisepsis - application of a TGA-approved antiseptic agent to the patient's skin around the surgical site to reduce the microbial load and minimise the risk of infection.
- Use of sterilized equipment - only sterilized instruments and materials may enter or be used within the sterile field. Any breach in sterility must be immediately addressed to maintain aseptic integrity.

5.10.1 Aseptic technique in oral health

The five essential principles for aseptic technique (refer to section 5.10 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.

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 sterilised 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.

For more information refer to the Australian Dental Association [Guidelines for Infection prevention and control](#).

5.11 Management of invasive devices

Under the NSW Health [Infection prevention and control in Healthcare Settings](#) policy directive, each Health Organisation must maintain written policies and/or procedures for safe management of all types of invasive devices, including intravascular devices. These documents must provide clear guidance on insertion, maintenance, and removal practices to minimise the risk of healthcare-associated infections (HAIs).

Health workers are expected to follow device-specific protocols and consult relevant clinical resources, including:

- [NSQHS Preventing and Controlling Infections Standard](#) – for overarching principles on invasive device safety and infection prevention and control.

- NSW Health Guideline GL2021_015 – [Insertion and Management of Urethral Catheters for Adult Patients](#), which outlines best practice to reduce catheter-associated urinary tract infections (CAUTIs).
- NSW Health Policy Directive PD2019_040 – [Intravascular Access Devices - Infection prevention and control](#), detailing mandatory standards for IVAD insertion, care, and documentation.
- ACI Clinical Practice Guide (2021) – [Central venous access device: Clinical practice guide](#), offering detailed procedures for CVAD insertion, maintenance, and removal.
- ACSQHC Clinical Care Standard (2021) – [Management of Peripheral Intravenous Catheters Clinical Care Standard \(2021\)](#), which sets national benchmarks for safe PIVC use, including daily review, documentation, and removal protocols.

All procedures involving aseptic technique must be documented. This includes:

- Indications for the procedure
- Any clinical misadventures or complications
- Required follow-up or review actions

This documentation supports clinical accountability and aligns with the (Australian Commission on Safety and Quality in Health Care, 2021a)) standards for safe invasive device management.

5.12 Skin antisepsis

Skin antisepsis is a critical component of preparing for any procedure requiring aseptic technique. This includes, but is not limited to, central line insertions, peripheral intravenous cannulations, lumbar punctures, drain insertions, and surgical procedures.

To ensure safety and efficacy:

- A single-use antiseptic skin preparation product must be used.
- After application, any remaining product and packaging must be discarded to prevent contamination and ensure compliance with infection prevention and control standards (Bednarek et al., 2025).
- For procedures involving surgical sites, clinicians should refer to Chapter 12 of the NSW Health Infection Prevention and Control Practice Handbook, which outlines detailed protocols for surgical site infection (SSI) prevention.

Selecting the Appropriate Antiseptic Agent

Effective skin preparation requires choosing the correct antiseptic agent at the appropriate concentration. Clinicians should refer to antiseptic summary table 26 Antiseptic agents for skin preparation to support evidence-based decision-making and ensure compliance with NSW Health and national infection prevention and control standards.

Table 26 Antiseptic agents for skin preparation

Antiseptic agent	Typical concentration	Activity against bacteria	Activity against viruses	Activity against fungi	Residual effect	Notes
Chlorhexidine Gluconate (CHG)	0.5%–4% in alcohol or aqueous base	Gram-positive & Gram-negative	Yes	Yes	Persistent (binds to skin)	Not inactivated by organic matter; persistent antimicrobial activity

Povidone-iodine (PVP-I)	7.5%–10% aqueous or alcohol-based	Gram-positive & Gram-negative	Yes	Yes	No	Inactivated by organic matter; apply to clean skin only
Alcohol (Isopropyl or Ethanol)	60%–90%	Broad-spectrum	Many enveloped viruses	Many fungi	No	Rapid action; no residual effect; flammable
CHG + Alcohol	2% CHG in 70% isopropyl alcohol	Excellent immediate & persistent	Yes	Yes	Yes	Combines rapid kill with long-lasting effect
PVP-I + Alcohol	0.5%–1% iodine in 70% alcohol	Excellent immediate & moderate persistence	Yes	Yes	Moderate	Combines fast action with iodine's broad-spectrum activity

Adapted from [Department of Queensland Health: Surgical skin disinfection guideline](#).

Best practice for skin antisepsis

When skin antisepsis is required for aseptic procedures (for example, central line insertion, IV cannulation, lumbar puncture, surgical procedures), a single-use antiseptic skin preparation should be used. After use, both the applicator and any remaining contents must be discarded to prevent contamination.

The following should be taken into consideration when applying skin antiseptics:

- 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, blot or fan 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.

5.12.1 Skin disinfection before injection

In some circumstance skin preparation is needed before injection. Alcohol should be used to disinfect the skin prior to injections to prevent introduction of microorganisms into the skin being injected within tissue (Dulong et al., 2020). Alcohol has been shown to be a good disinfectant, reducing the number of bacteria on skin by 47-91%.

Health Organisations deciding to disinfect skin prior injections are to ensure that:

At a minimum swabbing the injection site with a saturated 70% alcohol swab for 30 seconds and allowing the skin to dry for 30 seconds is essential to reduce the number of microorganisms.

Administration of vaccines

As per the [Australian Immunisation Handbook](#), before the administration of vaccines:

- If the skin is visibly clean, there is no need to wipe it with an antiseptic (such as an alcohol wipe)
- Alcohol wipes may increase injection site reactions as alcohol may track in with the vaccine.
- If you use alcohol or other disinfecting agents to clean skin that is visibly dirty, the skin must be allowed to dry before injecting the vaccine. This prevents inactivation of live vaccines and reduces the likelihood of irritation at the injection site.

5.12.2 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. Where alcohol-based skin preparations are used, procedures must be in place to minimise associated risks to the patient (Jones et al., 2017). 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 any pooling and what part of the body has been prepped
- The quantity of the flammable skin preparation used to prepare the skin should be kept to a minimum 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.

5.13 Needle stick and sharps injury prevention

Breaches in safe injection, infusion and medication vial handling practices has resulted in transmission of human immunodeficiency virus (HIV) and viral hepatitis and in some cases caused outbreaks of disease (Fischer et al., 2010, Guh et al., 2012). Standard precautions, particularly aseptic technique, form the basis of safe injection practices (Kottapalli et al., 2023). This section focuses on the safe injection practices, required to ensure patient and health 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
- Sharps must not be passed by hand between a relevant health practitioner and any other person (Part 3 Infection Control Standards-Health Practitioner Regulation (New South

Wales) Regulation 2010. If a sharp is to be carried, it must be carried in a puncture proof container

- Each health worker is responsible for the management and safe disposal of any sharp that they use
- 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 uses and injections
- Store and prepare medications and supply 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.

For more information refer to Part 3 Infection Control Standards-[Health Practitioner Regulation \(New South Wales\) Regulation 2010](#), NSW Health [Preparation of pharmaceutical and advanced therapeutic products](#) policy directive, NSW Health [Blood and Body Substances Occupational Exposure Prevention](#) guidelines and [Blood or Body Fluid Exposure Self-Assessment Tool](#).

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 (King and Strony, 2025, National Health and Medical Research Council, 2019a). The use of sharps should be minimised wherever possible and be disposed of immediately after use at the point of use.

In accordance with the NSW Health Infection Prevention and Control in Healthcare Settings Policy Directive, each Health Organisation must have a written procedure in place for the safe handling, transportation and reprocessing and disposal of sharps. A Health Organisation must also provide training to health workers on sharps handling, disposal, cleaning, reprocessing and safe storage (NSW Health, PD 2023_025).

Where possible, a Health Organisation should purchase and ensure the use of safety equipment for sharps handling, particularly in areas where high sharps use occurs and/or in areas where there have been occupational exposures relating to sharps handling. As per the [Health Practitioner Regulation \(New South Wales\) Regulation 2010](#), each health worker is responsible for the management and safe disposal of any sharp that they use and they must comply with the following:

- (1) Sharps must not be passed by hand between a relevant health practitioner and another person.
- (2) The requirement in subsection (1) does not apply if, in a case involving an invasive procedure, the proper conduct of the procedure would be adversely affected.
- (3) A puncture resistant tray must be used to transfer sharps.
- (4) A needle must not be removed from a disposable syringe for disposal, or be purposely broken or otherwise manipulated by hand, unless-
 - (a) it is necessary to remove the needle for technical reasons, or
 - (b) the relevant health practitioner is performing a procedure in which the needle must be bent.
- (5) A needle must not be bent after it is contaminated with blood or body substances.
- (6) If re-sheathing of a needle is required-

- (a) the needle must be properly recapped, and
- (b) the sheath must not be held in the fingers, and
- (c) a single-handed technique or forceps, or a suitable protective guard designed for the purpose, must be used.

(7) Immediately after being used, sharps must-

- (a) if they are reusable - be placed in a puncture resistant container specially kept for that purpose and labelled for that purpose or
- (b) if they are non-reusable sharps - be disposed of in a puncture resistant container.

Re-sheathing a needle in dental practice

Needles must not be re-sheathed, most health services use a single use syringe with a needle that can be discarded as one unit after administering the injection, except where no other alternative process is available such as dental practice (King and Strony, 2025).

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.

The Australian Dental association (ADA) [Guidelines for Infection prevention and control](#) do not recommend the recapping of local anaesthetic needles as a regular work practice. As per the management of sharps section 'Needles and medical sharps must not be recapped unless (1) there is a requirement to control a risk identified based on an assessment under jurisdictional Work Health and Safety regulations, AND (2) the risk of injury cannot be controlled by other means (for example, the absence of a needle recapping device or self-sheathing needle system).'

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

Dental practices that use a re-usable dental aspirating syringe, with a single-use needle attached, should remove the needle from the reusable syringe after administering the local anaesthetic.

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.

For more information refer to the NSQHS Standards on [Reprocessing of reusable equipment and devices](#), [Australian Guidelines for the Prevention and Control of Infection in Healthcare](#) and NSW Health [Clinical and Related Waste Management for Health Services](#) policy directive.

Sharp containers

All sharp containers should be positioned out of the reach of children at a height that enables safe disposal by all health workers. Relevant Australian and New Zealand Standards include:

- AS/NZS 3816:2018 Management of Clinical and Related Wastes
- AS 23907:2023, Sharps injury protection - Requirements and test methods - Sharps containers.

Sharp containers must have clear, standardised colour coding and labelling to ensure correct identification and segregation of different hazardous waste streams.

Containers must meet higher standards for penetration resistance to prevent sharps from piercing the walls of the container.

Materials and design should consider the environmental impact during the manufacturing, use, and disposal phases.

5.13.1 Sharps in community and home settings

In both clinical and non-clinical community settings, the handling and disposal of sharps must adhere to strict safety precautions to prevent injury and infection. In clinical environments such as community health centres and multi-purpose services, sharps should be managed in accordance with standard precautions, including immediate disposal into puncture-resistant, sealable containers clearly marked with biohazard warnings.

In non-clinical environments such as a patient's home or during Hospital in the Home (HITH) programs, the safe management of sharps is essential to protect patients, carers, and the community from injury and infection.

According to Safe Work Australia and the NSW Health Community Sharps Guidance, any sharps generated during care must be:

- Immediately placed into an approved sharps container at the point of use. These containers must be:
 - Rigid, puncture-resistant, and leak-proof
 - Clearly labelled with a biohazard symbol
 - Compliant with AS 23907:2023, the Australian Standard for sharps injury protection
- Securely closed and stored to prevent accidental exposure or tampering.
- Transported in a separate compartment from the driver's area of the vehicle, in accordance with Work Health and Safety (WHS) regulations.
- Disposed of at a designated facility, such as:
 - Public hospitals
 - Community health centres
 - Multi-purpose services
 - Participating pharmacies or sharps disposal bins provided by local councils

These practices are outlined in:

[NSW Health Community Sharps Guidance](#)

[Safe work Australia – Code of Practice](#)

[Sharps disposal and management in Australia: a comprehensive guide](#)

These guidelines ensure consistent, safe, and legally compliant sharps management across all care settings, including home-based healthcare.

5.14 Blood glucose monitoring devices

The following practices are recommended (Krlaza et al., 2015) when using blood glucose monitoring devices:

- When performing glucose monitoring procedures, health worker must use aseptic technique
- The glucometer and its protective casing are 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
- 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
- Where feasible patients should be encouraged and supported to undertake their own skin prick and blood glucose monitoring.

5.15 Intravenous solutions

The following practices are recommended (Dolan et al., 2016) in the context of intravenous solutions:

- Protective packaging should not be removed until immediately prior to use
- Intravenous solution containers (for example, bags or bottles, syringes) for flushing lines are not to be used for multiple patients. Single patients use only
- Replace the entire IV tubing (line) if disconnected 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
- Additions to intravenous fluids should be made under controlled conditions where possible (pharmacy laminar flow unit) or else 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
- All spikes must be attached to a fluid bag
- Check the expiry date on IV solution; do not use if it is expired
- All intravenous access ports should be meticulously cleaned with a large wipe (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 or 2% chlorhexidine in 70% alcohol. If allergic, 10% povidone-iodine should be used and allowed to air dry prior to accessing the system. The drying time may vary (20 second or more) depending on the product (Slater et al., 2018)
- Use needle free systems for all aspects of parenteral medication administration and transfer of solutions between containers.

For more information refer to the NSQHS Standards [Medication Safety](#), NSW Health [Medication Handling](#) policy directive, and NSW Health [Intravascular Access Devices \(IVAD\) - Infection Prevention & Control](#) policy directive.

5.15.1 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 (8 hours).

Flushing is recommended to promote and maintain patency and prevent the mixing of incompatible medical solutions (Goossens, 2015). 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. If a multi-dose vial must be used, use it for only one patient and then discard it. Use a new, unused sterile needle and new, unused sterile syringe for each entry into the vial. Syringes should not be attached directly to a normal saline ampule or bag. A drawing up needle/device should be used to protect key sites and key parts.

Clinicians managing intravascular access devices are to ensure that:

- The catheters must be flushed immediately,
 - After placement
 - Before and after each fluid infusion or injection
 - Prior to and after drawing blood
- Flush in a pulsatile (push-pause) motion
- Peripheral intravenous catheters (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 4 to 12 weeks, in line with manufacturer's IFU and local policy/procedure.

Use aseptic techniques including cleaning the access port (scrub the hub) with a disinfectant agent (for example, alcohol and/or chlorhexidine) for at least 15 seconds and allow to dry prior to accessing the system (Moureau and Flynn, 2015).

Use aseptic technique when preparing and administering intravenous medications (IV), flush solutions or other parenteral solutions (Buetti et al., 2022).

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.

For more information refer to the ACSQHC [Management of Peripheral Intravenous Catheters Clinical Care Standard](#) and NSW Health [Intravascular Access Devices \(IVAD\) - Infection Prevention & Control](#) policy directive.

5.16 Medication vials and ampoules

The following practices are recommended (Dolan et al., 2016) in the context of medication vials and ampoules:

- Follow the manufacturer's instructions for storage and use
- Disinfect the rubber septum on all vials prior to each entry, even after initially removing the cap of a new, unused vial
- Disinfect 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
- Use single-use ampoules or single-dose vials. Always use a sterile syringe and needle when entering a vial or sterile access device

- Never enter a vial with a syringe or needle that has been used on a patient
- Never leave a needle in the septum of a medication vial for multiple medication draws. This provides a direct route for microorganisms to enter the vial and contaminate the fluid
- 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. Dispose unused medication into pharmaceutical bins, not in sinks or clinical hand wash basins
- Never store medication vials in clothing or pockets
- Inspect vials and discard if sterility has been compromised or is thought to be compromised
- Use needleless transfer devices when reconstituting drugs. Discard transfer device with the vial at the end of the transfer
- Use a filter needle or filtered transfer device to draw medications from an ampul into a syringe to prevent glass shard and/or potential microbial contamination (Chiannilkulchai and Kejkornkaew, 2021)
- When handling medication vials and ampoules, glove use should be based on a risk assessment. Gloves are not required when handling ampoules unless specifically advised by the manufacturer.

Examine the vial for any particulate matter, discoloration, or turbidity. If present, do not use and discard immediately (Dolan et al., 2016). All vials used during an emergency should be discarded as sterility cannot be guaranteed.

5.16.1 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 (Ernstmeyer and Christman, 2021).

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 products and devices must be registered with the Therapeutic Goods Administration (TGA), and NSW Health Organisations must identify them and develop clear local protocols for their management.

Multi-dose vials must only be used between multiple patients where there is no other alternative product available on the Australian market. Where multi-dose vial use is unavoidable (such as, only manufactured as a multi-dose vial) it must be used for a single patient whenever possible and discarded immediately after use. Health workers are to be provided with appropriate education and training prior to the utilisation of multi-dose vials.

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 health workers fail to follow aseptic technique. Examples of multi-dose vials include, insulin, Botox, tuberculin skin test vials and 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 in Healthcare Settings](#) policy directive and NSW Health [Medication Handling](#) 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
- 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 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 (examples of immediate patient treatment areas include operating and procedure rooms, anaesthesia and procedure carts, and patient rooms or bays)
- Keep multi-dose vials away from the immediate patient environment (Ernstmeyer and Christman, 2021)
- 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 (Dolan et al., 2016)
- Date opened multi-dose vials to reflect date opened and/or date of expiration
- An organisation may choose to establish a system wide opened multi-dose discard schedule, such as, one date a month established to discard all opened multi-dose vials no matter when the vial was opened during the month.

5.17 Cleaning and disinfection of reusable shared equipment

Any reusable devices or equipment that have contact with intact skin (non-critical item) must be cleaned before it is used.

Use of shared devices and equipment in patient care has been implicated in the transmission of infection between individuals (Lee et al., 2018, Ssekitoleko et al., 2020).

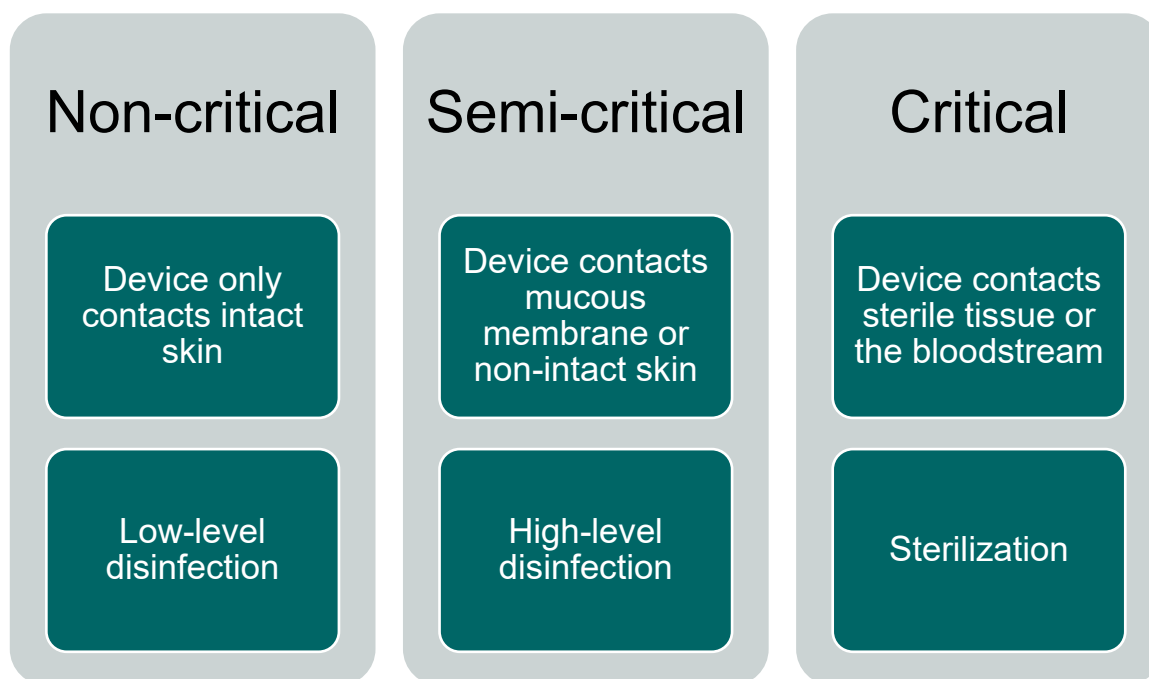
Cleaning is the removal of visible soil (such as inorganic and organic material) from objects and surfaces and is normally accomplished manually or mechanically using water with detergents or enzymatic products.

Disinfection is a process that eliminates many or all pathogenic microorganisms, except bacterial spores, on inanimate objects.

Sterilization is the complete elimination or destruction of all forms of microbial life and is accomplished in health care facilities by either physical or chemical processes.

As per the [Spaulding classification](#) (Figure 12) devices and equipment for patient care were categorised as critical, semi critical, and noncritical according to the degree of risk for infection involved in use of these items.

Figure 12 Spaulding classification



Principles of cleaning and disinfection

Reusable non-critical equipment used in the assessment and delivery of patient care should be reprocessed before use. Health workers are to pay special attention to the cleaning of shared reusable clinical devices and equipment between patients, their carers, between health workers and between episodes of patient care. They must be cleaned according to manufacturer's instructions for use and local procedures. The following principles apply to their use and reprocessing:

- Any reusable equipment and accessories that have 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 (Instruction for Use [IFU] to be followed) on the same patient
- Health workers that use or transfer 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 are no manufacturer's IFUs available, for example, reusable tape measures, consult with local infection prevention and control team or delegate to risk assess, determine required product cleaning method and frequency of cleaning.

Non-critical items such as a commode chair, temperature probe, should be cleaned with a neutral detergent and if disinfection is required a Therapeutic Goods Administration (TGA) approved hospital grade disinfectant, preferably with label claims against specific organisms should be used in accordance with manufacturers' recommendations.

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

Where possible and available 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.

The following table provides an example of frequency and type of cleaning required for shared patient care equipment. The facilities should develop their own list and based on local risk assessment.

Table 27 Example of frequency and type of cleaning required for shared patient care equipment

Item	Frequency	Cleaning product	Responsibility	Comments
Dressing or Procedure trolley	Before and after use	Neutral detergent solution or wipe OR	User	Disinfection based on risk assessment
Workstation on wheels	Before and after use, before moving to another patient's bedspace or room	2-in-1 detergent/disinfectant*	User	
Patient call bells	Daily		Environmental services	
Bed rails/bed side table	Daily		Environmental services	
PE trolley	After use		User	
Glucometer	Before and after use		User	
Stethoscope	Before and after use		User	
IV Infusion pump	Before and after use		User	

Bladder scanner	Before and after use		User	
Vital signs equipment	Before and after use		User	

*Use an ARTG listed 2-in-1 detergent/disinfectant, which has efficacy claims against the pathogen of interest.

5.17.1 Information communication technology

Health information communication technology (ICT) hardware (such as workstations on wheels, mobile phones, tablets, laptops, digital pens, wall mounted fixtures that support ICT equipment) in some circumstance can pose patient safety risks due to inability to clean these items effectively and efficiently in between use. ICT equipment in both clinical and non-clinical areas become contaminated with microorganisms, which are transmitted via contaminated gloves or hands. Cleaning and disinfection of these items are an important strategy to reduce microbial burden on these items and hand contamination of health workers.

The design, development, trial, purchase, and implementation of any ICT must be in consultation with local infection prevention and control service, work health and safety and local procurement to ensure relevant Australian Standards and processes are considered and followed.

Recommendations for ICT equipment reprocessing

The way each ICT equipment is used and the locations in which it is used should determine the frequency and level of cleaning and disinfection. For example, reprocessing of devices that are used in between patients should be much more frequent than items fixed on the wall or in non-clinical areas. The following practices should be followed to ensure equipment remains clean and safe for use:

- When purchasing equipment, choose items that are easy to clean and disinfect before and after use
- Do not take ICT equipment into patients' rooms if it cannot be cleaned and disinfected
- Any mobile equipment (for example, computer on wheels, mobile phones, tablets, or laptops) taken into a patients' room should be kept at least two metres away from the patient to prevent possible contamination
- Hand hygiene is the most important factor in keeping the ICT equipment clean and preventing microorganism transmission. Always access ICT equipment with clean hands, health workers should not wear gloves when using ICT equipment, alcohol-based hand rubs should be conveniently placed to improve hand hygiene
- Clean and disinfect ICT equipment regularly and if it becomes contaminated. The frequency for cleaning and disinfection is determined by the risk of cross contamination, the proximity of the equipment to the point of care and the amount of soiling or contamination
- Portable ICT equipment taken into the patient's room, but not directly in the point of care, for activities, such as charting in an electronic medical record, order entry, or data collection (for example, computer or workstation on wheels, tablets, wireless laptops) must be always handled with clean hands. When multiple health workers are present during patient review, one team member should be designated to interact with the patient while another operates the ICT equipment to minimise cross-contamination. If gloves are worn during patient contact, they must be removed and hand hygiene performed prior to touching any ICT

device. In the event of suspected or confirmed contamination, the equipment must be cleaned and disinfected immediately following use, in accordance with infection prevention protocols

- Fixed ICT equipment used at point of care should be cleaned at least daily and at transfer or discharge
- All other fixed ICT equipment located in clinical areas should be cleaned daily
- Personal ICT equipment (for example, pager, mobile phone, or device) and hard plastic casings should be cleaned daily
- Follow manufacturer's instructions for use (IFU) for specific equipment cleaning and disinfection. Establish a cleaning and disinfection process for all ICT equipment
 - Use a soft, non-abrasive, lint free cloth. Avoid abrasive cloths, towels, paper towels, and similar items that may cause damage to the equipment
 - Do not use cloths saturated with liquid
 - Never spray or pour disinfectant directly onto ICT equipment
 - Clean ICT equipment prior to disinfection
 - Allow surfaces to dry before reusing
 - Do not use compressed air to clean ICT equipment, for example, keyboards. Keyboards are cleaned and disinfected in the same manner as other ICT equipment. Replace keyboards with visible soil that cannot be removed by cleaning.

5.18 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' and a symbol 

A single use device is designed to be used once and then discarded (*ISO 13485:2016 Medical devices - Quality management systems-Requirements for regulatory purposes, Therapeutic Goods Administration*).

For more information refer to the [Australian Regulatory Guidelines for Medical Devices \(ARGMD\)](#).

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. 'Single patient use' devices and equipment can be used multiple times on the same patient following manufacturer's instructions for cleaning and/ or reprocessing between use.

Single patient use equipment should be cleaned and stored as per the manufacturer's instructions between periods of use in a manner that prevents contamination between uses.

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.

The [Therapeutic Goods \(Medical Devices\) Regulations 2002](#) (Commonwealth) requires a Health Organisation that reprocesses single use devices to be licensed as a manufacturer under Section

41BG (2) of the Therapeutic Goods Act 1989 (Commonwealth). Where the Health Organisation is a manufacturer by the Therapeutic Goods Administration (TGA) it is subject to audit conformance.

Health Organisations are required to consider environmental sustainability with a balanced approach to decisions related to the implementation of single use or single patient use items versus reusable items.

When considering single use vs reusable there are several factors to consider such as cost of consumables, preparation time, processing time, electricity, water, human resources, manufacturers recommendations, transport, infrastructure, policies and standards on healthcare associated infection prevention, health worker safety and consumer expectations.

Routine replacement of single use items with reusable items can be a complex process which requires rigorous risk assessment to ensure quality and safe provision of care is maintained.

5.19 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. To maintain the integrity and sterility of the stock, the following storage and handling practices must be adhered to:

- 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 if single use or if reusable is to be reprocessed before use
- 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 sterility
- Storage of stock should be in receptacles that reduce the risk of dust entrapment and fall through of items. In the absence of these receptacles processes should be in place for their routine cleaning
- Do not use cardboard boxes (transport or outer packing) including corrugated cardboard carton as routine storage. Items should be removed from outer packaging material but not to be removed from inner primary packaging even if it is in cardboard box to reduce direct handling of consumables. Bulk storage area should be located on the periphery of the unit so that deliveries of commercially prepared sterile stock is de-boxed from outer store/transportation packaging before being brought into the sterile stock storage area. Space is needed to unpack cartons. Where consumables may only have a primary packaging layer, the storage of these items should be managed based on risk assessment. The method of transport should also be assessed to ensure delivery occurs in a safe and clean manner
- 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 use
- Decision to use or dispose the items after a potential contamination event should be based on risk rating and the potential level of contamination

- The Health Organisation 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 their IFU and local procedure in between use and stored in a clean, dry place to prevent environmental contamination. For more information refer to Table 28.

Table 28 Examples of items to be stored in designated areas

Clean room or area	Dirty utility or clean up rooms	Sterile storage areas
• Medical equipment (for example, infusion pumps, blood pressure machines, computer on wheels) • Medical and administrative supplies • Wheelchairs • Walking aids • Plastic bed sheets or 'blueys' (disposable waterproof 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	• 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	• Clear segregation from sterile and other items • Prevents contamination from any source (dust, vermin, sunlight, water, condensation, and so forth) • All surfaces must be cleanable • Surfaces including shelving and storage containers should be able to be cleaned • Do not use cardboard boxes as routine storage. Decant stock from outer transport cardboard boxes • Store supplies off the floor

For more information refer to the [Australasian Health Facility Guidelines. Part D: Infection prevention and control](#) and [AS 5369:2023 Reprocessing of reusable medical devices and other devices in health and non-health related facilities](#).

5.20 Clean linen

Sort, package, transport, and store clean linen in a manner that prevents risk of contamination by dust, debris and vermin. Clean linen should be separated from used linen, or other soiled items. Each floor/ward should have a designated room for sorting and storing clean linen. Transport clean linen to patient care areas on designated carts or within designated containers that are regularly (for example, at least once daily) cleaned with a neutral detergent and warm water solution or premade wipes.

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 clean protective covering whilst on linen trolley
- in a separate area, away from used linen
- in a manner that will allow for stock rotation.

Linen should **not** be overstocked, and health workers are to handle linen with clean hands.

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

Clean linen trolleys are to be covered while in transit and in storage.

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 (for example, covered trolleys).

Clean linen and used linen are **not** transported together unless separated by a suitable barrier. For more information refer to the [AS/NZS 4146:2024 Laundry practice](#).

5.20.1 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 health workers clothing. Each Health Organisation is to have a written procedures on the collection, transport, and storage of linen. Furthermore, a Health Organisation that processes or launders linen in-house will also have documented procedures consistent with [AS/NZS 4146:2024 Laundry practice](#).

The following principles apply when handling linen used for all patients (such as, whether transmission-based precautions are in place or not):

- Standard precautions are to be followed when handling used linen
- Handle soiled linen with minimum agitation to avoid contamination of the air, surfaces, and persons (for example, roll up)
- Never carry soiled linen against the body. Always place it in the designated container
- 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 health workers handling the bags
- Reusable linen bags must be laundered before re-use
- Hand hygiene must be performed following the handling of used linen.

Used or soiled linen is **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 patient's personal items and only one patient's personal items can be washed per cycle.

All patient care and cleaning 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. Appropriate handling, storage, and transport of soiled linen are essential to minimise the risk of contamination, and the following points are to be considered when managing soiled linen:

- Laundry carts, skips 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
- Vehicles that 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, for example, containers with suitable closures, moisture impermeable bags that would prevent contact and 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. Standard precautions 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. Do not drag filled linen bags across the floor
- Disposable linen is the first-choice preference for patients with a high consequence infectious disease. Reusable linen should be discarded as clinical waste
- Used linen areas should be separated from the clean linen storage areas
- Regular monitoring and feedback of environmental cleaning and handling, transporting and storage of linen.

5.21 Environmental cleaning

Health Organisations are complex environments where the provision of care to large numbers of patients 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 healthcare associated infections.

Each Health Organisation must use a risk management framework when considering cleaning of the healthcare environment. The aim of determining risk is to ensure appropriate controls are implemented due to the variety of problems that inadequate cleaning can cause.

Health Organisations must have a multi-modal approach to environmental cleaning including a defined standard principle for cleaning and disinfection and compliance should be ensured by measures such as standard operating procedures, adequate training, and suitable audit and monitoring systems (Assadian et al., 2021).

The accountability for all aspects of cleaning lies with the Health Organisations management. Where an environmental services department does not exist, and an external contractor has not been deployed, a suitable worker should be designated this role. For more information refer to NSW Health [Cleaning of the Healthcare Environment](#) policy directive, NSQHS [Preventing and Controlling Infections Standard](#) and [Australian Guidelines for the Prevention and Control of Infection in Healthcare](#).

Health Organisations require a continuous comprehensive approach to monitoring the cleanliness of the healthcare environment. Internal audits of a Health Organisations 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 issues.

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

- Cleaning and disinfection using products listed on the Australian Register of Therapeutic Goods (ARTG), consistent with manufacturers' instructions for use and recommended frequencies
- Provide access to training on cleaning processes for routine and outbreak situations, and novel infections
- Ensure floors and baseboards are visibly clean*
- Ensure walls, ceilings and doors are visibly clean*
- All horizontal surfaces are visibly clean* (includes furniture, window ledges, overhead lights, phones, and so forth)
- Bathroom fixtures including toilets, sinks, tubs, and showers are visibly clean
- Mirrors and windows are visibly clean*
- Dispensers are visibly clean*
- Appliances are visibly clean*
- 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
- Minimal clutter in shared administrative and clinical areas, such as workstations, storerooms, and utility rooms
- Audit the effectiveness of cleaning practice and compliance with its environmental cleaning policy and use the results of audits to improve environmental cleaning processes and compliance with policy. The frequency may vary depending on the functional risk rating of the area.

- Cleaning practices must be periodically monitored and audited with feedback and education.

* *Visibly clean means free from dust, soil, mould, stains, smudges, cobwebs, soap/mineral build-up.*

5.21.1 Principles of environmental cleaning and product selection

Cleaning of healthcare environment is a key component of standard precautions; the first line in infection prevention and control in the healthcare environment. The level of cleaning and disinfection should be based on risk assessment (Assadian et al., 2021) consisting of the following:

- patient risk profile (vulnerability of patients to infections or colonisation)
- surface risk profile (probability of contamination with pathogens and potential for exposure and/or indirect transmission, and frequency of hand contacts)
- pathogen risk profile (persistence, antibiotic resistance and primary mode of transmission).

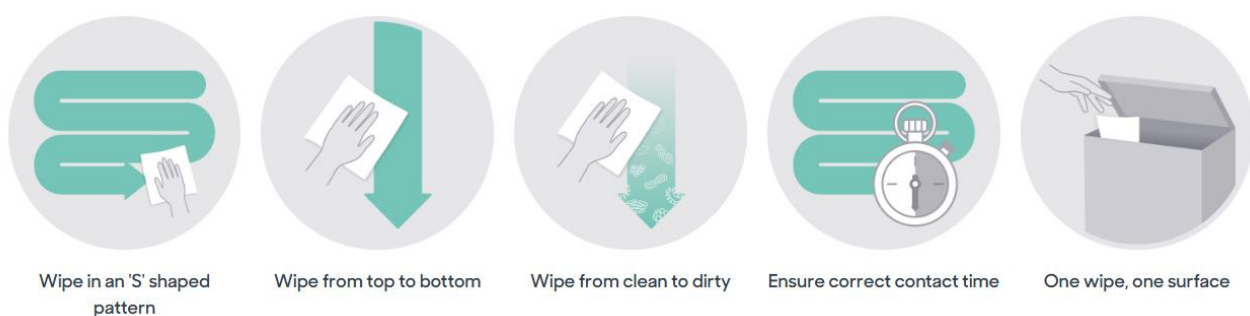
In the context of assessing the risks for patients, health workers and pathogen transmission, the following factors must be considered to distinguish the level of cleaning and disinfection:

- High touch surfaces - usually close to the patient, are frequently touched by the patient or health workers (bedrails, door handles, bedside tables, computer tables and keyboards, medical equipment, call bells and light switches)
- Low-touch surfaces usually not handled by the patient or health workers (floors, walls or environmental surfaces out of reach or outside the patient zone).

Consideration should be given to increased frequency of routine cleaning and disinfection of environmental surfaces and frequently touched surfaces in clinical areas.

- Clean using an S-shaped motion from clean to dirty (figure 13)
- Clean general surfaces and fittings straight away when visibly dirty and after spills
- Clean often touched surfaces with detergent solution or ARTG listed disinfectants in either a two-step process where a detergent is used, followed by a disinfectant or 2-in-1 cleaner/disinfectant, which has efficacy claims against the pathogen of interest.

Figure 13 The five principles of cleaning (Image from GAMA Healthcare)



Source: [GAMA Healthcare Clinell®](#)

Refer to Figure 14 Processes for routine cleaning of healthcare environments for more information.

Disinfection

Disinfection is a process that eliminates many or all pathogenic microorganisms, except bacterial spores, on inanimate objects. A disinfectant is a chemical agent that rapidly kills or inactivates most infectious agents. Disinfectants are not to be used as general cleaning agents, unless combined with a detergent as a joint cleaning agent (detergent and disinfectant). ARTG listed disinfectants

may be used in either a two-step process where a detergent is used, followed by a disinfectant or 2-in-1 cleaner/disinfectant, which has efficacy claims against the pathogen of interest.

2-step clean:

Physical cleaning with detergent followed by disinfection with a TGA listed hospital-grade disinfectant with activity against pathogen of concern (according to label/product information) or a chlorine-based product such as sodium hypochlorite.

2-in-1 clean:

A physical clean using a combined detergent and TGA listed hospital-grade disinfectant with activity against pathogen of concern (according to label/product information) or a chlorine-based product such as sodium hypochlorite, where indicated for use, such as a 2-in-1 cleaner/disinfectant wipe or solution.

Only hospital-grade disinfectants with specific claims listed on the ARTG should be used for equipment and hard surface cleaning in Health Organisations.

The use of disinfectants for routine cleaning is only recommended for:

- extreme risk areas*
- as part of management of an outbreak or cluster of infections
- terminal cleaning following an MRO/ infectious disease
- toilets.

*For more information refer to NSW Health [Cleaning of the Healthcare Environment](#) policy directive.

When selecting a disinfectant or 2-in-1 cleaner/disinfectant for a cleaning and disinfection task, the purchasing team/ committee is to ensure that:

- The product is listed on the ARTG
- The product is effective against the targeted organism(s) including microbiological activity and contact time to kill microorganisms
- The intended purpose of the product is as per the manufacturer's instructions
- The product is suitable for the surface or setting.

Questions to ask when selecting disinfectants for Health Organisations:

- Does it keep surfaces wet for enough contact time to kill pathogens? How long before the disinfectant evaporates? Is the product inactivated by organic material?
- Is it compatible with the surfaces within facility? Is it compatible with other products in use? Is it compatible with medical equipment?
- What is the toxicity rating? (consider exposure of staff, visitors, and patients) Is it approved by a relevant regulatory body? What personal protective equipment will be required?
- Does it need dilution or is it a ready-made solution?
- Is training required and who will provide this training?
- Is it the most cost-effective option? Is it sustainable?

For more information refer to the NSW Health [Cleaning of the Healthcare Environment](#) policy directive and [Australian Guidelines for the Prevention and Control of Infection in Healthcare](#).

NSW Health Organisations must have documented procedures for effective use, maintenance, and storage of cleaning equipment, such as, mops, cloths, and solutions.

Reusable cleaning equipment must be maintained, used, cleaned, laundered, and stored (in a clean space and off the floor) in accordance with their manufacturer's instructions and national and international standards.

After use, single-use cleaning equipment is to be disposed of in accordance with their manufacturer's instructions.

Enhanced cleaning

Enhanced cleaning refers to a targeted and intensified cleaning process aimed at reducing the risk of HAIs, particularly in high-risk areas or during outbreaks. It goes beyond routine cleaning by increasing the frequency, thoroughness, and scope of cleaning activities.

Enhanced cleaning consists of:

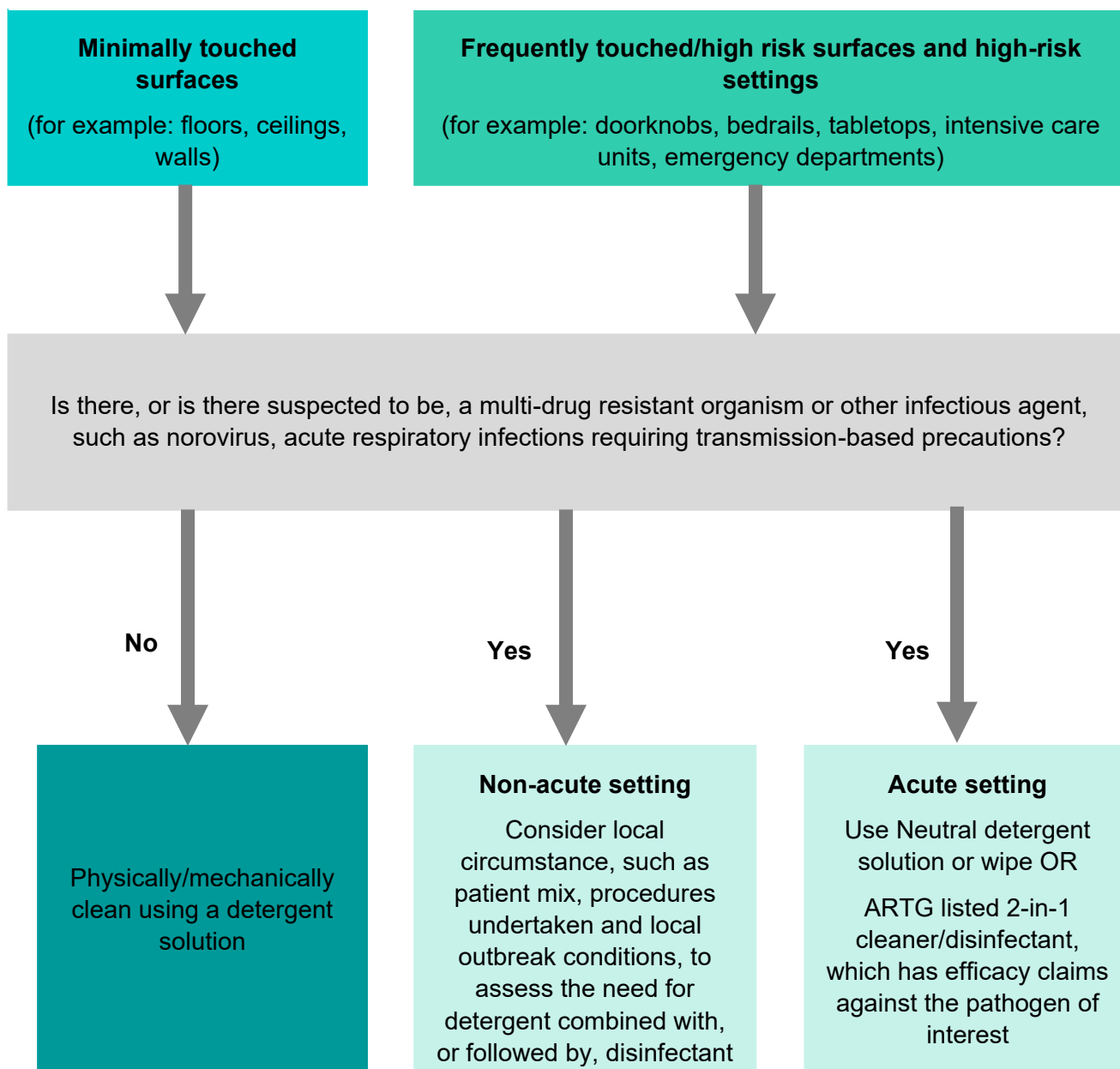
- Higher frequency of cleaning, especially for high-touch surfaces. For example, bed rails, doorknobs, light switches
- Use of ARTG listed disinfectants proven to be effective against pathogens of concern
- Documented cleaning protocols and audits to ensure compliance and effectiveness
- Trained staff following infection prevention and control procedures and PPE requirements.

Terminal cleaning

Terminal cleaning refers to cleaning and disinfection process required after patient(s) with transmission-based precautions has vacated the room, either through room transfer or discharge. This process also includes cleaning and disinfection of the patient zone, the wider patient care area and all shared patient care equipment to minimise the risk of microbial contamination from fomites. Methods can vary, but terminal cleaning often involves cleaning of all surfaces with a neutral detergent followed a TGA approved disinfectant or a dual-purpose product.

For more information refer to the CEC [Environmental cleaning Standard Operating Procedure \(SOP\)](#) and ACSQHC [Environmental cleaning and infection prevention and control resources](#).

Figure 14 Processes for routine cleaning of healthcare environments



Adapted from [ACSQHC Australian Guidelines for the Prevention and Control of Infection in Healthcare](#).

Preparation and use of cleaning products

The correct preparation and use of cleaning solutions is essential to the effectiveness of the product. Health workers undertaking environmental cleaning should:

- Mix and store cleaning products as per the manufacturer's instructions for use
- Ensure the correct contact time, such as the amount of time necessary for the disinfectant to be in contact with the surface to inactivate micro-organisms
- Allow surfaces to completely air-dry
- Ensure that hand hygiene, appropriate use of personal protective equipment (PPE) and correct waste disposal processes are used when handling a disinfectant to prevent contamination and promote environmental sustainability
- Replace solutions regularly when cleaning heavily contaminated areas; when solutions appear visibly dirty; and immediately after cleaning blood and body fluid spills.

High-level disinfectants or liquid chemical sterilant are not appropriate for general cleaning; such use is counter to manufacturers' instructions for these hazardous chemicals. Alcohol should not be used to disinfect large environmental surfaces, given the risk of additional hazards such as flammability.

Health organisations must consider the respiratory risks associated with spray disinfectants, including mucous membrane irritation and asthma in health workers. Evidence suggests that both spraying and general disinfection tasks may increase respiratory exposure to pathogens or chemicals, highlighting the need for safer alternatives, improved ventilation, appropriate PPE, and strict adherence to safety protocols (Casey et al., 2017, Clausen et al., 2020, Fontana et al., 2025).

Auditing of cleaning can be performed through a variety of different methods. For more information refer to the NSW Health [Cleaning of the Healthcare Environment](#) policy directive and the [Clinical Excellence Commission Environmental Cleaning](#).

5.21.2 Emerging disinfection technologies

As healthcare environments continue to evolve in response to emerging pathogens and increasing antimicrobial resistance, innovative disinfection technologies are gaining attention as potential adjuncts to traditional cleaning protocols. Among these, ultraviolet (UV) light disinfection has emerged as a promising option due to its ability to inactivate a broad spectrum of microorganisms. However, its effectiveness as a routine adjunct to terminal cleaning in Healthcare Organisations remains under investigation. While not yet established for routine use, UV light disinfection may be considered in high-risk settings or during outbreaks when conventional methods have been exhausted (Jain et al., 2025).

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

- If emerging disinfectants are used in healthcare facilities, this should always be used in addition to standard cleaning practices
- Cleaning robots or touchless technologies offer an alternative to overcome some challenges faced by traditional manual cleaning. However, the available evidence is modest and inconclusive, and the expectation of a dramatic clinical benefit is currently not supported by available data (Doll et al., 2018)
- 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 considered before local decision making.

There is also an emerging trend towards using steam and microfiber clothes for environmental cleaning as an alternative to other disinfection methods. The evidence on the use of steam and microfiber cloths on patient-centred outcomes including patient colonisation and healthcare associated infection were not supported by evidence therefore, Health Organisations are to consult the local infection prevention and control and infectious diseases specialists for advice.

Antimicrobial surfaces

Several disinfectant modalities have emerged or undergone further development for use in healthcare facilities. The effectiveness of surfaces, fittings or furnishing containing materials with antimicrobial properties in healthcare facilities is yet to be established. As per the [Australian](#)

[Guidelines for the Prevention and Control of Infection in Healthcare](#) currently, there is only minimal or insufficient evidence examining the effectiveness of copper-based surfaces compared to standard surfaces and hospital acquired infections. As a result, copper-coated surfaces are currently not recommended for use, nor are other antimicrobial surfaces or fittings (National Health and Medical Research Council, 2019a).

Electrolysed water

Electrolysed water (eW) is generated by electrolysis of dilute salt solutions, typically sodium chloride (NaCl), in an electrolytic chamber that contains positively, and negatively inert charged electrodes divided by a bipolar membrane. In this process, water molecules are electrolysed to form hydrogen ions (H⁺) and hydroxide (OH⁻), while salt (in the case of NaCl) dissolves into sodium ions (Na⁺) and chloride ions (Cl⁻) (Wang and Salvi, 2023).

Classification of Electrolysed Water

EW has three main physical properties—the available chlorine concentration (ACC), the pH value and the oxidation-reduction potential (ORP)—and the difference in these properties will categorise the effectiveness and efficacy of eW.

Acidic Electrolysed Water

The acidic eW has a pH of about 2.2 to 2.7, the ORP is greater than 1100 mV, and the ACC is 20–60 ppm, and the main component is hypochlorous acid.

Weak Acidic Electrolysed Water

Weak acidic eW is also known as slightly acidic hypochlorous acid water and slightly acidic oxidizing potential water. The pH value is 5.0–6.5, the ORP is about 850 mV, and the ACC is 10–30 ppm.

Basic Electrolysed Water

Basic electrolysed water is generated from the cathode. The alkaline solution has a pH of 10 to 13, an ORP of –800 to –900 mV, and an ACC is 80–100 ppm.

Neutral Electrolysed Water

Neutral eW is partially mixed hydroxide ions enter the cathode side, resulting in a near neutral pH of about 7.0–8.0, while the ORP is 700–900 mV and the ACC is 30–200 ppm (Chen and Wang, 2022).

Implications for practice

The evidence presented does not demonstrate that the product has a contribution to make to improvements in infection prevention and control interventions to reduce HAIs (Jain et al., 2025, Chen and Wang, 2022) and the evidence of the effects of these emerging disinfection methods on clinical outcomes remains sparse ([Australian Guidelines for the Prevention and Control of Infection in Healthcare](#)). For more information on emerging technologies refer to [ACSQHC Fact sheet - Environmental cleaning: emerging cleaning technologies](#).

5.22 Utility room

Workflows are to be separated in rooms where both clean and dirty functions occur (for example, dirty utility and clean-up rooms). Work should flow from clean to contaminated areas, with care taken to avoid contaminated equipment re-entering clean work areas.

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 with the lowest shelf at least 250 mm above the floor to avoid mechanical damage during cleaning and 440 mm from the ceiling
- Be adjacent to usage areas and easily available to health workers
- Be equipped with a work counter and dedicated hand washing basin if used for preparing patient care items.

Dirty utility room

The dirty utility room, provides a space for the decontamination and storage of bedpans, urinals, and bowls, testing and disposal of patient specimens, disposal of clinical and other waste, cleaning and holding of used equipment for collection, and holding of soiled linen for collection. Due to the availability of washers that do not require pre-handling of items, a spray hose and flushing rim sink are no longer included in the dirty utility room. For more information on the configuration refer to the [Australasian Health Facility Guidelines \(AusHFG\)](#).

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. Dirty utility rooms must be designed and maintained to support safe handling of soiled materials and equipment. The following requirements apply to ensure infection prevention and effective workflow:

- 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
- 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 health workers 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 to Table 28 Examples of items to be stored in designated areas)
- 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, bluey 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. Health workers should be made aware of the local routine cleaning program, including correct use of general cleaning products (for example, 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 to Table 28 Examples of items to be stored in designated areas).

5.23 Patient zone privacy curtains

A Health Organisation may use privacy curtains to separate individual patients, provide an easily identifiable perimeter and this plays an important role in defining the patient zone. Curtains should be installed to ensure that there is total coverage when the curtains are drawn closed (for example, no open gaps are present). Patient curtains should be disposable or able to be laundered, and easy to remove and to hang. When pulled/closed around the bed, ensure there is room for health workers to carry out procedures (Nelson et al., 2023). Privacy curtains are frequently contaminated with microorganisms and considered outside the patient zone. The following principles apply to their use and management to reduce the risk of cross-contamination:

- Touching the curtains after caring for a patient is equivalent to leaving the patient zone
- Hand hygiene must be performed between touching the curtains and touching the patient and vice versa
- Curtains are to be either made of a washable or disposable material. Curtains to be laundered should be changed and washed according to the CEC [Environmental Cleaning Standard Operating Procedure](#)
- The frequency of changing or washing is to be determined by applying the functional risk rating of the clinical area, as outlined in the NSW Health [Cleaning of the Healthcare Environment](#) policy directive. Refer to table 29 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 substances they should be replaced irrespective of the curtain expiry date
- In high-risk areas washable curtains should be changed upon discharge, increase frequency of cleaning or change during outbreak situations, when managing patients with new and emerging pathogen (for example, *Candida auris*)
- Non-disposable privacy curtains are to be changed as part of terminal cleaning.

Disposable 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.

Consider environmental sustainability when deciding on reusable versus disposable curtains such as life expectancy of reusable curtains, washing cost including energy, water, human resources, transportation charge. The relative efficiency of each curtain type depends largely on the functional area, infrastructure such as laundering, and storage facility and the ability of disposable curtains to be recycled.

The complex role of fabrics or textiles play in retention of pathogens, cross contamination and transmission of microorganisms is further complicated by limited evidence on the determination of optimal washing frequency. As the level of contamination increases over time, the washable curtains should be changed on a regular basis (for example, monthly to three monthly) depending on the risk of contamination, number of beds and patient risk factors (White et al., 2007, Ohl et al., 2012).

The frequency of curtain replacement will depend on “the risk of contamination” and it will vary depending on the type of patient care being provided. For example, curtains in operating rooms and emergency departments may require more frequent replacement than those in a general ward. In addition, Health Organisations should consider factors such as the prevalence of infections in the community and the specific needs of their patient population when determining their curtain replacement schedule.

Health workers are to:

- Monitor recorded dates on privacy curtains and ensure that curtains are changed in accordance with local procedure
- Should notify environmental cleaning staff if a curtain is visibly soiled and requires changing
- Environmental cleaning staff are responsible to undertake regular compliance audits as described in this procedure the CEC Environmental Cleaning Standard Operating Procedure
- Perform hand hygiene before hanging the curtain
- Record the date on the curtain on the label at the top of the curtain prior to hanging
- During the hang ensure the curtain does not touch the floor.

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

Table 29 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 <i>Clostridioides difficile</i> New and emerging pathogens (<i>Candidozyma auris</i>) High consequence infectious diseases (HCID)	Change when visibly soiled or torn Follow manufacturer's instructions for use (IFU) Change immediately on patient discharge Refer to local procedure	Depending on the risk of contamination, number of beds and patient risk factors Change when visibly soiled or torn Change upon patient discharge or terminal clean Refer to local procedure
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 Follow manufacturer's instructions for use (IFU)
Moderate risk General wards	Change when visibly soiled or torn Follow manufacturer's 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	Change when visibly soiled or torn Follow manufacturer's IFU	Change when visibly soiled or torn Change three monthly to bi-annually based on risk assessment
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5.23.1 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.

As per part [AusHFG Part-D Fixtures and Fittings](#) should be designed to allow easy cleaning and to discourage the accumulation of dust. Blinds contained in double glazing (preferred), 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 Health Organisation to consider the cleaning requirements for these furnishings in accordance with the NSW Health [Cleaning of Healthcare Environment](#) policy directive.

5.24 Waste disposal

Health Organisations generate a large amount of waste, about 85% is general, non-hazardous waste and 5% is considered hazardous material that may be infectious, toxic or radioactive (World Health Organization, 2024b). Healthcare waste may contain potentially harmful microorganisms that can infect patients, health workers and other health consumers. Waste generated in healthcare is landfilled or incinerated and can result in air pollutant emissions and water pollution due to landfill leaching, constantly raising concerns over environmental protection issues. The management of waste requires increased attention and diligence to avoid adverse health outcomes associated with poor practice and

Proper containment of waste can minimise the transmission of infection(National Health and Medical Research Council, 2019a). See NSW Health [Clinical and Related Waste Management for Health Services](#) policy directive. Health workers are to follow standard precautions at minimum when handling waste including:

- 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 health workers
- Anatomical waste must be refrigerated at or below 4°C of if stored for more than four days
- Biomedical waste storage areas are to be locked, except where authorized health workers 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
- Health Organisations are to 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.

To create a sustainable environment through the reduction in and management of healthcare generated waste, an appropriate organisational culture must be developed, encouraging the participation of all stakeholders who partake in waste generation, management and disposal (Lee and Lee, 2022).

5.24.1 Clinical waste disposal in the community

Clinical waste should be handled in a manner consistent with standard precautions. Health workers providing care in the community should consider the following:

- 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.

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 into a bin.

Where it is not feasible to discard closed systems into domestic waste and local processes require transport back to the centre/hospital for disposal, the item needs to be transported safely in a rigid secure container.

For more information refer to the NSW Health [Clinical and Related Waste Management for Health Services](#) policy directive.

5.25 Safe handling and transport of patient specimens

Health workers are to ensure that standard precautions are always applied when obtaining specimens. PPE must be selected based on symptoms, type of precautions patients is under and specimen type.

When transporting and handling pathology specimens, health workers are to 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.

Infectious substances or specimens means substances that are known to contain, or are reasonably expected to contain, pathogens. Infectious substances are divided into categories A, B and C/Exempt, and are governed by various UN 2814 and UN 2900 requirements. Pathology specimens and associated materials must be classified and packaged according to their level of risk, in line with the [Requirements for the packaging and transport of pathology specimens and associated materials \(Fifth Edition\)](#). The classifications include:

- Category A substance is an infectious substance in a form that, when exposure to it occurs, is capable of causing permanent disability, life threatening or fatal disease in otherwise healthy humans
- Category B substances an infectious substance which does not meet the criteria for inclusion in Category A. This includes Category B infectious substances transported for diagnostic purposes

- An exempt/category C substance is a patient specimen for which there is minimal likelihood that pathogens are present.

For more information refer to the NSW Health [Transport of Pathology Specimens to Laboratories](#) policy directive.

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, for example, 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
- do not use pneumatic tube specimen delivery systems when transporting highly pathogenic or novel infectious specimens.

In the event of a novel infectious disease, Health Organisations to refer to specific pathology specimen handling and transporting advice provided by NSW Health or other delegate agencies and [High consequence infectious diseases - Infection prevention and control Principles](#).

Also refer to:

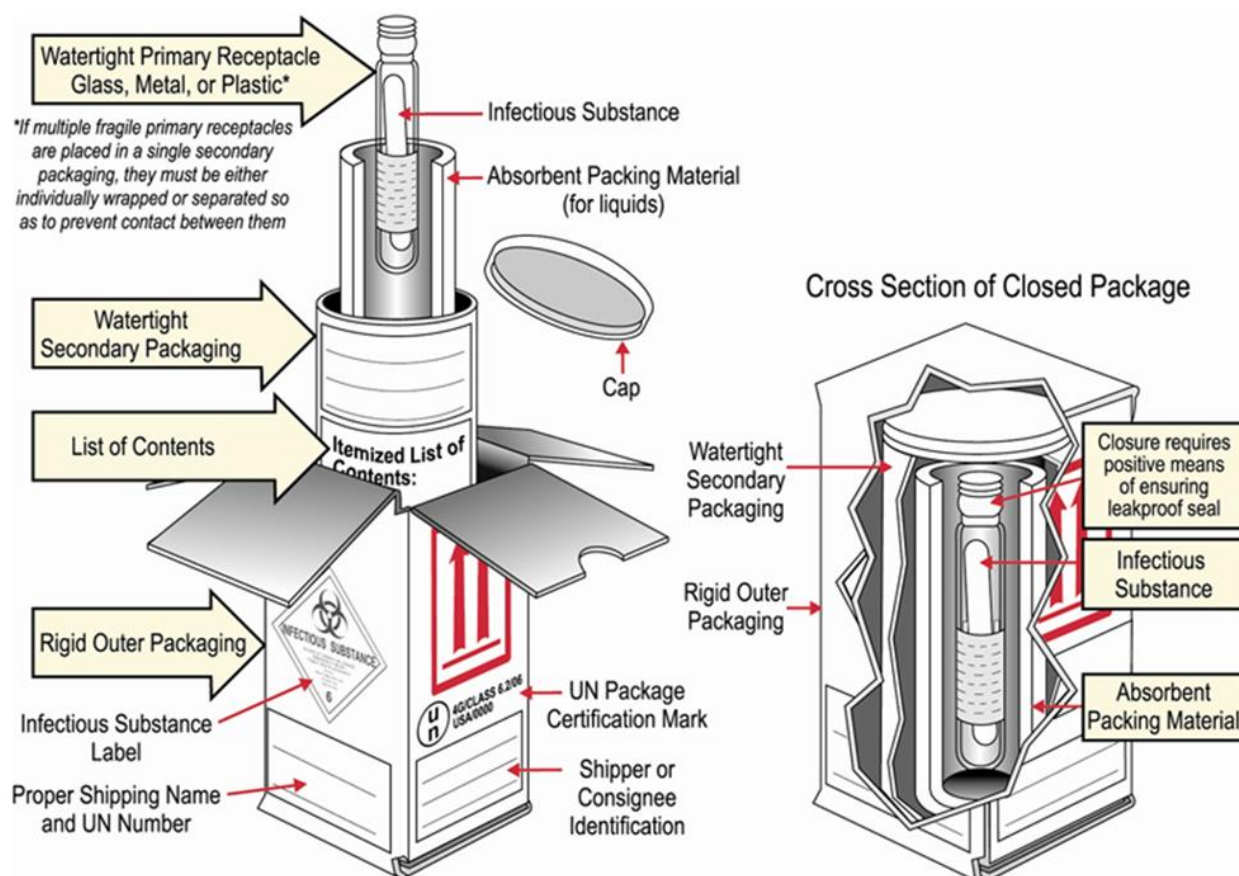
- NSW Health [Early Response to High Consequence Infectious Diseases](#) policy directive
- [The Australian Dangerous Goods Code Edition 7.9](#)
- [Requirements for the Packaging and Transport of Pathology Specimens and Associated Materials \(Fourth Edition 2013\)](#)
- [WHO Guidance on regulations for the transport of infectious substances 2021-2022](#)
- [CDC VHF Clinical Specimen Packaging and Shipping](#).

5.25.1 Specimen transport between locations

Where a Health Organisation is required to transport specimens to a pathology laboratory by road, rail or air transport, triple packaging is to be used. For example:

1. Leakproof primary receptacle (contains the sample, for example, screwcap tubes and needs to be sealable and leakproof)
2. Leakproof secondary receptacle (can be rigid or flexible and is capable of withstanding, without leakage, an internal pressure of 95 kPa). For liquid specimens, absorbent material must be in a quantity sufficient to absorb the contents of the primary receptacle
3. Rigid outer packaging (A rigid cardboard box or other designated transport container).

Figure 15 Packing and shipping category A specimen diagram



Source: [CDC VHF Clinical Specimen Packaging and Shipping](#)

Specimen packaging is to comply with the relevant standards and requirements for the mode of transport being used. For more information refer to the NSW Health [Transport of Pathology Specimens to Laboratories](#) policy directive, [AS 4834-2007 Packaging for surface transport of biological material that may cause disease in humans, animals and plants](#), and [Part 92 of CASR Consignment and carriage of dangerous goods by air](#).

5.26 Advice for Visitors

Health Organisations should adopt a risk-based approach when promoting visitation to acute care settings. Visitation processes may need to be adjusted in response to current risks, including seasonal outbreaks or emerging infectious diseases.

To safeguard patients, staff, and other visitors, the following minimum infection prevention and control measures are to be observed by all visitors:

Symptom Screening

Visitors must not enter the facility if they are experiencing symptoms of acute respiratory infection, such as cough, sore throat, fever, runny nose, diarrhoea, vomiting

Visitors should only return once symptoms have fully resolved.

Hand Hygiene

Visitors are required to sanitise hands thoroughly upon entry and exit.

Hand hygiene must also be performed before and after contact with any surfaces or individuals.

Alcohol-based hand rubs are to be used and are available at facility entrances and patient rooms.

Personal Protective Equipment (PPE)

Visitors must comply with facility-specific PPE requirements.

PPE use may vary depending on the clinical area, patient condition, or current infection risks.

Masks may be required in high-risk zones or during respiratory illness outbreaks.

Compliance with Local Protocols

Infection prevention and control requirements may differ between facilities and clinical contexts.

Visitors must always follow all posted guidelines and staff instructions.