Pacific Community
Communauté du Pacifique

Standards for Perioperative Nursing in Pacific Island Countries and Territories

Clinical Standards
First Edition

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Foreword

Emergency and essential surgical care is an integral component of universal health coverage (UHC). To achieve UHC, the Pacific Community (SPC) has adopted Sustainable Development Goal 3 (SDG3), which aims to support Pacific people reach their potential and live long and healthy lives by 2030, a vision shared by the Pacific Islands Forum leaders under the Framework for Pacific Regionalism.

Furthermore, the development of the Pacific perioperative practice standards was aligned to the World Health Organization (WHO) 'Safe surgery saves lives' initiative and accomplished in partnership with Pacific ministries of health and interested stakeholders.

A collaborative approach was taken in the development of the Pacific perioperative standards with ministries of health, operating room nurses, Royal Australasian College of Surgeons (RACS), Australian College of Perioperative Nurses (ACORN) and the Clinical Services Programme at SPC, taking the lead role in coordinating the development of the practice standards.

Sydney-based ACORN Fellows Menna Davies and Sally Sutherland-Fraser were engaged as consultants to work with the Pacific operating room nurses through a combination of in-country workshops and virtual meetings to develop the Pacific perioperative practice bundles (PPPB).

The development and implementation were done in three stages:
1. Pacific perioperative practice bundle 1 – Infection prevention, completed in December 2015.
2. Pacific perioperative practice bundle 2 – Patient safety, completed in December 2019.
3. Pacific perioperative practice bundle 3 – Environmental safety, in December 2020.

The development of the Pacific perioperative standards is an excellent example of Pacific regionalism, as nurses worked together to address the inconsistencies of practice in operating theatres across the region, and pooled expertise from across 14 Pacific Island countries and territories (PICTs) to review and adapt the ACORN standards to Pacific contexts. Packaging the standards into "bundles" for development and implementation was an innovative and cost-effective approach to addressing a common issue in the region, and to influence practice change intended to provide quality and safe surgical care for our Pacific people.

SPC, as the lead agency in coordinating the development and implementation of the Pacific perioperative practice standards, had the privilege of working with dedicated and experienced operating room nurses from the PICTs, fellows of ACORN and with the RACS, which also provided funding support. We acknowledge and are grateful for your contributions.

We are indebted to Davies and Sutherland-Fraser who have gone beyond their terms of engagement to develop close friendships; they have also mentored many of our Pacific nurses.

Lastly, we would like to acknowledge the Pacific Islands Operating Room Nurses Association (PIORNA) members who have become 'gatekeepers' of the Pacific perioperative practice bundles.

To all the Pacific operating theatre nurses, this is your standards manual. It is a living document that will need revision at some stage. Keep the perioperative flame burning.

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Public Health Division, Pacific Community (SPC)
Programme Coordinator – Clinical Services Programme (2017–March 2021)
October 2021

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Acknowledgements

The *Standards for perioperative nursing in Pacific Islands countries and territories* were initially developed and titled the Pacific perioperative practice bundle (PPPB) during three separate consultative processes in 2015, 2019 and 2020.

Nurse consultants Menna Davies and Sally Sutherland-Fraser, based in Sydney, Australia, collaborated with perioperative nurses from Pacific Island countries (PICs) to develop these standards.

Pacific ministries of health, through the chief nursing and midwifery officers, identified perioperative nurse leaders as members of the expert panel and provided their full support for the in-country discussions and implementation of the standards.

The Pacific standards were based on the International Federation of Perioperative Nurses (IFPN) guidelines and the Australian College of Operating Room Nurses (ACORN) standards (ACORN became the Australian College of Perioperative Nurses in 2016 but retained the acronym). Both organisations provided their support towards this work.

The development of the standards was funded through Australian Government programmes that included Strengthening Specialised Clinical Services in the Pacific (SSCSiP) in 2015, the Pacific Community and the Royal Australasian College of Surgeons (RACS) in 2018 and 2020. Funding facilitated each round of consultation through a combination of in-country workshops and virtual meetings. This ensured many nurses and stakeholders could participate in the consultation process.

Pacific perioperative nurses and stakeholders are acknowledged for their contribution to the development of each chapter of this first edition of the Pacific perioperative standards manual. Their involvement has been invaluable and has greatly contributed to the quality of the standards.

Chapter 1: Infection prevention (2015)
The practices outlined in the infection prevention standards were developed with reference to the IFPN guidelines and the 13th edition of the *ACORN Standards for Perioperative Nursing in Australia* (2014–2015).

The six standards were the products of two rounds of consultations with the following panel of experts representing contemporary perioperative practice in PICs:

Densy Saohu	Senior Charge Nurse Operating Theatre (OT), National Referral Hospital (NRH), Solomon Islands
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Chapter 2: Patient safety (2018)
The practices outlined in the patient safety standards were developed with reference to the IFPN guidelines and the 15th edition of the *ACORN Standards for Perioperative Nursing in Australia* (2018).

The seven standards were the products of two rounds of consultations with the following panel of experts representing contemporary perioperative practice in PICs:

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Chapter 3: Environmental safety (2020)

The practices outlined in the environmental safety standards were developed with reference to the World Health Organization (WHO) guidelines; IFPN guidelines and the 16th edition of the *ACORN Standards for Perioperative Nursing in Australia* (2020).

The three standards were the products of two rounds of consultations with the following panel of experts representing contemporary perioperative practice in PICs:

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Consultation team

Menna Davies and Sally Sutherland-Fraser (pictured below) were external consultants to this project while co-directors of Health Education and Learning Partnerships (2015–2019) and subsequently as individual education consultants (2020–present).

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The following perioperative professional associations supported the project through the initial stages and the contribution of these individuals is acknowledged with thanks:

International Federation of Perioperative Nurses (IFPN) | www.ifpn.org.uk

Ruth Melville	IFPN Ambassador Pacific Islands, PNG and Asia (2018–present) IFPN Past President (2015–2018)

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Sarah Bird	President (2016–2018)
Dr Jed Duff	President (2014–2016)
Ruth Melville	President (2012–2014)
Carollyn Williams	Fellow

Throughout each stage of the project additional perioperative nurses contributed to the in-country reviews of draft standards. Their contribution to this body of work and perioperative practice in Pacific Island countries and territories is also acknowledged with thanks.

Further details regarding this project can be found in the following publications:

- Davies M, Sutherland-Fraser S, Taoi MH, Williams C. Developing standards in Pacific Island countries: The Pacific perioperative practice bundle (Part 1). Journal of Perioperative Nursing in Australia. 2016;29(2):42–7.
- Davies M, Sutherland-Fraser S, Mamea N, Raddie N, Taoi MH. Implementing standards in Pacific Island countries: The Pacific perioperative practice bundle (Part 2). Journal of Perioperative Nursing in Australia. 2017;30(1):41–8.

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Chapter 1: Infection prevention

Introduction

The patient's surgical outcome can be adversely affected by the development of surgical site infection (SSI) leading to increased mortality and morbidity, increased length of stay and financial implications.[1] Effective infection prevention and control practices in the perioperative environment require a range of strategies that are based on current available evidence. These strategies are central to reducing SSI and in providing high quality healthcare for patients and a safe working environment for staff.[2,3-6]

Understanding rationales for practice as well as how and when to apply the basic principles of infection prevention and control are critical to the success of an infection prevention programme and can directly influence outcomes for perioperative patients undergoing procedures.[7]

The 'bundle' approach to infection prevention was first described in 2005 and is defined as "a structured way of improving the processes of care and patient outcomes: a small, straightforward set of evidence-based practices — generally three to five — that, when performed collectively and reliably, have been proven to improve patient outcomes".[8] The bundle approach has been widely adopted and shown to be an effective way of reducing healthcare-acquired infections (HAI).[2]

Healthcare workers are a major source of bacteria in the perioperative environment and each person must take effective measures to minimise risks of transferring microorganisms to patients and other staff. Skin and hair shed from the body and from the wearing of outdoor clothing, contain bacteria that can be potential causes of contamination. To reduce the risk of contamination, all healthcare workers entering the semi-restricted and restricted areas of the perioperative environment should change into clean, facility-laundered, surgical attire made of non-woven material.[7]

The skin of the surgical team is a potential source of microbial contamination. Effective hand hygiene practices, incorporating the World Health Organization's '5 Moments of hand hygiene' is an essential strategy in the prevention and control of healthcare-associated infections.[2,3,9–12] Although scrubbed members of the surgical team wear sterile gloves, the skin of their hands and forearms should be cleaned preoperatively to significantly reduce the number of resident and transient microorganisms and leave an antimicrobial residue which will inhabit microbial growth for several hours.

The skin, mucous membranes and hollow viscera of the patient are also major sources of endogenous flora which may contribute to SSI. Pre-operative skin preparation aims to remove soil and transient microorganisms from the skin, thus reducing the resident microbial count to sub-pathogenic levels with the least amount of tissue irritation and inhibiting the rebound growth of microorganisms. Risks are minimised by the wearing of protective apparel and the implementation of standard precautions for all patients receiving care in the healthcare facility (HCF) regardless of their diagnosis or presumed infection status, including blood (and dried blood), all body substances, secretion and excretions, non-intact skin, mucous membranes and eyes.

This perioperative practice chapter on infection prevention comprises:
Standard 1.1 – Hand hygiene
Standard 1.2 – Perioperative attire
Standard 1.3 – Aseptic technique
Standard 1.4 – Protective apparel
Standard 1.5 – Scrubbing, gowning and gloving
Standard 1.6 – Skin preparation of the surgical patient

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Standard 1.1 – Hand hygiene

Hand-to-skin contact is a common source of transmission for microorganisms. Effective hand hygiene is the single most important strategy in preventing healthcare-associated infections.[10] It is part of standard precautions and applies to all patients receiving care in healthcare facilities regardless of their diagnosis and infectious status.[7] Healthcare workers' hands can become contaminated by personal contamination and by contact with the environment and equipment, the patient, the patient's surroundings and belongings or other healthcare workers.[3,9,10,14–15]

Standard 1.2 – Perioperative attire

A clean perioperative environment is beneficial for both patients and perioperative team members.[15] The wearing of perioperative attire assists in reducing contamination within the perioperative environment. This assists in providing safe patient care by reducing the risk of HAI.

Standard 1.3 – Aseptic technique

Aseptic technique, as practised by perioperative nurses, can reduce the risk to the patient of exposure to microorganisms that may lead to the SSI. The application of the principles of aseptic technique depends primarily on the nurse's understanding and surgical conscience. All members of the surgical team must share the responsibility for monitoring aseptic practice and initiating corrective action when a sterile field is compromised.[16]

Standard 1.4 – Protective apparel

The use of protective apparel, including personal protective equipment (PPE), has proven effective against transmission of pathogens in the operating room (OR). The implementation of standard precautions, including the use of protective apparel, will protect the caregiver and the patient against transmission of microorganisms and reduce the specific risk of contamination by blood-borne pathogens.[15]

Standard 1.5 – Scrubbing, gowning and gloving

The surgical scrub, when properly performed, has been shown to remove transient flora from the fingernails, hands and forearms, reduce the resident microbial population and slow the growth of bacteria in order to reduce the risk of an SSI.[7] A standardised surgical scrub procedure ensures the surgical team consistently follow a surgical scrub procedure designed to achieve effective reduction of resident and transient microorganisms on the hands and arms.[16.]

Standard 1.6 – Skin preparation of the surgical patient

Pre-operative washing removes gross contaminants and oils that may block penetration of the antiseptic agent used during skin preparation and reduce the presence of pathogens on the skin. Performing pre-operative skin preparation immediately prior to surgery using an antimicrobial agent reduces the risk of post-operative SSI by removing soil, resident and transient microorganisms from the skin.[7]

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Further reading and resources for Chapter 1

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Standard 1.1 – Hand hygiene

Scope of standard
All areas of the healthcare facility.

Scope of responsibility
All perioperative nurses.
This standard may also apply to other perioperative personnel (i.e., surgical ward interns, nurses, orderlies, ward assistants, doctors [anaesthetists and surgeons], anaesthetic technicians, etc.).

Principles
1. The nurse's hands are inspected for any damage to skin integrity.
2. The nurse observes hand hygiene in all areas of the healthcare facility.
3. The nurse observes the '5 Moments of hand hygiene' consistently in clinical situations.
4. Hand hygiene is supported using gloves when direct contact is required.
5. The standard is reviewed every three years and when new evidence is available.

Principle 1: The nurse's hands are inspected for any damage to skin integrity

Rationale
Intact skin is the first line of defence against infection. Damaged skin can not only lead to infection in the host but can also harbour higher numbers of microorganisms than intact skin and hence increase the risk of transmission to others.[1]

Criteria
1.1 Correct hand hygiene practices include:
- maintenance of healthy nails and skin
- taking timely action in the event of skin irritation/allergies
- using hand lotion/moisturiser that is compatible with hand hygiene products
- keeping fingernails short and clean
- not wearing nail polish, artificial or acrylic nails, devices, or other adornments
- not wearing jewellery on the hands or wrist.[2,3,4,5]

NOTE: Care should be taken by personnel experiencing skin irritation or allergies.

Principle 2: The nurse observes hand hygiene in all areas of the healthcare facility

Rationale
Hands can become contaminated with infectious agents through contact with the environment, equipment and by personal contamination. Healthcare facilities must ensure that hand hygiene products, equipment and facilities are available for healthcare workers and positioned close to the point of patient care.[3]

Criteria
2.1 The nurse should perform hand hygiene consistently while at work, including:
- on arrival at the healthcare facility
- prior to leaving the healthcare facility[2,3,4,5]

2.2 The nurse should perform hand hygiene consistently when attending to personal hygiene, including:
- before and after using the restroom
- after touching or blowing one's nose
- before and after eating.[2,3,4,5]

Principle 3: The nurse observes the '5 Moments of hand hygiene' consistently in clinical situations

Rationale

Hands can become contaminated with infectious agents through contact with the patient's blood (including dried blood), all body substances, secretions and excretions, non-intact skin, and mucous membranes (including eyes). Hand hygiene procedures apply to all surfaces of the hands, including the wrists.

Criteria

3.1 The *5 Moments of hand hygiene* should be performed in clinical situations, including:
- **Moment 1: Before touching the patient** – e.g., transferring patient to the operating table, applying BP cuff
- **Moment 2: Before a procedure** – e.g., inserting a urinary catheter or applying a dressing
- **Moment 3: After a procedure or exposure to body fluids** – e.g., removing a dressing, preparing to collect a specimen
- **Moment 4: After touching a patient** – e.g., feeling for the patient's pulse
- **Moment 5: After touching a patient's surroundings** – e.g., cleaning the operating table, handling the patient's linen.[6]

NOTE: When gloves are donned to undertake the above actions, hand hygiene should be performed before donning gloves, and also after removing gloves and PPE.

Principle 4: Hand hygiene is supported using gloves when direct contact is required

Rationale

Wearing gloves provides a level of protection from direct contact with blood, body fluids and other workplace contaminants. (*See also* ***Standard 1.4 – Protective Apparel***.)

Criteria

4.1 Gloves should be single-use.

4.2 Gloves should be worn whenever there is direct contact with blood, body fluids, non-intact skin, mucous membranes, and environmental surfaces.[7]

4.3 Gloves should be discarded *immediately* after use.

4.4 Gloves do not replace the need for hand hygiene. Prolonged or inappropriate use of gloves undermines efforts to sustain correct hand hygiene.[1]

4.5 Hand hygiene should be performed before donning and after removal of the gloves.

NOTE: Gloves do not provide complete protection against hand contamination. Pathogens may contaminate the hands through glove defects or by contamination of the hands during removal.

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Principle 5: The standard is reviewed every three years and when new evidence is available

Rationale

Documentation of procedural steps is a foundation for best practice, ensures consistency of practice and provides a tool for care planning.[8]

Criteria

5.1 The standard should be stored in the unit practice manual and easily accessible for staff reference.

5.2 A sign-off sheet should be provided in the unit practice manual for staff to indicate when they have read the standard and any related local policies.

*See **Appendix 1: Recommended procedure for hand hygiene – hand-washing washing** and **Appendix 2: Recommended procedure for hand hygiene – alcohol-based handrub**.*

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Appendix 1: Recommended procedure for hand hygiene – hand-washing

Wash hands to the wrists with soap and clean water or hand wash when visibly soiled.[9]

The duration of the procedure should be 40–60 seconds.

1. Wet hands to the wrists with water.
2. Apply enough soap to cover all hand surfaces to the wrists. If using an antimicrobial hand washing agent, the manufacturer's recommendations must be followed.
3. Rub hands palm to palm.
4. Rub right palm over left dorsum with interlaced fingers and vice versa.
5. Rub palm to palm with fingers interlaced.
6. Rub backs of fingers to opposing palms with fingers interlocked.
7. Perform rotational rubbing of left thumb clasped in right palm and vice versa.
8. Perform rotational rubbing backwards and forwards with clasped fingers of right hand in left palm and vice versa.
9. Rinse thoroughly with water as this reduces the number of microorganisms and prevents skin irritation.
10. Dry hands thoroughly with single-use towel to prevent skin irritation.
11. Use elbows, sensor, or knees to turn off the tap to prevent contamination of the hands from the tap.

In addition:

12. Antimicrobial agents kill or inhibit microorganisms and are more effective against microorganisms than plain soap.[3]
13. Antimicrobial agents further reduce microbial levels by their residual effect but are quickly inactivated by organic material.
14. If cakes of soap are used, they should be small and changed daily. Soap racks that allow for drainage of water should also be used. These practices minimise the risk of contamination and minimise the risk of transferring microorganisms between users.
15. If liquid soap is used, the dispenser should be replaced or cleaned and filled with a fresh handwashing agent when empty. Liquid soap should not be added to a partially full dispenser as this will increase the microorganism count.

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Appendix 2: Recommended procedure for hand hygiene – alcohol-based handrub (ABHR)

The following is a recommended procedure for hand hygiene using alcohol-based handrub[10]

The duration of the alcohol-based handrub procedure should be 20–30 seconds.

1. Apply palmful of alcohol-based handrub into a cupped hand.
2. Rub hands palm to palm – mechanical friction is an important component of handwashing.
3. Rub right palm over left dorsum with interlaced fingers and vice versa.
4. Rub palm to palm with fingers interlaced.
5. Rub backs of fingers to opposing palms with fingers interlocked.
6. Perform rotational rubbing of left thumb clasped in right palm and vice versa.
7. Perform rotational rubbing backwards and forwards with clasped fingers of right hand in left palm and vice versa.
8. Allow alcohol-based handrub to dry prior to using hands.

In addition:

9. Alcohol kills bacteria more effectively than most other handwashing agents and if available alcohol-based handrubs should be used when the hands are not visibly soiled.
10. Hand lotions should be available to prevent skin dryness. Bacterial counts increase when the skin is damaged. Preventing skin dryness on healthcare workers hands will increase handwashing compliance. Care must be taken to prevent cross contamination from multiple-use bottles.

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Standard 1.2 – Perioperative attire

Scope of standard
All perioperative environments where the surgical patient is treated.

Scope of responsibility
All perioperative nurses.
This standard may also apply to other perioperative personnel (i.e., surgical ward interns, nurses, anaesthetic technicians, orderlies, ward assistants, doctors, including anaesthetists and surgeons, etc).

Principles
1. Nurses should change into perioperative attire when entering the perioperative environment.
2. Perioperative attire should be provided and laundered by the healthcare facility.
3. The head and all facial hair should be completely covered.
4. Designated protective footwear should be worn.
5. Nail polish and artificial nails should not be worn.
6. The wearing of jewellery should be kept to a minimum.
7. The standard is reviewed every three years and when new evidence is available.

Principle 1: Nurses should change into perioperative attire prior to entering the perioperative environment

Rationale
Outdoor/street clothes harbour potential harmful bacteria that may cause contamination if transmitted to the patient and the perioperative environment.

Criteria
Perioperative attire should:
1.1 consist of either a two-piece scrub suit, one-piece overalls, or a dress (pantyhose optional depending on climate)

> **NOTE:** While it is preferable for pantyhose to be worn with a dress to reduce the dispersal of skin squames, this may be decided by individual facilities based on climatic conditions. Similarly, the use of long-sleeved warm-up jackets to reduce the dispersal of skin squames from the arms may be decided by individual facilities based on climatic conditions.

Nurses should:
1.2 replace all outer clothing with designated perioperative attire prior to entering the perioperative environment
1.3 ensure that all undergarments are covered by perioperative attire
1.4 not wear perioperative attire outside the healthcare facility (HCF)[1,2]
1.5 change perioperative attire daily or when wet or soiled
1.6 be mindful that perioperative attire may be contaminated during the provision of clinical care or in non-clinical areas such as change rooms, bathrooms, and kitchens during meal breaks. Perioperative attire that has been in contact with soiled surfaces, such as wet sinks or the floor should not be worn.

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Principle 2: Perioperative attire should be provided and laundered by the healthcare facility

Rationale

Laundering of perioperative attire by the HCF ensures that the attire meets a consistent standard of cleanliness. Evidence suggests that home washing machines do not meet required standards in relation to attaining water temperature that is high enough to kill bacteria. There is also evidence that bacteria on perioperative attire can be transmitted to the home environment placing family members at risk.[1,2]

Criteria

2.1 Perioperative attire is supplied to healthcare workers and is made from a non-woven material.

2.2 Receptacles such as linen bags are supplied to collect used perioperative attire.

2.3 Perioperative attire is laundered within the HCF.

2.4 When the HCF linen supplies are inadequate, home laundering of used perioperative attire may be performed. The potential risks are minimised by strict adherence to all of the following practices:

- separate all used perioperative attire from other personal belongings and place into a bag to minimise the transmission of bacteria to the home environment
- seal the bag for transport home
- promptly launder preferably at high temperature all used perioperative attire (and the transporting bag) separately from all other laundry
- dry the perioperative attire (and the transporting bag) and re-pack for next day of work.

NOTE: Laundry that is dried outside should be protected by distance or by screening from contamination by dirt and dust from heavy traffic areas.

Principle 3: The head and all facial hair should be completely covered

Rationale

Hair attracts, harbours, and sheds bacteria, acting as a filter when left uncovered allowing bacteria to be released onto perioperative attire and into the air within the perioperative environment. Confining the hair with appropriate headwear eliminates the possibility of bacteria being shed and reduces the risk to patient safety by contamination of the aseptic fields.[1,4]

Criteria

Nurses should:

3.1 ensure that all hair, including facial hair is completely covered[1]

3.2 change headwear daily or when soiled

3.3 preferably wear disposable headwear

- if wearing reusable headwear such as cloth scarves, these should be worn over disposable headwear
- reusable headwear should be laundered by the HCF between use.

*See also **criteria 2.4** above.*

NOTE: The open weave of material from which reusable headwear is generally made allows for shedding of bacteria. Covering the head with disposable headwear first reduces this risk.[5]

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Principle 4: Designated protective footwear should be worn

Rationale
Footwear that complies with local work health and safety will provide protection of the nurse against sharps injury and from contamination by blood and body fluids.

Criteria
Nurses should:
4.1 wear footwear with a strong sole in the perioperative environment
4.2 wear footwear that is made of a material that is easily cleaned on a regular basis and when soiled

> **NOTE:** Wearing fully enclosed shoes/clogs is best practice, however, this may be impractical due to local climatic or environmental conditions.

4.3 perform hand hygiene when footwear is donned or removed[6]
4.4 not wear reusable shoe covers unless as part of protective apparel. *(See also **Standard 1.4 – Protective apparel**.)*

> **NOTE:** Shoe covers have been shown to increase floor bacterial counts and contamination on the wearers' hands when footwear is donned or removed.[6]

Principle 5: Nail polish and artificial nails should not be worn

Rationale
Research evidence suggests that artificial nails can harbour bacteria and fungi that may cause a HAI. Higher levels of gram-negative microorganisms have been cultivated under artificial nails and on nail polish, before and after hand hygiene.[2,7–9]

Criteria
Nurses should:
5.1 keep fingernails short, clean, and free from nail polish and/or artificial nails, devices or other adornments
5.2 check the health of nails on a regular basis and particularly prior to performing a surgical scrub.

Principle 6: The wearing of jewellery should be kept to a minimum

Rationale
Jewellery, including rings, bracelets, wrist watches, and necklaces (including those made from metal, shells or beads) can harbour microorganisms that may contaminate a surgical wound leading to HAI. Body piercings e.g., nose studs have the potential to cause friction against surgical face masks, increasing the risk of bacterial shedding. In addition, there is a risk that items such as nose studs and necklaces could fall into the open surgical wound or onto aseptic fields.[1–3]

Criteria
Nurses should:
6.1 remove wrist watches, bracelets and rings (wedding bands may remain unless performing the surgical scrub)
6.2 only wear metal necklaces if they are single strand and can be confined within the perioperative attire

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NOTE: Necklaces that are multi-strand or made from beads, shells, wood, or leather thongs should not be worn in perioperative settings.

6.3 only wear earrings that are stud or sleeper design and confined within headwear
6.4 remove all facial body piercing e.g., nose studs, etc.
6.5 remove wedding band, if present, prior to performing a surgical scrub.[3,9,10]

Principle 7: The standard is reviewed every three years and when new evidence is available

Rationale

Documentation of procedural steps is a foundation for best practice, ensures consistency of practice and provides a tool for care planning.[11]

Criteria

7.1 The standard should be stored in the unit practice manual and easily accessible for staff reference.
7.2 A sign-off sheet should be provided in the unit practice manual for staff to indicate when they have read the standard and any related local policies.

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Standard 1.3 – Aseptic technique

Scope of standard
Clinical environments where surgical procedures are undertaken.

Scope of responsibility
All perioperative nurses.

Principles
1. Items used within the aseptic field have been sterilised.
2. Sterility of items is maintained during opening and dispensing onto aseptic fields.
3. Personnel within the aseptic field must wear sterile gown and gloves.
4. Aseptic fields are created and maintained using drapes.
5. Aseptic fields are constantly monitored.
6. Movement of personnel and equipment in and around the aseptic field is kept to a minimum.
7. Sterile supplies are kept separate from contaminated items and waste.
8. The standard is reviewed every three years and when new evidence is available.

Principle 1: Items used within the aseptic field have been sterilised

Rationale
The use of items which have been sterilised will minimise the risk to the patient of exposure to microorganisms that may cause SSI.

Criteria
When managing sterile items:
1.1 apply the principles of event-related sterility to sterile items within the operating room and during transport to and from the operating room and between facilities, supply, handling and opening[1,2]
1.2 check the integrity of the packaging prior to opening e.g., for holes, signs of moisture
1.3 check the chemical indicators for evidence that a sterilising process has been undertaken
1.4 consider an item unsterile if it drops below the horizontal surface of the aseptic field[2]
1.5 discard any sterile packages that have been dropped on the floor.

NOTE: Where expiry dates are provided by the manufacturer, care must be taken to check the expiry date to ensure expired items are not introduced onto the aseptic field.[3]

Principle 2: Sterility of items is maintained during opening and dispensing onto aseptic fields

Rationale
Maintaining aseptic principles and practices during opening and dispensing sterile items will minimise contamination risk to patient and potential development of SSI.

Criteria
The circulating nurse, when opening sterile items, should:
2.1 check integrity of the sterile item
2.2 verify that the item has been through the appropriate sterilisation process
2.3 present the sterile item in a manner in which the instrument nurse can take the item without contamination

2.4 not lean over the aseptic field when dispensing the sterile item or pouring fluids onto the aseptic field
2.5 when opening a wrapped item, open the fold furthest away first, then side folds and the nearest fold last. If the item is handheld for opening, ensure that all wrapper folds are secured to avoid contamination when presenting the item to the instrument nurse
2.6 place large items, for example instrument trays or rigid containers, onto an appropriate surface while opening
2.7 consider the edges of sterile packaging as non-sterile once the package is opened
2.8 pull open and not tear peel back packages
2.9 not 'flip' items onto aseptic fields, unless in an emergency, as contamination can occur during the transfer of the sterile item.

The instrument nurse should:
2.10 lift sterile items out from packaging presented by the circulating nurse using, for example, a sponge holding forceps to avoid contamination of the gloved hand.

Principle 3: Personnel within the aseptic field must wear sterile gown and gloves

Rationale
The wearing of sterile gown and gloves by the surgical team minimises the risk of SSI for the patient and protects the team from contamination by blood and body fluids. (*See also **Standard 1.4 – Protective apparel**.*)

Criteria
The surgical team should:
3.1 complete the scrubbing, gowning and gloving procedure according to standards.
*(See also **Standard 1.5 – Scrubbing, gowning and gloving**.)*
3.2 immediately change gown and/or gloves if contamination has occurred.

Principle 4: Aseptic fields are created and maintained using drapes

Rationale
Sterilised drapes are used to create an aseptic field by forming a barrier that minimises microbial contamination of the surgical site.[4,5]

Criteria
The instrument nurse should ensure that:
4.1 there is minimal handling of drapes during the draping procedure
4.2 drapes are held above waist level when being carried to the operative site to avoid contamination
4.3 drapes are unfolded from the operative site to the periphery
4.4 a cuff is formed with the sterile drape over gloved hands when positioning the drape to prevent contamination
4.5 drapes are correctly positioned on instrument trolleys, furniture, and the patient to form an aseptic field
4.6 drapes are not repositioned once placed and are secured to prevent movement
4.7 contamination of drapes by fluids or strikethrough is prevented by the use of impervious drapes
4.8 drapes are secured using non-perforating devices, when available
4.8.1 when perforating devices are used (such as sharp towel clips) to secure drapes, once positioned, they should not be moved because the tips will be contaminated once they perforate the drapes
4.9 drapes are discarded using standard precautions, into a suitable receptacle (i.e., linen bag) positioned close to the aseptic field.

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Principle 5: Aseptic fields are constantly monitored

Rationale

Monitoring of the aseptic field for possible contamination will alert the surgical team to take corrective actions to minimise the risk of contamination of the patient.

Criteria

The nurse should:

5.1 ensure that aseptic sites are prepared as close to the time of use.[6]

5.2 maintain constant observation of the aseptic site for possible contamination and never leave it unattended[4]

5.2.1 bear in mind that covering aseptic trolleys is not considered best practice. It may be acceptable, however, to cover aseptic trolleys in the event of unanticipated delays, or due to environmental conditions that may compromise the aseptic field, such as flying insects or excessive dust in the operating room.

*See **Appendix 3: Procedures for covering and uncovering an aseptic trolley**.*

Principle 6: Movement of personnel and equipment in and around the aseptic field is kept to a minimum

Rationale

Excessive movement, including opening and closing of doors, can cause increased air turbulence and microbial shedding which can be a potential source of contamination of the aseptic field. Similarly, scrubbed and unscrubbed members of the surgical team should adhere to correct traffic patterns while moving around the aseptic fields to avoid contamination. Limiting the number of personnel within the operating room minimises the amount of air turbulence and shedding.

Criteria

The circulating nurse should:

6.1 monitor activity within the operating room and limit numbers to essential personnel such as those delivering direct patient care

6.1.1 consider that it may be appropriate for one or two students to be present as part of an education and training programme

6.1.2 bear in mind that it is not appropriate for non-essential staff in the procedure to be present in the operating room for social reasons

6.2 ensure that external doors to the operating room remain closed during the surgical procedure

6.3 face the aseptic field when moving around the operating room and remain at least 30 cm from the aseptic field

6.4 not touch or lean across the aseptic field

6.5 not move between two aseptic fields

6.6 move draped trolleys by holding the trolley legs below the drapes, avoiding all aseptic surfaces.

The instrument nurse should:

6.7 remain close to and face the aseptic field at all times

6.8 be aware that the draped trolleys are aseptic on the horizontal surface only

6.9 touch only aseptic surfaces and when repositioning draped trolleys, do so by placing hands on the horizontal surface only

6.10 avoid altering the level of the aseptic field and be seated only when required by the surgical procedure

6.11 consider the surgical gown aseptic only mid-chest to waist level in the front; and from gloved fingertips to elbows

6.12 keep gloved hands above waist level and within the levels of the aseptic fields

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Principle 7: Sterile supplies are kept separate from contaminated items and waste

Rationale

The use of appropriate procedures to transport sterile items to, and contaminated waste items away from, the operating room will minimise the risk of contamination occurring.

Criteria

The nurse should:

7.1 ensure the flow of supplies moves through predetermined route from clean to decontamination areas

7.2 ensure that soiled items are not moved back into clean areas

7.3 place soiled items within covered containers or vehicles to the designated decontamination area

7.4 ensure that soiled linen and rubbish areas are separated from personnel and patient traffic areas.[8,9]

Principle 8: The standard is reviewed every three years and when new evidence is available

Rationale

Documentation of procedural steps is a foundation for best practice, ensures consistency of practice and provides a tool for care planning.

Criteria

8.1 The standard should be stored in the unit practice manual and easily accessible for staff reference.

8.2 A sign-off sheet should be provided in the unit practice manual for staff to indicate when they have read the standard and any related local policies.[10]

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Appendix 3: Procedures for covering and uncovering an aseptic trolley

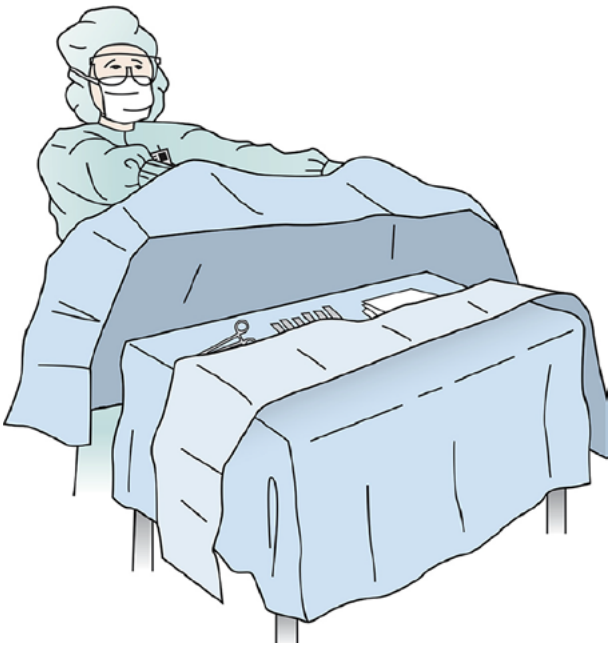
The following is a recommended procedure for covering an aseptic trolley:[7]

1. The nurse must be dressed in sterile gown, gloves, and mask.
2. Two sterile drapes must be used to cover the aseptic trolley.
3. One drape is placed horizontally over the aseptic trolley at the midpoint, or slightly beyond the midpoint of the aseptic trolley (*See **Figure 1** below*).
4. The second drape should be placed from the opposite side of the trolley to completely cover (overlap) the cuff of the first drape.
5. The covered aseptic trolley should not be left unattended.

The following is a recommended procedure for removing the cover from the aseptic trolley:

1. The covers should be removed by an unscrubbed person wearing a mask (the protective covers may have been contaminated).
2. The top drape should be removed by placing hands beneath the cuff and pulling the drape up and back towards the nurse.
3. From the opposite side of the trolley, the second drape is removed in the same way.
4. Care must be taken to ensure that no portion of the drapes hanging below the level of the trolley surface are brought up and across the trolley as this may contaminate the aseptic field.[7]

Figure 1



Source: Kennedy (2013, p19)[7]

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Standard 1.4 – Protective apparel

Scope of standard
Clinical environments where surgical procedures are undertaken.

Scope of responsibility
All perioperative nurses.
This standard may also apply to other perioperative personnel such as surgical ward interns, nurses, orderlies, ward assistants, doctors (anaesthetists and surgeons), anaesthetic technicians, etc.

Principles
1. Protective apparel should be provided by the healthcare facility.
2. Nurses should wear protective eyewear.
3. Nurses should wear a surgical face mask.
4. Nurses should wear gloves.
5. The standard is reviewed every three years and when new evidence is available.

Principle 1: Protective apparel should be provided by the healthcare facility

Rationale
Healthcare workers have a right to be protected in the workplace environment from risks of contamination posed by blood, body fluid sprays, burns, and splashes, from other aerosolised contaminants and hazardous substances. Protective apparel, including personal protective equipment (PPE), can minimise the risk of surgical site infection and protect staff from exposure to microorganisms. Protective apparel may also protect personnel from injuries such as burns and undue exposure to toxic substances.

Criteria
1.0 Protective apparel includes, but may not be limited to, the wearing of:
- eye protection (goggles, eye shields or visors)
- masks
- gloves (nitrate, latex, hypoallergenic, heat resistant gloves and sterile gloves)
- gowns (unsterile cover gowns or sterile surgical gowns)
- lead aprons (X-ray protection)
- plastic aprons (worn by unscrubbed personnel or beneath a sterile gown for procedures where there is likelihood of excessive blood loss e.g., trauma)
- shoe covers (worn for procedures where there is likelihood of excessive blood loss e.g., trauma)

Principle 2: Nurses should wear protective eyewear

Rationale
The wearing of protective eyewear reduces the risk to the wearer of splashes and sprays from blood, body fluids and other aerosolised contaminants in the perioperative environment.

Criteria

Protective eyewear should:

2.1 be worn when there is risk of exposure to mucous membranes of the eyes from splashes/sprays of blood, body fluids or aerosolised contaminants

2.2 be worn by the instrument and circulating nurses while delivering care

2.3 consist of protective goggles which are breathable, fog-free, waterproof, and durable, eye shields or a visor attached to a surgical face mask

2.4 meet basic safety requirements and be used according to manufacturer's instruction

2.5 be made of material that is scratch free, resistant to puncturing, non-fogging and have a lens that shapes to the contours of the face

2.6 be easily decontaminated and preferably reusable

2.7 be free of sharp edges fitting as tightly as possible to the forehead/brow, nose and side of the eyes

2.8 extend down and over the mask to prevent splashes going up under the eyewear.

Principle 3: Nurses should wear a surgical face mask

Rationale:

There has been debate in recent years about the efficacy of surgical face masks to protect the patients and aseptic fields (e.g., surgical attire, drapes, and instruments etc) from droplet contamination by healthcare workers. However, there is sufficient evidence to support the continued use of face masks to not only protect the patient, but as an integral component of protective apparel to protect healthcare workers from blood and body fluid splashes, sprays, and aerosolised contaminants.[1,2]

Criteria:

Surgical face masks should:

3.1 be worn in conjunction with protective, safe, and adequate eyewear

3.2 be worn by the instrument and circulating nurses while delivering care

3.3 be single-use, made of a repellent material that offers protection against potential blood and body fluids sprays, splashing and aerosol contamination. Single-use paper (cellulose) masks are not suitable in the perioperative environment, neither are reusable cotton masks as they become moist with expired air, reducing their effectiveness

3.4 be close fitting, securely tied and cover both the mouth and nose

3.5 consist of a new mask being worn at the start of the day and changed regularly, between procedures – dependent on availability

3.6 discourage the wearer from excessive talking to reduce moisture being exhaled and in turn reducing the mask's effectiveness

3.7 be pointed towards the surgical site if the wearer coughs or sneezes, and not away from it. Air escaping is sent backwards from the sides of the masks and away from the aseptic field

3.8 not be left to hang around the neck or placed in the pocket when not in use as this can cause contamination

3.9 be disposed of by handling *the ties only*, with the nurse facing away from the aseptic field while the mask is being removed to prevent contamination. Hand hygiene should be performed following removal of the mask.

In addition:

3.10 in situations of emerging epidemic disease (e.g., SARS, H_5N_1, Ebola virus) and when managing diseases e.g., TB, the World Health Organization (WHO) and national governments will make recommendations for appropriate practice regarding airborne transmission-based precautions. It will be necessary to wear a surgical face mask/ respirator with special filters that provides protection against the submicron bacteria and viruses responsible for such diseases.

3.11 surgical face masks offer *limited protection only* against laser, toxic substances and electrosurgery plume and additional plume evacuation equipment will be required to provide adequate protection.

Principle 4: Nurses should wear gloves

Rationale

Unsterile gloves can protect the nurse during any activity that has been assessed as carrying a risk of exposure to blood, body substances, secretions, and excretions. They can also protect the nurse from burns when in contact with hot surfaces e.g., sterilisers or hot fluids. (*See also* ***Standard 1.1 – Hand hygiene***.)

Criteria

Unsterile gloves should:

4.1 be single-use only
4.2 be worn for direct contact with blood or body fluids
4.3 be worn when in contact with non-intact skin or mucous membranes
4.4 be worn when in contact with contaminated environmental surfaces e.g., trolleys, operating table
4.5 be discarded immediately after use and hand hygiene performed
4.6 not be worn when opening sterile supplies.

Principle 5: The standard is reviewed every three years and when new evidence is available

Rationale

Documentation of procedural steps is a foundation for best practice, ensures consistency of practice and provides a tool for care planning.[3]

Criteria

5.1 The standard should be stored in the unit practice manual and easily accessible for staff reference.
5.2 A sign-off sheet should be provided in the unit practice manual for staff to indicate when they have read the standard and any related local policies.

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Standard 1.5 – Scrubbing, gowning and gloving

Scope of standard
Clinical environments where surgical procedures are undertaken.

Scope of responsibility
All perioperative nurses.

Principles
1. The nurse should be appropriately attired prior to the commencement of the surgical scrub.
2. The appropriate antimicrobial solution is used for the scrubbing procedure.
3. The nurse should follow a standardised scrub procedure.
4. The nurse should don sterile gown and gloves using aseptic technique.
5. The nurse should remove gown and gloves in a manner that protects the wearer from contamination.
6. The standard is reviewed every three years and when new evidence is available.

Principle 1: The nurse should be appropriately attired prior to commencement of the surgical scrub

Rationale
The covering of hair, including facial hair, removal of rings and wrist jewellery reduces the risk of transmitting microorganisms to the patient.[1–4] The use of protective apparel i.e., mask, eye protection, apron, reduces the risk of exposure to infectious agents through splashes/spray of blood, body fluids and other aerosolised contaminants.[5]

Criteria
1.1 Prior to commencement of the surgical scrub, the nurse:
- should wear clean perioperative attire (*see* ***Standard 1.2 – Perioperative attire***)
- ensures that all hair, including facial hair is covered
- removes wrist watches, bracelets, and rings
- checks skin integrity and keeps fingernails short, clean, and free from nail polish and/or artificial nails, devices, or other adornments
- dons protective apparel i.e., mask, eye protection, protective apron (*see* ***Standard 1.4 – Protective apparel***).

Principle 2: The appropriate antimicrobial solution is used for the scrubbing procedure

Rationale
An effective antimicrobial scrub solution kills resident and transient microorganisms and has a residual effect to further decrease the presence of microorganisms on the skin of the hands and arms.

Criteria
2.1 The selected antimicrobial scrub solution should:
- be used according to manufacturer's instructions
- be broad spectrum
- be fast acting and persistent
- have a residual and cumulative effect
- be non-irritating and have minimal detrimental effects on the skin
- antimicrobial scrub solutions should be stored in clean, closed containers.

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Principle 3: The nurse should follow a standardised scrub procedure

Rationale

A standardised surgical scrub procedure establishes a single standard of care. Although the skin can never be rendered sterile, it can be made surgically clean by reducing the number of microorganisms.

Criteria

3.1 ACORN states that the efficacy of the surgical scrub is influenced by the choice of antiseptic solution and the duration of the scrub.[17] Research indicates that scrub duration of less than the traditional five minutes can be effective when using chlorhexidine gluconate 4% followed by alcohol formulation (isopropanol 70% and chlorhexidine gluconate 0.5% or ethanol 70% and chlorhexidine gluconate 0.5%). While there is limited research to link length of surgical scrub to surgical site infection (SSI) there is supporting evidence that a five-minute scrub reduces bacterial count to an acceptable level.[4,6]

*See **Appendix 4: The 5-minute surgical scrub technique** and **Appendix 5: The 3-minute surgical scrub technique**.*

Principle 4: The nurse should don sterile gown and gloves using aseptic technique

Rationale

Sterile gown and gloves are essential in maintaining an aseptic field. Both items are made of materials that provide a barrier to microorganisms and are packaged in a manner that allows donning without contaminating the sterile field.[1,2,8–11]

Criteria

4.1 Sterile gowns maybe reusable or disposable.

4.1.1 Reusable gowns must be free of holes, tears and must have tapes to allow securing of the gown.

4.2 The nurse follows recommended procedure for donning gown and gloves.
(*See **Appendix 6: Drying hands and donning gown and gloves***.)

4.3 The nurse may be required to assist other members of the surgical team don gown and gloves.

*See **Appendix 9: Assisted gowning and gloving of team members**.*

Principle 5: The nurse should remove gown and gloves in a manner that protects the wearer from contamination

Rationale

Gown and gloves worn during a surgical procedure are considered contaminated and must be removed in a manner that protects the wearer from coming into contact with blood and body fluids.

Criteria

5.1 Gown and gloves are removed within the operating room to prevent transmission of microorganisms to other areas of the perioperative environment.

5.2 Both are disposed of in the appropriate receptacles according to local policy.

*See **Appendix 7: Removing gown and gloves during a procedure** and **Appendix 8: Removing gown and gloves at the end of a procedure**.*

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Principle 6: The standard is reviewed every three years and when new evidence is available

Rationale

Documentation of procedural steps is a foundation for best practice, ensures consistency of practice and provides a tool for care planning.[14]

Criteria

6.1 The standard should be stored in the unit practice manual and easily accessible for staff reference.

6.2 A sign-off sheet should be provided in the unit practice manual for staff to indicate when they have read the standard and any related local policies.

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Appendix 4: The 5-minute surgical scrub technique

The following is a recommended procedure for a 5-minute scrub:[15]

1. Open and prepare nail cleaner and scrub sponge for use later in the scrub.
2. Turn on the water to a comfortable temperature and even flow.
3. Complete pre-scrub wash using antiseptic solution to loosen debris on the skin.
4. Apply antiseptic solution to hands, wash hands before proceeding to wash arms using a circular hand motion, working in one direction from hands to 2.5 cm above the elbow.
5. Leave the solution in contact with the skin while nails are cleaned using nail cleaner – dispose of nail cleaner in a safe manner.
6. Rinse hands and arms keeping hands higher than elbows to allow water to run in one direction only.
7. Avoid splashing water onto perioperative attire as this will cause 'strike through' when donning a sterile gown, rendering it unsterile.
8. Apply antiseptic solution to scrub sponge (unless they are already impregnated).
9. Wash all surfaces of the hands and fingers, then wash the forearms to elbow level – discard the scrub sponge safely.
10. Rinse hands and arms thoroughly.
11. Apply antiseptic solution to hands and repeat previous step but stopping at mid-forearm.
12. Rinse thoroughly.
13. Apply antiseptic solution to hands and wash hands only.
14. Rinse for the final time – if taps are elbow operated, turn taps off using elbows to avoid contamination of the hands.

In addition:

15. If scrub sponge and nail cleaners are unavailable – greater attention must be paid to the first handwash of the procedure to ensure nail beds are thoroughly cleaned by dipping fingertips of each hand into the solution.
16. If brushes are used, the selection of reusable or disposable brushes or sponges for scrubbing should be based on realistic considerations of effectiveness and economy.
17. If a reusable brush is desired, it should be easy to clean and maintain and should be durable enough to withstand repeated sterilisation without bristles becoming soft or brittle.

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Appendix 5: The 3-minute surgical scrub technique

The following is a recommended procedure for a 3-minute scrub – used for subsequent scrubs:[15]

1. Turn on the water to a comfortable temperature and even flow.
2. Apply antiseptic solution to hands, wash hands before proceeding to wash arms using a circular hand motion, working in one direction from hands to 2.5 cm above the elbow.
3. Leave the solution in contact with the skin.
4. Without rinsing, apply additional solution and wash all surfaces of the hands and then proceed to forearms using a circular motion to the level of the elbow.
5. Rinse hands and arms thoroughly.
6. Apply solution and wash hands and forearms, stopping at mid forearm.
7. Rinse hands and arms thoroughly.
8. Apply solution and wash hands only.
9. Rinse for the final time.

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Appendix 6: Drying hands and donning gown and gloves

The following are recommended procedures for drying hands and donning gown and gloves:[15]

Drying hands

1. Approach the gown trolley which should be prepared in an aseptic manner, with gown and gloves opened.
2. Grasp the sterile towel by one corner, taking care not to contaminate the sterile field by drips of water from the arms.
3. Step back and with arms outstretched, keeping elbows bent and above the waist, use one half of the towel to pat one hand dry, paying attention to the area in between fingers before moving from forearm to the elbow drying the area using a circular motion.
4. Grasp the opposite end of the towel and repeat the process using the unused portion of the towel.
5. Dispose of the towel appropriately.
6. Keep hands higher than elbows at all times.

Donning gown

The sterile gown should be folded and presented in a manner that enables the inner surface to be handled with surgically clean hands.[10,12,15]

1. Grasp the sterile gown by the collar portion and unfolded until both arms can be extended into the sleeves.
2. Keep the hands inside the cuffs of the gown – this will facilitate the closed gloving method and minimise the risk of contamination.
3. Keep the arms above waist level at all times.
4. Allow a colleague to tie the back tapes.

Donning gloves

1. Prepare two pairs of gloves to comply with recommendation of double gloving. Double gloving minimises the risk of sharps injury.
2. Don the first pair of gloves using the closed method of gloving ensuring that the fingers do not contaminate the outer surfaces of the gloves.
3. Don the second pair of gloves by sliding over the first pair to complete the gloving procedure.

Completing the gowning and gloving procedure

1. Untie the tapes at the front of the gown and present to another scrubbed person to turn.
2. Secure the ties at the side of the gown.
   2.1 Depending on the type of gown, the procedure for turning may be completed with the assistance of an unscrubbed person.
3. Keep the arms above waist level and the nurse aware that areas of the gown considered sterile are the front of the gown from nipple line to waist/table level; from fingertips to elbow.[12,15]

NOTE: Assisted gloving is recommended when members of the team have contaminated gloves.

See ***Appendix 9: Assisted gowning and gloving of team members***.

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Appendix 7: Removing gown and gloves during a procedure

The following are recommended procedures for changing gown and gloves during a procedure:[1]

1. The person requiring a change of gown and gloves should step away from the aseptic field.
2. The removal of the contaminated gown and gloves should be carried out by an unscrubbed person wearing unsterile gloves to protect themselves from contamination.
3. All tapes at the front and back of the gown should be untied.
4. The gown should be grasped by the shoulders and pulled away from the person, turned inside out and discarded appropriately.
5. The gloves should be grasped and pulled off and discarded appropriately.
6. The person may be required to re-scrub if contamination of the hands has occurred, e.g. a glove tear.
7. Re-gowning and gloving are carried out using the procedure described in ***Appendix 6: Drying hands and donning gown and gloves***.

NOTE: If re-gloving is required without re-gowning, this should be accomplished using the assisted gloving method described in ***Appendix 9: Assisted gowning and gloving of team members***.

The contaminated gloves should be removed by an unscrubbed person wearing unsterile gloves, pulling the gloves off, taking care not to contaminate the sterile gown of the wearer.

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Appendix 8: Removing gown and gloves at the end of a procedure

The following are recommended procedures for removal of gown and gloves at the end of a procedure:[1]

1. As the gown is contaminated, it must be removed before the gloves to prevent bare hands coming into contact with the gown.
2. Untie tapes on the gown.
3. An unscrubbed person should untie the tapes at the back of the gown.
4. Grasp the shoulder seams and pull the gown forward and over the gloved hands, turning the gown inside out.
5. Keep the gown away from the body while removing to reduce the risk of contamination.
6. Dispose of the gown in the appropriate receptacle.

Removal of gloves

1. Using the gloved fingers of one hand, pull off one glove (glove-to-glove), turning it inside out and discarding appropriately.
2. Using the ungloved hand, place the fingers or thumb inside the glove (skin-to-skin) and pull off, turning it inside out and discarding appropriately.

NOTE: The mask can be removed if appropriate by touching only the ties and discarding it.

Hand hygiene should be performed following removal of protective apparel.

*See **Standard 1.1 – Hand hygiene**.*

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Appendix 9: Assisted gowning and gloving of team members

The following are recommended procedures for assisted gowning and gloving of team members:[1]

Assisted gowning procedure

1. The nurse assisting with gowning procedure must be dressed in sterile gown and gloves.
2. The nurse opens the gown and holds the inner surface toward the person to be gowned.
3. A cuff is formed in the neck and shoulder area of the gown to protect the nurse's gloved hands.
4. The person being gowned places their hands and arms into the sleeves – hands should not advance through the cuffs so that closed gloving can be accomplished.
5. If assisted gloving is being performed, the hands should be pushed through the cuffs of the gown.
6. An unscrubbed person can assist with pulling the gown on and tying the tapes on the back of the gown.
7.

Assisted gloving procedure

1. The nurse assisting with gloving procedure must be dressed in sterile gown and gloves.
2. The nurse grasps the glove under the folded cuff to protect their fingers from contact with the bare hands of the ungloved person.
3. Using the fingers stretch the cuff of the glove open.
4. Position the glove to allow the hand of the ungloved person to be inserted.
5. Repeat the procedure with the other hand.

NOTE: Double gloving is recommended and achieved by sliding the second pair of gloves over the first pair to complete the gloving procedure.[1]

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Standard 1.6 – Skin preparation of the surgical patient

Scope of standard
Clinical environments where surgical procedures are undertaken.

Scope of responsibility
Nurses performing skin preparation of the surgical patient, when applicable.

Principles
1. The surgical site and surrounding areas are clean.
2. The surgical site is prepared with an antimicrobial agent.
3. Skin preparation is performed by skilled personnel.
4. Skin preparation is documented in the patient's record.
5. The standard is reviewed every three years and when new evidence is available.

Principle 1: The surgical site and surrounding areas are clean

Rationale
Pre-operative skin antisepsis is performed to reduce the risk of post-operative surgical site infections (SSIs) by removing soil and transient organisms from the skin.

Criteria
1.1 Dirt and debris are removed before the patient enters the operating room. Appropriate methods include:
- the patient washing or showering
- cleansing the surgical site.

1.2 Hair is removed from surgical site only if necessary. Determining factors include:
- amount of hair
- location of wound or incision
- type of surgical procedure to be performed.

1.2.1 If hair removal is indicated, it should be performed:
- according to the surgeon's orders or facility policy
- by skilled personnel
- as close to the time of surgery as is practical[1,2,3,4] to minimise the time available for wound colonisation by microorganisms at the surgical site
- outside the operating room where the surgery is to be performed[3]
- in a manner that preserves skin integrity such as with the use of hair clippers with disposable blades[3,4,5] or depilatory agents (skin testing is required before using depilatory agents)
- only when other methods are not available – if shaving is undertaken, wet shaving is preferable.

1.3 The surgical site should be assessed before skin preparation, with consideration given to:
- patients with comorbidities, e.g., diabetes, skin ulcerations, sensitivity to antimicrobial solutions, obesity, smoking, steroid use, malnutrition, and renal failure[1,6]
- surgical site characteristics, e.g., burns[1]
- sites which include mucous membrane and delicate, compromised tissue
- areas with high microbial counts e.g., umbilicus, traumatic wounds

- the isolation of stoma sites by covering with an antiseptic-soaked sponge[7]
- skin integrity and presence of lesions, moles, warts, rashes etc.

Principle 2: The surgical site is prepared with an antimicrobial agent

Rationale

An effective antimicrobial agent that is active against endogenous organisms and exogenous organisms and which has a sustained effect may reduce the patient's skin flora.[1]

Criteria

2.1 The antimicrobial agent should have a broad spectrum, be non-toxic and provide residual protection.

2.2 Selection of the antimicrobial agent is based on:

- patient allergies or sensitivity
- the surgical site (see examples in **Principle 1** above on surgical site and surrounding areas)
- the surgeon's preference.

2.3 The use of antimicrobial agents should be consistent with manufacturer's guidelines and the infection control guidelines of the healthcare facility (HCF).

2.4 The same antimicrobial agent shall be used for all applications of the patient's skin preparation, to ensure full residual benefit and consistent action.

Principle 3: Skin preparation is performed by skilled personnel

Rationale

The effectiveness of skin preparation is dependent on the antimicrobial agent used, the method of application and the knowledge of the personnel. Personnel require knowledge of the following areas:

- the surgical site and operative procedure
- the antimicrobial agent properties and application technique
- risk of harm to the patient from the interaction of the agent with other surgical equipment which may result in skin reactions, burns, shock or fire.

Criteria

3.1 Skin preparation requires consideration of:

- maintenance of aseptic technique
- length of initial incision
- requirement to extend initial incision and/or make additional incisions
- more than one surgical site e.g., prepping the abdominal before prepping the perineal areas[8]
- drain sites required
- drape fenestration/window size
- preservation of skin integrity
- prevention of pooling/reduction of hazards.

*See **Appendix 10: Surgical skin preparation ('prepping')**.*

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Principle 4: Skin preparation is documented in the patient's medical record

Rationale

Documentation is an integral part of providing safe quality care to patients and perioperative documentation has a legal implication as a record of the care delivered.

Criteria

4.1 The record of skin preparation may include, but is not limited to:

- skin condition and integrity at the surgical site[9]
- hair removal (if performed), including method of removal and area
- the type of antimicrobial agent used
- name and role of the person performing the skin preparation
- onset and details of any hypersensitivity reactions.

Principle 5: The standard is reviewed every three years and when new evidence is available

Rationale

Documentation of procedural steps is a foundation for best practice, ensures consistency of practice and provides a tool for care planning.[9]

Criteria

5.1 The standard should be stored in the unit practice manual and easily accessible for staff reference.

5.2 A sign-off sheet should be provided in the unit practice manual for staff to indicate when they have read the standard and any related local policies.

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Appendix 10: Surgical skin preparation ('prepping')

The following is a recommended procedure for surgical skin preparation:

Aseptic technique should be maintained throughout the prepping procedure.

1. Prepare sterile swabs, sterile galipot/bowl, kidney dish and sponge holding forceps.
2. Pour recommended antimicrobial agent into galipot/bowl.
3. Place absorbent materials beneath surgical site to collect run-off of the antimicrobial agent to avoid pooling, as this can result in skin damage.
4. Using one swab attached to the sponge holding forceps, apply the antimicrobial agent starting at the proposed incision site (clean) and continue in a circular or square motion outwards to the least clean area.
5. Prep an area large enough to permit extension of the incision, potential drape shift and placement of drains.
6. Place the used swab in the kidney dish away from the remaining sterile swabs.
7. Repeat the prepping procedure as required, using a new swab each time.
8. On completion of the prepping procedure, remove any damp material, inspect the surrounding areas, ensure the diathermy return electrode plate remains in contact and ensure the patient is clean and dry.

NOTE: Special care must be taken when using fluids such as skin prep (especially alcoholic skin prep) near diathermy return electrode plates because of the risk of significant patient injury e.g., burns and electrocution.

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Chapter 2: Patient safety

Introduction

All patients have the right to expect their surgical experience will be carried out safely, free from risks of harm. Procedures to ensure the patient's safety rely for their effectiveness on perioperative nurses, as part of the surgical team, ensuring that standards of practice are followed that will deliver a safe outcome for the patient.

Adverse events such as wrong site surgery, pressure injury, retention of instruments and equipment have been reported.[1] These adverse events are considered preventable and strategies, such as the World Health Organization (WHO) *Surgical safety checklist* have been implemented to reduce the incidence of wrong site surgery.[2] In addition, human factors such as good teamwork and effective communication have been shown to reduce the risks of adverse events.[3]

This chapter on patient safety, comprises seven standards developed specifically to address patient safety issues and human factors. They should be read in conjunction with the standards in *Chapter 1 – Infection prevention*.

This perioperative practice chapter on patient safety comprises:
Standard 2.1 – Surgical safety
Standard 2.2 – Safe manual handling and positioning the surgical patient
Standard 2.3 – Sharps safety
Standard 2.4 – Managing accountable items
Standard 2.5 – Handling specimens
Standard 2.6 – Perioperative patient handover
Standard 2.7 – Safe use of electrosurgery

Standard 2.1 – Surgical safety

The accurate identification of the patient and the procedure to be performed will reduce the risk of wrong site surgery and enhance patient outcomes. Effective teamwork and communication between members of the surgical team can minimise risks of adverse events.[2,4]

Standard 2.2 – Safe manual handling and positioning the surgical patient

Knowledge and skills in safe manual handling equipment and positions used for surgery will minimise the risks of injury to patient and personnel. An understanding of functional anatomy, physiology, surgical procedures and patient co morbidities will enable perioperative personnel prepare and manage patients' specific positioning requirements.[4]

Standard 2.3 – Sharps safety

Perioperative personnel have a high risk of sustaining injuries related to the use of sharp devices e.g., scalpels, hypodermic needles, with suture needles being the most common source of sharps injury in the operating room.[5,6,7] The use of personal protective equipment (PPE) specific to sharps safety, including double gloves and protective footwear will protect the nurses against exposure to blood-borne diseases and sharps injury.[8,9]

Standard 2.4 – Managing accountable items during surgery and procedures

Accountable items such as instruments, needles, absorbent items (swabs, sponges) by their nature are at risk of being retained in the patient and require additional risk management. All members of the perioperative team have a duty to collaborate to ensure that all items used during surgery and procedures are retrieved, accounted for and appropriately documented. Correct management of the surgical/procedural count by the instrument nurse and circulating nurse and will minimise the risk of items being unintentionally retained in the patient.[4]

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Standard 2.5 – Handling specimens

Knowledge about the management of specimens taken during procedures will reduce the risk to the patient of adverse events, such as mislabelling and misdiagnosis. Perioperative nurses should demonstrate knowledge of the care and handling of specimens to reduce the risk adverse events and to optimise patient outcomes.[4]

Standard 2.6 – Perioperative patient handover

Effective communication can ensure that critical information about the patient is communicated during the clinical handover process. Conducting a clinical handover during all stages of the perioperative period using a standardised tool such as ISBAR, will ensure all critical information is communicated, ensuring continuity of patient care and responsibility.[3,10,11]

Standard 2.7 – Safe use of electrosurgery

Electrosurgery (diathermy) is a piece of equipment used by the surgeon to secure haemostasis and also cut tissue using high frequency electrical current. Correct care and handling of electrosurgical equipment is essential to ensure safe patient outcomes and the safety of the surgical team. The biproduct of using electrosurgery is the generation of surgical plume (smoke) which is a known workplace hazard and potentially harmful if inhaled by members of the surgical team. Mechanisms should be used to safely evacuate plume from the surgical site.

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The standards in this chapter were developed with reference to the *ACORN Standards for perioperative nursing in Australia* (2018, 2020).

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Standard 2.1 – Surgical safety

Scope of standard
All perioperative environments where the surgical patient is treated.

Scope of responsibility
All perioperative personnel have a duty to implement checking processes to reduce the risks of adverse events and to optimise patient outcomes.

Principles
1. The correct patient will undergo the correct surgery/procedure at the correct site.[1]
2. The perioperative team will effectively communicate and exchange critical information necessary for the safe outcome of the surgery/procedure.[1]
3. The standard is reviewed every three years and when new evidence is available.

Principle 1: The correct patient will undergo the correct surgery/procedure at the correct site

Rationale
Accurate identification of the patient and the procedure to be performed will reduce the risk of wrong site surgery and enhance patient outcomes.

Criteria
The perioperative team will collectively and actively participate in a three-step surgical safety checklist, including, at a minimum:

1.1 Sign in (before induction of anaesthesia):
- Confirm the patient's identity (verbally with patient, if appropriate, identification band, medical records).
- Confirm the surgical procedure to be carried out (verbally with patient, if appropriate, medical records, consent form).
- Confirm consent to surgical/anaesthetic procedure has been completed (verbally with patient, if appropriate, medical records, consent form).
- Confirm site marking is correct and visible.
- Note any patient allergies.
- Ensure that basic monitoring equipment is attached (pulse oximetry, non-invasive blood pressure cuff).
- Clarify with the anaesthetist any anaesthetic risks.

1.2 Time out (before skin incision or commencement of procedure):
- Ensure that all team members are introduced to each other.
- Confirm the patient's identity (sight identification band, medical record number).
- Confirm procedure and surgical site marking.
- Confirm antibiotic prophylaxis (if applicable).
- Ensure that medical images are displayed (if applicable).
- Confirm sterility of equipment.
- Communicate with the surgeon/anaesthetist in relation to any anticipated critical events (expected blood loss, difficult airway etc).

1.3 Sign out
- Name of the completed procedure.
- Confirmation that surgical count has been completed and result.
- Confirmation of surgical specimen(s) collected (labelling, management, transport).
- Identify any post-operative issues for handover to PACU.

1.4 Document the surgical safety checklist (according to health facility policy).

Principle 2: The perioperative team will effectively communicate and exchange critical information necessary for the safe outcome of surgery/procedure

Rationale
Effective teamwork and communication can enhance patient outcomes and minimise risks of adverse events.

Criteria
The perioperative nurses should:
2.1 participate in pre-operative briefings
2.2 confirm information with the surgical/anaesthetic team related to the preparation and progress of the procedure
2.3 raise any concerns related to patient care with the surgical/anaesthetic team.

Principle 3: The standard is reviewed every three years and when new evidence is available

Rationale
Documentation of procedural steps is a foundation for best practice, ensures consistency of practice and provides a tool for care planning.

Criteria
3.1 The standard should be stored in the unit practice manual and easily accessible for staff reference.
3.2 A sign-off sheet should be provided in the unit practice manual for staff to indicate when they have read the standard and any related local policies.

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Standard 2.2 – Safe manual handling, and positioning the patient for surgery

Scope of standard
All perioperative environments where the surgical patient is treated.

Scope of responsibility
All personnel involved in manual handling during patient transfer and safe patient positioning during surgery have a duty to ensure the safety of both patient and perioperative personnel.

Principles
1. Perioperative nurses should assess and evaluate manual handling tasks and take measures to protect themselves from injury.
2. Patients undergoing a surgical or invasive procedure should have a thorough assessment before surgery to identify and manage risk factors for injuries related to patient positioning.[1]
3. Perioperative personnel involved in the transfer and positioning of the patient for surgery should have the required knowledge and skills to correctly perform these activities.
4. The standard is reviewed every three years and when new evidence is available.

Principle 1: Perioperative nurses should assess and evaluate manual handling tasks and take measures to protect themselves from injury

Rationale
Perioperative nurses are often required to move equipment and supplies; act as first assistants and stand for long periods of time, all of which can pose a risk of injury.

Criteria
When working in the perioperative environment, the nurses should:
1.1 use devices such as carts, trolleys and other equipment to assist in lifting, carrying or moving supplies[2,3]
1.2 maintain good body posture when moving equipment and patients i.e., avoid twisting, bending actions
1.3 use anti-fatigue devices when available e.g., foot stools, sit-stand stools, comfortable footwear[3,4]
1.4 wear protective, lightweight radiation protective apparel when available
1.5 maintain good working height and posture if manual retraction is required to assist the surgical team during a procedure[3]
1.6 minimise lifting/holding an extremity for skin prepping purposes. Other personnel or assistive devices should be used where possible.[2]

Principle 2: Patients undergoing a surgical or invasive procedure should have a thorough assessment before surgery to identify and manage risk factors for injuries related to patient positioning[2]

Rationale
An understanding of functional anatomy, physiology, surgical procedures and patient co morbidities will enable perioperative personnel to prepare and manage patients' specific positioning requirements.

Criteria

Prior to the commencement of the procedure, the nurses should:

2.1 review the patient's medical records for risk factors such as size, weight, procedure, comorbidities, patient limitations

2.2 confirm with surgeon/anaesthetist the position required for surgery

2.3 carry out an assessment of the patient's skin integrity

2.4 document baseline assessment of patient's skin integrity (according to health facility policy).

Principle 3: Perioperative personnel involved in the transfer and positioning of the patient for surgery should have the required knowledge and skills to correctly perform these activities

Rationale

Knowledge and skills in safe manual handling equipment and positions used for surgery will minimise the risks of injury to patient and personnel.

Criteria:

In preparation for the procedure, the nurses should:

3.1 ensure the operating table is appropriate for patient's needs e.g., size and weight

3.2 ensure appropriate mechanical transfer and positioning devices to meet the patient's needs are available e.g., pat slide, transfer sheets, orthopaedic table

3.3 check that all equipment used to transfer and position the patient are working correctly

3.4 ensure that additional positioning aids are available e.g., lateral supports, foot boards, foam wedges

3.5 ensure sufficient personnel are available to:

- safely transfer the patient to and from the operating table
- complete safe positioning procedures.

When transferring the patient to and from the operating table, the nurses should:

3.6 implement safe manual handling principles (area to which patient is being transferred is slightly lower, use correct body posture)

3.7 ensure transfer devices are used correctly, according to manufacturer's instructions

3.8 avoid shearing/friction occurring during transfer

3.9 instruct the patient about transfer procedure (if applicable).

When assisting with positioning the patient for surgery, the nurses should:

3.10 protect the patient's privacy and dignity during transfer and positioning

3.11 ensure additional positioning devices are used correctly, according to manufacturer's instructions

3.12 manage physiological risk factors e.g., protect pressure points and bony prominences, use wedge for obstetric patients, anti-skid devices, arm supports, etc.

3.13 remove all potential causes of pressure e.g., patient gown buttons/ties, creases in sheets under patient

3.14 ensure correct body alignment was achieved prior to commencement of the procedure.

3.15 monitor the patient and manage identified risks e.g., crush injury from equipment, pressure from team members leaning on patient, pressure from positioning aids e.g., straps, overstretched joints

3.16 communicate with the multidisciplinary team the need for repositioning during prolonged procedures.

At completion of procedure, the nurses should:

3.17 carry out an assessment of the patient's skin integrity and document (according to health facility policy)

3.18 ensure the patient's skin is clean and dry prior to transport to PACU

3.19 ensure there are sufficient number of personnel present to safely transfer the patient
3.20 use transfer devices correctly
3.21 instruct the patient about transfer procedure (if applicable).

Principle 4: The standard is reviewed every three years and when new evidence is available

Rationale
Documentation of procedural steps is a foundation for best practice, ensures consistency of practice and provides a tool for care planning.

Criteria
4.1 The standard should be stored in the unit practice manual and easily accessible for staff reference.
4.2 A sign-off sheet should be provided in the unit practice manual for staff to indicate when they have read the standard and any related local policies.

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Standard 2.3 – Sharps safety

Scope of standard
All perioperative environments where the surgical patient is treated.

Scope of responsibility
All perioperative nurses.
This standard may also apply to other perioperative personnel (i.e., surgical ward interns, nurses, orderlies, ward assistants, doctors [anaesthetists and surgeons] anaesthetic technicians etc).

Principles
1. The perioperative nurses should wear approved personal protective equipment (PPE) specific to sharps safety, including double gloves and protective footwear.
2. The perioperative nurses should maintain safe work practices while handling sharp instruments and needles.
3. The instrument nurse should ensure that all sharps are safely disposed of in an approved sharps disposal container at the completion of each surgical procedure.
4. The standard is reviewed every three years and when new evidence is available.

Principle 1: The perioperative nurses should wear approved personal protective equipment (PPE) specific to sharps safety, including double gloves and protective footwear

Rationale
The use of PPE, including double gloves and protective footwear will protect the nurses against exposure to blood-borne diseases and sharps injury.[1,2,3]

Criteria:
Perioperative nurses should:
1.1 wear fully enclosed shoes where possible (these will provide the best protection but may be impractical due to local climatic and environmental conditions)
1.2 wear double gloves where possible (this is best practice; however, this is dependent on availability. If there is limited supply of sterile gloves, double glove for surgery where there is higher risk for sharps injury e.g., orthopaedics).

Principle 2: The perioperative nurses should maintain safe work practices while handling sharp instruments and needles

Rationale
Perioperative personnel have a high risk of sustaining injuries related to the use of sharp devices with the suture needle being the most common source of sharps injury in the operating room.[4]

Criteria
When handling needles, scalpel blades and other sharp equipment (rake retractors, drill bits etc), the nurses should:
2.1 load/unload needles and scalpel blades with care, using, for example, needle holder to avoid using fingers for this task (training in the use of a needle holder for this task must be provided to avoid injury)
2.2 pass all sharp instruments (e.g., needle holder, scalpels) using a puncture proof container (kidney dish, tray) to avoid hand-to-hand passing of sharp instruments[5]

2.3 isolate all sharps within a restricted area on the instrument table to avoid being mixed with other instruments
2.4 create a neutral zone within the aseptic field where sharps are placed for transfer (avoids two people touching sharps simultaneously)
2.5 communicate with the surgeon and other team members when a sharp is within the neutral zone[6]
2.6 keep visual contact with sharps while in use to ensure they are not inadvertently placed in an area that may risk harm to the patient or other team members
2.7 avoid recapping, bending, or breaking needles
2.8 report and manage sharps-related injuries promptly (according to hospital policy).

Principle 3: The instrument nurse should ensure that all sharps are safely disposed of in an approved sharps disposal container at the completion of each surgical procedure

Rationale
The risk of sharps-related injury is reduced through the safe management and disposal of sharps.[6,7]

Criteria
When disposing of sharps, the nurses must:
3.1 take responsibility for discarding all disposable sharps into designated, appropriately labelled sharps containers
3.2 discard sharps as soon as the procedure is completed
3.3 discard sharps as close to the point of use as possible
3.4 separate and isolate reusable sharp instruments from other instruments prior to and during reprocessing.

Principle 4: The standard is reviewed every three years and when new evidence is available

Rationale
Documentation of procedural steps is a foundation for best practice, ensures consistency of practice and provides a tool for care planning.

Criteria
4.1 The standard should be stored in the unit practice manual and easily accessible for staff reference.
4.2 A sign-off sheet should be provided in the unit practice manual for staff to indicate when they have read the standard and any related local policies.

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Standard 2.4 – Managing accountable items during surgery and procedures

Scope of standard
All perioperative environments where the surgical patient is treated.

Scope of responsibility
All members of the perioperative team have a duty to collaborate to ensure that all items used during surgery and procedures are retrieved, accounted for and appropriately documented.

Principles
1. The instrument nurse and circulating nurse are responsible for the management of items used during surgery and procedures in the perioperative environment.[1,2]
2. A standardised procedure for managing and documenting accountable items during surgery/procedure should be followed.[3]
3. A standardised procedure for managing and documenting counts should be used during complex surgery.
4. All absorbent accountable items that are used during surgery/procedures should be handled in a manner that reduces the risk of the item being retained.[3]
5. Where available, standardised instrument trays and procedures for accounting of instruments during surgery/procedure should be followed.[3]
6. A progressive counting away technique to count and remove accountable items from the aseptic field may be used.
7. A process should be implemented in the event of an incorrect count.
8. The standard is reviewed every three years and when new evidence is available.

Principle 1: The instrument nurse and circulating nurse are responsible for the management of items used during surgery and procedures in the perioperative environment

Rationale
Correct management of the surgical/procedural count by the instrument nurse and circulating nurse and will minimise the risk of items being unintentionally retained in the patient.

Criteria:
Prior to commencement and during the procedure:
1.1 two (2) nurses should perform the count procedure, one of whom shall be a registered nurse. In minor procedures where no instrument nurse is present e.g., removal of lipoma or suturing lacerations, the count should be conducted by the circulating nurse and the surgeon
1.2 whenever possible the same two nurses should perform all counts
  1.2.1 where there is a permanent change in personnel, a complete count should be performed, and the names of all relieving nurses documented
  1.2.2 when a nurse is temporarily relieved (tea/lunch break), the names of the relieving nurses should be documented, but it is not necessary to conduct a complete count
1.3 if the count is interrupted, the count should be restarted.

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Principle 2: A standardised procedure for managing and documenting accountable items during surgery/ procedure should be followed

Rationale

A standardised procedure for managing and documenting accountable items will minimise the risks of items being retained unintentionally in the patient.

Criteria

The instrument nurses and circulating nurses should:

2.1 perform a minimum of two (2) counts of accountable items i.e., initial and final counts

2.1.1 when a body cavity has been opened, an additional count(s) should be performed at the closure of the body cavity and any additional body cavities

2.2 perform counts:

- prior to commencement of procedure i.e., the initial count
- at closure of a cavity, including a cavity within a cavity (i.e., uterus)
- at commencement of wound closure
- at skin closure i.e., the final count.

2.3 document all counts on an approved health facility document ('count sheet') which should also include the names of personnel performing the counts

2.4 document and initial all counted items immediately

2.5 open only the minimum number of accountable items deemed necessary to the surgery/procedure

2.6 count each individual item loudly and simultaneously while visualising the item.

2.7 where possible, ensure items remain intact within their inner packaging, so they do not become separated prior to counting

2.8 separate each item during the counting procedure

2.9 check the integrity of the item (X-ray detectable marker is present in swabs, sponges etc)

2.10 remove the entire package of items from the aseptic field if an incorrect number is noted. (These should be bagged, marked and isolated from the aseptic field)

2.11 remove from the operating/procedure room, accountable items accidently dropped/contaminated and not include these items in the count

2.12 document accountable items deliberately retained in the patient (e.g., sponges for haemostasis) on the count sheet, with final totals reflecting number of items retained. Similar documentation will be required when accountable items are removed at a later date, with final totals reflecting number of items removed

2.13 ensure that the results of closure counts are communicated loudly to the surgeon

2.14 ensure that no accountable items leave the operating room prior to completion of procedure. If an accountable item is required for transportation of a specimen intraoperatively, it must be documented on the count sheet

2.15 document on the count sheet if no count was required for the procedure.

Principle 3: A standardised procedure for managing and documenting counts should be used during complex surgery

Rationale

A standardised procedure for managing and documenting accountable items during complex surgery involving simultaneous or sequential procedures and more than one surgical team, will minimise the risks of items being retained unintentionally in the patient.

Criteria

When two or more procedures are undertaken simultaneously, with one instrument nurse and one circulating nurse involved, the nurses should:

3.1 use one count sheet.

When two or more procedures are undertaken simultaneously, with one instrument nurse and one circulating nurse involved and it becomes difficult to separate the accountable items used by both teams, the nurses should:

3.2 use one count sheet.

When two or more procedures are undertaken simultaneously and an additional instrument nurse and circulating nurse are involved: the nurses should:

3.3 use separate count sheets for each procedure.

When sequential procedures are undertaken (two-stage procedures) and the operating room *is cleared of instruments, equipment and rubbish* between each procedure, the nurses should:

3.4 conduct new counts for each procedure and document using *two* separate count sheets.

When sequential procedures are undertaken (two-stage procedures) and the *same set up* is being used or *remains* in the operating room, the nurses should:

3.5 continue the same count. This will require the use of a second count sheet. The final count of the first procedure is carried over to become the first count of the second procedure. Keep both count sheets together in the patient's record e.g., stapled together.

Principle 4: All absorbent accountable items that are used during surgery/procedures should be handled in a manner that reduces the risk of the item being retained

Rationale

The appropriate use of absorbent accountable items (e.g., swabs, sponges etc), contributes to the prevention of items being unintentionally retained.

Criteria

When handling absorbent accountable items (e.g., swabs, sponges etc), the instrument nurse should ensure the items:

4.1 contain an X-ray detectable marker

4.2 are not cut (*see also* ***criteria 4.6***, ***4.8*** *and* ***4.9***)

4.3 are never used as a wound dressing

4.4 are not used to wrap articles for sterilisation.

When managing throat packs, the anaesthetist is responsible for the insertion of the throat pack and recording on the anaesthetic record. The circulating nurse should ensure:

4.5 the insertion and removal are documented on the count sheet.

When managing gauze rolls, tapes, vessel loops, the instrument nurse and circulating nurse should ensure (*in addition to* ***criteria 4.1***, ***4.3*** *and* ***4.4***):

4.6 if they are cut, this is recorded on the count sheet.

When managing cotton wool balls, the instrument nurse and circulating nurse should ensure (*in addition to* ***criteria 4.1***, ***4.3*** *and* ***4.4***):

4.7 they are not used for skin antisepsis ('prepping').
4.8 if they are divided for use during surgery, the segments are counted and documented.

When managing neuro patties and eye strolls, the instrument nurse and circulating nurse should ensure (*in addition to **criteria 4.1, 4.3** and **4.4***):
4.9 if they are divided for use during surgery, the segments are counted and documented.

Principle 5: Where available, standardised instrument tray lists and a checking procedure to account for instruments during surgery/procedure should be followed

Rationale
Standardisation of instrument trays and corresponding tray lists will assist in accounting for all items used and minimise the risks of instruments being retained.

Criteria
The instrument nurse and circulating nurse should:
5.1 ensure instrument trays contain a standardised type and number of instruments
5.2 ensure a tray list corresponding to the contents is present
5.3 use the tray list to check and document the completeness of the contents:
- prior to the commencement of the procedure
- at the closure of body cavities (if required)
- at the completion of the procedure.

5.4 ensure that instruments with component parts (self-retaining retractors) are inspected for completeness and separate components documented as necessary to reduce risk of retention
5.5 sign and manage the storage of the tray list (according to health facility policy).

Principle 6: A progressive counting away technique to count and remove accountable items from the aseptic field may be used

Rationale:
A progressive counting away technique assists with managing large numbers of used accountable items and promotes standard precautions.

Criteria:
The *instrument* nurse should:
6.1 segregate used accountable items within the aseptic field in preparation for counting away
6.2 open out and separate all accountable items that are to be counted away
6.3 count items loudly with the circulating nurse in multiples of five (5) or ten (10) (as per original packaging)
6.4 perform two (2) consecutive counts prior to handing off the items
6.5 hand off items from aseptic field to circulating nurse using standard precautions.

The *circulating* nurse should:

6.6 don PPE (gloves, eye protection)

6.7 prepare plastic bags or suitable container to receive used items

6.8 count items loudly with the instrument nurse

6.9 receive the accountable items, then seal the bag/container, and write the number of items on the bag/container. Retain the bag/container in the OR for subsequent counting procedures.

Principle 7: A process should be implemented in the event of an incorrect count

Rationale

In the event of an incorrect count, a process must be implemented to ascertain whether the missing items have been retained inside the patient.

Criteria

The *instrument* nurse should:

7.1 immediately report any discrepancy in the count to the surgeon

7.2 request the surgeon to conduct a thorough search of the procedure site

7.3 work with the circulating nurse to carry out a thorough search of the aseptic field and operating room environment.

The *circulating* nurse should:

7.4 immediately report any discrepancy in the count to the operating room supervisor/manager (according to health facility policy)

7.5 conduct a thorough search of the environment (rubbish and linen bags, the floor, open all bags/containers to re-count those accountable items from progressive counts)

7.6 organise for an X-ray be taken prior to patient leaving the operating room or at earliest opportunity (according to health facility policy)

7.7 document incident (according to health facility policy).

Principle 8: The standard is reviewed every three years and when new evidence is available

Rationale

Documentation of procedural steps is a foundation for best practice, ensures consistency of practice and provides a tool for care planning.

Criteria

8.1 The standard should be stored in the unit practice manual and easily accessible for staff reference.

8.2 A sign-off sheet should be provided in the unit practice manual for staff to indicate when they have read the standard and any related local policies.

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Standard 2.5 – Handling specimens

Scope of standard
All perioperative environments where the surgical patient is treated.

Scope of responsibility
Perioperative nurses should have knowledge about the care and handling of specimens to reduce the risk adverse events (mislabelling, misdiagnosis) and to optimise patient outcomes.

Principles
1. Specimen handling should be assessed and planned prior to the commencement of the scheduled procedure/list.
2. Correct patient and specimen identification should be confirmed to minimise the risk of an adverse outcome for the patient.
3. The perioperative nurse should ensure that correct collection and handling methods are implemented for the protection of the specimen.
4. Specimen containers should be accurately labelled.
5. Documentation methods should be established to ensure specimen accuracy and accountability.
6. Transfer and transport methods should be established to ensure the integrity of the specimen/s.
7. The standard is reviewed every three years and when new evidence is available.

Principle 1: Specimen handling should be assessed and planned prior to the commencement of the scheduled procedure/list

Rationale
Patient assessment and assembling of all equipment required to manage specimens prior to commencement of procedure will ensure timely collection of the specimens and will reduce the risk of specimen errors.

Criteria
Prior to commencement of the procedure, the nurses should:
1.1 ensure there is a selection of specimen containers, fixative solutions, specimen. labels/stickers, pathology request forms biohazard bags (if used) or protective plastic bags for transporting the specimen container.
1.2 ensure a supply of PPE (mask, gloves) available for handling/transporting specimens.
1.3 alert the pathology or relevant department if a specimen is to be transported urgently.

Principle 1: Correct patient and specimen identification should be confirmed to minimise the risk of an adverse outcome for the patient

Rationale
Correct patient and specimen identification can prevent adverse outcomes for the patient through misdiagnosis, delay, or errors in treatment.

Criteria

On removal of the specimen from the patient, the instrument nurse should immediately confirm with the surgeon:

2.1 the name of the specimen

2.2 any identification markers or anatomical features to be documented

2.3 fixative solution required.1

Principle 3: The perioperative nurse should ensure that correct collection and handling methods are implemented for the protection of the specimen

Rationale

The integrity of the specimen must be ensured through correct handling, collection, and preservation. The specimen must be protected at all times to prevent damage, drying or deterioration due to extremes of temperature.

Criteria

When handling the specimen, the *instrument nurse* should:

3.1 ensure the specimen is safely stored on the instrument table prior to handing off the specimen to the circulating nurse e.g., placing it in a container or on a moist swab

3.2 ensure only one specimen is present on the aseptic field and instrument table at any time

3.3 instruct the circulating nurse to prepare a specimen container to receive the specimen

3.4 double check the labelling on the specimen container with the circulating nurse *prior* to handing off the specimen e.g., viewing and reading out loud the patient identification and specimen name

3.5 hand off the specimen as soon as possible following removal from the patient.[1,2]

Principle 4: Specimen containers should be accurately labelled

Rationale

The incorrect labelling of specimens can lead to adverse outcomes for the patient through misdiagnosis, delay or error in treatment.[1,2]

Criteria

Prior to receiving the specimen, the *circulating nurse* should:

4.1 select a specimen container appropriate for the specimen e.g., size, type of specimen

4.2 label the specimen container as instructed by the instrument nurse, ensuring the following identification information (at a minimum) is included:

- 4.2.1 name of patient, medical record number, date of birth
- 4.2.2 name of specimen (no abbreviations to be used)
- 4.2.3 identification makers (if any)

4.3 place the label on the container (not the lid) *prior* to receiving the specimen

4.4 confirm the identification details (*as above in **criteria 4.2***) with the instrument nurse

4.5 receive the specimen wearing PPE and maintaining aseptic technique.[1,2]

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Principle 5: Documentation methods should be established to ensure specimen accuracy and accountability

Rationale

A chain of custody using accurate specimen documentation, will reduce the risk of error from the time the specimen is removed from the patient until the pathology examination is completed.[1,2]

Criteria

The nurses should ensure:

5.1 a pathology request form is prepared for the specimen

5.2 the correct patient identification and specimen name is included on the pathology request

5.3 the surgeon completes the pathology request form and any additional requirements (according to hospital policy)[1,2]

5.4 specimen details are confirmed with the surgeon during the 'sign out' procedure.

Principle 6: Transfer and transport methods should be established to ensure the integrity of the specimen/s

Rationale

Establishing routine methods of specimen transportation, can reduce the risk of error caused by mishandling of specimens.[1]

Criteria

The nurses should:

6.1 ensure the specimen and associated patient identification be removed from the operating room immediately after each procedure (reduces risk of potential mix-up with subsequent patients/specimens)

6.2 wear PPE if pouring fixative solution into specimen container and when transporting the specimen

6.3 secure the lid of specimen container to prevent leakage during transportation

6.4 place specimen container into pre-labelled biohazard bag (if unavailable, use a plastic bag to secure specimen container)

6.5 ensure pathology form accompanies the specimen

6.6 keep specimen and labelling out of sight of public waiting areas during. transportation/storage to maintain patient privacy and confidentiality

6.7 protect specimen against loss or damage during transport or storage due to exposure to vermin or extremes of temperature

6.8 place specimen container and pathology form in designated collection point

6.9 complete documentation of specimen details into specimen register or as per local policy[1,2]

6.10 ensure specimens, particularly fresh specimens, are transported to the pathology laboratory as soon as possible or alternative storage is undertaken to ensure integrity of the specimen is maintained.

Principle 7: The standard is reviewed every three years and when new evidence is available

Rationale

Documentation of procedural steps is a foundation for best practice, ensures consistency of practice and provides a tool for care planning.

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Criteria

7.1 The standard should be stored in the unit practice manual and easily accessible for staff reference.

7.2 A sign-off sheet should be provided in the unit practice manual for staff to indicate when they have read the standard and any related local policies.

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Standard 2.6 – Perioperative patient handover

Scope of standard
All perioperative environments where the surgical patient is treated.

Scope of responsibility
All perioperative nurses and other members of the multidisciplinary team who are engaged in the clinical handover of patient care.

Principles
1. The perioperative team will effectively communicate and exchange critical information necessary for the safe outcome of surgery/procedure.
2. Nurses should conduct a pre-operative check of the patient on admission to the perioperative environment.
3. Nurses should conduct a clinical handover of the patient on admission to the PACU.
4. Nurses should conduct a clinical handover of the patient on return to the ward.
5. The standard is reviewed every three years and when new evidence is available.

Principle 1: The perioperative team will effectively communicate and exchange critical information necessary for the safe outcome of surgery/procedure

Rationale
Effective communication can ensure that critical information is communicated during the handover process. and can enhance patient outcomes.[1]

Criteria
During the clinical handover process the perioperative nurse should:
1.1 introduce themselves to the nurse participating in the handover, including their role in the care of the patient
1.2 conduct a verbal clinical handover using a consistent structured process[2]
1.3 confirm critical information with the nurse receiving clinical handover
1.4 raise any concerns related to patient care with the nurse during the clinical handover process
1.5 complete relevant documentation (according to health facility policy).

Principle 2: Nurses should conduct a pre-operative check of the patient on admission to the perioperative environment

Rationale
Conducting a pre-operative check of the patient on admission to the perioperative environment will reduce the risks of adverse events, for example, wrong site surgery and ensure all information relevant to the patient's care is communicated to the perioperative team.

On admission to the perioperative environment, the nurse admitting the patient should work with the ward nurse to conduct a clinical handover of the patient using a comprehensive, standardised pre-operative checklist (according to health facility policy). The use of a structured tool such as ISBAR is recommended.[1,2]

*See **Appendix 11: Example of use of ISBAR as clinical handover tool** for example.*

Criteria

On admission to the perioperative environment, the nurse admitting the patient should:

2.1 confirm responses verbally with the patient (carer/parent), if appropriate and check against identification band, medical records, consent form

2.2 document responses on pre-operative checklist (according to health facility policy)

2.3 ascertain/clarify additional information from the ward nurse as necessary

2.4 sign pre-operative checklist (according to health facility policy).

Principle 3: Nurses should conduct a clinical handover of the patient on admission to the PACU

Rationale

Conducting a standardised clinical handover of the immediate post-operative patient on admission to PACU will ensure all relevant anaesthetic, procedural information and nursing care is communicated to the PACU nurses, emphasising a continuity of care and responsibility.[3]

On arrival in PACU, the nurse accompanying the patient should conduct a clinical handover of the patient with the PACU nurse, using a structured tool such as ISBAR.

*See **Appendix 11: Example of use of ISBAR as clinical handover tool** for example.*

Criteria

On arrival in the PACU, the nurse accompanying the patient should:

3.1 conduct a verbal clinical handover with the PACU nurse using a consistent structured process

3.2 confirm critical information with the PACU nurse participating in the clinical handover

3.3 raise any concerns related to patient care with the PACU nurse during the clinical handover process

3.4 complete relevant documentation (according to health facility policy).

Principle 4: Nurses should conduct a clinical handover of the patient on return to the ward

Rationale

Conducting a standardised clinical handover of the post-operative patient to the ward nurses will ensure all relevant information about the procedure and immediate post-operative care is communicated, ensuring continuity of care and responsibility.[4,5]

On arrival in the ward, the perioperative nurse accompanying the patient should conduct a verbal handover with the ward nurse, using a structured tool such as ISBAR and documented according to health facility policy.

*See **Appendix 11: Example of use of ISBAR as clinical handover tool** for example.*

Criteria

On arrival in the ward, the perioperative nurse accompanying the patient should:

4.1 conduct a verbal clinical handover with the ward nurse using a consistent structured process

4.2 confirm critical information with the ward nurse participating in the clinical handover

4.3 raise any concerns related to patient care with the ward nurse during the clinical handover process

4.4 complete relevant documentation (according to health facility policy).

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Principle 5: The standard is reviewed every three years and when new evidence is available

Rationale

Documentation of procedural steps is a foundation for best practice, ensures consistency of practice and provides a tool for care planning.

Criteria

5.1 The standard should be stored in the unit practice manual and easily accessible for staff reference.

5.2 A sign-off sheet should be provided in the unit practice manual for staff to indicate when they have read the standard and any related local policies.

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Appendix 11: Example of use of ISBAR as clinical handover tool

The table is a guide only, using examples of critical information that may be included in the clinical handovers. Further critical information may be included specific to your patient's condition.[1]

ISBAR	PRE-OPERATIVE HANDOVER ON ADMISSION TO THE OPERATING THEATRE	HANDOVER FROM OPERATING ROOM TO PACU	HANDOVER FROM PACU TO THE WARD
INTRODUCTION/ IDENTIFCATION	• patient identity and preferred name	• patient identity and preferred name	• patient identity and preferred name
SITUATION	• surgical procedure to be carried out • consent to surgical/ anaesthetic procedure has been completed • site marking (if applicable) is correct and visible	• details of procedure completed and anaesthetic type • specimens taken (if applicable)	• details of procedure completed and anaesthetic type • specimens taken (if applicable)
BACKGROUND	• patient allergies • relevant medical history • pre-operative issues (e.g., anxiety, physical limitations, hearing or visual impairment, pressure injury) • administration of any pre-operative medication (e.g., anti-hypertensive drugs, insulin etc) • medical records, X-rays are present	• patient allergies • significant intraoperative events (e.g., blood loss, use of tourniquet) • pre-operative issues (e.g., anxiety, physical limitations, hearing or visual impairment) • pressure injury • medical records, X-rays are present	• patient allergies • vital signs and any special observations (e.g., extremity, neurological) carried out in PACU • patient's progress and current condition • significant intraoperative events (e.g., blood loss, use of tourniquet) • pre-operative issues (e.g., anxiety, physical limitations, hearing or visual impairment) • pressure injury • medical records, X-rays are present
ASSESSMENT	• fasting status • removal of prosthesis (e.g., dentures, contact lenses, hearing aids etc) • removal or securing of jewellery (e.g., wedding bands, earrings, neck chains, cultural/religious items) • skin integrity status	• consider A, B, C, D and E: Airway, Breathing, Circulation, consciousness, comfort, Drugs, dressings, drains, Everything else • post-operative orders re: analgesia, nausea, IV, fluids, care of any drains, catheters etc • skin integrity status	• IV fluids, dressings, drains, catheters in situ, any specific care carried out in PACU and post-operative orders for ongoing management • post-operative medications administered in PACU (analgesia, anti-emetics), effectiveness and ongoing post-operative orders • skin integrity status
RECOMMENDA-TIONS	• whereabouts of patient's relatives, belongings (if applicable)	• whereabouts of patient's relatives, belongings (if applicable) • whereabouts of surgeon/ anaesthetist if assistance required • discharge information	• whereabouts of patient's relatives, belongings (if applicable) • whereabouts of surgeon/ anaesthetist if assistance required • discharge information

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Standard 2.7 – Safe use of electrosurgery

Rationale

Electrosurgery (diathermy) is a procedure in which an equipment is used by the surgeon to secure haemostasis and also cut tissue using high frequency electrical current. Correct care and handling of electrosurgical equipment is essential to ensure safe patient outcomes and the safety of the surgical team.

The biproduct of using electrosurgery is the generation of surgical plume (smoke), which is a known workplace hazard and is potentially harmful if inhaled by members of the surgical team. Mechanisms should be used to safely evacuate plume from the surgical site.

Scope of standard

Clinical environments where electrosurgery is used.

Scope of responsibility

Nursing staff involved in operating and maintaining electrosurgical equipment.

Principles

1. Electrosurgical equipment should be operated according to manufacturer's instruction and inspected before use.[1,2]
2. All personnel involved with operating the electrosurgical unit (ESU) should be educated and trained in electrical safety and safe operation of the ESU.[1,2]
3. All personnel must take precautionary measures to ensure the safety of the patient during the pre-operative preparation for use of ESU.[2]
4. The surgical team must ensure patient and personnel safety during the intraoperative use of ESU
5. Surgical plume (smoke) generated by ESU should be evacuated from the surgical site.[3]
6. The standard is reviewed every three years and when new evidence is available.

Principle 1: Electrosurgical equipment should be operated according to manufacturer's instruction and inspected before use[1,2]

Rationale

Electrosurgical units (ESUs) that are in good working order and operated in accordance with manufacturer's written safety will ensure the safety of the patient and personnel.

Criteria

The facility should ensure that:

1.1 each ESU undergoes regular preventative maintenance according to local policy

1.2 each ESU has been assigned an identification or serial number to allow for tracking of service and maintenance[1]

1.3 records of maintenance, repair and testing should be kept and available for inspection.[2]

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Principle 2: All personnel involved in operating the electrosurgical unit (ESU) should be educated and trained in electrical safety and safe operation of the ESU[1,2]

Rationale

A thorough understanding of basic electrical safety and the safe use of ESU will reduce the risk of injury to both patient and the surgical team.

Criteria

2.1 Orientation and ongoing education for nurses operating ESU provides content including but not limited to:

- understanding of principles of electricity
- electrical safety principles and practice
- use of monopolar and bipolar diathermy
- positioning of patient return electrode
- safe use of the active electrode for both open and laparoscopic procedures
- dangers of surgical plume and methods of evacuation
- management of surgical fires.[2]

2.2 Documentation of orientation and ongoing education records are maintained as per local policy.

Principle 3: All personnel must take precautionary measures to ensure the safety of the patient during the pre-operative preparation for use of ESU[2]

Rationale

The use of ESU has been associated with patient injuries, for example burns, electrocution, fires and therefore extreme caution should be taken to ensure no injuries occur.[1]

Criteria

Prior to use, the nurses should ensure:

3.1 leads and connectors are visually inspected. Any damage (e.g., frayed leads/cords) or faults noted must be reported according to local policy and the equipment removed from use[1,2]

3.2 ESU generator has been tested to ensure all functions are working and ready for use, including volume of audible activation settings and light indicators. This will ensure that inadvertent activation of the active electrode is noted[1]

3.3 ESU is positioned close to the surgical field to:

3.3.1 reduce risks of trip hazards for staff from electrical cords or patient return electrode lead

3.3.2 prevent tension on patient return electrode lead as this may affect the quality of the contact with the patient and interfere with the safe dispersal of electrical current[1,2]

3.4 fluids such as skin prepping solutions and opened bottles are *not* to be placed on top of the ESU, as they may cause electrocution if spilt

3.5 where there is likelihood of contamination from blood or other fluids, foot pedals used for activation of ESU are protected by placement in a plastic bag and changed when soiled

3.6 an appropriately sized single-use patient return electrode is selected, where available (paediatric or adult). They should never be cut as this may impact its ability to safely conduct electrical current, resulting in burns injury[1]

3.7 reusable patient return electrodes are cleaned after each use as an infection prevention practice and inspected before each use to ensure that no damage has occurred. Reusable patient return electrodes used on infectious patients should be discarded

3.8 the patient return electrode *should* be:
- 3.8.1 placed firmly and with uniform contact with the patient's skin to ensure safe conduction of electrical current
- 3.8.2 placed as close to the operative site as possible to allow the lowest power settings to be used and prevent alternate pathway injury
- 3.8.3 positioned on a large muscle mass e.g., outer thigh, as a well vascularised area will ensure good conduction of electrical current
- 3.8.4 applied following positioning of the patient to ensure good contact with the skin.
- 3.8.5 carefully removed following completion of surgery to reduce risk of damage to the patient's skin. The patient's skin should be inspected for any signs of burns injury, which if noted should be reported and treatment measures taken[1,2]

3.9 the patient return electrode should *not be* placed:
- 3.9.1 in areas of vascular insufficiency e.g., scar tissue as there is reduced vascularity for good electrical contact
- 3.9.2 on hairy areas as this reduces ability of electrode to adhere to the skin. Excess hair should be clipped prior to application of patient return electrode
- 3.9.3 near metal implants or bony prominences as electrical current can be concentrated into a small area and may lead to patient suffering burns
- 3.9.4 on heavily tattooed areas of the body as some coloured inks can conduct electricity and may result in burns injury

3.10 all patient jewellery is removed to prevent burns occurring due to inadvertent leakage of electrical current. If jewellery cannot be removed, they should be covered with tape/Elastoplast

3.11 pooling of skin antisepsis solution is avoided, as this can be a fire hazard and damage the skin integrity. Using a minimal amount of prepping solution and placing a protective absorbent pad in the area to be prepped will reduce risk of pooling.[1,2]

Principle 4: The surgical team must ensure patient and personnel safety during the intraoperative use of ESU

Rationale

Correct intraoperative use of the active electrode will reduce the risk of injury to the patient and surgical team members.

Criteria

The nurses should ensure that:

4.1 the power settings of the ESU are set at the lowest possible setting to achieve desired tissue effect

4.2 the required settings of the ESU are confirmed between the surgeon and the instrument and circulating nurses.

The circulating nurse should:

4.3 verbally confirm the settings aloud and ensure that all audible and visible alarm systems are functioning

4.4 The instrument nurse should:
- 4.4.1 inspect the active electrode for any visible faults or fraying of leads and test the functionality prior to use
- 4.4.2 place the active electrode in a safety holster when not in use to prevent accidental activation and injury to the patient
- 4.4.3 avoid any kinking or coiling of leads/cables e.g., wrapping leads around metal instruments as this can result in leakage of electrical current and burns injury to surgical team
- 4.4.4 use a damp sterile sponge to keep the active electrode free of tissue build-up, blood, or eschar, as this will diminish effective use
- 4.4.5 ensure that only bipolar diathermy is available if patient has an implantable device e.g., cardiac pacemaker[1,2]

NOTE: Electrical current used in monopolar diathermy passes through the patient's body to the patient return electrode and may cause a pacemaker to malfunction. The action of activating the diathermy via an instrument (buzzing) and not directly to the patient's tissue should be discouraged as this action may lead to current travelling through the person holding the instrument causing injury. In bipolar diathermy, the electrical current passes between the two prongs of the active electrode forceps and does not pass through the body. Bipolar diathermy does not require the use of patient return electrode.[1]

4.4.6 take extreme care ESU is used in the presence of anaesthetic gases and oxygen to reduce risk of ignition of flammable gases which may result in a fire

NOTE: When ESU is used for head, neck, oral surgery, the high concentration of oxygen and anaesthetic gases near the operative site can ignite causing a fire. Moist sponges can be placed around the operative site to reduce the risk of fire. Good communication with the anaesthetist is important when activating ESU to ensure gases and oxygen are managed safely.[1]

4.4.7 carry out a visual check of the insulation covering of electrosurgical laparoscopic instruments for any damage, as this may result in leakage of electrical current and burns injury to the patient.[1,2]

Principle 5: Surgical plume (smoke) generated by ESU should be evacuated from the surgical site[3]

Rationale

Surgical plume is a workplace hazard as the plume is known to contain noxious gases and potentially harmful cellular debris e.g., viruses, bacteria, DNA.

Criteria

5.1 Specialised surgical plume evacuation systems should be used where available. When not available, alternative practices may include use of:
- 5.1.1 handheld suction equipment incorporating an in-line filter placed between the wall suction outlet and suction canisters to filter plume and prevent damage to the suction outlet
- 5.1.2 portable suction[3,4]

5.2 a capture device (specialised diathermy handpiece or sucker) should be held 2 cm from the source of the plume.

Principle 6: The standard is reviewed every three years and when new evidence is available

Rationale

Documentation of procedural steps is a foundation for best practice, ensures consistency of practice and provides a tool for care planning.

Criteria

6.1 The standard should be stored in the unit practice manual and easily accessible for staff reference.

6.2 A sign-off sheet should be provided in the unit practice manual for staff to indicate when they have read the standard and any related local policies.[5]

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Chapter 3: Environmental safety

Introduction

The patient has a right to receive care and treatment in a clean and safe environment and the staff have a right to work in a well-maintained, hygienic and safe workplace.[1,2]

Many potentially hazardous chemicals are used within the perioperative environment and are used in many aspects of patient care, including:

- patient's diagnostic processes (e.g., tissue fixatives for pathology specimens)
- patient's treatment (e.g., cytotoxic substances, cements, glues and sealants etc)
- environmental cleaning (e.g., detergents, disinfectants etc) or
- during reprocessing of reusable medical devices (RMDs) (e.g., high-level disinfectants, enzymatic cleaners etc).

Nurses and other members of the perioperative team who know how to manage risks associated with hazardous chemicals in their workplace can minimise the occupational exposure to these potentially hazardous substances and can reduce the risks of harm to themselves, to others and to the environment.

Healthcare services and local facilities have a responsibility to provide the infrastructure and policies, the resources and the training to enable staff to safely handle hazardous chemicals present in all healthcare settings that may be hazardous to users as well as others in close proximity to their use. Safe handling of hazardous chemicals includes their preparation, storage and disposal of related waste.

Employer responsibilities are a universal principle of occupational health and safety (OHS) legislation and is a legal requirement governed by legislation in the following Pacific Island countries (PICs):[3]

- Fiji – known as the Fiji Health and Safety at Work Act 1996 (HASAWA 1996)
- Samoa – known as the Occupational Safety and Health Act 2002
- Solomon Islands – known as Safety at Work Act 1982 (SAWA 1982)
- Vanuatu – known as Health and Safety at Work Act 2006

The following PICs are working towards such legislation:[5] Cook Islands, Kiribati, Marshall Islands, Tonga and Tuvalu.

The chapter on environmental safety comprises three standards developed specifically to address chemical safety, reprocessing practices for instruments and equipment and cleaning the perioperative environment.

The standards are:

- *Standard 3.1 – Safe handling of hazardous chemicals*
- *Standard 3.2 – Reprocessing reusable medical devices*
- *Standard 3.3 – Cleaning the perioperative environment*

Standard 3.1 – Safe handling of hazardous chemicals

Exposure to hazardous chemicals can place staff at risk of acute and chronic health related illness through inhalation, ingestion or skin contact.[4] Knowledge of safe handling practices and adherence to legislative and local safety policies and practices will minimise occupational exposure.

This standard is designed to complement the facility policies for environmental cleaning and waste management, as well as the applicable OHS legislation, where present.

This standard should not be the sole source of information on the safe handling of chemicals and should be considered a supplementary resource to standardise nurses' practice in the perioperative environment.

Standard 3.2 – Reprocessing of reusable medical devices (RMDs)

Reprocessing of RMDs refers to the processes undertaken to clean, dry, inspect, assemble, package and sterilise/disinfect instruments and equipment used in surgical procedures. RMDs that have been correctly reprocessed can positively influence the patient's surgical outcome and reduce the risk of surgical site infection.[5]

The standard acknowledges that in some facilities a centralised Sterile Service Department (SSD) may be a separate department which undertakes all the reprocessing steps, while in other facilities, washing, drying, inspection and repackaging of RMDs takes place within the operating theatre, maternity department or emergency department prior to transfer to SSD for sterilisation.

It should be noted that the standard will focus on steam sterilisation and chemical disinfection as these are the two most used methods in reprocessing RMDs. Where other technology exists, the manufacturer's recommendations should be followed, and education provided on the safe use of the reprocessing method.

Standard 3.3 – Cleaning of the perioperative environment

A clean environment can reduce the risk of infection for hospitalised patients and visitors, as well as staff. Cleaning is an essential component of effective infection prevention and control (IPC) programs in healthcare settings.[1,6,7]

Policies for environmental cleaning of healthcare facilities should be developed or reviewed by IPC professionals to ensure the content is based on the latest evidence and current industry practices.

This standard is designed to complement the facility policies for IPC, environmental cleaning, and waste management, where present. This standard should not be the sole source of information on cleaning the perioperative environment and should be considered a supplementary resource to standardise nurses' practice.

Nurses and other members of the perioperative team may be required to assist and/or supervise dedicated cleaning and housekeeping staff, or contract cleaners employed by the facility.[6] Teamwork and supervision are particularly important when sensitive medical equipment and patient-care devices need to be cleaned or moved.[6] Such items may be referred to as critical or semi-critical equipment in the literature.

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Acknowledgements for Chapter 3

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Further reading and resources for Chapter 3

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Standard 3.1 – Safe handling of hazardous chemicals

Preamble
Healthcare services and local facilities have a responsibility to provide the infrastructure and policies, the resources and the training to enable staff to safely handle hazardous chemicals used in the workplace. Employer responsibilities such as these are among the universal principles of occupational health and safety (OHS) legislation.*[1]

Chemicals are present in all healthcare settings and may be hazardous to users as well as others in close proximity to their use. Chemicals may be used in the patient's diagnostic processes (e.g., tissue fixatives for pathology specimens), as part of the patient's treatment (e.g., cytotoxic substances, cements, glues and sealants etc), as part of environmental cleaning (e.g., detergents, disinfectants etc.), or during reprocessing of reusable medical devices (RMDs) (e.g., high-level disinfectants, enzymatic cleaners etc). Safe handling of hazardous chemicals includes their preparation, storage and disposal of related waste.

Rationale
The nurse has a right to work in a safe workplace.[2,3]

Nurses and other members of the perioperative team who know how to manage risks associated with hazardous chemicals in their workplace can minimise the occupational exposure to these potentially hazardous substances and can reduce the risks of harm to themselves, to others and to the environment.

Scope of standard
The term 'perioperative environment' refers collectively to operating theatre (OT) departments including anaesthetic rooms, operating rooms and procedure rooms (ORs) where patients undergo minor procedures such as biopsies, debridement and dressing changes or more invasive surgical operations. The principles in this standard may also apply to sterile service departments (SSDs).

Scope of responsibility
Nurses working in the perioperative environment.

Nurses' ability to comply with this standard may be influenced by the infrastructure, policies and the supply of resources in their local facility as well as the presence of applicable OHS legislation.*

> *"In relation to chemicals, a hazard is a set of … properties of the substance … or process that may cause adverse effects to organisms or the environment. There are two broad types of hazards associated with hazardous chemicals which may present an immediate or long-term injury or illness to people. These are:*
>
> ***Health hazards***
> *Exposure usually occurs through inhalation, skin contact or ingestion.*
> *Typical acute health effects include headaches, nausea or vomiting and skin corrosion, while chronic health effects include asthma, dermatitis, nerve damage or cancer.*
>
> ***Physical hazards***
> *These are properties of a chemical that can result in immediate injury to people or damage to property. They arise through inappropriate handling or use and can often result in injury to people and/or damage to property because of the intrinsic physical hazard.*
> *Many chemicals have properties that make them both health and physical hazards."* [1(p.7)]

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*OHS is a legal requirement in the following Pacific Island countries (PICs):[4]

Fiji – known as the Fiji Health and Safety at Work Act 1996 (HASAWA 1996)
Samoa – known as the Occupational Safety and Health Act 2002
Solomon Islands – known as Safety at Work Act 1982 (SAWA 1982)
Vanuatu – known as Health and Safety at Work Act 2006

The following PICs are working towards such legislation:[5] Cook Islands, Kiribati, Marshall Islands, Tonga and Tuvalu.

This standard is designed to complement the facility policies for environmental cleaning and waste management, as well as the applicable OHS legislation, where present. This standard should not be the sole source of information on the safe handling of chemicals and should be considered a supplementary resource to standardise nurses' practice.
This standard should also be read in conjunction with other standards in this chapter, namely:

- *Standard 3.2 – Reprocessing of reusable medical devices*; and,
- *Standard 3.3 – Cleaning in the perioperative environment*.

Principles

1. A register of commonly used hazardous chemicals is maintained and is easily accessible for staff.
2. Local policies for the chemical safety are based on current best practice and the principles of occupational health and safety.
3. Precautions should be taken to mitigate the risks associated with the use of chemicals in the perioperative environment.
4. Education and training are provided for nurses to ensure safe handling of chemicals used in the perioperative environment.
5. The standard is reviewed every three years and when new evidence is available.

Principle 1: A register of commonly used hazardous chemicals is maintained and is easily accessible for staff

Rationale

A written record of hazards (known as a "hazard register") will help staff to identify any safety controls needed in their workplace and provide advice to help staff handle chemicals safely.[3]

Criteria

The department ensures staff have access to a register which:

1.1 lists hazardous chemicals commonly stored, handled or used in the department.
1.2 includes a current safety data sheet (SDS) for each of the chemicals listed
  1.2.1 SDS must be no older than five years (manufacturers are required to update product SDS every five years)
  1.2.2 SDS must also be displayed where chemicals are stored.

*See also **Appendix 12: Principles of managing a hazardous chemical spill**.*

When facilities do not have a local register for commonly used hazardous chemicals:

1.3 The department can:

- 1.3.1 use a template to develop their own hazardous chemical register[5]
- 1.3.2 identify other resources for staff to access the latest information and advice about chemical safety (see ***Further reading and resources*** section below).

Principle 2: Local policies for the chemical safety are based on current best practice and the principles of occupational health and safety

Rationale

Local policies provide staff with a standardised method to identify and safely manage potential chemical hazards, which can minimise the risk of harm to patients, staff, the environment, or property.[1]

Criteria

The department ensures staff have access to local policies or standards which identify:

2.1 department-specific roles and responsibilities for staff handling chemicals

2.3 storage requirements for chemicals

2.4 the PPE to be used when handling chemicals

2.5 the training requirements for nursing staff, including the management of hazardous chemical spills and leakages. This should also include the authorship, the date of publication and a date for review and a reference list identifying the source OHS documents.

Principle 3: Precautions should be taken to reduce and manage the risks associated with the use of chemicals in the perioperative environment

Rationale

Safety control measures are considered best practice to prevent user exposure to hazardous chemicals which can occur through skin absorption, inhalation, or ingestion.[6]

Criteria

The department has:

3.1 a risk assessment process to manage chemical use

3.2 access to PPE for the commonly used chemicals, which is:

- 3.2.1 well-maintained and fit for purpose, including single-use PPE and reusable PPE
- 3.2.2 supplied in adequate volumes and frequencies to meet demand
- 3.2.3 suitable for safe handling of commonly used chemicals e.g., long, thick vinyl or nitrile gloves which are chemical resistant, gown and/or apron, mask, respirator, eye protection such as goggles or face shield, hoods and head covers, gumboots

3.3 a process to manage chemical spills, including:

- 3.3.1 spill kits for the commonly used chemicals
- 3.3.2 additional PPE stored with the spill kit
- 3.3.3 signage

3.4 a process to manage chemical waste, including:
- 3.4.1 spill kits for the commonly used chemicals
- 3.4.2 additional PPE
- 3.4.3 signage.

When handling hazardous chemicals in the perioperative environment, the nurse:

3.5 checks the product label including any warning notices, to confirm the correct product selection and to manage any identified risks

3.6 prepares chemicals safely by:
- 3.6.1 referring to manufacturers' instructions and SDS if unsure of safe handling practices.
- 3.6.2 using appropriate PPE
- 3.6.2 using closed systems, if available (e.g., fume cabinets when pouring formalin, sealed vacuum containers or syringes for mixing bone cement)
- 3.6.3 ensuring chemical preparations are properly labelled if transferred from the original container
- 3.6.4 cleaning reusable containers after use and returning them to storage areas

3.7 minimises chemical exposure time for self and others

3.8 manages chemical spills appropriately and promptly

3.9 disposes of chemical waste appropriately and promptly.

*See also **Appendix 12: Principles of managing a hazardous chemical spill** and **Appendix 13: Commonly used hazardous chemicals**.*

Principle 4: Education and training are provided for nurses to ensure safe handling of chemicals used in the perioperative environment

Rationale

Education and training will help staff to recognise and correct hazards relating to chemical safety and supports them to understand best safety practices and expectations.

Criteria

The department orientation for nurses:

4.1 provides content on safe handling of chemicals used in the perioperative environment, including but not limited to:
- 4.1.1 the facility's policies relating to safe handling of chemicals used in the perioperative environment
- 4.1.2 the commonly used chemicals in the perioperative environment
- 4.1.3 record-keeping for chemical use or exposures
- 4.1.4 the underlying principles of occupational health and safety that inform the department's procedures including:
  - safe storage
  - PPE
  - preparation of chemicals
  - disposal of chemicals
  - management of chemical spills and leakages.

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Principle 5: The standard is reviewed every three years and when new evidence is available

Rationale

Documentation of procedural steps is a foundation for best practice, ensures consistency of practice and provides a tool for care planning.[7]

Criteria

5.1 The standard should be stored in the unit practice manual and easily accessible for staff reference.

5.2 A sign-off sheet should be provided in the unit practice manual for staff to indicate when they have read the standard and any related local policies.

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Appendix 12: Principles of managing a hazardous chemical spill

Hazardous chemicals must be stored and transported safely with lids secured.

Any spills or leaks must be cleaned up immediately.

Chemical spill kit should contain all equipment to deal with spills or leaks, including:

- instructions for use
- PPE such as long, thick vinyl or nitrile gloves which are chemical resistant, gown and/or apron, mask, respirator, eye protection such as goggles or face shield
- absorbent materials for large volume spills
- neutralising or decontaminating material
- strong plastic waste bags
- signage to alert staff to spill hazard and restrict access
- current SDS.

Appendix 13: Commonly used hazardous chemicals

COMMON USAGE	CHEMICAL NAME (Common name)	RESOURCES
Environmental cleaning (e.g., detergents and disinfectants)	Neutral detergents (pH between 6 and 8)	Centers for Disease Control and Prevention CDC, 2020 https://www.cdc.gov/hai/prevent/resource-limited/supplies-equipment.html
	Chlorine, sodium, hypochlorite (household bleach, Chlorox, Chlorosan, Depex)	Centers for Disease Control and Prevention CDC, 2016 https://www.cdc.gov/infectioncontrol/guidelines/disinfection/disinfection-methods/chemical.html
	Hospital-grade disinfectants (Viraclean, Virosol)	
Reprocessing of reusable medical devices (RMDs) (e.g., high-level disinfectants, enzymatic cleaners)	Glutaraldehyde (Aidal Plus, Cidex, Unidex)	Centers for Disease Control and Prevention CDC, 2016 https://www.cdc.gov/infectioncontrol/guidelines/disinfection/disinfection-methods/chemical.html
	Enymatic cleaners (Endozime, Getinge Clean MIS Detergent, Medizyme, Matrix, Sonizyme)	International Association for Soaps, Detergents and Maintenance Products AISE https://www.aise.eu/our-activities/standards-and-industry-guidelines/safe-handling-of-enzymes.aspx
Tissue fixatives (e.g., pathology specimens)	Formaldehyde (formalin, formal saline)	University of Washington, Environmental Health and Safety, 2017 https://www.ehs.washington.edu/system/files/resources/Formaldehydeguidelines.pdf
Cytotoxic substances (e.g., chemotherapy)	Mitomycin-C	eviQ, Cancer Institute of NSW, 2019 https://www.eviq.org.au/clinical-resources/administration-of-antineoplastic-drugs/188-safe-handling-and-waste-management-of-hazardou
	5-Fluorouracil (5FU)	
Surgical sealants (e.g., bone cements, tissue glues)	Polymethyl methacrylate PMMA (bone cement) (Biomet, CWM, Palcos, Simplex)	Bone Smart (Pfiedler Enterprises, 2011) https://bonesmart.org/forum/attachments/bone-cement-pdf.4185/

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Useful websites

New South Wales government
Hazardous chemicals – general requirements
https://www.safework.nsw.gov.au/hazards-a-z/hazardous-chemical/general-requirements

Centers for Disease Control and Prevention (CDC)
Chemical disinfectants: Guideline for Disinfection and Sterilization in Healthcare Facilities (2008)
https://www.cdc.gov/infectioncontrol/guidelines/disinfection/disinfection-methods/chemical.html

Organisation for Economic Co-operation and Development (OECD)
eChemPortal
The Global Portal to Information on Chemical Substances
https://www.echemportal.org/echemportal/

SafeWork Australia
Registers, manifests and placards
https://www.safeworkaustralia.gov.au/registers-manifests-and-placards

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University of Washington
Environmental Health and Safety
https://www.ehs.washington.edu

World Health Organisation (WHO)
International Programme on Chemical Safety
https://www.who.int/ipcs/saicm/saicm/en/

List of Environmental Health Criteria (EHCs) on chemicals or groups of chemicals
https://www.who.int/ipcs/publications/ehc/ehc_alphabetical/en/

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Standard 3.2 – Reprocessing of reusable medical devices

Reprocessing of reusable medical devices refers to the processes undertaken to clean, dry, inspect, assemble, package and sterilise/disinfect instruments and equipment used in surgical procedures.

Rationale
Reusable medical and surgical equipment that has been correctly reprocessed can positively influence the patient's surgical outcome and reduce the risk of surgical site infection.[1]

Scope of standard
Clinical environments where reusable medical devices (RMD) are reprocessed e.g., central sterilising departments, sterilising departments connected to operating theatres, maternity and emergency departments.

Scope of responsibility
Nursing staff involved in reprocessing RMDs and surgical equipment.

Background
While this standard is developed to guide the practices of nursing staff involved in reprocessing RMDs, it is acknowledged that ancillary staff may participate in some or all these activities.

It is also acknowledged that in some facilities the centralised sterile service department (SSD) may be a separate department which undertakes all the reprocessing steps, while in other facilities, washing, drying, inspection and repackaging of RMDs takes place within the operating theatre, maternity department, or emergency department prior to transfer to SSD for sterilisation.

This standard will focus on steam sterilisation and chemical disinfection as these are the two most used methods used in reprocessing RMDs. Where other technology exists, the manufacturer's recommendations should be followed, and education provided on the safe use of the reprocessing method.

This standard should also be read in conjunction with other standards in the Chapter 3 on environmental safety, namely:

- *Standard 3.1 – Safe handling of hazardous chemicals*; and,
- *Standard 3.3 – Cleaning in the perioperative environment*.

Principles

1. A designated area is provided to enable the reprocessing of reusable medical devices (RMDs).
2. All instruments and equipment (RMDs) are kept free of bioburden (blood, tissue and body fluids) at point of use (intraoperatively).
3. All instruments and equipment (RMDs) are washed, rinsed and dried prior to sterilisation/disinfection.
4. Following the cleaning process, instruments and equipment are inspected for cleanliness and integrity prior to sterilisation.
5. Instruments and equipment are assembled and packaged prior to steam sterilisation.
6. All RMDs must undergo a process of sterilisation to eliminate all microorganisms and spores.
7. Following sterilisation, packaged sterile items are stored in a manner that will ensure sterility is maintained.
8. The reprocessing of heat sensitive endoscopy equipment should be carried out using high-level disinfection.
9. Education and training are provided for nurses to ensure reprocessing is carried out in accordance with relevant infection control and sterilisation principles and practices, manufacturer's instructions and local policies.
10. The standard is reviewed every three years and when new evidence is available.

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Principle 1: A designated area is provided to enable the reprocessing of reusable medical devices (RMDs)

Rationale

A designated area physically separated from other clinical areas, will reduce the risks of contamination of sterile items.

Criteria

The facility should ensure that:

1.1 the area where reprocessing of RMDs takes place is, where possible, physically separated from all other clinical areas e.g., the operating theatre

1.2 there are clearly demarcated areas which allows segregation of 'dirty' (receiving and washing RMDs) and 'clean' (inspection, packaging, sterilising, and storing) processes

1.3 there is a clear workflow to facilitate movement of items from the 'dirty' area to the 'clean' area, e.g., signage to indicate zones etc.

1.4 where applicable, contaminated equipment are transported to SSD in fully enclosed, puncture-resistant containers or covered trolleys clearly labelled 'biohazard', to minimise contamination risk to staff and public during transportation between departments

1.5 provision is made for transportation containers/trolleys to be cleaned after the contaminated items have been unloaded and before reuse to limit the risk of cross contamination

1.6 PPE is available for staff involved in the reprocessing of RMDs to protect them from contamination.[1,2]

Principle 2: All instruments and equipment (RMDs) are kept free of bioburden (blood, tissue and body fluids) at point of use (intraoperatively)

Rationale

The presence of bioburden can prevent the effective use of the instrument and compromise the disinfection or sterilisation processes if it is not removed promptly.

Criteria

Intraoperatively, the instrument nurse should ensure:

2.1 instruments and equipment are wiped with a sterile sponge (e.g., abdominal sponge) moistened with sterile water if available, or boiling water at point of use as soon as possible after use to prevent bioburden from drying on the instrument and compromising the effective use of the instrument

NOTE: Sterile saline should *not* be used for wiping instruments, as the solution can cause damage to the surface of the instrument.

2.2 care should be taken to reduce risk of sharps injury when sharp instruments are being cleaned e.g., scissors, osteotomes, drill bits etc. For example, reusable sharps should be separated from other instruments and placed in kidney dish prior to reprocessing

2.3 following completion of the procedure, bioburden is washed from the RMDs prior to dispatch to SSD in a clean-up area, if available or within the OR

2.4 all disposable sharps are correctly discarded in an approved sharps receptacle prior to transportation between departments

2.5 RMDs are transported to SSD as soon as practicable to allow timely reprocessing and prevent any residual bioburden compromising the integrity of the RMD

2.6 if there is a delay in transporting RMDs to the SSD, hinged instruments (e.g., scissors, clamps) are opened to expose inner surface, placed in a covered container, and kept moist using a towel soaked in enzymatic solution or completely submerged in enzymatic solution and tap water (or as recommended by the manufacturer).[1,2]

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Principle 3: All instruments and equipment (RMDs) are washed, rinsed and dried prior to sterilisation/disinfection

Rationale

The presence of bioburden can compromise the effectiveness of the disinfection or sterilisation processes if it is not removed by thorough cleaning prior to high-level disinfection or sterilisation.

Criteria

The nurse should ensure:

3.1 contaminated RMDs are received at the designated 'dirty' area within the SSD and never at the 'clean' area

3.2 staff receiving and involved in the cleaning of contaminated RMDs wear appropriate PPE to reduce risk of contamination

3.3 if applicable, RMDs are disassembled prior to cleaning to ensure every component is cleaned with brushes and single-use cloths (if available) used to remove gross soil from the RMDs

3.4 RMDs are reprocessed with compatible cleaning solutions and using compatible cleaning processes according to manufacturer's instructions. Cleaning processes include:

- 3.4.1 mechanical cleaners, e.g., automated washers, automated washers/disinfectors, ultrasonic cleaners
- 3.4.2 manual cleaning with water and appropriate detergent/enzymatic cleaner (Note: bleach should not be used as this will damage the instrument)

3.5 immersible RMDs are completely submerged during the cleaning process to minimise the risk of aerosolisation and assist in the cleaning process

3.6 RMDs which cannot be submerged, are cleaned using a damp, single-use cloth

3.7 all RMDs are rinsed in clean water or wiped with a cloth following cleaning process to remove all residual detergent**/**enzymatic cleaner

3.8 RMDs are air dried or dried by hand using a clean, lint free cloth, preferably single-use (if available)

3.9 RMDs with lumens are:

- 3.9.1 manually cleaned with brushes and flushed to ensure all contamination is removed
- 3.9.2 flushed with clean water to remove residual detergent
- 3.9.3 flush dried using compressed medical grade air

3.10 cleaning solution including water are changed when visibly soiled and at the completion of each cleaning session

3.11 tools and equipment used in cleaning processes are inspected, cleaned, disinfected and dried after every shift;

- 3.11.1 any damaged cleaning equipment should be discarded. Disposable cleaning tools are recommended.[1,2]

*See **Appendix 14: Policy for local decontamination of reusable equipment according to the Spaulding classification**.*

Principle 4: Following the cleaning process, instruments and equipment are inspected for cleanliness and integrity prior to sterilisation

Rationale

Any residual visible bioburden will compromise the effectiveness of the sterilisation process. In addition, instruments or equipment that are damaged may adversely affect patient safety.

Criteria

The nurse should ensure:

4.1 all instruments are visually inspected to detect any visible soil or damage (cracks etc).
- 4.1.1 if any visible soil is detected, the item is re-washed
- 4.1.2 if any damage is noted, the item should be discarded for repair and the item replaced

4.2 each item is checked to ensure it functions correctly

4.3 multi-part instruments are assembled to ensure all parts are present and functioning

4.4 instruments may require lubricating to ensure functionality.

Principle 5: Instruments and equipment are assembled and packaged prior to steam sterilisation

Rationale

Correct assembly and packaging of RMDs will ensure the sterilisation process is effective and the instruments and equipment are protected until ready for use.

Criteria

The nurse should ensure:

5.1 instrument trays have a list documenting the contents of the tray. (The instrument tray list ensures standardisation of the instruments within the tray and provides the instrument nurse with a reference point during surgical procedures to ensure all instruments are returned to the tray, and not retained inadvertently in the patient's wound)

5.2 instruments are assembled in trays according to designated tray lists

5.3 trays are perforated (to allow the passage of steam) and a tray liner placed in the base of the tray

5.4 instruments are arranged in a manner that allows for steam to penetrate all surfaces e.g., place clamps on first ratchet

5.5 similar instruments can be kept together using an instrument device pin e.g., artery forceps

5.6 instruments are arranged in one layer and in a manner that ensures ease of access by the user

5.7 heavier instruments are separated from delicate items to avoid damage

5.8 multi-part instruments are disassembled for sterilisation

5.9 holloware items (bowls, kidney dishes) may be packed together but must be separated by non-porous material to permit efficient steam circulation

5.10 holloware and RMDs should not be packed with swabs, sponges, dressings etc due to different drying times which may compromise efficacy of sterilisation

5.11 packaging materials should be:
- 5.11.1 compatible with the sterilising agent to be used
- 5.11.2 checked for integrity and be free of holes or damage
- 5.11.3 secured in position using sterilisation chemical indicator tape

5.12 where available, a chemical indicator strip is placed within the package to be sterilised

5.13 an adhesive label is placed on the outside of the package identifying the item and date packaged (some facilities may require initials of staff member)

5.14 if packaged items require transportation to the sterilisation department for sterilisation, dedicated trolleys are used. The trolleys are clean and covered to protect the packages during transport
- 5.14.1 trays/packs are not stacked on top of each other during transportation to avoid damage to the integrity of the packaging.[1,2]

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Principle 6: All RMDs must undergo a process of sterilisation to eliminate all microorganisms and spores

Rationale

Sterilisation processes are designed to eliminate all microorganisms and spores which can minimise the risks of surgical site infection from surgical instruments.

Criteria

The nurse should ensure:

6.1 prior to sterilisation, each package is labelled with information related to steriliser used, load number, date of sterilisation and any other relevant information according to local policy[3]

6.2 RMDs are arranged in the steriliser, in a manner that will expose all surfaces to the sterilant:

6.2.1 non-perforated trays, holloware and heat-sealed peel packages are placed on their edge to allow the sterilant to penetrate all the packages

6.2.2 textile packs are placed upright on the steriliser shelf allow the sterilant to penetrate the packs

6.3 steriliser loads should always be within the steriliser capacity. Overloaded sterilisers will prevent sterilant penetrating the load which may compromise efficacy of sterilisation

*See **Appendix 15 for steam sterilisation parameters used for gravity displacement sterilisers**.*

6.4 following completion of the sterilisation process, the load is removed and allowed to cool

6.5 the load is inspected for any signs of moisture, which will require the item to be repacked and sterilised

6.6 print outs/documentation from each cycle are retained according to local policy

6.7 when items have cooled and been released for use by SSD staff, they are transported on dedicated clean covered trolleys to protect the packages on route to sterile storage areas in their department of origin.[1,2,3]

Principle 7: Following sterilisation, packaged sterile items are stored in a manner that will ensure sterility is maintained

Rationale

Correct storage conditions, free of dust, moisture, vermin will ensure the sterility of the items until ready for patient use. Refer to note on page 94.

Criteria

The nurse should ensure:

7.1 the sterile storage area is kept clean through ad hoc cleaning and periodic cleaning schedules, as per local policy

7.2 where shelving does not meet the recommended heights, sterile packages are stored in alternative locations within the sterile storage area e.g., avoid using shelves that are too high or too low etc

7.3 where dust and humidity maybe an environmental issue or when sterile packages are being stored for extended periods, plastic coverings are placed over the packages for additional protection. These unsterile dust covers must be labelled clearly to ensure they are not mistaken for sterile packaging when being prepared for use

7.4 where plastic storage boxes are used, they are regularly cleaned to prevent the build-up of dust that can compromise the integrity of the sterile packages

7.5 sterile packages *are not* stacked or packed tightly, as this may damage the integrity of the wrappers[1,2,3]

- 7.5.1 care is taken whenever sterile packages are moved on shelving surfaces to protect pack integrity and ensure packed items are not inadvertently damaged
- 7.5.2 care is taken whenever sterile packages are stored in drawers or cupboards to ensure the ensure packaging is not inadvertently damaged by mechanisms when opening and closing
- 7.5.3 a system for stock rotation is in place i.e., first items in/first items out, ensuring sterile packages are used promptly

NOTE: The integrity of the packaging of sterile items may become compromised if they remain on shelves for lengthy periods of time. If the integrity of the packaging is compromised during storage, they must be unpackaged and reprocessed. Rotating stock also assists in reducing wastage.

7.6 cardboard boxes are not to be used for storage as they shed dust, debris and may harbour insects.[1]

NOTE: Sterile storage areas should be restricted to authorised staff only to reduce the risk of contamination from external sources.

Environmental controls including air conditioning units can ensure sterile storage areas are kept dry and well ventilated and free from events, dust, moisture, insects and vermin which may compromise the integrity of the packaging, rendering the contents unsterile.

Caston-Gaa and Ruparelia (2018) recommend that storage shelving should be constructed and arranged to ensure they are:

- 20–25 cm from the floor.
- 46 cm from ceilings.
- 5 cm from outside walls.

These parameters are recommended as they promote air circulation, make the area easier to clean and minimise contamination by humidity condensate. Open shelving racks are recommended where possible as they minimise the collection of dust. Shelving and other surfaces within the sterile storage area should be easy to clean and regularly maintained.[1,2]

Shelf life refers to the length of time a sterile packaged item remains sterile and can be *event-related or* determined using *expiry dates.*

The ***event-related method*** is the most used and accepted parameter, as it refers to items remaining sterile until an event occurs (e.g., a tear or moisture) that causes the integrity of the packaging to become compromised rendering the contents unsterile.

An ***expiry date*** can be placed on sterile packaged items but is not a guarantee of sterility within a given date. An expiry date should be agreed and consistently applied e.g., one month from sterilisation date. Expiry dates act as a reminder to use most recently sterilised items first and rotate sterile stock. Sterile packaged items that are not used immediately and are stored for long periods of time are at risk of the packaging becoming worn and its integrity compromised. (Caston-Gaa and Ruparelia, 2018)

Disinfection
The following principle relates to the reprocessing of heat sensitive items, like endoscopes, using high-level chemical disinfection.

Principle 8: The reprocessing of heat sensitive endoscopy equipment should be carried out using high-level disinfection

Rationale
High-level disinfection will destroy all microorganisms which can minimise the risks of surgical site infection from endoscopic equipment.

Criteria
The nurse should ensure the following processes are completed at these stages:

Cleaning and preparation for disinfection:
8.1 disinfection solution must be prepared at the correct concentration (according to manufacturer's instructions) and compatible with the endoscope to be cleaned
8.2 PPE must be worn while undertaking cleaning of the endoscope
8.3 immediately after use, the endoscope should be wiped with freshly prepared detergent using a single-use cloth
8.4 immediately after use, detergent should be sucked through the suction biopsy channel.
8.5 the endoscope should be leak tested prior to cleaning process
8.6 the cleaning process must include brushing all accessible channels, i.e., suction/biopsy along the entire length of the channel before flushing with detergent the process should be repeated until visibly clean.[1,2,3]

Disinfection process:
8.7 during the disinfection process, the endoscope must be completely submerged in a covered receptacle using the correct disinfection solution
8.8 all surfaces, including lumens and channels, of the endoscope should be in contact with the disinfectant solution for the recommended exposure time
8.9 following disinfection, the endoscope should be rinsed and flushed using filtered or sterile water to remove all residual disinfectant
8.10 the external surface of the endoscope should be dried with a single-use cloth and channels dried with medical grade air or flushed with 70% alcohol, followed by air
8.11 endoscopes should be stored in a manner to promote drying, preferably hung in a dust-free environment i.e., a storage cabinet, if available
8.12 accurate documentation must be made including contact time with disinfectant, date of disinfection and other information according to local policy.[1,2,3]

NOTE: Details of cleaning and disinfection processes can be found in the 'Decontamination of endoscope' section in *Decontamination and reprocessing of medical devices for health-care facilities* (WHO 2016).[2]

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Principle 9: Education and training are provided for nurses to ensure reprocessing is carried out in accordance with relevant infection control and sterilisation principles and practices, manufacturer's instructions and local policies

Rationale

Nurses may be involved in the reprocessing of RMDs or supervising others who carry out this work. A thorough knowledge of reprocessing principles and practices will ensure that all items used on patients are reprocessed correctly and remain sterile until used in the perioperative environment.

Criteria

9.1 Orientation and ongoing education for nurses directly involved in reprocessing of RMDs or who work in a supervisory capacity, provides content including but not limited to:

- 9.1.1 Point-of-use care of instruments and equipment
- 9.1.2 transportation of used instruments and equipment to clean up area.
- 9.1.3 use of PPE
- 9.1.4 work health and safety considerations:
  - when using instrument cleaning products, enzymatic agents, sterilising and disinfection agents
  - avoiding slip injuries due to fluid spills in clean up areas
  - reducing burns injuries when loading/unloading steam steriliser
- 9.1.5 inspection and maintenance of instruments
- 9.1.6 cleaning and drying processes – manual and mechanical
- 9.1.7 use of packaging materials appropriate to sterilising process
- 9.1.8 techniques involved in wrapping and packaging instrument trays/single items
- 9.1.9 use of chemical indicator tape
- 9.1.10 techniques when loading/unloading steam steriliser
- 9.1.11 documentation required throughout each step of reprocessing
- 9.1.12 managing sterile items in sterile stock areas.

9.2 Documentation of orientation and ongoing education records are maintained as per local policy.

Principle 10: The standard is reviewed every three years and when new evidence is available

Rationale

Documentation of procedural steps is a foundation for best practice, ensures consistency of practice and provides a tool for care planning.

Criteria

10.1 The standard should be stored in the unit practice manual and easily accessible for staff reference.

10.2 A sign-off sheet should be provided in the unit practice manual for staff to indicate when they have read the standard and any related local policies.[4]

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Appendix 14: Policy for local decontamination of reusable equipment according to the Spaulding classification

Risk category	Recommended level of decontamination	Examples of medical devices
High (critical) Items that are involved with a break in the skin or mucous membrane or entering a sterile body cavity	Sterilisation	Surgical instruments, implants/ prostheses, rigid endoscopes, needles
Intermediate (semi-critical) Items in contact with mucous membranes or body fluids	Disinfection (high-level)	Respiratory equipment, non-invasive flexible endoscopes, bedpans, urine bottles
Low (non-critical) Items in contact with intact skin	Cleaning (visibly clean)	Blood pressure cuffs, stethoscopes

Source: WHO (2016, p22)[2]

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Appendix 15: Recommended cycle times for different packages of gravity displacement steam sterilisers

Items	Exposure time at 121°C (250°F)	Exposure time at 132°C (270°F)	Exposure time at 135°C (275°F)	Drying time
Wrapped instruments	30 min	15 min		15–30 min
			10 min	30 min
Textiles packs	30 min	25 min		15 min
			10 min	30 min
Wrapped utensils	30 min	15 min		15–30 min
			10 min	30 min
Unwrapped porous items (e.g., instruments)		3 min	3 min	0–1 min
Unwrapped non-porous and porous items in mixed load		10 min	10 min	0–1 min

Source: Caston-Gaa and Ruparelia (2018, p54)[1]

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Standard 3.3 – Cleaning of the perioperative environment

Preamble
Healthcare services and local facilities have a responsibility to provide the infrastructure and policies, the resources and the training to enable staff to maintain a clean and hygienic patient-care environment and workplace at all times.

Policies for environmental cleaning of healthcare facilities should be developed or reviewed by IPC professionals to ensure the content is based on the latest evidence and current industry practices. These policies should complement facility waste management and occupational health and safety policies, to ensure staff are able to maintain a tidy and safe workplace.

Facility-approved policies can direct and standardise workplace practices in individual and specialised departments. The perioperative environment is one such department with additional environmental cleaning requirements, which should be guided by department specific cleaning protocols.[1] This is because multiple patients spend time in the department each day, with ad hoc cleaning for spills, routine cleaning required between patient care episodes and terminal cleaning required at the end of each day.[1] Additional cleaning may also be required when caring for patients with known or suspected infections with multi-resistant organisms (MROs) in the OT and additional cleaning schedules will also be required for the periodic cleaning of department fittings and fixtures.

Rationale
Environmental cleaning is an essential component of effective infection prevention and control (IPC) programmes in healthcare settings.[1,2,3]

A clean environment can reduce the risk of infection for hospitalised patients and visitors as well as staff. The patient has a right to receive care and treatment in a clean and safe environment and their surgical outcomes are influenced by IPC practices.[2] The nurse has a right to work in a well-maintained, hygienic and safe workplace.[4,5]

Scope of standard
The term 'perioperative environment' refers collectively to operating theatre (OT) departments including anaesthetic rooms, operating rooms and procedure rooms (ORs) where patients undergo, minor procedures such as biopsies, debridement and dressing changes or more invasive surgical operations. The principles in this standard may also apply to sterile service departments (SSDs), treatment rooms in emergency departments or delivery suites.

Scope of responsibility
Nurses involved in cleaning of the perioperative environment.
Nurses' ability to comply with this standard may be influenced by the infrastructure, the policies, and the supply of resources in their local facility.

> *"Environmental cleaning activities must be implemented within the framework of the facility infection prevention and control (IPC) program, and not as a standalone intervention. It is also essential that IPC programs advocate for and work with facility administration and government officials to budget, and operate and maintain adequate water, sanitation, and hygiene infrastructure to ensure that environmental cleaning can be performed according to best practices."*[2(p.5)]

NOTE: Nurses and other members of the perioperative team may be required to assist and/or supervise dedicated cleaning and housekeeping staff, or contract cleaners employed by the facility.[2] Teamwork and supervision are particularly important when sensitive medical equipment and patient-care devices need to be cleaned or moved.[2] Such items may be referred to as critical or semi-critical equipment in the literature.

This standard is designed to complement the facility policies for infection prevention and control, environmental cleaning, and waste management, where present. This standard should not be the sole source of information on cleaning the perioperative environment and should be considered a supplementary resource to standardise nurses' practice.

This standard should also be read in conjunction with other standards in this chapter, namely:

- *Standard 3.1 – Safe handling of hazardous chemicals*; and,
- *Standard 3.2 – Reprocessing of reusable medical devices*.

Principles

1. Local policies for environmental cleaning are based on current best practice and the principles of infection prevention and control (IPC).
2. Dedicated departmental cleaning equipment is available for safe and effective use, including personal protective equipment (PPE).
3. Environmental cleaning products and supplies are available for safe and effective use.
4. The department has a schedule for environmental cleaning to ensure all areas of the department are maintained in a tidy, clean, and hygienic state.
5. The environmental cleaning practices are based on the principles of risk management and current evidence for best practice in IPC.
6. Education and training are provided for nurses to ensure environmental cleaning of the department is safe and effective.
7. The standard is reviewed every three years and when new evidence is available.

Principle 1: Local policies for environmental cleaning are based on current best practice and the principles of infection prevention and control (IPC)

Rationale

Clean patient-care areas, equipment and surfaces can reduce the potential for transmission of infectious microorganisms and limit the transmission of healthcare-associated infections (HAIs).[1,2,6]

Criteria

1.1 The department has its own written policy and procedure for environmental cleaning, which identifies:
- 1.1.1 department specific roles and responsibilities for staff
- 1.1.2 the cleaning equipment and products to be used
- 1.1.3 the recommended cleaning schedules and range of cleaning practices to be followed
- 1.1.4 the training requirements for nursing staff
- 1.1.5 and includes the authorship, the date of publication and a date for review and a reference list identifying the source IPC documents.

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Principle 2: Dedicated departmental cleaning equipment is available for safe and effective use, including personal protective equipment (PPE)

Rationale

The perioperative environment is a specialised department with the enhanced environmental cleaning requirements, such as after the care of patients with known or suspected infections with multi-resistant organisms (MROs)

*See also **criteria 5.3** below*

The use of dedicated cleaning equipment is considered best practice because it reduces the potential for cross contamination between departments in the facility.[2,3,7]

Criteria

2.1 The department has access to cleaning equipment, which is:

- 2.1.1 easily identified for specific department use e.g., there is clear labelling or colour-coding. that supports segregation of equipment between different departments in the facility
- 2.1.2 well-maintained and fit for purpose
- 2.1.3 designed to limit the spread contamination through dust, particles and fluid aerosols. Dusters and aerosol spray bottles should be avoided due to this risk

*See also **criteria 5.3** below*

- 2.1.4 supplied in adequate volumes and frequencies to meet demand
- 2.1.5 stored in a manner that encourages drainage and thorough drying, and which discourages the development of moisture or mould

2.2 The department has access to PPE for use during cleaning, which is:

- 2.2.1 well-maintained and fit for purpose, including single-use PPE and reusable PPE
- 2.2.2 supplied in adequate volumes and frequencies to meet demand
- 2.2.3 suitable for routine cleaning with standard precautions and transmission-based precautions e.g., gloves, eye protection, masks and respirators, aprons and gowns, caps and head covers, shoe covers
- 2.2.4 suitable for additional cleaning when managing outbreaks e.g., measles virus (rubeola), SARS CoV-2 virus (COVID-19).

*See also **criteria 5.3** below*

Principle 3: Environmental cleaning products and supplies are available for safe and effective use

Rationale

Clean patient-care areas, equipment and surfaces can reduce the potential for transmission of infectious microorganisms and limit the transmission of healthcare-associated infections (HAIs).[1,2 6]

Criteria

3.1 The department uses only facility-approved cleaning products and supplies, which are:
- 3.1.1 fit for purpose, based on the latest evidence and current industry practices, including but not limited to:
  - 3.1.1.1 neutral detergents, disinfectants, chlorine-based products and enzymatic cleaners
  - 3.1.1.2 cleaning cloths and wipes which are non-linting and single-use, wherever possible
- 3.1.2 supplied in adequate volumes and frequencies to meet demand.
- 3.1.3 stored with easy access to the manufacturers' instructions for use e.g., laminated flashcards attached to shelves, posters on walls etc.
- 3.1.4 stored with safety data sheets (SDS) on display.

NOTE: Refer to manufacturers' instructions when using other methods of room decontamination systems in addition to manual cleaning procedures e.g., ultraviolet light and hydrogen peroxide.[7]

To minimise the spread of contamination and risk of transmission from microorganisms, reusable cloths and wipes should only be used when supported by facility policies which should specify the decontamination or laundering processes required between uses.

Principle 4: The department has a schedule for environmental cleaning to ensure all areas of the department are maintained in a tidy, clean and hygienic state

Rationale

Cleaning schedules can reduce the potential for transmission of infectious microorganisms and limit the transmission of healthcare-associated infections (HAIs).[2,7,8] Multiple surgical patients spend time in the department each day, with known or suspected infections with multi-resistant organisms (MROs) requiring prompt cleaning, while department fittings and fixtures may require less frequent cleaning.[2,7,8]

Criteria

4.1 The department has a schedule for environmental cleaning, including:
- 4.1.1 routine cleaning between patient care episodes
- 4.1.2 terminal cleaning at the end of the day
- 4.1.3 enhanced cleaning practices in addition to routine cleaning following the care of patients with known or suspected infections with MROs (consult your local facility IPC protocols for these details)
- 4.1.4 recommended frequency for the periodic cleaning of fittings and fixtures distinguishing between:
  - 4.1.4.1 high-touch surfaces requiring frequent cleaning
  - 4.1.4.2 low-touch surfaces and areas requiring periodic cleaning

*See also **Appendices 16–20***

4.2 The department has separate procedures, where required for:
- 4.2.1 cleaning and decontamination of reusable anaesthetic equipment and breathing circuits
- 4.2.2 cleaning and decontamination of instruments and reusable medical devices (RMDs).

NOTE: Other staff may be responsible for these cleaning practices and other procedures may exist.

Principle 5: The environmental cleaning practices are based on the principles of risk management and current evidence for best practice in IPC

Rationale

Clean patient-care areas, equipment and surfaces can reduce the potential for transmission of infectious microorganisms and limit the transmission of healthcare-associated infections (HAIs).[1, 2, 6]

Criteria

5.1 The nurse ensures the following actions are part of all cleaning processes in the OT:

- 5.1.1 inspect the area to be cleaned and identify any environmental hazards
- 5.1.2 select cleaning equipment to suit the task and to manage any identified risks
- 5.1.3 select cleaning products to suit the tasks and to manage any identified risks
- 5.1.4 select appropriate PPE according to identified risks
- 5.1.5 perform hand hygiene and don PPE
- 5.1.6 display signage, when required
- 5.1.7 clean methodically, in a systematic way so as not to miss any areas
- 5.1.8 start with clean equipment and products
- 5.1.9 replace cleaning products as they become ineffective (dried-out, caked-up, or soaked etc)
- 5.1.10 inspect the area after cleaning and confirm the environment has been cleaned effectively
- 5.1.11 doff PPE and perform hand hygiene
- 5.1.12 if surfaces remain wet, ensure safety signage remains on display until dry
- 5.1.13 once dry, return equipment to storage locations
- 5.1.14 restock used products and supplies.

5.2 The nurse ensures the OR is cleaned:

- 5.2.1 immediately following spills of blood and body substances
- 5.2.2 before the first patient of the day
- 5.2.3 between patients
- 5.2.4 at the end of the day.

*See also **Appendices 16–20***

5.3 The nurse ensures cleaning practices after MRO patient care:

- 5.3.1 comply with those described in local facility guidelines on infection prevention and control (IPC) and management of the specific MRO e.g., MRSA, VRE, TB etc.
- 5.3.2 have been given adequate wet contact time of 10 minutes[9] and allowed to air dry naturally before the room is used i.e., surfaces should not be wiped dry.

NOTE: Extended "rest times" are generally not required after an MRO patient.
AN EXCEPTION IS FOR COVID-19 PATIENTS: A minimum rest period of 30 minutes has been recommended in Australian facilities (see also *Further resources*). This "rest time" is to allow the COVID-19 aerosols and other viral particles to settle after a patient with COVID-19 has had surgery. A full 30 minutes must pass **before** staff wearing full COVID-19 PPE can safely begin cleaning the room. The room can be used as soon as the recommended cleaning products have dried naturally.

Principle 6: Education and training are provided for nurses to ensure environmental cleaning of the department is safe and effective

Rationale

Ongoing professional development helps staff to develop and maintain the expertise required for their roles.[8] Nurses and other members of the perioperative team may be required to assist and/or supervise dedicated cleaning and housekeeping staff, or contract cleaners employed by the facility.[2] Teamwork and supervision are particularly important when sensitive medical equipment and patient-care devices need to be cleaned or moved.[2]

Criteria

6.1 The department orientation for nurses provides content on environmental cleaning, including but not limited to:
- 6.1.1 the facility's policies relating to environmental cleaning, waste management and occupational health and safety
- 6.1.2 the underlying principles of IPC that inform the department's specific cleaning procedures
- 6.1.3 the cleaning equipment, products and supplies to be used with hands-on demonstrations and participatory training
- 6.1.4 the cleaning schedules for routine, terminal and periodic cleaning
- 6.1.5 the department-specific roles and responsibilities for nurses to:
  - 6.1.5.1 maintain a tidy, clean and hygienic workplace
  - 6.1.5.2 assist and/or supervise the cleaning practices in the department.

6.2 The department maintains training records related to the environmental cleaning procedure, including but not limited to:
- 6.2.1 full name of staff member
- 6.2.2 staff designation and/or role e.g., RN, recovery nurse, sterilising technician etc.
- 6.2.3 details of training activity, e.g., the date, duration, title or content, presenter or details of training resources e.g., webinar, video, demonstration etc.

7. Principle: The standard is reviewed every three years and when new evidence is available

Rationale

Documentation of procedural steps is a foundation for best practice, ensures consistency of practice and provides a tool for care planning.[10]

Criteria

7.1 The standard should be stored in the unit practice manual and easily accessible for staff reference.

7.2 A sign-off sheet should be provided in the unit practice manual for staff to indicate when they have read the standard and any related local policies.

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Appendix 16: Cleaning principles

The following is a recommended procedure for preparation for all cleaning tasks:

- Cleaning should be done as soon as practical, with spot cleaning of spills to be done immediately
- Look at the cleaning task and consider the potential environmental risks, such as:
  - trip hazards from electrical cables, clutter or poor access.
  - slip hazards from dusty or wet surfaces.
  - infection transmission and biohazards from blood and bodily fluids, droplets and aerosols from MRO.
  - puncture injury hazards from sharps.
- Display signage, when required.
- Collect appropriate equipment and supplies:

- Select cleaning products to suit the tasks and to manage any identified risks. For cleaning products that require preparation:
  - wear appropriate PPE during preparation to prevent contact, splash or inhalation of hazardous chemicals.
  - follow the manufacturers' instructions for use to ensure correct concentrations.
  - follow local protocols for volumes required (e.g., prepare enough for single-use, or for a session, or for the entire day).
- Perform hand hygiene before donning appropriate PPE.

Systematic cleaning

- Always start the task with clean equipment.
- Ensure cleaning products are prepared at the correct concentration/dilution.
- Check that the product is still active and has not lost its cleaning efficacy e.g., this may be indicated by the preparation date and time, a change in smell, a change in appearance, activated testing strip.
- Always clean surfaces and areas in a systematic way so as not to miss any areas:
  - clean in the same order or direction every time.
  - start at the cleanest areas before moving to the dirtier areas.
  - clean from high to low, top to bottom (this accounts for any subsequent contamination of lower surfaces from particles or drops from above).
  - clean high-touch surfaces every time and low-touch surfaces as required.
  - critical and semi-critical devices to be cleaned by nurses or medical staff.
- Replace cleaning products as they become ineffective (dried-out, caked-up, or soaked etc).

At the end of all cleaning tasks

- Look at the cleaning task and confirm the environment has been cleaned effectively.
- Doff PPE and perform hand hygiene.
- If surfaces remain wet, ensure safety signage remains on display until dry.
- Once dry, return equipment to storage locations.
- Restock used products and supplies.
- Identify damaged equipment and put aside for repair.

Further information

- Always seek more information if unsure of procedures, for example:
  - consult department procedures.
  - refer to manufacturers' instructions for use and/or SDS.
  - report to manager for instructions (or a senior colleague).

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NOTE: The following are not recommended for cleaning in the perioperative environment:

- Bristle brooms – cannot be cleaned effectively between use and may create dust when used to sweep floors.
- String mop heads – may be difficult to dry effectively between use and may create a slip hazard when used to mop floors.
- Dry dusters and cloths – create lint and disperse dust.
- Spray bottles and hoses – create aerosols which creates a splash hazard and may disperse microorganisms further afield and extend the duration of potential contamination.
- Alcohol-based products are not recommended for use at the same time that oxygen and anaesthetic gases are flowing in the theatre because of the risk of combustion and fire (alcohol-based products can be used for cleaning surfaces with due care at other times e.g., between surgical cases, ensuring no residual moisture or alcohol fumes remain).

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Appendix 17: Ad hoc cleaning of blood and body substances

The following is a recommended procedure for ad hoc cleaning of blood and body substances:[2,8]

Spot cleaning of spills

- Wipe up immediately with neutral detergent solution and allow to dry.

Spills smaller than 10 cm

- Wipe or remove excess organic matter with absorbent disposable paper towels, before following up with two-step cleaning:
  - clean with neutral detergent solution
  - finish with facility-approved disinfectant such as sodium hypochlorite solution for recommended contact time and allow to dry
  - discard used disposable towels into waste bins or bags (do no flush because of the potential to block pipes and damage plumbing).

Spills larger than 10 cm

- Contain and confine spill by:
  - removing any sharps with forceps e.g., broken glass
  - wiping or removing organic matter with absorbent disposable paper towels
  - soaking up excessive fluid with absorbent material or granules
  - following up with two-step cleaning:
    - clean with neutral detergent solution
    - finish with facility-approved disinfectant such as sodium hypochlorite solution for recommended contact time and allow to dry.

NOTE: Alcohol-based solutions are not recommended for these spillages and may create a risk for chemical burns or fire.

Adapted from: CDC (2020) 4.5 Spills of blood or body fluids, p.48–49. NHMRC (2019) Table 6. Appropriate processes for managing spills, p.67.

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Appendix 18: Daily cleaning of the operating theatre[2]

Before the first patient of the day

- Inspect the OR and consider the potential environmental risks.
- Wipe all horizontal surfaces with damp cloths using neutral detergent, taking care not to disperse particles into the air:
  - OR lights and overhead boom arms
  - OR table/bed and other furniture
  - equipment trolleys, poles, bins and buckets
  - shelves bench-tops and working surfaces.
- Spot clean any equipment brought from storage rooms or outside corridors before it enters the OR.
- Ensure surfaces are clean and dry before bringing in aseptic supplies for the first patient of the day.

Routine cleaning of the OR between patients

- Inspect the OR and consider the potential environmental risks.
- Remove all waste and used linen.
- Perform hand hygiene and don appropriate PPE.
- Wipe all used surfaces and equipment with damp cloths using a neutral detergent solution starting from cleanest areas outside of the surgical field:
  - high-touch surfaces (e.g., light switches, doorknobs, bench-tops, telephones etc).
  - any visible blood or body substances on surrounding areas and walls.
- Continue by cleaning all surfaces inside of the surgical field:
  - OR light, checking for blood spots on reflective inner surfaces, handles and switches
  - suction canisters, kick buckets, etc.
  - electrosurgery machine, tourniquet cuffs and leads
  - anaesthetic machine and equipment
  - OR table from top to bottom, taking care to clean beneath and between mattress segments.
- Finish by cleaning the floor, taking care to move and reposition equipment including the OR table and anaesthetic machine.
- Doff PPE and perform hand hygiene.
- Ensure surfaces are clean and dry before bringing in aseptic supplies for the next patient.

Terminal cleaning of the OR at the end of the day

Terminal cleaning takes care to remove any remaining blood spots and accumulated lint at the end of the day, using a 2-step process:

- clean with neutral detergent solution
- finish with facility-approved disinfectant such as sodium hypochlorite solution for recommended contact time and allow to dry.

Terminal cleaning repeats the routine cleaning of the OR described above, plus the following additional items:

- Horizontal surfaces of fixed equipment and overhead boom arms
- Under surfaces of small portable equipment including wheels on poles, cannisters and trolleys
- Vertical surfaces including walls, windows, vents, doors
- Floors, taking care to move and reposition all portable equipment

NOTE: When dry, return surplus portable equipment to storerooms or corridors.

Terminal cleaning using the same principles should extend to adjacent rooms, including:

- scrub bays and sinks
- utility rooms
- anaesthetic prep bays
- recovery rooms

Adapted from: CDC (2020) 4.6.1 Operating rooms Table 13. Recommended frequency and process for operating rooms, pp. 50–52; and Appendix B2 Table 1. Cleaning procedure summaries for operating room, p.78.

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Appendix 19: Sample cleaning schedule[1,2,7]

	Daily cleaning schedule for high-touch surfaces (*see **Appendix 20** for details of high-touch surfaces*)			Periodic cleaning schedule for low-touch surfaces	
	Start of day	Between patients	End of day, "terminal cleaning"	Weekly	6-monthly
			Curtain rails, window and door frames, wall vents	Walls and windows	High shelving, light fittings, fire detectors
Patient waiting areas	X	X	X	X	X
Patient examination rooms	X	X	X	X	X
Equipment preparation rooms	X	X	X	X	X
Anaesthetic bays	X	X	X	X	X
Operating rooms	X	X	X	X	X
Scrub bays	X	X	X	X	X
Utility disposal rooms	X	X	X	X	X
Recovery rooms	X	X	X	X	X
Storage rooms			X	X	X
Offices			X	X	X
Staff tea rooms			X and more frequently if required	X	X
Staff change rooms			X and more frequently if required	X	X

Adapted from: CDC (2020) Table 13, Recommended frequency and process for operating rooms p.50–51; and ACORN (2020); and AORN (2020).

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Appendix 20: High-touch surfaces

Patient-related areas				Staff common areas
Patient transport	**Clinical rooms**	**Work zones and surfaces**	**Medical devices** (to be cleaned by nurses and medical staff)	
Bed and rails, mattresses, pillows, gurneys, wheelchairs etc	Floors OR lights and overhead boom arms Used equipment including OR table/bed, surgical positioning equipment, electrosurgical devices and foot pedals, power tools, tourniquets, electric leads, suction machines, IV poles, kick buckets and waste bins etc	Trolleys and drawers, cupboard doors and shelves, bench-tops, whiteboards, clipboards and markers, computers and keyboards, phones and intercom buttons, seats, stools and steps, door handles and push plates, light switches, waste and dirty linen containers, taps, sinks and sluices etc	Anaesthetic machines, drug trolleys, critical and semi-critical equipment including microscopes, cameras etc	Change rooms, kitchens, tea-room lounges, toilets and showers etc

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Glossary

Term	Definition
5 Moments of hand hygiene	Based on the World Health Organization initiative launched on 5 May 2009, 'Save lives: clean your hands'. The five moments have been identified as the critical times during patient care that hand hygiene should be performed.
Accountable item	Reusable instruments or disposable items e.g., swab/sponge/needle, which by their nature are at risk of being left inside the patient. These must be documented on the count sheet.
Active electrode	Can be in the form of a monopolar pencil with 'cut' and 'coagulate' buttons or bipolar forceps with a foot pedal which is operated by the surgeon. Laparoscopic active electrodes are available which the surgeon operates using a foot pedal.
Alcohol-based hand rub (ABHR)	Considered the gold standard (best practice) for hand hygiene in health care. Alcohol has been found to be more effective against bacteria and viruses than medicated and non-medicated soaps.
Ad hoc cleaning	Cleaning that is carried out when necessary, e.g., blood spill.
Adornments	An adornment is generally an accessory or ornament worn to enhance the beauty or status of the wearer. Fingernail adornments range from studs to chains placed through the fingernail(s).
Aerosols	Microscopic particles < 5 microns in size. Aerosols are the residue of evaporated droplets produced when a person speaks loudly, coughs or sneezes. These particles can remain suspended in the air for prolonged periods of time. They can also be carried on normal air currents in a room or may be carried to adjacent spaces or areas receiving exhaust air.
Aerosolisation	Process by which blood or body fluids can be formed and dispersed in fine spray or aerosol.
Aerosolised contaminants	Contaminants that may be in microscopic particles dispersed in air or gas. These contaminants may be generated during debridement of wounds (such as trauma or gas gangrene). Healthcare equipment may also aerosolise contaminants such as surgical plume, bone cement vapours, bone saw dust, plaster dust or chemical vapours i.e., formalin, Cidex, etc.
Antimicrobial agent	Agents capable of preventing or inhibiting the growth of resident or transient microorganisms.
Asepsis	The prevention of microbial contamination of living tissues or sterile materials by removal, exclusion or destruction of microorganisms.
Aseptic field	Previously termed 'sterile' field. Terminology has changed to aseptic field because items are only 'sterile' while they remain within an intact package that has been sterilised. Once a sterile package is opened and inner items are exposed to the atmosphere, the items can no longer be considered 'sterile'; they are considered 'aseptic'.

Term	Definition
Aseptic techniques	Techniques that protect patients during invasive clinical procedures by employing infection control measures that minimise, as far as practical, the presence of microorganisms. In perioperative environments this applies to the handling of instruments, the draped patient, draped trolleys as well as the clothing and gloves of the surgical team.
Best practice	When the healthcare provided is based on the best available evidence and is used to achieve the best possible outcomes for patients.
Bioburden	Number of viable microorganisms contained in blood, tissue and body fluids, that can contaminate a device.
Bipolar	Application of high frequency electrical current to a specific area of the patient's tissue to cut or coagulate. Unlike monopolar, the electrical current flows from one tip of the bipolar forceps to the other and back to the generator. A patient return electrode is not required for bipolar.
Body cavity	Refers to any space in the human body that: • contains internal organs • or is of a size that an instrument, accountable item or other item may be unintentionally retained (e.g., hip joint).
Body substance	May include urine, faeces, vomitus, bile, and fluid drained from body cavities.
Capture device	A specialised suction device usually attached to the diathermy pencil which when activated suctions plume from the surgical site and removes it to a surgical plume evacuation system where it is filtered and absorbed. Specialised capture devices are available for laparoscopic surgery.
Critical information	Information that is vital to the health and wellbeing of the patient that if not communicated could lead to an adverse event occurring. Information is based on the health professional's clinical judgement and tailored to individual patients. ISBAR is a tool that assists health professional that structures the critical information. (*see also* ISBAR)
Contaminated	The presence of potentially infectious pathogenic microorganisms.
Contamination	The introduction of microorganisms and/or foreign matter to sterile or non-sterile materials or living tissue.
Clean	The absence of visible dust, soil, debris, or blood.
Cleaning	Mechanical or manual removal of visible dirt, soil, debris or blood from objects and surfaces, using water with detergents or enzymatic cleaners.
Cleaning schedule	A written schedule outlining the minimum recommended frequency of cleaning of low-touch objects or surfaces and equipment that are not cleaned daily or after every use, e.g., weekly, monthly or less frequently.
Critical and semi-critical equipment	Sensitive medical equipment and patient-care devices that require specialised reprocessing procedures. Nursing and or medical staff are responsible for cleaning such equipment.
Decontamination	The physical or chemical process of removing pathogenic microorganisms from objects so they are safe to handle, use, or discard.
Disinfectant	A chemical agent capable of killing most pathogenic microorganisms, but not necessarily bacterial spores

Term	Definition
Electrosurgery unit (ESU) or generator	Produces high frequency electrical current which is delivered to the active electrode via a connecting cable. The generator has audible alarms and settings that can be altered to provide different levels of current as required by the surgeon.
Environmental cleaning	The process and practices of cleaning, disinfecting and monitoring for cleanliness.
Enhanced environmental cleaning	Additional steps for cleaning of surfaces and environments beyond routine cleaning. It is performed following the care of a patient who is known to be infected or colonised with a multi-resistant organism (MRO).
Enzymatic solution	A solution using enzymes with neutral pH that is able to remove blood, fatty deposits and other organic residue from devices prior to cleaning
Eschar	Charred tissue residue which can collect on the active electrode after use and can diminish effectiveness of the electrosurgery if not removed.
Event-related sterility	The sterility of an item is *event-related* rather than *time-related*. It may depend on the events occurring during storage and handling of the item e.g., damage to packaging materials, soiling, becoming wet, prolonged exposure to sunlight, exposure to vermin, etc.
Facility-laundered	Onsite hospital-run laundry used for washing patient linen and clothing and, in some facilities, perioperative attire.
Fenestration e.g., fenestrated drape	Drape with a central window that permits access to a small area beneath the drape.
Fixative solution	A solution which protects a specimen from damage during transit to pathology and while awaiting examination. An example is formaldehyde (Formalin) which is a toxic substance, requiring the use of PPE when handling. Another common example is normal saline.
Healthcare acquired infections (HAI)	Infections acquired in healthcare facilities ('nosocomial' infections) and infections that occur as a result of healthcare interventions ('iatrogenic' infections), and which may manifest after people leave the healthcare facility.
High-level disinfection	A chemical process used to reduce the number of viable microorganisms to a less harmful level and is the minimum treatment recommended for reprocessing a device that maybe heat sensitive and cannot be sterilised
High-touch surface	An object, surface or equipment that is frequently touched e.g., door handles, benchtops, telephones etc
Holloware	Are containers e.g., bowls, kidney dishes that are used as receptacles in surgical procedure. They can be reusable or disposable
Holster	Sterile plastic case or sheath used on the aseptic field for storing active diathermy electrode when not in use. Reduces risk of accidental activation. Also known as quiver.
Human factors	Interrelationships between people, their environment and each other which are vital for the safety of the patient e.g., teamwork, communication. Sometimes called 'non-technical' skills.
Identification markers	Surgeon may place a suture to mark a specific area on a tissue specimen to assist pathologist in identification or orientation (left, right etc).
Impervious	Item which does not permit the passage of liquid.

Term	Definition
In line filter	Disposable unit containing filters to absorb plume and located between the wall suction outlet and suction canisters. Plume is captured at operative site using suction handpiece, e.g., Yankauer.
ISBAR	Abbreviation for *Identification, Situation, Background, Assessment, Recommendations (R* may also be referred to as 'responsibilities' or 'requests'). A clinical handover tool used to ensure that all critical information necessary for ongoing patient care is communicated during the transfer of care between healthcare personnel.
Loudly	Clear, strong, audible communication.
Low-touch surface	An object, surface or equipment that is touched infrequently e.g., high shelves, air vents, etc.
Monopolar	Application of high frequency electrical current to a specific area of the patient's tissue to cut or coagulate current flows from the ESU generator to the active electrode, through the patient and back to the ESU generator. The patient must be placed on a disposable/reusable patient return electrode to enable the safe and effective operation on the ESU.
Must	Indicates a mandatory action that requires compliance.
Non-invasive blood pressure cuff	An external inflatable cuff applied to the patient's upper arm and attached to a manual or automatic measuring device (sphygmomanometer) used to measure a patient's blood pressure.
Non-woven material	Cotton and polyester combination recommended for use in healthcare textiles.
Neuro patties	Thin absorbent strips of varying sizes designed for use on brain tissue during neurosurgical procedures to absorb fluid. They have a radio opaque marker and a locating string attached. They are an accountable item, usually packaged in multiples of 10 or 20.
Neutral zone	A designated area on the aseptic field agreed upon by the surgical team in which sharps e.g., scalpels, suture needles, etc., are placed in a puncture proof container e.g., kidney dish or tray, for retrieval by the surgeon. Only one sharp item at a time is permitted within the neutral zone. This strategy is designed to reduce the risk of sharps injury during hand-to-hand transfer of sharps.  Diagram of neutral zone on aseptic field showing puncture proof tray to transfer sharps. Source: www.medline.com
Patient return electrode	Sometimes called the 'patient plate' or 'grounding plate', the patient return electrode directs current back from the patient to the ESU generator when monopolar ESU is used. The patient return electrode can be disposable or reusable.
Perioperative environment	A collective term referring to operating theatre (OT) departments including anaesthetic rooms, operating rooms and procedure rooms (ORs) where patients undergo, minor procedures such as biopsies, debridement and dressing changes or more invasive surgical operations. The sterile service department (SSD) may also be considered part of the perioperative environment.

Term	Definition
Point of use cleaning	Refers to the removal of bioburden from a device intraoperatively or immediately after the procedure, prior to dispatch to sterile services department (SSD).
Plume	Noxious biproduct of ESU and laser which contains potentially harmful gases and particulate matter e.g., viruses, bacteria. Sometimes called 'smoke' due to its appearance and smell.
PPE	A range of equipment e.g., face mask, gloves, eye protection, plastic aprons worn by healthcare personnel to protect them from infectious organisms.
Progressive counting	Technique to remove accountable items e.g., swabs/sponges from the aseptic field during surgery in multiples of 5 or 10. This will reduce risk of infection and assist in managing large numbers of accountable items for counting purposes.
Receptacles	Containers to receive items on the aseptic field e.g., gallipots, kidney dishes, or rubbish bags to dispose or reprocess items e.g., linen bags.
Restricted areas	Restricted areas are limited to authorised personnel wearing perioperative attire and include operating or procedural rooms, sterile stock rooms and areas for the processing of sterile items.
Reusable medical device	A medical device that has been designated suitable for reprocessing by the manufacturer.
Semi-restricted area	Semi-restricted areas are limited to personnel usually wearing perioperative attire although some hospitals may allow staff wearing uniforms to access to these areas e.g., recovery staff, ward staff accessing recovery. Semi-restricted areas include peripheral support areas, such as reception, holding bays and corridors leading to restricted areas.
Sequential procedures	Two or more surgical procedures which occur one after another e.g., laparoscopy followed by laparotomy.
Should	Indicates an obligation, duty, or correctness. An action that should be followed unless there are sound reasons for taking a different course of action.
Simultaneous procedures	Two or more surgical procedures which occur at the same time by two or more surgical teams e.g., for a leg fracture and abdominal surgery on a trauma patient.
Skin integrity	Intact skin is the first line of defence against infection. When the skin shows signs of damage such as scratches, cuts, rashes etc the skin integrity is compromised.
Smoke evacuation system	A specialised system containing ultra-low particulate air filter (ULPA) which filters plume removed from the surgical site.
Squames	Dead skin cells which are constantly being shed from skin surfaces.
Standard precautions	The foundation IPC practice and primary strategy for successful nosocomial infection control and prevention of worker exposure. Standard precautions are used for all patients, regardless of their diagnosis or presumed infectious status. They include good hygiene practices and the use of protective barriers such as gloves, gowns, plastic aprons, masks, and eye shields/goggles. Standard precautions also encompass the appropriate handling and disposal of sharps and other contaminated or infectious waste. The use of aseptic technique is essential.
Sterile field	*See* 'aseptic field'.
Sterilisation	A process used to render an object completely free from viable microorganisms, including viruses and bacterial spores.

Term	Definition
Surgical conscience	An individual's professional honesty and inner morality system, which allows no compromise in practice whether a breach occurs within the team or when working alone.
Terminal cleaning	Thorough environmental cleaning that is performed at the end of each day when the area has been used.
Time out	A term in the *Surgical safety checklist* requiring the surgical team to pause and confirm critical information about the patient, the procedure and associated actions prior to skin incision or commencement of a procedure. This action is aimed at reducing wrong site surgery.
Unintentionally retained item	Describes a swab, sponge, instrument *accidentally* left inside a patient during surgery. On occasions, it may be necessary to *intentionally or deliberately* leave swabs or sponges inside at patient for the purpose of haemostasis. This must be noted on the count sheet and the items removed at a later operation.
Unrestricted areas	In unrestricted areas there is unlimited access to all personnel, who may wear either perioperative attire or street clothes. These unrestricted areas are the entry points for patients, personnel, stock and supplies, e.g., staff changing rooms.

Abbreviations used in this standard

HAI	healthcare-associated infection	PPE	personal protective equipment
IPC	infection prevention and control	RMD	reusable medical device
MRO	multi-resistant organism	SDS	safety data sheets
OR	operating room (single room)	SSD	sterile service department
OT	operating theatre (whole department)		

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