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Patient Matters Manual

CHAPTER 24 – SURGICAL CARE

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ACCOUNTABLE ITEMS USED IN SURGERY AND OTHER PROCEDURES (PD2023_002)

PD2023_002 replaced PD2013_054

POLICY STATEMENT

NSW Health requires that health workers, involved in the managing and counting of accountable items used during surgery and other procedures, must ensure accountable items are not unintentionally retained in the patient.

SUMMARY OF POLICY REQUIREMENTS

This Policy applies to surgery/ procedures performed in NSW Health settings, including but not limited to, perioperative settings, interventional radiology suites, cardiac catheter laboratory, biopsy clinics and birthing units.

Each NSW Health service in which surgery/ procedures are performed is to have a multi-disciplinary perioperative management committee which reviews and oversees compliance with this Policy.

An incident involving the “*unintended retention of a foreign object in a patient after surgery or other invasive procedure resulting in serious harm or death*” is to be managed as an Australian Sentinel Event as per the NSW Health Policy Directive *Incident Management* ([PD2020_047](#)).

The instrument nurse/ midwife is responsible for ensuring the count sheet is complete and accurate. The circulating nurse/ midwife is responsible for documenting the count.

The count sheet and documentation of the instrument count must be part of the patient’s medical record.

A minimum of two counts must be performed. When the initial count starts all accountable items and waste must remain in the operating/ procedure room.

A pharyngeal pack is an accountable item. When a pharyngeal pack is used, it must be documented on the count sheet.

Where multiple and complex instrument trays are used, the patient may be transferred from the operating/ procedure room before the final count is complete. The final count must be completed before the patient leaves the post-surgical/ procedural area. The next patient must not enter the operating/ procedure room until the final count is complete.

When an accountable item is intentionally retained in a patient, the accountable item and its location must be documented on the count sheet.

When an instrument tray/ separate instruments/ loan set is considered incorrect post operatively/ post procedure by the Sterilizing Services Department, the Department is to notify the nurse/ midwife in charge of the operating theatre/ procedural area, in a timely manner, who is to initiate an immediate investigation including checking the count sheet and instrument list documentation.

Disposable accountable items involving incorrect packaging and/ or inadequate quality are to be reported to the [Therapeutic Goods Administration](#) (TGA).

The entire Accountable Items used in Surgery and Other Procedures policy is available at:
https://www1.health.nsw.gov.au/pds/Pages/doc.aspx?dn=PD2023_002

REGISTER OF SURGICAL OPERATIONS (PD2014_049)

PD2014_049 rescinds PD2009_078.

PURPOSE

A register of surgical operations is required to be maintained for all surgical operations and procedures performed in operating suites in all public hospitals in NSW.

MANDATORY REQUIREMENTS

The Register of surgical operations can be documented manually or digitally (electronically). The register shall document the following data items:

- Full name of the patient
- Patient's facility medical record number
- Anaesthetic start and finish time
- Name of the Anaesthetist (if applicable)
- Procedure(s) performed
- Name of the Surgeon
- Name of the Surgical Assistant (if applicable)
- Name of the Registered Nurse in Charge of the surgical operation (case).

Where the register is maintained digitally (electronically) appropriate security arrangements must be in place to ensure that once entered, data must not be altered without the creation of a clear audit trail.

Additionally requirements for digital record keeping are outlined in *IB2009_027 NSW Standard on Digital Record Keeping* - http://www.health.nsw.gov.au/policies/ib/2009/IB2009_027.html

Surgical Operations Registers must be retained in accordance with The General Retention and Disposal Authority (GDA17) Section 2.1.8 – Surgical procedures, Operation or Theatre register

<http://www.records.nsw.gov.au/recordkeeping/rules/retention-and-disposal-authorities/general-retention-and-disposal-authorities/public-health-services-patient-client-records-gda17/part-1-the-general-retention-and-disposal/2.0.0-patient-client-registration-and>

Private Hospitals and Health Care Facilities should maintain a register of surgical operations in accordance with the *Private Health Facilities Regulation 2010* Schedule 2, clause 76. For information on suppliers of hard copy *Register of Surgical Operations* please contact the System Relationship and Performance Branch.

IMPLEMENTATION

- This policy directive is effective immediately and applies to all operating theatre departments at NSW public hospitals.
- Local Health District and Special Health Network Chief Executives are responsible for the implementation of this policy directive.
- Hospital Operating Theatre Managers are responsible for the operationalization of this policy directive and monitoring to ensure compliance.

CLINICAL PROCEDURE SAFETY (PD2017_032)

PD2017_032 rescinds PD2014_036

PURPOSE

The purpose of this policy directive is to address clinical care and patient safety risks associated with clinical procedures; improve matching of the patient to the correct procedure; improve communication within the procedural team, and between the patient and the procedural team; and reduce the number of clinical procedure related incidents.

The principles of the [World Health Organization \(WHO\) Surgical Safety Checklist](#) and the [Royal Australasian College of Surgeons' Surgical Safety Checklist](#) have been used in the development of this policy directive.

This policy directive aligns with the [National Safety and Quality Health Services Standards](#) requirements for correctly matching patients with their intended care.

MANDATORY REQUIREMENTS

All staff involved in clinical procedures must adhere to the requirements of this policy directive regardless of the location where the procedure is performed.

Each health service undertaking clinical procedures must have systems and processes in place to enable compliance with this policy directive. This includes educating and training staff, documenting incidents associated with procedures, monitoring compliance with this policy directive, and reporting outcomes to the appropriate committee/s within the health service and to relevant external agencies such as the NSW Coroner's office.

IMPLEMENTATION**Chief Executives are responsible for:**

- Assigning responsibility for implementing and complying with this policy directive and reporting on the implementation of this policy document as required.

Clinicians are responsible for:

- Complying with this policy directive.

Clinical Excellence Commission responsible for:

- Reviewing and ensuring the currency of this policy directive.

1 BACKGROUND**1.1 About this document**

The purpose of this policy directive is to address clinical care and patient safety risks associated with clinical procedures; improve matching of the patient to the correct procedure; improve communication within the procedural team and between the patient and the procedural team; and reduce the number of clinical procedure related incidents.

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1.2 Principles

The following principles apply to clinical procedures.

1. The policy directive applies to the full age range of patients. Where issues are specific to children these are raised by way of exception for children.
2. The manager / departmental head is responsible for ensuring the processes for clinical procedure safety are followed.
3. Every clinician involved in a procedure whether as an individual proceduralist or as a member of a procedural team is responsible for ensuring the processes for clinical procedure safety are followed.
4. Active involvement and effective communication between the proceduralist (and procedural team members where appropriate) and the patient or their person responsible should occur.
5. Use age appropriate communication techniques when communicating with children. A staff member experienced in communicating with children should provide an explanation of the procedure, in consultation with the person responsible, in language that can be understood by the child. The use of toys such as dolls or teddy bears may assist with explanations as may the opportunity to see and touch any non-dangerous equipment prior to the procedure such as a stethoscope and the anaesthetic mask.
6. In general, for Level 1 and Level 2 procedures, the person responsible is encouraged to stay with their child where clinically appropriate and where the child is conscious, and agreed between the senior proceduralist and the person responsible; for Level 3 procedures up to when the child is sedated / anaesthetised and then following the procedure as the child wakes up as the clinical situation allows.
7. Valid consent must be obtained for the procedure.¹
8. The proceduralist (and procedural team members where appropriate) is responsible for confirming patient identification, procedure verification and where appropriate the correct site / side / level for the procedure. The proceduralist carries ultimate responsibility for the patient identification and procedure verification.
9. Patient identification, and verification of the correct procedure and correct site (where appropriate) must occur prior to the procedure commencing.
10. To the extent possible involve the patient, or their person responsible, at all points in the patient identification and procedure verification processes, including marking of the procedure site, where appropriate.
11. Site marking is essential where there is the potential for error involving multiple structures (fingers, toes, or lesions), left / right distinction, or levels (spine).
12. Confirm the patient's known allergies / adverse reactions to substances. Ensure substances the patient has a known allergy / adverse reaction to are not used during the procedure.
13. If pre-procedure imaging data are to be used, the data must be available and correctly identified before the patient receives procedural sedation / anaesthesia.
14. If prostheses, implants, sterile equipment, or special equipment are required, they must be available and, where appropriate, confirmed they are functional and appropriate for use e.g. left / right, before the patient receives procedural sedation / anaesthesia.

1.3 Key definitions

Airway management	Includes oxygen therapy via face mask, management of airways obstruction including the use of common devices such as oro -pharyngeal and naso - pharyngeal airways, single handed and two handed mask ventilation using Bag and Mask, insertion and management of Laryngeal Mask Airways and intubation of the trachea using standard laryngoscopy equipment and monitoring of the patient for the effects of hypoxia with basic monitoring such as ECG (electrocardiogram), NIBP (non-invasive measurement of blood pressure), Pulse Oximetry and CO ₂ waveform analysis for deep sedation.
Anaesthesia and sedation	Refer to definition - Sedation and anaesthesia.
Assisting clinicians	Staff engaged in assisting the proceduralist as part of the procedure.
Clinical handover	The effective transfer of professional responsibility and accountability for some or all aspects of care for a patient, or group of patients, to another person or professional group on a temporary or permanent basis. ²
Clinician	A person authorised by a facility to provide clinical care to a patient.
Clinician airway monitor	A dedicated clinician (who is not the proceduralist) with appropriate competency-based training, whose primary responsibility is to monitor the patient's level of consciousness and to monitor and provide the initial management of cardio-respiratory status of the patient during the procedure.
Incident	Any unplanned event resulting in, or with the potential for, injury, damage or other loss. This includes a near miss. ³
Must	Indicates a mandatory action required that must be complied with.
Patient	A person receiving health care. Also known as consumer or client.
Patient identification	The active process of confirming a patient's identity through the use of approved patient identifiers to ensure the correct patient is matched to their planned procedure. ⁴
Person responsible	For the purposes of this policy directive a <i>person responsible</i> is a person who can provide consent for a patient's clinical procedure to be performed. ¹
Proceduralist	A clinician who is performing or assisting in the procedure. There may be more than one proceduralist involved in a procedure. The senior proceduralist takes overall responsibility for the case.
Procedural Team	Includes all clinicians participating in the delivery of care during the procedure.

Procedure	<p>For the purposes of interpreting this policy directive <i>procedure</i> is defined as follows.</p> <p>Level 1 procedure</p> <ul style="list-style-type: none"> • Usually requires a single proceduralist • Usually does not require written consent • Does not involve procedural sedation or general / regional anaesthesia. <p>Exception - Dental procedures involving dental nerve blocks are classified as Level 1 procedures.</p> <ul style="list-style-type: none"> • Usually performed in wards, emergency departments, clinics and imaging departments. <p>Level 2 procedure</p> <ul style="list-style-type: none"> • Requires a proceduralist, often supported by an assisting proceduralist/s • Usually requires written consent • Does not involve procedural sedation or general / regional anaesthesia • Usually performed in wards, emergency departments, clinics, imaging departments and interventional suites. <p>Level 3 procedure</p> <ul style="list-style-type: none"> • Requires at least one proceduralist and a procedural team • Always requires written consent • Involves procedural sedation or general / regional anaesthesia • Usually performed in formal procedural suites such as operating theatres, emergency departments, endoscopy suites, interventional imaging suites, birthing suites and cardiac catheterisation laboratories.
Procedure verification	The active process of verifying the procedure by confirming the planned procedure and the site / side / level for the procedure.

<p>Sedation and anaesthesia⁵</p>	<p>Procedural sedation implies that the patient is in a state of drug-induced tolerance of uncomfortable or painful diagnostic or interventional medical, dental or surgical procedures.</p> <ul style="list-style-type: none"> • Conscious sedation is defined as a drug-induced depression of consciousness during which patients are able to respond purposefully to verbal commands or light tactile stimulation. • Deep levels of sedation, where consciousness is lost and patients only respond to painful stimulation, are associated with potential loss of the ability to maintain a patent airway, inadequate spontaneous ventilation and / or impaired cardiovascular function. Deep levels of sedation may have similar risks to general anaesthesia, and may require an equivalent level of care. <p>For the purposes of interpreting this policy directive:</p> <ul style="list-style-type: none"> • Use of opioids The use of opioids for analgesia is not considered procedural sedation. • Use of nitrous oxide <ul style="list-style-type: none"> - If the primary intent is analgesia then it is not considered procedural sedation. - If the primary intent is sedation then it is considered procedural sedation and these procedures must be classed as Level 3 procedures. <p>Procedural sedation does NOT include premedication to reduce anxiety or provide pain relief.</p> <p>Regional anaesthesia includes major nerve blocks, epidural blocks and spinal blocks. Excludes dental nerve blocks. It involves the injection of local anaesthetic in the vicinity of major nerve bundles supplying body areas. Regional anaesthesia may be used on its own or combined with sedation or general anaesthesia.</p> <p>General anaesthesia is a drug-induced state characterised by absence of purposeful response to any stimulus, loss of protective airway reflexes, depression of respiration and disturbance of circulatory reflexes. General anaesthesia is sometimes indicated during diagnostic or interventional medical or surgical procedures and requires the exclusive attention of an anaesthetist, or other appropriately trained and credentialed medical specialist within their scope of practice.</p>
<p>Should</p>	<p>Indicates a recommended action that should be followed unless there are sound reasons for taking a different course of action.</p>
<p>Sign In</p>	<p>The period immediately before preparing the patient for their procedure by the procedural team.</p>
<p>Sign Out</p>	<p>The period after the procedure and before the patient / procedural team leaves the procedural area.</p>

Team Time Out	The period immediately before commencing the procedure to undertake a final verification of the patient's identity and the procedure. Team Time Out applies to Level 2 and Level 3 procedures.
VTE prophylaxis	Treatment, either pharmacological or mechanical, provided to a patient in order to reduce the risk of venous thromboembolism (deep vein thrombosis and pulmonary embolism). ⁶

2 LEVEL 1 PROCEDURES

Definition	Examples ¹	Requirements	
		Pre-procedure	Post procedure
<ul style="list-style-type: none"> - Single proceduralist - Usually does not require written consent - Does not involve procedural sedation or general/regional anaesthesia, except for dental procedures involving dental nerve blocks - Usually performed in wards, emergency departments, clinics, imaging departments 	<ul style="list-style-type: none"> - Insertion IV cannula - Insertion IDC - Insertion NGT - Taking blood samples - Diagnostic Radiology - Diagnostic Nuclear Medicine - Routine dental procedures e.g. dental extraction, fillings - Dental procedures involving dental nerve blocks - Superficial skin lesions/biopsies - Non operative obstetrics e.g. fetal scalp blood sampling, perineal repair with LA, Artificial Rupture of Membranes, fetal scalp electrode² 	<p>STOP and confirm the following before commencing the procedure</p> <ul style="list-style-type: none"> - Patient identification - Procedure verification – procedure + site/side/level, where appropriate, matches consent - Allergy/adverse reaction check - Anticipated critical events 	<ul style="list-style-type: none"> - Document procedure in patient's health care record or Radiology Information System - Advice for clinical handover - Label specimen/images - Post procedure tests where clinically relevant

2.1 Pre procedure

Procedures **not** involving procedural sedation / anaesthesia are either Level 1 or Level 2 procedures. Refer to the definition and examples for guidance in classifying procedures as Level 1 or Level 2.

For Level 1 procedures the proceduralist, and assisting proceduralist/s, where relevant, must **STOP** and confirm the following minimum requirements immediately before commencing the procedure. Where two or more staff members are involved they must introduce themselves to each other and the patient, as appropriate, by their preferred names and roles before the procedure commences.

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¹The examples provided do not cover all possible procedures and the examples may be escalated to a higher level (ie Level 1 procedures may be classified by a health service as Level 2 or Level 3 procedures). Health services should consider development of local lists of examples for Level 1, Level 2 and Level 3 procedures consistent with the requirements of this policy directive.

² Where the procedure is a non operative obstetric procedure and patient identification has occurred at the commencement of labour, the obstetric team that has cared for the patient during labour should confirm the patient's identification immediately before commencing the procedure if appropriate e.g. if the patient is moved to a new room or a new member joins the obstetric team caring for the patient during the procedure.

2.1.1 Patient identification

- The patient's identity must be confirmed before any procedure commences.
- Staff must confirm that they have the correct patient by asking the patient, or their person responsible, to state the patient's full name and date of birth. Staff should not state the patient's name or date of birth and then ask the patient, or their person responsible, if this information is correct.
- The response must be confirmed against the details on the request form / referral / treatment plan and patient identification band or other approved patient identification tool (including unique patient identifier), as appropriate.
- Where patient details on the request form / referral / treatment plan are incomplete or there is a discrepancy with the information received from the patient, or their person responsible, the correct information must be verified before commencing the procedure and actions taken documented in the patient's health care record.
- If the patient is unable to participate in the patient identification step, for example due to physical incapacity, language issues, or is a child, and their person responsible is not present, then the patient's identification band or other approved patient identification tool (including unique patient identifier) should be used to confirm the patient's identification.

2.1.2 Procedure verification

- Consent must be obtained for any procedure as required by the NSW Health policy directive on consent to medical treatment.¹
- Consent must be documented for high risk radiology and nuclear medicine procedures for Diagnostic Imaging Accreditation Scheme accreditation.
- Signed consent forms are not required for minor procedures performed under local anaesthesia, e.g. insertion of IV cannula, urethral catheterisation, or suture of minor lacerations.
- Request forms / referrals / treatment plans for procedures must include the patient's name, date of birth, sex, unique patient identifier (where appropriate), reason for the procedure, details of the test/s required, the date the test/s were ordered, and the exact anatomical location for the test/s including the procedure site, laterality and level.
- The proceduralist must ask the patient, or their person responsible, to state what procedure they understand will be performed and to state the site / side / level for the procedure (where relevant) and verify this matches the planned procedure and consent / request form / referral / treatment plan.⁷
- Where procedure details on the request form / referral / treatment plan are incomplete or there is a discrepancy the requesting clinician or a member of their team must be contacted to clarify the information before commencing the procedure and the response documented.

2.1.3 Allergy/adverse reaction check

- Ask the patient, or their person responsible, if they have a known allergy / adverse reaction and if yes, what the allergy / adverse reaction was and what effect they experienced. The response should be documented.

2.1.4 Anticipated critical events

- The proceduralist must consider the planned procedure, critical steps, anticipated events and equipment requirements.

2.2 Post procedure

- The name of the proceduralist/s must be documented in the patient's health care record or Radiology Information System.
- Document the name of the procedure and outcome/s in the patient's health care record or Radiology Information System.
- Provide clinical handover advice (verbal and documented) to the staff caring for the patient or post procedure destination, as appropriate, and discuss with the patient and / or person responsible where possible.
- Specimens / images must be labelled correctly and labels checked with the patient or person responsible or checked with another clinician where possible.
- Arrange post procedure tests where clinically relevant.

3 LEVEL 2 PROCEDURES

Definition	Examples ³	Requirements	
		Pre-procedure (including Team Time Out)	Post procedure
<ul style="list-style-type: none"> - Proceduralist often supported by an assisting proceduralist/s - Usually requires written consent - Does not involve procedural sedation or general/regional anaesthesia - Usually performed in wards, emergency departments, clinics, imaging departments, interventional suites 	<ul style="list-style-type: none"> - Lumbar puncture - Insertion of chest tube - Ascitic tap - Stress test - Diagnostic interventional procedures - Nuclear Medicine therapies - Non-superficial biopsies - IV or IT administration of chemotherapy - IV administration of contrast - Centrally inserted central venous access device⁸ 	<p>STOP and confirm the following before commencing the procedure</p> <ul style="list-style-type: none"> - Proceduralist/assisting proceduralist/s introductions, where appropriate - Patient identification - Procedure verification - procedure + site/side/level, where appropriate, matches consent - Patient position - Essential imaging reviewed - Allergy/adverse reaction check - Special medication/s administered - Antibiotics - Implants and special equipment - Anticipated critical events 	<ul style="list-style-type: none"> - Document procedure in patient's health care record or Radiology Information System - Advice for clinical handover - Equipment problems/issues - Specimens/images labelled correctly - Post procedure tests where clinically relevant eg. CXR post insertion of chest tube

3.1 Pre procedure (including Team Time Out)

Procedures **not** involving procedural sedation / anaesthesia are either Level 1 or Level 2 procedures. Refer to the definition and examples for guidance in classifying procedures as Level 1 or Level 2.

The proceduralist, and where present assisting proceduralist/s, must **STOP** and confirm the following minimum requirements immediately before commencing the procedure. Where two or more staff members are involved they must introduce themselves to each other, and the patient and their person responsible where appropriate, by their preferred names and roles before the procedure commences.

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³ The examples provided do not cover all possible procedures and the examples may be escalated to a higher level (ie Level 1 procedures may be classified by health services as Level 2 or Level 3 procedures). Health services should consider development of local lists of examples for Level 1, Level 2 and Level 3 procedures consistent with the requirements of this policy directive.

3.1.1 Patient identification

- The patient's identity must be confirmed before any procedure commences.
- Staff must confirm they have the correct patient by asking the patient, or their person responsible, to state the patient's full name and date of birth. Staff must not state the patient's name or date of birth and then ask the patient, or their person responsible, if this information is correct.
- The response must be confirmed against the details on the consent form / request form / referral / treatment plan and patient identification band or approved patient identification tool (including unique patient identifier), where appropriate.
- Where patient details on the consent / request form / referral / treatment plan are incomplete or there is a discrepancy with the information received from the patient, or their person responsible, the correct information must be verified before commencing the procedure and actions taken documented in the patient's health care record.
- If the patient is unable to participate in the patient identification step, for example due to physical incapacity, language issues, or is a child, and their person responsible is not present, then the patient's identification band or approved patient identification tool (including unique patient identifier) should be used to confirm their identification

3.1.2 Procedure verification

- Consent must be obtained for any procedure as required by the NSW Health policy directive on consent to medical treatment.¹
- The consent form (where written consent obtained) must be completed as required by the NSW Health policy on consent.¹
- Request forms / referrals / treatment plans for procedures must include the patient's name, date of birth, sex and unique patient identifier (if available), and should include the procedure site / side / level, reason for the procedure, details of the examination / test/s required, the date the test/s were ordered, and the exact anatomical location for the test/s.
- Consent must be documented for high risk radiology and nuclear medicine procedures for Diagnostic Imaging Accreditation Scheme (DIAS) accreditation.⁹ The level of risk associated with each imaging procedure should be determined locally based on the risk factors of the individual patient and the risk of the procedure.
- When contrast is used for procedures outside the operating theatre a patient checklist that is specifically designed for contrast administration must be used.
- The proceduralist must ask the patient, or their person responsible, to state what procedure they understand will be performed and to state the site / side / level for the procedure (where appropriate) and verify this matches the planned procedure and consent / request form / referral / treatment plan.⁹
- Where procedure details on the consent form / request form / referral / treatment plan are incomplete or there is a discrepancy the requesting clinician or a member of their team must be contacted to clarify the information before commencing the procedure and the response documented.

3.1.3 Site / side / level marking

- The site / side / level should be marked where there is the potential for error involving multiple structures (fingers, toes, or lesions), left / right distinction, or levels (spine).
- The site /side / level marking for radiotherapy treatments involve the following.
 - The mark should be on or near the incision site or radiotherapy site.
 - For certain treatments the immobilising device may be marked.
 - Site / side / level marking is not required in the following circumstances. For multiple fractions of radiotherapy, where the site is usually only marked before the first fraction and reapplied as necessary, and where markings are applied to the immobilisation device rather than on the patient's skin.

3.1.4 Patient position

- The positioning of the patient must be verified as correct for the planned procedure.
- The appropriate equipment for positioning and venous thromboembolism (VTE) prophylaxis must be working and available for use during the procedure.

3.1.5 Essential imaging available

If imaging data are to be used to verify the procedure or site/side/level of the procedure the proceduralist must verify in conjunction with the assisting proceduralist/s, where appropriate, that:

- The patient's identity, the site of the procedure and the date of the image in relation to the procedure all match.
- The images are for the correct side of the body, oriented correctly, and correctly labelled with the patient's name and date of birth.

3.1.6 Allergy/adverse reaction check

The proceduralist should:

- Ask the patient if they have a known allergy/adverse reaction and if yes, what the allergy/adverse reaction was and what effect they experienced. The response should be documented.
- Check for any other source that may provide further information on allergies/adverse reactions the patient might have eg. treatment plan, progress notes.
- Check that allergies/adverse reactions are noted on the allergy/adverse reaction section of the National Inpatient Medication Chart or other relevant section of the patient's health care record.
- Note that when contrast is used for procedures the allergy/adverse reaction check must be included in a patient checklist that is specifically designed for contrast administration.
- Ensure the assisting proceduralist/s is aware of all identified allergies/adverse reactions.

3.1.7 Special medications administered

- The proceduralist should confirm that any special medications required have been administered.

3.1.8 Antibiotics

- Antibiotic prophylaxis may be indicated and should be given in accordance with current antibiotic therapeutic guidelines prior to the procedure commencing except when antibiotics are withheld in order to get specimens for microbial testing.

3.1.9 Anticipated critical events

- The proceduralist must consider, and discuss with the assisting clinician/s, the planned procedure, critical steps, anticipated events and equipment requirements.
- The proceduralist, and the assisting proceduralist/s, must verbally confirm sterility, implants and equipment requirements.

3.2 Post procedure**3.2.1 Name of the proceduralist/s documented**

- The name of the proceduralist/s must be documented in the patient's health care record or Radiology Information System.

3.2.2 Name of the procedure documented

- The proceduralist must confirm exactly what procedure was done, any expected or unexpected adverse events and patient outcomes, and ensure this is documented in the patient's health care record or Radiology Information System. Where a procedure has varied from that planned the rationale must be documented with reason/s why.

3.2.3 Advice for clinical handover

- Provide clinical handover advice (verbal and documented), including the patient's management plan post procedure, for the clinicians to post procedure destination and discuss with the patient where possible.
- Document and communicate any altered calling criteria on the relevant observation chart.

3.2.4 Equipment problems/issues documented and advised to relevant staff

- Malfunctioning equipment and instruments should be accurately identified to prevent them from being used again until the problems are resolved. Any equipment or instrument problems arising during the procedure must be documented, and raised with the relevant staff so they can be resolved as soon as possible. If an adverse event has occurred as a result of equipment / instrument malfunctions then this should be notified in the incident management system.

3.2.5 Specimens/images labelled correctly

- The proceduralist, and assisting proceduralist/s, must ensure the correct labelling of any pathology specimen/images obtained during the procedure by verifying the patient's name, specimen/image description and any orienting marks.

3.2.6 Tests required

- Referral for test/s post procedure should be discussed with the patient and their person responsible where clinically appropriate, and arranged.

4 LEVEL 3 PROCEDURES

Definition	Examples ⁴	Requirements	
<ul style="list-style-type: none"> - At least one proceduralist and a procedural team - Always requires written consent - Involves procedural sedation or general/regional anaesthesia - Usually performed in formal procedural suites such as operating theatres, emergency departments, endoscopy suites, interventional imaging suites, birthing suites, cardiac catheterisation laboratories 	<ul style="list-style-type: none"> - Surgical procedure (OR) - ECT - Colonoscopy - Bronchoscopy - Interventional imaging procedure, including: <ul style="list-style-type: none"> • Angiography • Cardiovascular • Coiling • Stenting • Interventional Neuroradiology 	1. Pre-procedure <ul style="list-style-type: none"> - Patient identification - Procedure verification – planned procedure + site/side/level, where appropriate, matches consent - Site/side/level marking, where appropriate 	2. Sign In SIGN IN ONE <ul style="list-style-type: none"> - Patient identification - Procedure verification – planned procedure + site/side/level, where appropriate, matches consent - Allergy/adverse reaction check - Sedation/anaesthetic equipment checked - Patient sedation risk/anaesthetic assessment - Significant airway or aspiration risk - Clinician airway monitor identified - Clinician skilled to manage airway identified - Pulse oximeter working - Risk of major bleeding SIGN IN TWO <ul style="list-style-type: none"> - Essential imaging available - Site marking (exemptions) - Implants and special equipment - Proceduralist available to complete procedure
		3. Team Time Out <ul style="list-style-type: none"> - Team member introductions - Patient identification - Procedure verification - planned procedure + site/side/level, where appropriate, matches consent - Patient position - Essential imaging reviewed - Allergy/adverse reaction check - Special medication/s administered - Antibiotics - VTE prophylaxis - Anticipated critical events 	4. Sign Out <ul style="list-style-type: none"> - Name of procedure recorded - Counts/tray list checks correct - Specimens/images labelled correctly - Blood loss documented; ongoing blood loss discussed - Equipment problems/issues documented/relevant staff member advised or equipment / instrument labelled. - Advice for clinical handover

⁴ The examples provided do not cover all possible procedures and the examples may be escalated to a higher level (ie Level 1 procedures may be classified by health services as Level 2 or Level 3 procedures). Health services should consider development of local lists of examples for Level 1, Level 2 and Level 3 procedures consistent with the requirements of this policy directive.

Procedures involving procedural sedation / anaesthesia must always be classified as Level 3 procedures.

4.1 Pre procedure requirements

The following must be undertaken before the patient is transferred to the procedural suite.

4.1.1 Patient identification

- The patient's identification must be confirmed before any procedure commences.
- Staff must confirm they have the correct patient by asking the patient, or their person responsible, to state the patient's full name and date of birth. Staff must not state the patient's name or date of birth and then ask the patient, or their person responsible, if this information is correct.
- The response must be confirmed against the details on the consent form/request form/referral/treatment plan and patient identification band (including unique patient identifier).
- Where patient details on the consent form / request form / referral / treatment plan are incomplete or there is a discrepancy with the information received from the patient, or their person responsible, the correct information must be verified before commencing the procedure and actions taken documented in the patient's health care record.
- If the patient is unable to participate in the patient identification step, for example due to physical incapacity, language issues, or is a child, and their person responsible is not present, a member of staff from the preceding location of the patient (e.g. ward or emergency department) must act as the patient's advocate to confirm the patient's identity.
- Patients undergoing Level 3 procedures must be wearing a patient identification band.⁵

4.1.2 Procedure verification

- Consent must be obtained for all Level 3 procedures as required by the NSW Health policy directive on consent to medical treatment.⁶
- The consent form must be completed as required by the NSW Health policy on consent
- Request forms / referrals / treatment plans for procedures must include the patient's name, date of birth, sex and unique patient identifier and should include the procedure site / side / level, reason for the procedure, details of the examination / test/s required, the date the test/s were ordered, and the exact anatomical location for the test/s.
- Staff must ask the patient, or their person responsible, to state what procedure they understand will be performed and to state the site / side / level for the procedure (where appropriate) and verify this matches the planned procedure and consent form / request form / referral / treatment plan
- Where procedure details on the consent form / request form / referral / treatment plan are incomplete or there is a discrepancy the requesting clinician or a member of their team must be contacted to amend or complete a new document before the procedure commences and actions taken documented in the patient's health care record.
- Verify x-ray and other imaging data are for the correct patient and are the correct images, where appropriate.
- Other relevant clinical information including documentation recorded electronically must be available prior to the planned procedure.
- Verification should be documented in the patient's health care record, including a record of individuals involved in the verification process.

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⁵ Patient Identification Bands, PD2014_024 at http://www.health.nsw.gov.au/policies/pd/2014/PD2014_024.html

⁶ Consent to Medical Treatment - Patient Information, PD2005_406 at http://www.health.nsw.gov.au/policies/PD/2005/PD2005_406.html

4.1.3 Site/side/level marking

Site/side/level marking

Site / side / level marking is essential in cases where there is the potential for error involving multiple structures (fingers, toes, or lesions), left / right distinction, or levels (spine). In these cases, where appropriate, the site / side / level should be marked.

The site / side / level must be marked by one of the proceduralists (except for intra-ocular surgery):

- As a minimum, all cases involving multiple structures (fingers, toes or lesions), laterality or levels (spine) must be marked.
- Non-procedure sites / sides / levels must not be marked.
- Marking occurs before the patient enters the procedural room, except in an emergency.
- The method of marking should be consistent throughout the organisation. Initials must not be used in marking.
- Marking takes place with the patient involved, awake and aware, where appropriate. Note some paediatric, psychiatric and intellectually impaired patients may find this distressing and marking may be done after these patients are anaesthetised. For this group of patients it may be appropriate to have a person responsible present.
- The mark should be on or near the incision site.
- The mark should be visible and sufficiently permanent so it remains visible following skin preparation and draping.
- The marking must be documented in the patient's health care record by the person marking the site / side / level.

Exception: For **intra-ocular surgery** where pre-operative mydriatic drops have been ordered, the correct side may be marked by a registered nurse, and the marking checked by a second registered nurse before the drops are given, in conjunction with confirmation of the patient's identity, checking of the consent, and verbal confirmation by the patient, or their person responsible, of the side to have surgery. The mark must be subsequently checked as the correct side for the procedure as required by Sign In One, Sign In Two and Team Time Out.

Site/side/level marking exemptions

Site / side / level marking is **not required** in the following circumstances (although it can be used):

- To avoid confusion e.g. if a procedure requires a regional anaesthetic then only the procedure site should be marked.
- For single organ cases e.g. cardiac surgery, caesarean section.
- Where the site of surgical entry is unambiguous e.g. midline incisions, cystoscopies, laparoscopies.
- If the site is obvious e.g. open trauma wound, large tumour.
- For endoscopies.
- For procedures where the catheter / instrument site is not predetermined e.g. cardiac catheterisation, epidural / spinal analgesia / anaesthesia.
- For radiology procedures where marking the site could add to the ambiguity of subsequent procedures.
- Where intra-procedure imaging for localisation e.g. radiological, MRI, stereotaxis, ultrasound, radiation detection will be used.

- Where the procedure site cannot be marked e.g. teeth, the site / side must be clearly recorded in the patient's health care record.
- For premature infants, and some oral and maxillofacial surgery, where marking may cause permanent marking of the tissues.
- Where the patient refuses marking. Such refusal must be documented in the patient's health care record.
- In a life-threatening emergency where the patient enters the procedural room directly. This must be documented in the patient's health care record.

4.2 Requirements for a Level 3 procedure checklist

There are three distinct stages to Level 3 procedure checklists with each stage corresponding to a specific time period in the patient's procedure.

Sign In	The period before commencing procedural sedation or general / regional anaesthesia that is, immediately before the procedural team prepares the patient for their procedure. Sign In is further divided into two parts - Sign In One & Sign In Two
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Team Time Out	The period immediately before commencing the procedure to undertake a final patient identification and procedure verification
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Sign Out	The period before the patient / procedural team leave the procedural area.
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- A checklist must be used for every Level 3 procedure.
- A checklist must include Sign In, Team Time Out and Sign Out.
- Sign In One and Two may be combined with the agreement of sedationists / anaesthetists and proceduralists.
- The name of the clinician/s that completed each section of the checklist must be clearly documented.

Section	Clinician responsible
Sign In One	Sedationist / Anaesthetist
Sign In Two	Proceduralist
	Where Sign In One and Sign In Two are combined the names of both clinicians responsible must be documented - that is the name of the Sedationist / Anaesthetist and the name of the Proceduralist
Team Time Out	Senior proceduralist
Sign Out	Nurse / Midwife

- The checklist is part of the patient's health care record.
- The checklist must include confirmation of the patient's identification and the procedure verification.
- The checklist should comply with the requirements of Sections 4.3 to 4.6 of this policy.
- For procedures performed outside an operating suite, Local Health Districts / Specialty Health Networks (LHD / SHNs) may remove items included in a Level 3 procedure checklist, as set out in Sections 4.3 to 4.6, based on a risk management approach considering issues such as the type of procedure and the procedural setting. This would only apply when the items removed have no relevance to the procedure being performed (e.g. for electroconvulsive therapy (ECT) procedures the checklist might remove the items about blood loss or imaging). If modified checklists are created then they must be clearly labelled with the location the checklist will be used in or, if a procedure specific checklist, then the procedure must be included in the title (e.g. ECT Procedure Safety Checklist).
- Additional items not covered by this policy directive may be added as required.
- Checklists for Level 3 procedures must be approved by the LHD / SHN Chief Executive or their delegate/s (such as Executive Directors for Clinical Governance, Medical Services, Nursing & Midwifery) or the LHD / SHN's quality and safety committee. The approval must be documented.

4.3 Sign In One: Checklist completed by the sedationist / anaesthetist

Sign In One must be completed before commencing procedural sedation or general / regional anaesthesia.

Sign In One is completed by the sedationist / anaesthetist in conjunction with another member of the procedural team e.g. anaesthetic nurse / circulating nurse. Where there is no sedationist / anaesthetist then a proceduralist must complete this check.

In procedural suites where a formal, documented verification check is performed prior to entering the procedural suites e.g. in an airlock, theatre holding bay or reception area, the Sign In One is an additional step that must occur in a room or area immediately adjacent to the procedural room e.g. in the anaesthetic room if available, or in the procedural room.

Sign In One must be completed before the patient enters the procedural room, except in emergency situations, where an anaesthetic room does not exist or where the patient enters the procedural room directly. In these cases Sign In One should be completed inside the procedural room.

4.3.1 Patient identification

- Patient identification must occur before any treatment / intervention is initiated except if a life threatening or emergency situation exists.
- Staff must ask the patient, or their person responsible, to state their full name and date of birth. Staff must not state the patient's name or date of birth and then ask the patient, or their person responsible, if this information is correct.
- The answers to these questions must be confirmed against the details on the patient identification band. If there is a discrepancy between the details, the procedure must not proceed until this is resolved.
- If the patient is unable to participate in the final patient identification step prior to the planned procedure/s, for example due to physical incapacity, language issues, or is a child, then the patient's person responsible or the patient's identification band/s should be used to confirm the patient's identity.

4.3.2 Planned procedure matches consent

- The consent form is the primary source of information about the patient's planned procedure. The procedure to be performed must match what has been written on the patient's signed consent form. Details on the consent form must be clear and correct; and must match the health care record, the request / referral letter, the patient's or their person responsible's, understanding of the procedure to be undertaken and imaging data, where appropriate.
- A final consent check with the patient, or their person responsible, before sedating / anaesthetising the patient gives the patient the opportunity to identify any mistakes. If the planned procedure and consent do not match, the proceduralist must resolve the matter before the patient receives procedural sedation / anaesthesia.
- If the planned procedure information on the consent form is incorrect this should be documented in the patient's health care record as well as the actions taken to resolve the discrepancy.

4.3.3 Site/side/level matches consent

- The relevant team member should ask the patient, or their person responsible, to state their site / side / level for the planned procedure. The team member must not state the site / side / level for the planned procedure and then ask the patient, or their person responsible, if this information is correct.
- For some procedures (e.g. those that involve ovaries and fallopian tubes), side detection may be unreliable preoperatively.⁷ In these circumstances, side verification is not recommended.

4.3.4 Allergy/adverse reaction check

The relevant team member should:

- Ask the patient, or their person responsible, if they have a known allergy / adverse reaction and if yes, what the allergy / adverse reaction was and what effect they experienced.
- Check for any other source that may provide further information on allergies / adverse reactions the patient might have e.g. treatment plan, progress notes.
- Check that allergies / adverse reactions are noted on the allergy / adverse reaction section of the National Inpatient Medication Chart or other relevant section of the patient's health care record.
- Note that when contrast is used for procedures the allergy / adverse reaction check must be included in a patient checklist that is specifically designed for contrast administration or a Level 3 checklist.
- Ensure all team members are aware of all allergies / adverse reactions identified.

4.3.5 Sedation/anaesthetic equipment checked

- When procedural sedation or anaesthesia is planned a formal check of the necessary sedation / anaesthetic equipment must be completed prior to each procedure to ensure the equipment is available and working. Continuous pulse oximetry and blood pressure monitoring must be commenced on the patient prior to commencing procedural sedation or anaesthesia and continued until the patient is adequately recovered from this.

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⁷ Gynaecology surgery for adnexal masses: it is not uncommon for a patient to be consented for a right sided procedure, based on clinical examination or imaging (usually ultrasound) and to find at operation that the pathology is left sided (and vice versa). This is due to the fact that the tubes and ovaries are lateral and posterior to the uterus and fall towards the midline of the pelvis, making it easy to get the wrong side.

4.3.6 Patient sedation risk/anaesthetic assessment done

- When procedural sedation or anaesthesia is planned a medical assessment must be completed prior to commencement of the procedure (except in a life threatening emergency). This must include documentation of the patient's medical condition/s and their sedation risk/anaesthetic assessment. When a non-anaesthetist plans to give procedural sedation an assessment must be made as to whether an anaesthetist is required to assess and manage the patient. This decision must be documented in the patient's health care record.

4.3.7 Significant airway risk

- When procedural sedation or anaesthesia is planned the sedationist/anaesthetist must formally assess the patient's airway and document this in the patient's health care record prior to commencing procedural sedation/anaesthesia. If this assessment indicates a significant airway risk then an anaesthetist must be present before sedation is given.
- When a significant airway risk is identified the procedural sedation/anaesthesia must not commence until all required special equipment needed is present and functional, and procedural team members needed are present.
- Functioning and clean suction equipment must always be immediately available when procedural sedation/anaesthesia is given.

4.3.8 Significant aspiration risk

- The risk of aspiration should also be evaluated and documented. If the patient has symptomatic active reflux or a full stomach, the sedationist / anaesthetist must consider what additional steps might be taken to reduce the increased risk of aspiration.
- When a significant aspiration risk is identified the procedural sedation / anaesthesia must not commence until all required special equipment needed is present and functional, and the appropriate procedural team members are present.
- Functioning and clean suction equipment must always be immediately available.

4.3.9 Identification of clinician airway monitor and availability of skilled personnel

- When procedural sedation is to be used, and where an anaesthetist is not present to care exclusively for the patient, a clinician airway monitor other than the proceduralist must be nominated whose primary responsibility is to monitor the patient's level of consciousness and to monitor and provide the initial management of cardio-respiratory status of the patient during the procedure. There must be present a clinician skilled in airway management and cardio-pulmonary resuscitation relevant to the patient's age.

4.3.10 Risk of major bleeding

Defined as the risk of bleeding more than:

- 500 ml of blood for adults
- 7 ml/kg of blood for children
- >750 ml of blood for maternity patients.⁸

If there is a risk of major bleeding:

- The procedural team should confirm there is a valid group and screening available. If antibodies are present and the blood bank indicates that this may delay the provision of cross-matched blood, then at least two units of compatible cross-matched blood should be available before proceeding.
- The patient should have large bore venous access.
- Intra-procedure blood loss should be measured and the patient monitored for signs of hypovolaemia.

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⁸ WHO guidelines for safe surgery : 2009 : safe surgery saves lives at http://www.who.int/patientsafety/safesurgery/tools_resources/en/

4.4 Sign In Two: Checklist completed/signed by the proceduralist

Sign In Two must be completed before commencing procedural sedation or general / regional anaesthesia.

Sign In Two must be completed by a proceduralist who is required to confirm the following.

4.4.1 Essential imaging available

If imaging data are to be used to verify the site or procedure, a proceduralist must confirm with another member of the procedural team that:

- Images are correct and properly labelled for the correct side of the body, oriented correctly, and labelled with the patient's name and date of birth.
- Patient's identity, the site of the procedure and the date of the image, in relation to the procedure, all match.

4.4.2 Site marked

A proceduralist must confirm that the site has been marked or marking is not required (Refer to **4.1.3 Site marking**).

4.4.3 Implants and special equipment

- If any implant (type / side / size / power) and / or special equipment is required, its availability and function where possible to check, must be checked by two team members.
- A proceduralist must be present prior to commencement of procedural sedation / anaesthesia to confirm that sterile instrumentation, implants and / or any special equipment required are present and functional.
- Where an implant is used the product's label, code reference and serial number should be recorded in the patient's health care record.

4.4.4 A proceduralist who can complete the procedure is immediately available

- Confirm that a proceduralist, who can complete the procedure, is immediately available before the patient receives procedural sedation/anaesthesia and before moving to the Team Time Out stage.

4.5 Team Time Out – Checklist signed by proceduralist

Team Time Out is the final patient safety check and must occur immediately before the procedure commences in the room where the procedure is to be conducted. Usually this will be after procedural sedation / anaesthesia has commenced. The senior proceduralist present must lead the Team Time Out. The proceduralist, sedationist / anaesthetist and other members of the procedural team must **ALL** confer and agree on all aspects of the Team Time Out section of the checklist.

Success of Team Time Out is reliant on active communication amongst all members of the procedural team. It is the responsibility of the senior proceduralist present to ensure that Team Time Out is completed. The procedure should not commence until all team members are satisfied that the patient identification and procedure verification processes have been completed and patient identification and procedure verification are correct.

Each and every member of the procedural team is responsible for ensuring Team Time Out occurs and for raising any concerns they may have during Team Time Out.

Where discrepancies are noted or disagreements occur at Team Time Out, the procedure must be delayed until the issues are resolved. Only for reasons of clinical urgency should the procedure commence. The justification for proceeding in the presence of such discrepancies must be documented by the proceduralist in the patient's health care record as soon as the procedure is completed and an incident report must also be completed.

Where previous identification / verification steps have occurred satisfactorily but a discrepancy in information or disagreement in identification / verification occurs at Team Time Out, an incident report should also be completed even if the issues are resolved satisfactorily.

If disagreement occurs in an extreme emergency situation, the senior member of the procedural team is responsible for the care of the patient and should decide the most appropriate course of action.

Only after Team Time Out has been completed should the procedure commence.

4.5.1 Procedural team member introductions

- All procedural team members must introduce themselves to each other by their preferred names and roles before the procedure commences. Team members may change frequently and it is important in effective management that all team members understand who each member is and their role.
- In situations where multiple patient procedures are undertaken consecutively and there is no change in team members during the list, then this action can occur at the commencement of the list.
- In addition, teams may adopt local strategies such as documenting the name and role of team members on a whiteboard.

4.5.2 Patient identity

- The patient's identity must be confirmed against approved patient identifiers, including the patient identification band/s, consent and documentation. The identification band/s used for confirmation must be accessible after positioning and draping.

4.5.3 Planned procedure matches consent

- The consent form is the primary source of information about the patient's planned procedure. The planned procedure must be matched against the patient's consent form and imaging data, where appropriate.
- The processes described in this policy directive should not preclude the use of discretion by the treating proceduralist to alter the procedure for reasons of clinical judgement. However, significant changes to the documented procedure must be communicated to all members of the procedural team and must be recorded in the patient's health care record.

4.5.4 Site/side/level mark matches consent

- The site/side/level mark must be consistent with the site/side/level documented in the consent and imaging.
- For some procedures (eg. those involving ovaries and fallopian tubes), side detection may be unreliable preoperatively. In these circumstances, side confirmation is not recommended (Refer to **4.3.3 Site/side/level matches consent**).

4.5.5 Patient position

- The positioning of the patient must be confirmed as correct for the planned procedure and site/side/level.

4.5.6 Essential imaging reviewed

- One of the proceduralists must confirm that the essential imaging is in the procedural area and ready for use during the procedure. If imaging data are used to verify the site or procedure, the proceduralist must review and confirm the images are correct and properly labelled. If essential images are not available, the proceduralist must decide if it is safe to proceed and document this decision in the patient's health care record.

4.5.7 Allergies/adverse reactions

- Confirm any known allergies/adverse reactions. This will raise the team's awareness of precautions that may need to be taken during the procedure to avoid allergies/adverse reactions.

4.5.8 Special medications administered

- Confirm that any special medications required (eg. eye drops, steroids, mannitol) have been administered.

4.5.9 Antibiotics

- Antibiotic prophylaxis is considered best practice for a number of complex procedures. Where ordered, antibiotic prophylaxis must be given prior to the procedure (ideally within 60 minutes of the procedure commencing).¹²
- Antibiotics for caesarean sections may be given prior to the procedure or after the cord is clamped. This should be determined by local procedures or by the senior proceduralist. The senior proceduralist must decide the timing of antibiotic administration for a caesarean section and document this decision in the patient's health care record.
- An exception is when antibiotics are withheld in order to obtain specimens for microbial testing or to observe the patient.

4.5.10 VTE prophylaxis

- The need for VTE prophylaxis must be assessed on every patient. Where indicated, it should be commenced prior to the procedure. Methods include anticoagulants, compression stockings and foot / calf compressors. Indicators for use are outlined in the NSW Health policy directive on prevention of venous thromboembolism.⁶ Note that not all VTE prophylaxis methods will commence pre-procedure e.g. anticoagulants may commence post procedure.

4.5.11 Anticipated critical events

Effective team communication reduces error, prevents major complications and supports efficient teamwork. To ensure the procedural team has a common understanding of the planned procedure and expected outcomes / issues:

- The proceduralist must verbally brief the team on the planned procedure, critical steps, anticipated events and equipment requirements.
- The sedationist / anaesthetist must verbally identify any specific patient or procedure concerns they have.
- The nurse / midwife verbally confirms that
 - Any required equipment is available and, where possible to check, functional
 - Any required items or implants are available and, if necessary, sterilised / disinfected.

4.6 Sign Out – Checklist signed by the nurse/midwife

Sign Out should occur before the patient/procedural team leave the procedural area.

Sign Out is designed to ensure that all relevant patient documentation is completed and that appropriate clinical handover can be conducted. The nurse/midwife is responsible for Sign Out and should sign this section before the patient/procedural team leave the procedural area. The proceduralist or sedationist/anaesthetist could also complete this section.

Responsibility for documentation must be consistent with the requirements set out in the NSW Health policy directive on handling instruments and accountable items which says that “while documentation is primarily completed by the circulating nurse / midwife, the instrument nurse / midwife is ultimately responsible for ensuring the completion and accuracy of all documentation relating to the surgery/procedure. The anaesthetic nurse is responsible for documenting the anaesthetic nursing care provided.”

The nurse/midwife confirms the following.

4.6.1 Name of the procedure recorded

- The proceduralist must document the procedure that was carried out in the patient’s health care record. Where a procedure has varied from what was planned the rationale must be also noted in the health care record.

4.6.2 Count/tray list checks

- To ensure there are no instruments, accountable items or other items unintentionally retained in the patient, a count/tray list check must be performed as required by the NSW Health policy directive on handling instruments and accountable items.⁹
- This is usually attended prior to the patient leaving the procedure room. However, for the management of multiple or complex instrument trays, for example, the policy directive says that *the final instrument check may be completed immediately post procedure and before the next patient enters the operating or procedural room.*

4.6.3 Specimens/images labelled correctly

- The proceduralist and another member of the procedural team must ensure the correct labelling of any pathology specimen / images obtained during the procedure by verifying the patient’s name, specimen / image description and any orienting marks.

4.6.4 Equipment problems/issues documented and advised to relevant staff

- Malfunctioning equipment and instruments need to be accurately identified, and if possible isolated from other equipment and instruments, to prevent them from being used again until the problem/s is resolved. Any equipment or instrument problem/s arising during the procedure must be documented, raised with the relevant staff or the equipment / instrument labelled so the problem/s can be resolved as soon as possible. If an adverse event has occurred as a result of equipment / instrument malfunction then this should be notified in the incident management system.

The procedural team confirms the following.

4.6.5 Blood loss documented, ongoing blood loss discussed

To ensure that early warning signs of blood loss can be assessed, the blood loss (if any) during the procedure should be documented and any anticipated post procedure bleeding discussed. If significant post procedure bleeding is anticipated, blood loss criteria for notifying medical staff must be documented.

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⁹ Management of Instruments, Accountable Items and Other Items used for Surgery or Procedures, PD2013_054
http://www.health.nsw.gov.au/policies/pd/2013/PD2013_054.html

4.6.6 Advice for clinical handover

The following advice for clinical handover (verbal and documented) must be provided to staff at the post procedure destination.

- The procedural team has discussed the patient management plan for recovery, post procedure investigations and communication. This is expected to include any key messages that should be relayed to the patient or their person responsible.
- Any altered calling criteria documented if patient is not being recovered in a Post Anaesthetic Care Unit (PACU) or Recovery.
- Post procedure VTE prophylaxis has been ordered, if required.
- Post procedure care should be discussed with the patient, or their person responsible, where possible.

5 INCIDENTS

In the event of an incident:

- If the patient's condition permits, an immediate plan to rectify the error/s should be made by the senior member of the procedural team. Wherever possible, the patient and their person responsible should be involved in the management plan
- Manage incidents as required by NSW Health policy directives on incident management and open disclosure.¹⁶
- Serious incidents must be discussed at appropriate patient safety or clinical review meetings. Local improvement strategies should be developed in response to these serious incidents
- Report to the Special Committee Investigating Deaths Under Anaesthesia (SCIDUA) even when anaesthesia / sedation did not contribute, regardless of cause of death.

6 AUDITING AND REPORTING

Auditing of compliance with this policy directive must be undertaken by each LHD/SHN.

Performance indicators may be included in quarterly reporting to LHD/SHN clinical councils.

7 RESOURCES

Resources to support implementation of this policy directive can be found at the following sites.

Clinical Procedure Safety

<http://www.cec.health.nsw.gov.au/programs/clinical-procedure-safety>

This site includes a checklist for Medical Imaging Departments (Radiology and Nuclear Medicine) which has been developed by clinicians of the Agency for Clinical Innovation's Radiology and Nuclear Medicine Networks.

Safe Sedation

<https://www.aci.health.nsw.gov.au/resources/anaesthesia-perioperative-care/sedation/safe-sedation-resources>

8 ABBREVIATIONS

ECT	Electroconvulsive therapy	LA	Local anaesthetic
IDC	Indwelling catheter	MRI	Magnetic resonance imaging
IV	Intravenous	NGT	Nasogastric tube
IT	Intrathecal	VTE	Venous thromboembolism

9 REFERENCES

1. *Consent to Medical Treatment - Patient Information*, PD2005_406 at http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2005_406.pdf
2. Clinical Handover is defined at <https://www.aci.health.nsw.gov.au/resources/acute-care>
3. Incident is defined in *Incident Management Policy*, PD2014_004 at http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2014_004.pdf
4. *Client Registration Policy*, PD2007_094 (http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2007_094.pdf)
Client Registration Guideline, GL2007_024 (http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/GL2007_024.pdf)
Patient Identification Bands, PD2014_024 (http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2014_024.pdf).
5. ANZCA, *PS09 – Guidelines on Sedation and/or Analgesia for Diagnostic and Interventional Medical, Dental or Surgical Procedures, 2014* at <http://www.anzca.edu.au/resources/professional-documents> .
6. *Prevention of Venous Thromboembolism*, PD2014_032 at http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2014_032.pdf
7. Refer to *Consent to Medical Treatment - Patient Information*, PD2005_406 for information about how long a consent remains valid and who should obtain consent at http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2005_406.pdf
8. *Central Venous Access Device Insertion and Post Insertion Care*, PD2011_060 at http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2011_060.pdf
9. *Diagnostic Imaging Accreditation Scheme: Practice Accreditation Standards*, Australian Government Department of Health <http://www.health.gov.au/internet/main/publishing.nsf/Content/diagnosticimaging-accred2>
10. *Patient Identification Bands*, PD2014_024 at http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2014_024.pdf
11. WHO guidelines for safe surgery:2009 : safe surgery saves lives at http://www.who.int/patientsafety/safesurgery/tools_resources/9789241598552/en/
12. Bratzler DW, Houck PM. *Antimicrobial prophylaxis for surgery: an advisory statement from the National Surgical Infection Prevention Project. Clinical Infectious Diseases*, 2004;38:1706–15.
13. Refer to section 4.2 of *Management of Instruments, Accountable Items and Other Items used for Surgery or Procedures*, PD2013_054 http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2013_054.pdf

14. *Management of Instruments, Accountable Items and Other Items used for Surgery or Procedures*, PD2013_054 http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2013_054.pdf
15. Refer to section 5.5 of *Management of Instruments, Accountable Items and Other Items used for Surgery or Procedures*, PD2013_054 http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2013_054.pdf
16. *Incident Management*, PD2014_004
http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2014_004.pdf
- Open Disclosure Policy*, PD2014_028
http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2014_028.pdf
17. Special Committee Investigating Deaths Under Anaesthesia (SCIDUA)
<http://www.ccc.health.nsw.gov.au/incident-management/mortality-review-committees/scidua>

10 FURTHER READING

Agency for Clinical Innovation, *Anaesthesia Perioperative Care Resources*

<http://www.aci.health.nsw.gov.au/resources/anaesthesia-perioperative-care>

Antibiotic Therapeutic Guidelines - available via the CIAP website (“Medications” then “Therapeutic Guidelines eTG”) at <http://www.ciap.health.nsw.gov.au/home.html> or directly at accessible at

<https://tgldcdp.tg.org.au.acs.hcn.com.au/topicTeaser?guidelinePage=Antibiotic&etgAccess=true>

ANZCA, *PS09 – Guidelines on Sedation and/or Analgesia for Diagnostic and Interventional Medical, Dental or Surgical Procedures, 2014* <http://www.anzca.edu.au/resources/professional-documents>.

Collaborating Hospitals' Audit of Surgical Mortality (CHASM)

<http://www.ccc.health.nsw.gov.au/incident-management/mortality-review-committees/chasm>

Maternity – Breast Milk: Safe Management, PD2010_019

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EXTENDED DAY ONLY ADMISSION MODEL (GL2020_023)**GL2020_023 rescinds PD2011_045****GUIDELINE SUMMARY**

The Extended Day Only (EDO) admission model for elective surgeries provides Local Health Districts (Districts) and Specialty Health Networks (SHNs) with advice and the specific Diagnosis Related Groups (DRG) that are to be routinely considered for this service model.

All Districts and SHNs are expected to maximise the use of the EDO model to ensure that there is predictable access for surgical patients. The EDO model also supports quality and safety for patients by establishing protocolised care for patients undergoing commonly performed surgical procedures.

KEY PRINCIPLES

EDO surgery is defined as specified (by DRG) surgical treatments requiring admission up to 24 hours for elective surgery and includes Day Only surgery. Up to 80% of all surgical patients can be treated as Day Only and EDO admissions.

The concept of EDO model is to have a designated service alongside physical resources to ensure elective surgical procedures are undertaken safely and effectively.

Where the EDO Unit has historically been a dedicated and uniquely identifiable surgical unit, it more often incorporates dedicated beds within surgical wards in contemporary hospital systems.

The EDO Unit is ideally located close to the operating theatre suite for streamlined access and to minimise transportation.

To enhance predictability of surgery and maintain separation from emergency surgical services, the key elements of the EDO model include:

- Established clinical protocols* to inform, direct and record the patient's clinical pathway, admission, discharge and post discharge management. These also streamline patient care processes and support quality clinical management of the patient.
- Clear, safety-based inclusion or exclusion *criteria for EDO admission*, including:
 - o Identification of procedures from DRG suitable for the EDO model in the facility;
 - o Selection of patients with an expected length of stay of less than 24 hours;
 - o Selection of patients with a predictable course of recovery for the surgical procedure being undertaken; and
 - o Assessment of patient comorbidities to ensure patients who are unsuitable for EDO are more appropriately managed.
- Compulsory screening* of all admission notifications by the perioperative service for procedures suitable for admission to the EDO unit.
- Staggered admission times* dependent on the timing of the patient's surgery.
- Designated beds and staff* who are allocated to the EDO service only.
- Consultant-led procedures* and with trainees under consultant supervision.
- Escalation pathways* to resolve clinical uncertainty regarding a patient's suitability for Day Only or EDO admission. This may include referral to the relevant local Program Director of Surgery or equivalent.
- Communication pathways* to handover patient care to their primary care provider or other relevant community services.

Paediatric patients

The classification of procedures for paediatric patients suitable for EDO differs considerably from the adult population. Paediatric patients frequently require a general anaesthetic to perform routine medical procedures e.g. endoscopy, CT/MRI scans and change of plaster. These may be appropriate for Day Only or EDO admission and the care model is to be routinely considered when requesting and scheduling procedures.

Selection of Procedures suitable for EDO

The DRG identified in Attachment 2 as suitable for EDO admission are not exhaustive. Other DRG may appropriately be admitted as EDO based on clinical judgement and specific facility care pathways. The DRG identified have been selected on the basis that over 50% of separations were either same-day or single overnight admissions during the 2019 calendar year.

While it is recognised that some DRG lack a precise clinical descriptor, they provide the best objective assessment of length of stay for the purpose of selecting procedures. Careful assessment of patients with significant clinical co-morbidities must be undertaken to ensure the patient's suitability for EDO Admission. Additionally, if a patient experiences any intra- or post-operative complication(s), they must be reassessed for EDO Admission suitability.

Key Performance Indicators

Eighty percent of all surgery from the DRG identified in Attachment 2 should be performed through a combination of a Day Only and EDO model, to maximise the utilization of bed occupancy and efficiency of operating theatres, and to provide patients with flexible admission times.

This target is measured for each Districts on a monthly basis and reported to the Surgical Services Taskforce and local Directors of Surgery to enable ongoing monitoring and action where appropriate.

The measurement for EDO patients is up to 28 hours, to accommodate those patients who are unable to be discharged within the 24-hour timeframe.

USE OF THE GUIDELINE

The implementation checklist and the list of DRG provide direction to NSW Health organisations to implement the EDO model.

Available with the full guideline at:

https://www1.health.nsw.gov.au/pds/Pages/doc.aspx?dn=GL2020_023

For further references;

- NSW Health Guideline *High Volume Short Stay Surgical Model Toolkit* (GL2012_001)
- NSW Health Guideline *The Perioperative Toolkit* (GL2018_004)

THE PERIOPERATIVE TOOLKIT (GL2018_004)

The Perioperative Toolkit is designed to aid in the continuous quality improvement of perioperative structures, processes and outcomes for patients having a surgery/procedure and anaesthesia. The Perioperative Toolkit applies evidence and clinical reasoning to risk stratification and directing resources to clinical need.

Shared decision making with patients, families and carers and integration with primary care are integral aspects of perioperative care.

The nine elements of perioperative care described in this Toolkit build upon the five in its predecessor – the Pre Procedure Preparation Toolkit (PPPT) (2007).

KEY PRINCIPLES

The perioperative team comprises of the patient, their family and carers, general practitioners, surgeons, proceduralists, anaesthetists, nurses, administrative and clerical staff, allied health professionals, primary healthcare providers, Aboriginal health, multicultural and diversity health workers.

The Perioperative Toolkit (2016) builds on the state-wide systems of the PPPT (2007). Significant inroads have been made in addressing elective surgery waiting times by reducing length of hospital stay in healthier patients having less major surgery.

The four new elements are directed towards measuring outcomes for quality improvement, pre-operative pre-habilitation and strengthening intra- and post-operative care for the high-risk complex patient with chronic multisystem disease having moderate to major surgery.

Recommendations for prioritising perioperative care

Standard care	Best practice (to be developed further over the next five years)
Elements 1,2,3,4,9	Elements 5,6,7,8

Effective perioperative care is reliant on the following key elements.

1. The perioperative process prepares the patient, family and carer for the whole surgical/procedural journey.
2. All patients require pre admission review using a triage process.
3. Pre procedure preparation (PPP) optimises and supports management of the patient's perioperative risks associated with their planned surgery/procedure and anaesthesia.
4. The multidisciplinary team collects, analyses, integrates and communicates information to optimise patient centred care.
5. Each patient's individual journey should follow a planned standardised perioperative pathway.
6. Measurement for quality improvement, benchmarking and reporting should be embedded in the perioperative process.
7. Integration with primary care optimises the patient's perioperative wellbeing.
7. Partnering with patients, families and carers optimises shared decision making for the whole perioperative journey.
8. Effective clinical and corporate governance underpins the perioperative process.

A range of tools are available on the [Perioperative Toolkit](#) page on the ACI website. These tools can be used and adapted to meet local needs.

USE OF THE GUIDELINE

To address the economic challenges of safe access to elective surgery each NSW Health facility should have an integrated service in place for perioperative care and invest in strengthening the model of care.

The perioperative service should be supported and led by a clinical champion. Ideally the medical clinical leader or Director, Perioperative Service is an anaesthetist. An anaesthetist's continuing professional development and experience with surgeons and proceduralists at the most critical time of treatment, informs this role.

The medical clinical leader, collaborating closely with the nurse clinical leader, is responsible for:

- facilitating the other's leadership role
- the coordination of integrated perioperative multidisciplinary care
- the identification, communication and management of perioperative patient risk
- the establishment of local guidelines
- measurement, benchmarking and reporting of outcomes.

The Perioperative Toolkit is available at:

https://www1.health.nsw.gov.au/pds/Pages/doc.aspx?dn=gl2018_004

304(07/02/18)

NSW EMERGENCY SURGERY GUIDELINES AND PRINCIPLES FOR IMPROVEMENT (GL2021_007)

GL2021_007 rescinded GL2009_009

GUIDELINE SUMMARY

Emergency surgery is an important and significant component of surgical service provision, accounting for up to 45% of surgery delivered in public hospitals each year.

NSW hospitals have a long history of delivering high-quality surgical services, and timely access to emergency care is key to supporting optimal outcomes for patients and communities.

This iteration of the NSW Emergency Surgery Guidelines support hospitals, local health districts (Districts) and specialty health networks (SHNs) to plan their emergency surgery services based on a predictable long-term workload. It aims to ensure capacity is sufficient to meet demand, minimise unwarranted variation in care, and facilitate monitoring for improvement to ultimately provide a supportive work environment for staff and a safe, caring service for patients.

A revised framework for prioritisation of clinical urgency, incorporating obstetric emergencies for the first time, is presented to support clinical decision-making.

Category	Priority	Maximum timeframe
A	Life threatening (including obstetric)	1 hour
B	Highly critical (including organ/limb threatening)	2 hours
C	Critical	4 hours
D	Urgent	8 hours
E	Semi-urgent	24 hours
F	Non-urgent	72 hours

338(18/05/21)

KEY PRINCIPLES

The key principles supporting a safe, responsive and high-quality emergency surgical service are further articulated.

1. Hospitals are designated for either elective or emergency surgery, or for specific components of each.
2. Emergency surgical workloads are measured and reviewed regularly to maximise predictability.
3. Emergency surgery capacity is matched to service demand, with consideration of caseload, case mix and balance with elective surgery demand.
4. Where clinically appropriate, emergency surgery is scheduled in standard hours.
5. Emergency surgery cases are scheduled based on clinical need, in line with a statewide urgency prioritisation framework and these guidelines.
6. Emergency surgery models of care are consultant-led.
7. Evidence-based protocols are used for the assessment and treatment of common acute surgical presentations.
8. Local escalation plans are established and agreed to facilitate delivery of best practice patient care, communication and conflict resolution.
9. A standardised set of indicators is applied to emergency surgery to facilitate service monitoring and continuous quality improvement.

USE OF THE GUIDELINE

The NSW emergency surgery guidelines and principles for improvement are a resource to support this planning across all specialties, allowing appropriate allocation of the necessary operating theatre time and resources to meet the expected demand. For emergency surgery, planning should also include immediate access to operating theatres for the most urgent emergency surgery patients; sufficient staffing and equipment for safe patient care; access to data and information to support planning; and effective leadership to foster high-performing surgical services. Future proofing and planning are required to plan for the predictable annual increase in emergency surgery workload.

These guidelines outline the key principles. The examples provided are drawn from surgical specialties where emergency caseloads are generally high (orthopaedics, general surgery, obstetrics and gynaecology and plastic surgery).

However, the principles are equally applicable to those specialties where emergency caseloads are less (neurosurgery, vascular surgery, oral and maxillofacial surgery) or where caseloads are relatively low (urology, cardiothoracic, ophthalmology and otolaryngology).

The guidelines detail each of these principles more fully, guiding hospitals to better align their services with the principles in order to deliver better, safer emergency surgical care to their communities.

The NSW emergency surgery guidelines and principles for improvement are available at https://www1.health.nsw.gov.au/pds/Pages/doc.aspx?dn=GL2021_007

INTRAVASCULAR ACCESS DEVICES INFECTION PREVENTION AND CONTROL INSERTION AND POST INSERTION CARE (PD2019_040)

PD2019_040 rescinded PD2011_060

PURPOSE

The purpose of the NSW Health Intravascular Access Device (IVAD) Infection Prevention and Control Insertion and Post Insertion Care Policy is to provide guidance to NSW Health Organisations (HO's) including Affiliated Health Organisations on the minimum standards for insertion, management and removal of IVADs, in order to minimise the adverse health impacts on patients and reduce burden of healthcare associated Infections (HAIs). This Policy is to be read in conjunction with NSW Health Infection Prevention and Control Policy.

MANDATORY REQUIREMENTS

All clinical staff who insert IVADs or care for a patient with an IVAD must comply with this Policy Directive. For each insertion a record of insertion must be completed.

Every IVAD insertion, management and removal must be documented at the time of care or as soon as possible afterwards.

HO's must have local guidelines or procedures in place to support the technical and procedural aspects for using and managing these devices for clinicians.

HO's must support clinicians to ensure adherence with this Policy Directive.

Aseptic technique must be adhered to during each IVAD insertion, management and removal to reduce the risk of local or systemic infection.

IMPLEMENTATION

NSW Health Organisations (HOs) and the governance structure for the implementation of this Policy Directive to reduce the risk of healthcare associated infections (HAIs).

Clinical Excellence Commission

- Provides tools to support the implementation, monitoring and evaluation of this policy.

Health Education and Training Institute (HETI)

- Compliance with the existing mandatory education components (Aseptic technique, Hand Hygiene and Infection prevention and Control Practices from HETI online) applies.

Chief Executive of Local Health District and Specialty Health Network

- Assigns leadership responsibility, personnel and resources to implement and comply with this Policy.

Directors of Clinical Governance

- Ensure that this Policy is communicated to all managers and health workers.
- Ensure local infection prevention and control programs and systems are in place to implement and monitor this Policy.
- Monitor and provide regular reports on the progress and outcomes of infections related to IVADs.
- Monitor, evaluate and address issues with compliance with this Policy.

Clinical leaders and senior managers

- Provide resources and equipment necessary for compliance with this Policy.
- Implement and evaluate local infection prevention and control systems.

Infection prevention and control professionals

- Provide leadership in infection prevention and control surveillance and reporting.
- Provide advice on compliance with the insertion, management and removal of IVADs policy within their health organisation.
- Provide leadership in the management of HAIs or other transmission risks and in the communication of these risks to health workers, patients, volunteers, carers and visitors.

Clinical Staff Inserting, Caring for, Managing and Removing IVAD Devices

- Comply with IVAD Infection Prevention and Control, Insertion and Post Insertion Care policy this Policy.
- Are trained, competent and assessed in the insertion, management and removal of an IVAD device in accordance with this Policy Directive.
- Ensure IVAD insertion and care is documented in the patient's health record.
- Assess and document daily the ongoing need for an IVAD device.

Intravascular Access Devices (IVAD) – Infection Prevention and Control Procedures**BACKGROUND****Background**

Intravascular access devices (IVADs) are commonly used in a variety of settings. They are used to provide a route for administering intravenous medications, fluids, blood products and nutrients and may be used for haemodynamic monitoring, short to long term intravascular access, renal therapies and blood specimen collection.

Intravascular access devices provide direct access to the patient's bloodstream and therefore pose a serious risk for infection of microorganisms to be introduced either at the time of insertion or while the device is in situ. Device-related infections are associated with increased morbidity and mortality, prolonged hospital stay and additional healthcare costs.

Central Venous Access Devices (CVAD) pose a risk of air embolism in patients during insertion and removal (1).

Correct use and management of IVADs minimises the risks of device related infection to patients (2). The health service organisation must have a process for the appropriate use and management of invasive medical devices (3).

About This Document

This Policy outlines the minimum infection prevention and control requirements for IVADs for NSW Health Organisations (HOs). It has been developed for clinicians who insert, use/manage and remove devices and for persons responsible for surveillance and control of infections in hospital, outpatient, and home healthcare settings. It is recognised that in a clinical emergency, the principles of insertion outlined in this Policy may be difficult to meet. In these situations a risk assessment should be undertaken and the intravascular device replaced as soon as clinically appropriate.

This Policy integrates evidenced-based knowledge with clinical expertise to:

- Support appropriate device management within NSW HOs
- Prevent device related infections
- Prevent adverse events
- Assist NSW HOs to meet the requirements for Standard 3 of the National Standards for Quality Healthcare Services

Scope

This Policy focuses on infection prevention and control (IP&C) for IVADs. Some aspects outside of IP&C are also included to assist in guiding the overall management of IVADs.

This Policy sets out the minimum standards to ensure the safe use of devices and should be used in conjunction with the manufacturer's instructions relating to individual catheters, connections, administration set dwell time, and compatibility with antiseptics, medications and other fluids. HO's who use these devices must have local guidelines or procedures in place to support the technical and procedural aspects for using and managing these devices.

The Policy is applicable to all patient care settings in which devices are inserted, managed or removed. This Policy is applicable across all patient populations (e.g. adults, ambulance, pre-hospital, hospital in the home, paediatrics and neonatology).

The following devices have been included in this Policy:

- Peripheral intravenous cannula (PIVC)
- Midline catheters
- Central venous access devices (CVAD)
 - Peripherally inserted central catheter (PICC)
 - Tunnelled cuffed and non-cuffed central venous catheter
 - Non-tunnelled central venous catheter
 - Implantable Venous Ports (Port)
- Umbilical catheters
- Peripheral artery catheters
- Pulmonary artery catheters
- Haemodialysis catheters

The following items are out of scope for this Policy:

- Technical or procedural aspects related to the above devices
- Sub-cutaneous devices
- Arteriovenous (AV) fistulas
- Anticoagulants
- Intraosseous devices

Key definitions

A detailed [glossary](#) of terms can be found at the back of the Policy

Central Venous Access Device (CVAD)	<ul style="list-style-type: none"> • A catheter inserted through an upper or lower peripheral or central vein where the catheter tip terminates in: <ul style="list-style-type: none"> ○ For upper body access: superior vena cava/right atrial (SVC/RA) cavo-atrial junction. ○ For lower body access: the common iliac vein or abdominal vena cava • These catheters are used for the administration of parenteral fluids and medications that are typically not suitable via a short peripheral catheter. They are also used for the measurement of central venous pressure in critical care setting. <ul style="list-style-type: none"> ○ <i>Centrally</i>- inserted central venous catheters have a skin entry point in the neck or trunk. ○ <i>Peripherally</i>- inserted central catheters have a skin entry point on a limb or the scalp. ○ <i>Non-Tunnelled</i>- the catheter insertion and exit points are the same • <i>Tunnelled</i> - the catheter is inserted through one point and then “tunnelled” under the skin to a remote exit point.
Implantable Venous Port (port):	Long term CVAD, which is surgically placed under the skin from the insertion site to a separate exit site. The exit site is typically located in the chest, but can be located elsewhere for comfort and aesthetic reasons (e.g. inner bicep, abdomen and thigh). They can be multi lumen. Ports consist of two main parts: the portal reservoir and a catheter. The tip of the catheter resides in the cavo-atrial junction. Also known as a port-a-cath or a venous port.
Intravascular access device (device)	Catheters, tubes, or devices inserted into the vascular system, including veins, arteries, and bone marrow.
Midline Catheter	A long peripheral catheter inserted into the upper arm via the basilic, cephalic, or brachial vein, with the internal tip located at or near the level of the axilla and distal to the shoulder.
Non-tunnelled CVAD- Also known as Percutaneous CVAD	A device that enters the venous system. Non-tunnelled catheters are generally used for short term therapy and in emergency situations.
Peripheral Artery Catheter	An arterial line (also art-line or a-line) is a thin catheter inserted into an artery.
Peripheral intravenous cannula (PIVC)	A catheter (small, flexible tube) placed into a peripheral vein for intravenous access.
Peripherally inserted central catheter (PICC)	A catheter inserted through the veins of the upper extremities in adults and children; upper or lower extremities in neonates, catheter tip is located in the superior or inferior vena cava, preferably in the cavo-atrial junction
Health Organisation (HO)	For the purpose of this Policy a Health Organisation is: Local Health District, Speciality Health Networks, Statutory health corporation that provides inpatient services, or Affiliated health organisation in respect of its recognised establishments that provide inpatient services.
Pulmonary Artery Catheter	Also known as a Swan-ganz catheter, is a catheter inserted into a large central vein, with the tip residing in a pulmonary artery. Its purpose is diagnostic and therapeutic; it is used to detect heart failure or sepsis, monitor therapy, evaluate the effects of drugs, frequent blood sampling and to infuse medication.
Tunnelled CVAD	A central vascular access device (CVAD) with a segment of the catheter lying in a subcutaneous tunnel with the presence of a cuff into which the subcutaneous tissue grows to offer security for the catheter; indicates that the skin exit site and vein entry site are separated by the subcutaneous tunnel.
Umbilical Catheter	Catheter that is inserted into one of the two arteries or vein of the umbilical cord.

1 EDUCATION & DOCUMENTATION

1.1 Staff Education and Training

- All staff involved in the insertion, management and removal of IVADs must complete an educational program that is appropriate for the care being provided as determined by their HO.
- Clinicians are responsible and accountable for attaining and maintaining currency of skills for device insertion, management and removal within their scope of practice (4).
- HOs should have systems in place to recognise prior competence/skills assessment of the clinician from other HOs.
- The role, responsibilities and accountability for each type of clinician involved with these devices must be clearly defined in organisational policy or procedure (4).

1.1.1 Competency Assessment for Intravascular Access Devices (IVADs)

- Clinicians who insert, manage and remove IVADs must undergo training and formal competency assessment, as determined by the HO and is consistent with best practice.
 - Competency assessment must be conducted to establish proficiency to perform these skills independently and may be undertaken on an ongoing basis as necessary.
 - Competency validation must be documented in accordance with organisational policy.
- Clinicians working towards formal competency must be supervised by an experienced and competent clinician

1.2 Patient Education

- The level of the education program provided to the patient and/or caregiver should be determined by the:
 - criticality of the patient
 - cognition of the patient
 - ability to manage the IVAD
 - type and duration of the IVAD
- The clinician should educate the patient and/or caregiver while in hospital or hospital in the home and before discharge on:
 - the procedure and need for the device
 - signs and symptoms of infection
 - signs of air embolism
 - what to do if it becomes disconnected or accidentally removed
 - practice and principles of caring for the device
 - infection prevention strategies for their device
- **Patients and/or carers in the community must be provided with appropriate material that includes who to contact for advice or in the case of an emergency**

1.3 Documentation

- Documentation in health care records must provide an accurate description of each patient/client's episodes of care or contact with health care personnel NSW Policy Directive [Health Care Records - Documentation and Management \(5\)](#).
- Each HO must determine where clinical information relating to devices is to be documented in the patient's health record and that this is applied consistently so that clinical information can be readily accessed as needed. This is particularly important for devices with a longer dwell time.
- All clinical incidents must be reported and documented as per the NSW Health, PD2014_004 Incident Management Policy (6).
- Follow Australian Commission on Safety and Quality in Health Care (ACSQH) guidelines for labelling requirements. NSW Health Policy Directive [User-applied Labelling of Injectable Medicines, Fluids and Lines \(7\)](#)

1.3.1 Insertion

- Minimum documentation requirements at insertion by the proceduralist/procedure assistant are: A Central Venous Line Insertion Record or equivalent must be completed by the proceduralist inserting the device or their assistant for all CVADs which should include the below information:
 - Patient education and consent, refer to [Consent to Medical Treatment \(8\)](#).
 - Date and time of insertion, number of attempts, reason for insertion, local anaesthetic (if used), and the technique used, including visualisation and guidance technologies.
 - Site preparation, infection prevention and safety precautions taken.
 - The type, length, and gauge/size of the device (for PIVC); including the lot number for all CVADs and implanted devices.
 - Identification of the insertion site by anatomical descriptors and landmarks.
 - Confirmation of the location of the catheter tip for all CVADs prior to initial use.
 - Confirmation of patency and ready for use.
- This Record must be placed in the patient's health care record.

1.3.2 Post-Insertion

While the patient is admitted to hospital the condition of every IVAD must be documented at least once per nursing shift. The documentation must detail (4):

- Condition of the site, dressing, catheter securement, dressing change details, site care, and any changes related to the device or site.
- Length of CVAD catheter from skin to hub (to assess potential migration).
- Patient reported symptoms.
- Device function (e.g. patency, lack of resistance when flushing, presence of a blood return upon aspiration).
- Equipment/infusion type used for administration of Intravenous (IV) therapy.
- The Visual Infusion Phlebitis (VIP) score if used or any signs of infection

1.3.3 Administration Sets

All labelling of administrations sets used in continuous infusion must be documented in accordance with [NSW Health Policy Directive User-applied labelling of injectable medicines, fluids and lines \(7\)](#). If the lumen has an indwelling lock solution, the lumen must be clearly labelled so that it is not inadvertently flushed into the patient (7).

1.3.4 Removal

Minimum documentation requirements on removal of devices is:

- Date and time of device removal, reason for removal, condition of the site, and whether the catheter length and/or tip were complete and intact.
- Dressing applied.

Any continuing management of complications including site observation and documentation post removal.

2.3.5 Infection

Incidents of infection/phlebitis at the insertion site must be reported to Incident Information Management System (IIMS) or as per other local reporting requirements (6).

If a catheter related site infection or Blood Stream Infection (BSI) is suspected or confirmed this must be documented clearly in the patient medical record, if cultures are obtained, document the source of culture(s). The documentation should include a management plan and actions taken.

If IVAD site infections are suspected to have progressed to a systemic infection (bacteraemia) then notify as a Safety Assessment Code (SAC 2; all staphylococcus aureus bacteraemia must be recorded as a SAC 2).

Compliance with reporting mandatory Key Performance Indicators (KPIs) including routine reports on IVAD associated infections should be communicated to relevant stakeholders, peak organisational, governing and executive committees (6, 9).

2 PRE-INSERTION

2.1 Considerations when Choosing a Device

The risk of infection can be dependent on device site and selection. The following should be considered (10) as contributing to this risk: (see [Section 4.2](#) for more information).

- Comorbidities, prolonged use and sites with frequent movement.
- History of mastectomy, arteriovenous (AV) fistula or graft, haematological disorders, history of device complications, obesity, coagulopathy, previous surgery, failed or difficult device access or immunocompromised.
- Therapeutic purpose: the infusate characteristics, complexity of infusion regime, availability of peripheral access sites.
- Estimated length of time: long-term intermittent therapy, treatment anticipated for more than 3 weeks.
- Vein status: veins may be difficult to access, torturous, fragile, hidden or deep.

3.1.2 Bundles

Infection prevention and control bundles reduce the risk of healthcare associated infections (11, 12). Facilities should develop bundles that are both evidence based and include local clinical risks. The principles for developing a bundle include:

- A manageable list of interventions that are descriptive and meet local requirements.
- Processes for documentation and assessment that considers clinical judgment in decision making.
- Input from the multidisciplinary team in developing the bundle.
- Monitoring and communication to clinical teams.

3 INSERTION

3.1 Prophylaxis, antimicrobial impregnation, coating or bonding

- The following should not routinely be used for the prevention of infection when inserting an intravascular device:
 - Systemic antibiotic prophylaxis (13-17).
 - Antibiotic or antiseptic ointment (13, 18).
 - Antimicrobial-impregnated catheters may be considered for specific population based on patients' risk factors and clinical presentation (19-21).
- The use of bonded connections and valves are beneficial in reducing the risk of air embolism and infection (22).
 1. Device Selection, Site Selection, and Device Securement

3.1.1 Peripheral Intravenous Cannula (PIVC)

Device Selection

- Clinicians should use the smallest gauge and shortest length PIVC that will accommodate the anticipated therapy to reduce the risk of phlebitis.
- See [Attachment 1 PIVC Device Selection Guide](#) more information.

Site Selection

- Optimal site selection for PIVC is the distal areas of the upper extremities (e.g. Forearms) (3, 13).
- Basilic or cephalic veins on the posterior (dorsal) forearm are the preferred site for catheterisation (3).
- The site selected should be accessible and functional during surgery and procedures.
- Veins should be selected on the non-dominant forearm if practical (especially if the catheter is to remain in position for any length of time) (3).
 - Avoid veins of the lower extremities unless necessary, due to risk of tissue damage, thrombophlebitis, and ulceration.
 - Rotate PIVC site and arm where possible for repeated cannulations.
 - Replace a catheter inserted in a lower extremity, to an upper extremity as soon as possible.
 - Avoid compromised areas, areas of flexion e.g. antecubital fossa and areas of pain on palpation.
- For paediatrics, preference should be given to sites that are long lasting for duration of therapy (e.g. hands, forearm and upper arm).
 - Upper or lower extremities or the scalp (last option) can be used as the catheter insertion site (13).
 - Avoid hand or fingers, or the thumb/finger used for sucking in infants.
 - Avoid the right arm of infants and children after procedures treating congenital cardiac defects that may have decreased blood flow to the subclavian artery.

Securement

- The catheter should be stabilised with a transparent dressing and sterile adhesive tape or sterile adhesive/wound closure strips, to prevent catheter dislodgement (13, 23).
- For paediatrics use of IV board/splints are recommended to secure PIVC placed in or adjacent to areas of flexion. Follow local policy or guidelines for strapping and securement of PIVCs.

3.1.2 Midline Catheters*Device Selection*

- Use the smallest gauge of midline catheters that will accommodate the prescribed therapy to reduce the risk of phlebitis and thrombosis (24, 25).

Site Selection

- Vein selection should be based on the biggest and most superficial vein above or directly below the antecubital fossa to allow normal arm movement and function. The catheter should not be placed at the antecubital fossa crease/fold or pass the axillary crease/fold.

Securement

- A sutureless securement device is preferred to reduce the risk of infection (26).

3.1.3 Central Venous Access Device (CVAD)*Device Selection*

- Use the smallest gauge of CVAD that will accommodate the anticipated therapy to reduce the risk of phlebitis (27).
- The minimum necessary number of lumens and add-ons (manifolds, stopcocks and multi-extension sets) should be used.
- Heparin-coated catheters are not recommended (28).

Site Selection

- For PICCs select the basilic (preferred), cephalic, and brachial veins (with sufficient size) of the antecubital space or brachial veins (29, 30).
- In neonates the upper and lower extremities have similar complication rates.
- Use a subclavian or internal jugular site rather than a femoral site where possible, in adult patients to minimise infection risk for non-tunnelled CVC placement (31).
 - If the patient has chronic kidney disease, consider the internal jugular vein or, secondarily, the external jugular vein, weighing benefits and risks for each access site due to the risk of central vein stenosis (32).
 - Subclavian vein should be avoided for temporary access in patients with chronic renal failure due to the risk of central vein stenosis (33).
 - In patients with chronic renal failure be aware if a limb is being preserved for future haemodialysis access.
- For internal jugular sites, the right side of the patient is favoured as vessel anatomy allows direct access to the superior vena cava/inferior vena cava and provides a shorter and easier route for the practitioner inserting the device (34).

Securement

The CVAD must be secured (26) at the skin insertion point and anchor point (if present) by:

- A sutureless securement device (preferred to reduce the risk of infection) OR
- Direct suturing at the hub and three-way bifurcation anchor point.

3.1.4 Implanted Venous Port (port/IVP)

Device Selection

- Catheters made of radiopaque silicone rubber or polyurethane are preferred.
- Ports made of various materials including plastic, titanium, silicone rubber, polyurethane, and a combination of these substances can be used.
- The life of the septum is dependent on the gauge of needles used to access the port and the type of needle used i.e. if a larger needle is used, the septum will wear out after fewer punctures than when a smaller gauge needle is used (35).

Site Selection

- Port pocket site selection should allow for placement in an area that provides good port stability, does not interfere with patient mobility, does not create pressure points or interfere with clothing (36).

Securement

- The suture line closing the port should not be located over the septum of the port (36).
- Umbilical catheters are commonly secured using the goalpost method, refer to local guideline or procedures for more information.

3.1.5 Peripheral Artery Catheter

Device Selection

The catheter must be flexible, resistant, as radiopaque as possible, thin walled with a high internal to external diameter ratio (37).

Site selection

- The radial artery is preferred due to its accessibility and good collateral flow, however the femoral, brachial or pedal artery may also be used (1).
- The brachial site should not be used in paediatrics (13).

Securement

- A sutureless securement device (preferred to reduce the risk of infection) OR
- Direct suturing at the hub and three-way bifurcation anchor point.

3.1.6 Pulmonary Artery Catheter

Device Selection

The catheter must be flexible, resistant, as radiopaque as possible, thin walled with a high internal to external diameter ratio (37).

Site selection

- The preferred site is the right internal jugular vein followed by the left subclavian vein.

The femoral and antecubital veins should be avoided if possible.

Securement

- A sutureless securement device (preferred to reduce the risk of infection) OR
- Direct suturing at the hub and three-way bifurcation anchor point.

3.2 Confirmation of Tip Position for Central Catheters

- The catheter tip position must be confirmed when a device is inserted, by any of the following techniques prior to use (38, 39):
- ECG CVAD tip confirmation
- Chest x-ray or image intensifier
- Fluoroscopy imaging and Digital Subtraction Angiography (DSA)
- Computed Tomography (CT)
- Magnetic Resonance Imaging (MRI)
- Pressure monitoring of the central venous waveform in operating theatre until formal confirmation post-surgery
- Once the CVAD distal tip position is confirmed via any of the above, the “final Tip position” of the catheter must be documented (the total catheter length and external/inserted length (skin to hub) in the patients’ medical record. This then becomes the clinician’s primary referral source for written confirmation of tip position.
- This must be completed by the clinician inserting the device, their assistant or delegate for all insertions.

3.3 Standard Precautions (At Insertion)

Standard precautions are the minimum precautions required and must always be applied when caring for patients (4).

- *During an emergency situation (e.g. rapid deterioration and ambulance) time does not always permit use of aseptic technique or full maximal barrier precautions, the clinician should make every effort within their environment to maintain asepsis and adhere to standard precautions. If inserted in an emergency, the IVAD must be replaced as soon as the patient is stable (within 24 hours).*

The precautions outlined in sections 4.4.1 to 4.4.4 are the minimum requirements when inserting a device.

3.3.1 Hand Hygiene

- Perform hand hygiene before insertion procedures, refer to table 2 below.
- Hand hygiene should be performed before and after palpating catheter insertion sites as well as before and after inserting, **replacing, accessing, repairing, or dressing**.
- Palpation of the PIVC insertion site should not be performed after the application of antiseptic, unless non-touch technique is maintained or sterile gloves are used. If you need to palpate the planned insertion site after skin antiseptics to confirm anatomy, repeat the application of antiseptic.

The use of gloves does not eliminate the need for hand hygiene (before putting on gloves and after removal).

Table 2: Hand Hygiene for Device Insertion

Activity		Hand Cleansing Product*	Duration of Hand wash*
Aseptic Procedure	Insertion of PIVC	ABHR*	30-60 seconds
		Liquid antimicrobial soap and running water	40-60 seconds
	Peripheral Arterial Catheter	ABHR*	60 seconds minimum
		Liquid antimicrobial soap and running water	
	Insertion of CVAD, Midline and Umbilical Catheters	Liquid antimicrobial soap and running water	2 minutes
		Alcohol Based Surgical Hand Rub (ABSHR*)	Refer to manufacturer's instructions. Note: Prior to surgical rub, wash hands, forearms and nails using a non-medicated soap and running water.

*Manufacturers recommendations should be followed for the amount of solution and duration

3.3.2 Aseptic Technique

- All clinicians involved in the insertion of devices must have appropriate training and assessment of aseptic technique, refer to section [2.1 Staff Education and Training](#).
- Aseptic technique must be maintained for the duration of the procedure, this includes:
 - Hand hygiene.
 - Maintaining aseptic fields.
 - Once insertion site has been prepped aseptic technique must be maintained and the site must not be touched (unless sterile gloves are worn).
 - Procedures must be performed using non-touch technique protecting key sites and key parts. The cap/cover must remain on the device to maintain asepsis.
 - Personal protective equipment (PPE) must be worn as per standard precautions.
 - Ensure a logic, efficient and safe order of the procedure.
 - Equipment or items dropped on the floor must be discarded (even if there is a cap/cover on) and replaced.
 - Ultrasound transducers used for imaging the vascular system for insertion of venous access devices should be used with a sterile probe cover and sterile gel. The transducer probe must be cleaned and disinfected adequately in between use. Follow manufacturers' instructions for use.
 - A clean environment must be maintained throughout the procedure. Environmental controls to achieve this include; IVAD insertion trolley or procedure tray is to be cleaned, no room cleaning (buffing or polishing) immediately prior to, or during the procedure. The procedure should take place in a closed room or with curtains drawn around the patient zone to minimise air currents.

3.3.3 Personal Protective Equipment

Clinicians should wear appropriate personal protective equipment based on risk assessment and likelihood of exposure to bodily fluids.

Glove Use

- The use of non-sterile examination or sterile gloves will depend on the procedure being undertaken, contact with susceptible sites or clinical devices, the risks involved and the HO guidelines or procedures that are in place.
- For PIVC insertion gloves should be worn immediately after performing hand hygiene.
 - HOs should have in place local guidelines or procedures determining the type of gloves for PIVC insertion based on local needs and clinical risk.
 - Gloves considered in local guidelines or procedures may include; sterile procedural gloves, sterile gloves, non-sterile gloves.
- See below [4.4.4 Maximal Barrier Precautions](#) for more information (4).

3.3.4 Maximal Barrier Precautions

- Use maximum sterile barrier precautions. This involves:
 - Except for PIVC and arterial line insertions, mask, hair covering including beard if necessary, sterile gown and sterile gloves are required to be worn by all personnel involved in the procedure.
 - PIVC and arterial lines insertion require compliance with asepsis.
 - The insertion site is to be covered with a large sterile drape during catheter insertion.

3.4 Skin Preparation

- Hair at the insertion site should be removed using clippers to improve adherence of the dressing.
- The skin should be physically cleaned with soap and water (if necessary) prior to applying the antiseptic solution before inserting the catheter.
- The same antimicrobial agent must be used for all phases of the patient's skin preparation, to ensure full residual benefit and consistent action (17).
- Palpation of the insertion site should not be performed after the application of antiseptics, unless aseptic technique is maintained.
 - If the health worker needs to re-establish the identification of the vein, the site should be re-prepped with the antiseptic solution and allowed to thoroughly dry (17).

Table 3: Skin Preparation for Adults and Children \geq 2 months (40, 41)

Skin cleansing prior to <i>PIVC</i> insertion	0.5-2% chlorhexidine gluconate (CHG) and 70% isopropyl alcohol
Skin cleansing prior to all other device insertions	2% chlorhexidine gluconate (CHG) in 70% isopropyl alcohol
If there is a contraindication to chlorhexidine, povidone iodine 10% in 70% alcohol can be used as an alternative.	

- The application of antiseptic should be a measured quantity and avoid over application. If the site is accessed prior to full evaporation of the product, this can lead to reduced efficacy.
- All solutions must be allowed to dry before beginning insertion, do not wipe or blot.
- Some of the alcoholic chlorhexidine solutions now contain colour to allow easier identification.
- Sterile saline or water solutions alone are not acceptable antiseptic solutions and should only be used to clean the skin of gross contaminants prior to applying antiseptic solution.
- Take care when applying liquid solutions to minimise the risk of eye injury to the patient due to splashes.
- Care should be taken during internal jugular approaches that solutions containing chlorhexidine are not introduced to the ear canal as this can lead to deafness.

4.5.1 Skin preparation in neonates

NSW public health organisations who care for **neonates** must have a local policy or guideline in place for skin preparation and/or antiseptics for pre-term infants. This should consider:

- Using topical antiseptics with extreme caution, particularly alcohol based preparations.
- The risk of chemical burns in premature babies.
- Avoiding Povidone Iodine for skin antiseptics.

4 POST INSERTION MANAGEMENT

4.1 General Information

- If Total Parenteral Nutrition (TPN) is being administered, where possible, health workers should utilise one lumen exclusively for that use (42, 43).
- Consider use of an extension set between an IVAD and needleless connector to reduce catheter manipulation (4).
- Refer to section **2.3 Documentation** for minimum documentation requirements.

4.2 Daily Review for In-patients

- All intravascular devices must be checked (table 4) at each shift for ongoing need and promptly removed when no longer required.
- The insertion site must be visually inspected by the clinician at least hourly with continuous infusion, at least every eight hours if no infusion (15). For further information refer to **Intentional Patient Rounding - Information for Clinicians and Health Professionals (44)**. For high-risk medicine clinicians should refer to the local protocols or **Australian Injectable Drugs Handbook (AIDH) - 7th Edition (45)**.
- Ensure medical staff review the need for IV therapy including antimicrobials on a daily basis and switch to oral administration as clinically appropriate.

- Table 4: Daily Assessment

Daily Assessment			
Phlebitis - Erythema - Tenderness - Swelling - Pain - Palpable venous cord - Purulent discharge	Systemic Infection - Rigor - Fever - Tachycardia - Hypotension - Malaise - Nausea/vomiting	Infiltration/extravasation • Insertion Site - Blanced, taut skin - Oedema - IV fluid leaking - Burning/stinging pain • Change in infusion flow	• Catheter position • Integrity of suture • Dressing integrity • Occlusion/patency • Ongoing need for line
<i>For PICCs & Midlines, if limb swelling is suspected, compare the mid-upper limb circumference with the initial value recorded on the CVAD Insertion Record to quantify this. If a significant increase in circumference is confirmed, venous thrombosis should be considered and investigated appropriately.</i>			

- (Source: I-care QLD (15, 17, 28, 36, 46-48))

5.3 Patients in the Community

- All intravascular devices should be checked (refer to table 4) at every clinical visit and removed when no longer required.
- Patients should be educated to visually inspect the insertion site when continuous infusions are running. This must include signs and symptoms of complications and who to contact if needed.

5.4 Transferring and transporting patients with CVADS

- There is an increased risk of CVAD dislodgment and falling out during transfer or transportation of patients.
- Devices should be visually inspected and secured before transfers occur.
- Consideration should be given to the weight of lumen sets and lines must be supported with additional fixation to reduce the risk of unplanned dislodgement.
- If catheter is not in use, check that the catheter is clamped prior to commencing transport.

5.5 Accessing Devices

- To reduce the risk of infection, manipulations of an intravascular device should be kept to a minimum and use a continuous flow system wherever possible.
- Where continuous flow is not possible, then the device should be flushed and locked as per local guidelines and procedures.
- The catheter lumen should be kept sterile and should never be left open to the air.
- Aseptic technique must be maintained at all times.
- Ensure line clamps are used when accessing a CVAD to reduce the risk of air embolism (22).

Table 5: Accessing Devices

PIVC, Midline, PICC, CVC (tunnelled & non-tunnelled), Umbilical Catheters, Pulmonary Artery & Peripheral Artery Catheters, Port	
<p>Aseptic Technique Principles (49), relevant to the procedure.</p> <ul style="list-style-type: none"> • Sequencing • Hand Hygiene • Environmental control • Maintain asepsis • PPE 	<p>Antiseptic</p> <ul style="list-style-type: none"> • 70% isopropyl alcohol swab OR • 0.5-2% chlorhexidine gluconate & 70% isopropyl alcohol <p>PORT/IVP with needle insertion</p> <ul style="list-style-type: none"> • 2% chlorhexidine gluconate & 70% alcohol
<p>Accessing a Catheter</p> <ul style="list-style-type: none"> • All intravenous access ports should be meticulously cleaned with a large wipe (scrub the hub) for at least 15 seconds generating friction by scrubbing in a twisting motion with a single-use 70% alcohol-impregnated swab or alcoholic chlorhexidine or if allergic 10% povidone-iodine and allowed to air dry prior to accessing the system (50, 51). • The catheter should be accessed with a sterile single-use device. <p>Accessing a Port</p> <ul style="list-style-type: none"> • Only a non-coring (e.g. Huber) needle should be used to access implanted ports. Safety needle is preferred. • Use a new needle for each access attempt. • Needles should be changed every seven days or more frequently for continuous infusions if necessary. • Reinsertion through the immediately preceding needle site should be avoided. 	

(Source: I-care QLD (15, 17, 28, 36, 46, 47))

4.3 Blood Collection

- Blood sampling via a CVAD is appropriate for some patient populations based on individual patient risk assessment prior to collection.
- Risks of venepuncture can include anxiety, pain, damage to skin and nearby nerves, and hematoma in patients receiving anticoagulants or with bleeding disorders (4).
- Limit drawing blood from IVADs as it increases hub manipulation and the potential for contamination (4).
- Blood samples from PIVC should not be drawn due to the risk of haemolysis, unless it is directly after insertion.
- Blood cultures should never be collected through a PIVC due to the increased rate of contamination at the time of collection.
- PICC in newborns should not be used for blood sampling or infusing blood products.

- Allow continuous observation of the site and to stabilise and secure the device.
- For patients aged ≥ 18 years with a CVAD (CVC and PICC), chlorhexidine-impregnated dressings may be used to protect the insertion site from contamination (51, 52).
- Use of chlorhexidine impregnated dressings in infants and children may require individual risk assessment and prescription, should be considered in local guidelines (53-55).
- When the patient is diaphoretic or has excessive bleeding or oozing from the site, use sterile gauze secured with a sterile transparent, semi-permeable dressing until this is resolved (51, 56).
- Umbilical catheters do not routinely use an occlusive dressing over the insertion site, refer to local guideline or procedure for more information.
- When the patient has multiple devices, each should be dressed separately unless the puncture sites are too close together.
- All equipment used for the dressing of the insertion site must be sterile.
- Dressing must be placed so the insertion site is visible for regular inspection, therefore do not place non-sterile or opaque tape directly over the insertion site.
- All dressings must be replaced if it becomes damp, loosened, no longer adherent, soiled, there is evidence of inflammation and/or there is an accumulation of fluid.

•

Table 6: Dressing Change Intervals

Dressing Type	Replacement Intervals
Transparent, semi-permeable, self-adhesive polyurethane	Every 7 days or sooner if the dressing is no longer intact, evidence of inflammation or moist
Gauze	Every 24 - 48 hours or whenever loose, soiled or moist
Chlorhexidine-impregnated	Every 7 days or at each dressing change

(Source (13, 47, 57))

4.4 Needleless Injection Ports

- Removal of a needleless injection port must be performed using aseptic technique.
- Anytime a needleless injection port is removed from the catheter, this is to be discarded and a new sterile injection port should be attached, using appropriate aseptic technique.
- Needleless injection ports that are not bonded to the central line should be changed(17, 42):
 - At least every 7 days (coinciding with administration set changes) OR
 - At the frequency recommended by the manufacturer OR
 - If the integrity of the needleless injection port is compromised (e.g. residual blood remains within the port).

Needleless Injection Ports can also be known as: needleless IV catheter systems, swabable capless valves, swabable capless access device, needleless access ports, needle-free injection port, needleless connector and needle-free connector.

4.5 Arterial Catheters

- Replace disposable or reusable transducers at 96-hour intervals or when clinically indicated. Replace other components of the system (including the tubing, continuous-flush device, and flush solution) at the time the transducer is replaced (13).
- Keep all components of the pressure monitoring system (including calibration devices and flush solution) as a closed system (13).

4.6 Administration Sets

- IV administration sets include both the IV lines and any additional attachments such as needleless injection ports, sideline syringe infusion pumps, three-way stopcocks, multi-flow adaptors and extension tubing that may be added.
- IV administration sets must be attached to the patient so that no tension is applied to the catheter to reduce the risk of dislodgement.
- Ensure all components of the administration system are compatible (including sideline syringe infusion pump or burettes and needleless injection ports) to the devices to minimise leaks and breaks in the system.
 - All connections must be luer-lock.
- Refer to section [2.3 Documentation](#) for labelling requirements.

Disconnection of Administration Sets

- A continuous circuit should be maintained as intermittent disconnections of administration sets increases the risk of infection.
- All administration sets must be replaced;
 - After being disconnected.
 - If the catheter is changed or
 - After blood has refluxed into the administration set and the blood is unable to be cleared by flushing.
- When an administration set is changed, the IV fluid bag must also be changed.

NB: infusions with blood and blood products and high value medicines, consideration may require on the continuation of the product and a risk assessment should be conducted to assess if product should be discarded and replaced with new lines or continue with existing set. Where an obvious contamination has occurred all lines must be changed.

- Disconnection of administrations sets must be avoided for routine care, such as showering, changing nightwear/gowns. If disconnected, IV lines must be replaced.
- Controlled disconnections where reconnection of the set is immediate may be appropriate in certain situations based on clinical requirements (e.g. changing IV access or infusions in operating theatres, administration of blood products or medical imaging departments).
 - For transient controlled disconnections, aseptic technique must be maintained to prevent contamination of the set.
 - If disconnection becomes more than transient or if the ends become contaminated in any way they must be discarded and replaced.

In-line Filters

In-line filters are not recommended for prevention of BSI, however certain agents such as chemotherapeutic, immunological drugs etc. require filtering for other reasons (15, 17, 46, 58).

Table 7: Frequency of Line Change

Administration Set Use	Frequency of Change
Continuous use (NOT containing lipids, blood or blood products)	Do not need to be replaced more frequently than every 96 hours unless device-specific recommendations from the manufacturer indicate otherwise (51). Change intermittent infusion sets without a primary infusion every 24 hours or whenever their sterility is in question (59).
Blood and blood products	Must be changed when the transfusion is complete, or every 12 hours if the transfusion is not complete (60). The maximum number of blood products as per the manufacturer's recommendations has been reached. Any number of red cell units may be transfused during a 12-hour period, provided the flow rate remains adequate (60). Platelets must be transfused via a new blood administration set. Note: Manufacturer's recommendations defining the maximum number of units per blood administration set must not be exceeded.
Lipid containing solutions and parenteral nutrition	Changed every 24 hours or as recommended by the manufacturer.
Lipid containing medications (e.g. Propofol, Clevidipine)	Changed at minimum every 12 hours or as per the manufacturers' instruction (61).
Chemotherapeutic agents	Remove immediately after use. On completion of infusion including the line flush. The chemotherapy infusion episode may include more than one agent, it is common practice to utilise the same administration set, with line flush in between in order to ensure the full dose has been administered.

4.7 Flushing

- Flushing is recommended to promote and maintain patency and prevent the mixing of incompatible medical solutions. Sterile 0.9% sodium chloride for injection must be used by clinicians, unless the manufacturer recommends flushing with an alternate solution (15-17, 46, 47, 62).
- Clinicians must flush catheters immediately:
 - After placement
 - Before and after each fluid infusion or injection
 - Prior to and after drawing blood
- PIVCs must be flushed at least every 8hrs, for hospital patients or every 24 hours for patients in the community, if not on a continuous infusion.

- CVADs not being accessed must be flushed and locked every 7 days.
- Ports/IVP not being accessed must be flushed and locked every four to six weeks.

4.8 Locking

- Sterile 0.9% sodium chloride for injection should be routinely used to lock a catheter no longer required for continuous infusions, unless the manufacturer recommends catheter lumens be locked with an alternate solution (17).
 - HO's who determine a need to use alternative locking solutions (e.g. heparin, antibiotic, antimicrobial and antiseptic), must have local policy or guidelines to support the appropriate use of these solutions.
- Locks containing medication must be prescribed by a Medical Officer or Nurse Practitioner.
- Refer to NSW Health Policy, [Medication Handling in NSW Public Hospitals](#) (63).
- Catheters with a medicine 'in situ' to lock the catheter must be labelled as per NSW Health Policy, [User- applied labelling of Injectable Medicines, Fluids and Lines](#) (7).

4.9 Catheter Migration

- A catheter that has migrated externally must not be re-advanced (64). The treating medical team must be notified immediately if this has occurred.
- If a CVAD is noted to have migrated inwards from the documented marking point, the CVAD must be retracted to the original insertion measurement as documented on the insertion form (65).
 - The medical team must be notified and a risk assessment for infection/contamination should be conducted.
 - This procedure can only be done by a clinician who has achieved CVAD competency. Refer [2.1 Staff Education and Training](#) for more information.

5 REPLACEMENT AND REMOVAL

5.1 Device Duration

- All devices must be checked at each shift and removed when no longer required or if mechanical complications occur (42).
- Assess any devices in patients transferring from other healthcare facilities who may have a documented or non-documented device in situ. The clinician should inspect for infection, mechanical complications and correct distal tip position. Correct position can be determined through previous documentation and correct external lengths comparison, or via radiological confirmation.
- When adherence to aseptic technique is compromised (i.e. catheters inserted during a medical emergency, ambulance), replace the catheter as soon as possible (e.g. when the patient is stable or within 24 hours) (66-68).
- Devices should be removed based on the following clinical indications:
 - The catheter is no longer required
 - Evidence of systemic infection
 - Damaged catheter
 - Evidence of local infection (redness, swelling, oozing or pain at catheter exit site)
 - Persistent catheter occlusion
 - Confirmation of thrombosis

5.1.1 PIVC

The routine replacement of PIVC may not prevent infection or phlebitis (69, 70). Current research supports replacing a PIVC on clinical indication but the device should not be left in indefinitely and in most cases PIVC dwell time should not exceed 72-96 hours (71). A PIVC should not be used for an extended period. The need for a PIVC beyond short term vascular access should defer to a suitable long term device (refer to [section 4.2](#)). The decision to implement PIVC replacement on clinical indication must be based on a formal risk assessment.

Criteria for clinical indication based PIVC replacement

- There is good availability of staff appropriately trained in the insertion and maintenance of devices on each shift.
- There is an assurance that PIVC surveillance in the healthcare facility is adequate, including regular inspection of the site and device, and of PIVC-related *Staphylococcus aureus* bacteremia (SAB).
- There is consistent documentation regarding device insertion (site ease and date), site appearance and complications experienced with devices.
- Remove PIVC if patient develops signs of local infection, pain or tenderness and follow local reporting guidelines (e.g. IIMS)

Criteria for routine replacement of PIVC

- Replacement is likely to be uncomplicated and the risk is judged to be less than retention.
- May be appropriate in the context of high rates of PIVC related complications
- The PIVC is likely to be needed for another 24 hours.
- The decision should be document in the patient's health record.
- PIVC replacement in neonates and children should be based on clinical indication and ongoing need for the device.

5.1.2 Midline Catheters

- Midline catheters that are inserted at the bedside using sterile technique may stay in place for 2 to 4 weeks (72).

5.1.3 Umbilical Catheters

- This will be determined by the clinical condition of the baby and availability of alternative access (73).
- Remove and do not replace the umbilical catheter if there any signs of catheter-related BSI, vascular insufficiency in the lower extremities, or thrombosis are present.
- An umbilical catheter may be replaced if it is malfunctioning, breaks or splits, and there is no other indication for catheter removal.
- Refer to local policy or guideline for further information.

5.1.4 Peripheral Arterial and Pulmonary Artery Catheters

- Do not routinely replace arterial catheters to prevent infections. Replace only when there is a clinical indication (74).

5.1.5 CVADS

- Do not routinely replace CVADs or haemodialysis catheters. Replacement should be based on clinical indication and need (51, 75).
- Do not remove CVADs on the basis of fever alone. Use clinical assessment to determine whether infection is evident elsewhere or if there is another non-infectious cause of the fever, refer [7 Diagnosis of Infection & Surveillance](#).

5.1.6 PORTS

- Ports are a long term vascular access solution.
- The life of a port is limited to the number of needle punctures. The number of punctures varies depending on the gauge of the needle used but is approximately 1000-2000 (follow manufacturers instruction) (76).
- Replace ports based on clinical indications.

5.2 CVAD Guidewire Exchange

- Guide-wire exchanges to replace catheters is not recommended. A small number of patients may benefit from this in exceptional circumstances based on patient assessment, risk and suitable environment. Not advised for haemodialysis and tunnelled catheters.
- Guidewire exchanges must not be performed in the presence of BSI (77).

5.3 Catheter Removal

- Processes must be in place to ensure appropriate authority or order/instruction and written documentation to remove devices. HOs should develop standing orders or local protocols/processes for the routine removal of PIVCs (e.g. nurse initiated PIVC removal).
- Standard precautions and aseptic technique must be used to prevent catheter site infections (4).
- Following device removal, the site must be sealed with a sterile airtight dressing until the site is healed.
 - Umbilical catheters are not routinely dressed on catheter removal, but must be clean and dry.
 - If the patient is being discharged the patient or carer should be educated on the signs and symptoms of infection and complications and advised what to do if symptoms present.
- On removal the clinician should visually check the integrity of the line.
- Routine collection of the tip is not required except in circumstances where infection is suspected. Refer section [7 Diagnosis of Infection and Surveillance](#).
- PORT/IVP and tunnelled cuffed CVADs are only to be removed by a Medical Officer or Nurse Practitioner/Clinical Nurse Consultant who has been deemed competent in this skill.
- Ports require surgical removal in theatre or interventional radiology.

Table 8 Requirements for Removal of CVADs

Requirements for Removal of CVADs: To prevent air embolism during CVAD removal HOs must have CVAD removal detailed in their local guideline or procedure.

- Refer to **Clinical Focus Report- Central Venous Access Devices and Air Embolism (1)**
- Removal of CVAD must only be undertaken by trained or supervised clinicians. Refer to **2.2.1 Competency Assessment for CVAD.**
- Removal of the CVAD must be undertaken using an aseptic technique that will minimise the risk of infection.
- The patient is to be positioned supine with head slightly down (if tolerated) during CVAD removal. This is to increase the pressure in the large veins to above that of atmospheric pressure, which reduces the risk of aspirating air into the venous circulation.
- Following CVAD removal, the site must be sealed with an airtight dressing which remains insitu for at least 24 hours to reduce the risk of late air embolism. **Refer to Safety Notice 004/14 Removal of Central Venous Access Devices (CVAD).** The patient must remain in the supine position (or Semi-Fowlers if supine not tolerated) for between 30 and 60 minutes following CVAD removal (78). At least one set of observations should be done during this period, as well as immediately prior to retrieving the patient to the upright position. Observe for sign of respiratory distress, assess site for bleeding or haematoma and report any changes in status immediately.
- The removal of the CVAD and the presence of an intact tip must be noted in the patient's health record.
- Following removal, the CVAD site will require daily review and dressing until healed.
- Routine observations are to be conducted after the removal of the IVAD.

5.3.1 Removal of Catheter in Suspecting Line Infection

- Do NOT remove a functioning device based solely on temperature elevation (4).
- Remove PIVC if patient develops signs of local infection, pain or tenderness(4).
- If an infection is suspected the treating medical team must be notified and an assessment made for the ongoing need of device, persisting relapse of catheter related BSI, patient deterioration and alternative IV access.
- Patients transferring from other healthcare facilities with a documented device insitu should have the device reviewed upon arrival by a clinician for infection, mechanical complications and correct distal tip position, either through previous documentation and correct external lengths comparison, or via radiological confirmation. Without documentation, consider removal.

6 DIAGNOSIS OF INFECTION AND SURVEILLANCE

6.1 Diagnosis of Infection

- For a suspected catheter related BSI (79), obtain blood cultures (**see 7.1.1**).
- If pus, exudate or erythema is present at the insertion site, swab the site prior to removal of the device and send for culture.
- Catheter tip cultures are not a substitute for blood cultures for the determination of a bacteraemia, a negative tip culture does not exclude infection (79, 80).

6.1.1 Blood Cultures

- Two sets (4 bottles) of blood cultures should be collected in suspected infection for each new episode. This should occur prior to commencement of antimicrobials treatment. If patient is hemodynamically unstable, take 1 set prior to commencement of antimicrobials. Do not delay the administration of antimicrobials in patients with severe sepsis or septic shock.
- Collect one set from the pre-existing device and one set from a peripheral site.
 - If a peripheral set is not possible, a blood culture set from each of 2 or more lumens is required.
- The bottle should be well filled with a minimum 10mL per bottle (for adult patients only)
 - If volume of blood to be collected is an issue, preference should be given to aerobic bottles.
 - In neonates, collect an aerobic blood culture with 0.5-1mL, refer to local policy or guideline for additional information.
- Note the collection site on the request form at the time of collection.
- For further information, refer to local policy or guideline and [Sepsis Kills Adult Blood Culture Guideline, Sepsis Kills Paediatrics Blood Culture Guidelines and Sepsis Kills Neonatal Blood Culture Guidelines](#).

6.1.2 Culturing of Tips

- Do not send catheter tips for culture on routine line removal, unless infection is suspected.
- Catheter tips should be cut using an aseptic technique.
- Ensure the site and type of catheter are noted on the request form as well as the appropriate clinical information.

6.1.3 Reporting of Catheter-related BSI

- HOs must have procedures in place for the timely reporting of all positive cultures to the treating medical and infection prevention and control teams.
- Open disclosure should be performed for all suspected or actual catheter related infections, as per the [NSW Health Open Disclosure Policy](#).
- For healthcare associated BSIs (Staphylococcus aureus and Vancomycin resistant enterococcus) HO should follow internal reporting and escalation processes and key performance indicator requirements (e.g. IIMS). The NSW health incident management process must be followed for identification, investigation and management of these incidents as SAC 2 (6).

LIST OF ATTACHMENTS

1. PIVC Size & Use Guide
2. Related Documents
3. Additional Resources
4. Implementation Checklist

Attachment 1: PIVC Device Selection Guide

This is a guide for PIVC device selection and should be used whenever practical. However clinical risks and patient characteristics may require a different size to be used (e.g. paediatrics and neonates).

PIVC Size	Use
14G	Trauma patients Rapid, large-volume replacement
16G	Trauma patients Major surgery Intra-partum or post-partum GIT Bleeding Multiple line access Multiple blood transfers High volume of fluids
18G	Blood products Multiple line access Large volume of fluids Major surgery Imaging requiring power injection of CT contrast
20G	General use IV maintenance IV antimicrobials IV analgesia Power Injection
22G	Small or Fragile veins Cytotoxic therapy
24G	Small or Fragile veins Cancer services Day only infusion services Paediatrics
<p>Delivery of Irritant medications: Use the most appropriate cannula size for the vein as use of a peripheral intravenous cannula that is too large for the vein increases the risk of phlebitis.</p> <p>Refer Safety Notice 009/16 Avoiding thrombophlebitis with intravenous amiodarone (revised 10 Feb 2017).</p>	

Attachment 2: Related Documents

- NHMRC, [Australian Guidelines for the Prevention and Control of Infections in Healthcare](#) (3)
- NSW Health Policy Directive, [Infection Prevention and Control Policy](#) (81)
- [Clinical Excellence Commission, Infection Prevention and Control Practice Handbook](#) (49)
- Clinical Excellence Commission, [Healthcare Associated Infection: Clinical Indicator Manual version 2.0](#) (9)
- NSW Health Policy Directive, [Medication Handling in NSW Public Health Facilities](#) (63)
- NSW Health Policy Directive, [Clinical Procedure Safety](#) (82)
- ACSQHC, [National Safety and Quality Healthcare Service Standards \(second edition\)](#) (83)
- NSW Health Policy Directive, [User-applied labelling of injectable medicines, fluids and lines](#) (7)
- ACSQHCs, [National standard for user-applied labelling of injectable medicines, fluids and lines](#) (84)
- Clinical Excellence Commission, [Clinical Focus Report- Central Venous Access Devices and Air Embolism](#) (1)
- NSW Health, [Health Care Records-Documentation and Management](#) (5)

Attachment 3: Additional Resources

- Australian Injectable Drugs Handbook (AIDH) - 7th Edition <https://www.shpa.org.au/australian-injectable-drugs-handbook-aidh-7th-edition>
- Cancer Institute NSW, eviQ Cancer Education Online- [Central Venous Access Devices](#)
- Cancer Institute NSW, eviQ Cancer Education Online- [Clinical Resources, Central Venous Access Devices](#)
- Clinical Excellence Commission- [Training framework for clinicians new to inserting central lines in NSW](#)
- My Health learning - [Central Venous Access Devices](#)
- My Health Learning -[Invasive Device Protocols](#)
- Intensive Care NSW- [Central venous Access Device Post Insertion Management Guideline](#)
- NSW Health Multicultural Service- [Patient Information Sheets](#)
- [Sepsis Kills Paediatrics Blood Culture Guidelines](#)
http://www.ccc.health.nsw.gov.au/__data/assets/pdf_file/0003/259419/paediatric-blood-culture-guideline.pdf
- [Sepsis Kills Neonatal Blood Culture Guidelines](#)
- [Safety Notice 004/14 Removal of Central Venous Access Devices \(CVAD\)](#)
- Centers for Disease Control and Prevention- [Central Line-associated Bloodstream Infections](#)
- Health Protection Surveillance Centre- [Central Vascular Catheters](#)
- Health Protection Surveillance Centre- [Peripheral Vascular Care Bundles](#)
- Health Protection Scotland- [Preventing infections when inserting and maintaining a peripheral vascular catheter \(PVC\)](#)
- The Joint Commission- [CLABSI Toolkit](#)
- Association for Professionals in Infection Control- [CLABSIs](#)

Attachment 4: Implementation Checklist

Note: This implementation planner is NOT mandatory – it is a tool for HOs to use to monitor implementation of this policy.

LHD/ Facility:	Assessed By:				Date:
Implementation Requirements	Not Applicable	Not Started	Partial Compliance	Full Compliance	Action Required
Local guideline or procedures in place for Peripheral Intravenous Catheters (PIVC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Local guideline or procedure in place for Midline Catheters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Local guideline or procedure in place for Central Venous Access Devices (CVADs), including implanted venous ports (ports).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Local guideline or procedure in place for Umbilical Catheters.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Local guideline or procedure in place for Peripheral Artery Catheters.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Local guideline or procedure in place for Pulmonary Artery Catheters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Roles and responsibilities for each type of clinician involved with these devices is clearly defined in the guideline or procedure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Clinicians who insert, manage and remove CVADs have undergone training and formal competency assessment. Assessments are documented and accessible for review	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Facility wide monitoring of clinician CVAD insertion practices to ensure only trained/experienced clinicians undertake or supervise CVAD insertion.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
All staff involved in the insertion, management and removal of devices have completed periodic educational program and assessment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ongoing education is provided to HWs on preventing and controlling infection risks in relation to intravascular devices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Patients are provided with infection prevention and control education on their device and this education is documented.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
It has been determined where devices are to be documented in the patient health record. The CVAD Insertion Record or equivalent is completed for every CVAD insertion.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
There is an evaluation method to ensure that insertion sites are assessed and documented daily	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

in the patient health record.					
Processes are in place to support and evaluate the appropriate use of alternative locking solutions (e.g. heparin or antimicrobial). Locks containing medication are prescribed by a medical officer or nurse practitioner.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Confirmation of tip position is documented on the central venous line insertion record or equivalent for all central device insertions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
HOs who care for neonates have a local policy or guideline in place for skin preparation and/or antisepsis for pre-term infants.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Criteria for PIVC replacement based on clinical indication has been met by the HO.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Processes are in place to ensure appropriate authority to remove devices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Procedures in place to investigate positive cultures that are attributed to devices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
All reportable device related BSI events are reviewed at the HO on a case by case basis to identify potential opportunity for clinical practice improvement.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Surveillance systems are in place to monitor adverse events and incidents related to devices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Compliance with this Policy Directive and Procedures is monitored and reported to the nominated peak committee.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

9 GLOSSARY

Administration Set	A tubing set composed of components that is used to deliver infusions.
Air Embolism	The presence of air in the vascular system that obstructs venous blood flow primarily to the lungs and brain (85).
Alcohol Based Hand Rub (ABHR)	An alcohol-containing preparation (gel, foam or liquid) designed for reducing the number of viable microorganisms on dry, unsoiled hands.
Alcohol Based Surgical Hand Rub (ABSHR)	Hand rub performed preoperatively by the surgical team to eliminate transient flora and reduce resident skin flora.
Antimicrobial	A chemical substance, usually a medicine, that inhibits or destroys bacteria, viruses, fungi or protozoa (81).
Antiseptics	Antimicrobial substances that are applied to the skin to reduce the number of microflora (e.g. topical alcohols, chlorhexidine and iodine).
Asepsis	Free from infection or infectious (pathogenic) material.
Aseptic Technique	Aseptic technique consists of a set of practices aimed at minimising contamination and is particularly used to protect the patient from infection during clinical procedures. The five essential principles of aseptic technique are sequencing, environmental control, hand hygiene, maintenance of aseptic fields and personal protective equipment (PPE). While the principles of aseptic technique remain

constant for all procedures, the level of practice will change depending upon a standard risk assessment (81)

Assistant	A trained or experienced clinician who supports or aids a clinician inserting a CVAD.
Arteriovenous Fistula (AV)	Vascular access used to access the blood for haemodialysis treatment.
Blood stream infections (BSIs)	The presence of live pathogen(s) in the blood, causing an infection.
Catheter Exchange	Replacement of existing central venous access device (CVAD) with a new CVAD using the same catheter tract (4).
Central Related Blood Stream Infection (CR-BSI)	A laboratory-confirmed, primary blood stream infection in a patient with a intravascular access device in place, and the BSI is not related to an infection at another site (4)
Central Venous Access Device (CVAD)	A catheter introduced via a large vein into the superior vena cava or right atrium for the administration of parenteral fluids, medications or for the measurement of central venous pressure, this includes femoral venous catheters.
Also called a central venous line or central venous catheter (CVC).	<ul style="list-style-type: none"> Centrally- inserted central venous catheters have a skin entry point in the neck or trunk. Peripherally- inserted central catheters have a skin entry point on a limb or the scalp. Non-Tunnelled- the catheter insertion and exit points are the same Tunnelled - the catheter is inserted through one point and then “tunnelled” under the skin to a remote exit point.
Clinician	<p>For the purpose of this policy, a clinician is defined as a medical practitioner (including Locum Medical Officers), nurse or midwife.</p> <p>Experienced Clinician- A clinician with a high level of competence in CVAD insertion and a comprehensive understanding of the management of potential complications.</p> <p>Trained Clinician- Clinician who has completed a training program consistent with best practice for the insertion of CVADs.</p> <p>Untrained Clinician- Clinician who has commenced, but not completed, a training program consistent with best practice for the insertion of CVADs.</p>
Competency	<p>Competence- Capability of the individual to apply knowledge, critical thinking, interpersonal, decision making, and psychomotor skills to intravascular access devices (4).</p> <p>Competence is the combination of skills, knowledge, attitudes, values and abilities that underpin effective performance (86)</p> <p>For the purpose of the guideline, a competent clinician is one who has completed a training program in the insertion of PIVCs or who is in, or has completed, a specialist medical training program</p> <p>Competency- An integration of behaviours in the varied circumstances of the work environment demonstrating the individual’s ability to perform the desired job related activities and tasks (4).</p> <p>Competency Assessment- The process of reviewing and documenting the individual’s demonstrated ability to perform a job, role, specific tasks, or other patient care activities (4).</p>
Electrocardiogram	Is a test that measures and records the electrical activity of the heartbeat

ECG

Erythema	Redness of skin along a vein track that results from vascular irritation or capillary congestion in response to irritation, may be a precursor to or indication of phlebitis (4).
Extravasation	Inadvertent infiltration of vesicant solution or medication into surrounding tissue; rated by a standard tool (4).
Flushing	The act of moving fluids, medications, blood, and blood products out of the vascular access device into the bloodstream; used to assess and maintain patency and prevent precipitation due to solution/medication incompatibility (4).
Guidewire	A long, flexible metal structure, composed of tightly wound coiled wire in a variety of designs; contains safety mechanisms that allow it to be inserted into the vein or artery (4).
Hand Hygiene	A general term applying to processes aiming to reduce the number of microorganisms on hands. This includes application of a waterless antimicrobial agent (e.g. ABHR) to the surface of dry unsoiled hands; or use of soap / solution (plain or antimicrobial) and running water (if hands are visibly soiled), followed by patting dry with single-use towels (81)
Healthcare Associated Infection (HAI)	Refers to infections acquired in healthcare facilities and infections that occur as a result of healthcare interventions and which may manifest after people leave the healthcare facility (81)
Health Organisation	For the purpose of this Policy a Health Organisation is: Local Health District, Speciality Health Networks, Statutory health corporation that provides inpatient services, or Affiliated health organisation in respect of its recognised establishments that provide inpatient service
IIMS	The NSW Health Incident Information Management System
Implantable Venous Port (port/IVP):	Long term CVAD, which is surgically placed under the skin from the insertion site to a separate exit site. The exit site is typically located in the chest, but can be also located elsewhere for comfort and aesthetic reasons (e.g. inner bicep, abdomen and thigh). They can be multi lumen. TIVPs consist of two main parts: the portal reservoir and a catheter. The tip of the catheter resides in either the superior or inferior vena cava. Also known as a port-a-cath or a venous port.
Infection	The presence and growth of a pathogenic microorganism(s) having a local or systematic effect (49).
Infiltration	Inadvertent administration of a non-vesicant solution or medication into surrounding tissue (4).
Intravascular device (device):	Catheters, tubes, or devices inserted into the vascular system, including veins, arteries, and bone marrow (4).
Key Parts	Key parts are those parts of equipment / instruments / consumables that if contaminated by infectious material increases the risk of infection. Contamination may occur by direct or indirect contact with the key site(s), other key-parts, or liquid infusions (81).
Key Sites	The area on the patient that must be protected from pathogenic microorganisms. Key Sites are medical device access sites, surgical sites or open wounds (81).

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Locking The instillation of a solution into an intravascular access device (device) used to maintain patency in between device use and/or reduce risk of catheter related BSI.

Maximum Barrier Surgical mask, hat (head and facial hair cover), eye protection, sterile gown and

Precautions	sterile gloves. Equipment and clothing used to avoid exposure to pathogens, including sterile coverings for the clinicians and patient: mask, gown, protective eyewear, cap, gloves, large or full body drapes, and towels (4).
Midline Catheter	Catheter used in a vascular access procedure that is inserted inside a major vein for a period of weeks so that blood can be repeatedly drawn or medication and nutrients can be injected into the patient's bloodstream on regular basis
Monitor	To check, supervise, observe critically, or record the progress of an activity, action or system on a regular basis in order to identify change.
Must:	Indicates a mandatory action
Needleless Injection Port	A device that allows intermittent access to a device with an administration set or syringe without the use of needles (4). Also known as: Needleless IV catheter systems, Swabable capless valve, swabable capless access device, needleless access ports, needle-free injection port, needleless connector and needle-free connector.
Neonate	Pertaining to the first 4 weeks of life.
Non-tunnelled CVAD Also known as Percutaneous CVAD	Enter the venous system at the point of insertion and are fixed in place at this site, with the catheter and attachments protruding. Non-tunnelled CVADs are also known as percutaneous CVADs. Non-tunnelled catheters are generally used for short term therapy and in emergency situations. A vascular or nonvascular access device inserted by puncture directly through the skin and the intended location without a portion of the device allowed to remain in a subcutaneous tract (4).
Osmolality	The number of osmotically active particles in a solution (4).
Palpation	Examination by application of the hands or fingers to the surface of the body in order to detect evidence of disease or abnormalities in the various organs; also used to determine location of peripheral superficial veins and their condition (4)
Peripheral Arterial Catheter	An arterial line inserted in radial artery; can be placed in femoral, axillary, brachial, posterior tibial arteries.
Peripherally Inserted Central Catheter (PICC)	A medium to long term CVAD inserted in a large peripheral vein, preferably the basilic vein, and then advanced until the tip rests in the superior vena cava or cavo-atrial junction
Peripheral Intravenous Cannula (PIVC):	A catheter (small, flexible tube) placed into a peripheral vein for intravenous access.
Personal Protective Equipment (PPE):	Refers to a variety of infection prevention barriers and respirators used alone, or in combination, to protect mucous membranes, skin, and clothing from contact with recognised and unrecognised sources of infectious agents in healthcare settings. The equipment worn to minimize exposure to a variety of hazards, including blood-borne pathogens; examples of PPE include items such as gloves, eye protection, gown, and face mask (81) .
Phlebitis	Inflammation of a vein; may be accompanied by pain, erythema, oedema, streak formation, and/or palpable cord (48).
Pulmonary Artery Catheter (PA)	Also known as a Swan-ganz catheter, is a CVAD inserted into a large central vein, with the tip residing in a pulmonary artery. Its purpose is diagnostic and therapeutic; it is used to detect heart failure or sepsis, monitor therapy, evaluate the effects of

drugs, and infuse medication.

Should	Indicates an action that ought to be followed unless there are justifiable reasons for taking a different course of action.
Sterile Technique	Is a set of specific practices and procedures performed to make equipment and areas free from all microorganisms and to maintain that sterility
Supervisor	An experienced clinician (also refer to definition of experienced clinician).
Surveillance	Active, systematic, ongoing observation of the occurrence and distribution of disease within a population and of the events or conditions that increase or decrease the risk of such disease occurrence.
Total Parenteral Nutrition (TPN)	The intravenous provision of total nutritional needs for a patient who is unable to take appropriate amounts of food enterally; typical components include carbohydrates, proteins, and/or fats, as well as additives such as electrolytes, vitamins, and trace elements (4).
Tunnelled CVAD	A central vascular access device (CVAD) with a segment of the catheter lying in a subcutaneous tunnel with the presence of a cuff into which the subcutaneous tissue grows to offer security for the catheter; indicates that the skin exit site and vein entry site are separated by the subcutaneous tunnel (4)
Vesicant	An agent capable of causing tissue damage when it escapes from the intended vascular pathway into surrounding tissue.
Visual Infusion Phlebitis (VIP) score	

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HIGH VOLUME SHORT STAY SURGICAL MODEL TOOLKIT (GL2012_001)

GL2012_001 rescinds GL2005_076.

The High Volume Short Stay Surgical Model emerged as a model of care from the Surgery Futures - A Plan for Greater Sydney Project (released January 2011). The toolkit provides Local Health Districts with information about the key features of the model, processes for service delivery, staff roles, diagnosis related groups suitable for HVSSS, key success factors, benefits and the steps for implementation of the model.

The Guidelines can be downloaded at
http://www.health.nsw.gov.au/policies/gl/2012/GL2012_001.html

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PATIENT IDENTIFICATION BANDS (PD2021_033)

PD2021_033 replaced PD2014_024

POLICY STATEMENT

This Policy Directive supports health services' compliance with the [National Safety and Quality Health Service Standards](#), second edition in particular [Action 6.5](#) relating to patient identification bands. The use of patient identification bands supports the correct identification of a patient within NSW Health.

SUMMARY OF POLICY REQUIREMENTS

Patient identification bands are to be white or clear with a white panel/ insert.

Red patient identification bands are to be used where the patient has a documented allergy to a medicine and/ or a documented life-threatening allergy to a food, or a documented adverse reaction to a medicine. These bands are to be red with a white panel/ insert.

As a minimum, the three approved patient identifiers are to be included on the patient identification band.

Patient identification bands

Health services are to develop local procedures to identify which patients require a patient identification band.

Health services are to develop local procedures consistent with this Policy Directive where technology, such as a patient identifier barcode, is part of, or attached to, the patient identification band.

Patient identification bands are to be destroyed in a way that maintains confidentiality of patient details.

Alert bands

Coloured alert bands must not be used except for yellow bands for patients who have undergone vitreoretinal surgery involving insertion of an ocular gas.

Patient Identification Bands: Procedures.

1 BACKGROUND

The use of patient identification bands supports the correct identification of a patient.

Correct identification of a patient promotes patient safety and minimises the risk of complications such as wrong procedures, medication errors, life-threatening food allergies, transfusion errors and diagnostic testing errors.

Health services are to develop local procedures to identify which patients require a patient identification band.

2 PATIENT IDENTIFICATION BANDS

2.1 Colour

A white identification band or a clear identification band with a white panel/ insert is to be used.

Exception

A red patient identification band with a white panel/ insert is to be used where the patient has a:

- Documented allergy to a medicine and/ or a documented life-threatening allergy to a food
- Documented adverse reaction to a medicine.

The patient's allergy and/ or adverse reaction is not to be recorded on the identification band. Health workers are to refer to the patient's medical record for this information.

2.2 Patient Identifiers

Black text is to be used to record patient identifiers on a patient identification band.

Core patient identifiers

The following three core patient identifiers are to be recorded on the identification band.

- Name: Family name to appear first using UPPER case letters followed by given names in Title case e.g. SMITH, John Paul.
- Date of birth: Standardise the format across the health service e.g. DD/MM/YYYY (26/06/1983), DD-MM-YYYY (26-06-1983), DDMMMYYYY (26Jun1983).
- Medical Record Number.

Exception: Newborns

To minimise the risk of mismatching a newborn and mother, especially if urgent separation occurs for example, newborn requiring admission to a special care nursery/ neonatal intensive care unit, the following identifiers are to be recorded on the newborn's identification band.

- Family name of mother in UPPERCASE then "baby of (given name of mother)" e.g. SMITH, baby of Jane.
- Date of birth.
- Time of birth to distinguish between multiple births.

The newborn's identification band is to be replaced with a new band when the newborn's own Medical Record Number is available.

Confirmation of patient identifiers

The patient's identity is to be confirmed before the identification band is placed on the patient to reduce the risk of misidentification. The patient, or their family/ carer, is to be asked the question "Can you please tell me your full name and date of birth?" The response to this question is to be compared with the patient's identification band and the patient's medical record, admission form, medication charts or request forms.

The information on the identification band is to be confirmed at intervals appropriate for the health care setting. Where the core patient identifiers are missing, inaccurate or unreadable the band is to be replaced immediately.

The identification band is to be disposed of in a way that maintains confidentiality of the patient details.

2.3 Number of patient identification bands

Patients are to wear **one** identification band.

Exception: Patients undergoing procedures

Two or more identification bands are to be placed on a patient undergoing a procedure where a band may be removed or become inaccessible to health workers during the procedure.

During the procedure one identification band is to be visible and accessible to health workers without interrupting the procedure. For example, unstrapping the patient's arm from the table, disturbing the procedural drapes, asking the proceduralist to pause, move or adjust equipment.

Where the identification bands are not visible during the procedure, health services are to develop local risk-based practices to ensure correct identification of the patient during the procedure.

Exception: Newborns

Two identification bands are to be used. An identification band is to be placed on each ankle of a newborn as soon as practicable after birth that is before separation from the mother and before the newborn leaves the birthing room or operating theatre.

If the newborn requires resuscitation the identification bands are to be placed on the newborn while the newborn is on the resuscitaire.

3 COLOURED ALERT BANDS

Coloured alert bands are *not* patient identification bands.

Coloured alert bands *must not* be used.

Exception: Yellow bands and vitreoretinal surgery

A yellow band (picture below) is applied to patients who have undergone vitreoretinal surgery involving insertion of an ocular gas. The bands are to be applied by the surgeon and the surgeon arranges removal.

The gas company supplies the bands. At the time of surgery, the surgeon records the name and contact number of the surgeon/ consultant and the date of surgery. The bands are not to be removed by health workers except for emergency access or if oedema of the limb is present. A new yellow band is to be applied if the band comes off or is removed except as arranged by the surgeon.

The yellow band advises the wearer to:

- Wear the band up to a specific date
- Absolutely avoid nitrogen protoxide anaesthesia
- Absolutely avoid pressure variation (elevation, travel by plane, diving with or without cylinders, hyperbaric chamber treatment).

This information is on the band in six languages.



4 APPENDIX – INFORMATION ABOUT PATIENT IDENTIFICATION BANDS

4.1 Size

Identification bands are to be available in a variety of sizes to fit patients, from the smallest newborn to the largest adult, as relevant to the health care setting. Identification bands are to be long enough for obese patients, patients with lymphoedema, patients with intravenous lines and bandages.

4.2 Comfort for the patient

Use bands that are comfortable to the patient. Ensure no sharp corners, edges, ends or fastenings that can irritate, rub or press into the patient's skin. Due to the tapering shape of infant and toddler's limbs and the absence of a flaring out of the circumference at wrists and ankles, identification bands can fall off. If put on tightly enough to prevent slipping on the infant or toddler sharp edges can irritate the skin and be uncomfortable.

Use material that is flexible, smooth, waterproof, resistant to fluids (e.g. soaps, detergents, gels, sprays, rubs, alcohol cleaning products, blood and other bodily fluids), cleanable, breathable and non-allergenic (e.g. latex free bands).

Check the band does not catch on clothing, equipment or devices e.g. intravenous lines.

4.3 Ease of use by health workers

Use bands that are easy for health workers to:

- Store and remove from storage
- Add, read, check, change or update patient information
- Place on a patient e.g. select the correct size, adjust to the correct length
- Remove from the patient.

4.4 Recording patient identifiers

Standardise the layout, order and style of information across the health service. Use predefined spaces for each patient identifier, a pre-printed format or pre-printed lines. Allow enough space for long names, multiple names and hyphenated names.

- **Printed labels:** use an easily readable style and font size. Ensure the label fits the available space on the identification band. Where possible print labels directly from the client registration database.
- **Handwritten labels:** print clearly in an easily readable size.
- **Write-on identification bands:** only use where a printed band/ label/ insert is not available.

Ensure information cannot wear off and does not require special pens. Inserts are to be sealed to ensure the insert is durable, waterproof, secure and tamperproof.

4.5 Placement of patient identification bands

Placement of the identification band is to be safe and comfortable for the patient and visible, accessible and easily readable to health workers providing care. Care is to be taken to ensure the peripheral circulation is not restricted by the identification band or the band is not causing a pressure injury especially in children. Monitor the size of the band for patients such as premature/ newborn patients who may outgrow their band.

Avoid placing the identification band on a limb with for example, epidermolysis bullosa, burns, an intravenous access, an arteriovenous fistula or graft, a limb to be operated on, or a limb with bandages or compression stockings.

Place bands on the lower limbs of newborns to prevent facial scratching.

Consider how to attach a patient identification band when limbs are not available for example,

- Apply a transparent adhesive dressing/ film over the band and onto the patient's skin in a readily accessible, visible body area. Check for allergies/ adverse reactions to the dressing/ film and check the skin integrity for pressure injuries.
- Attach the band to the patient's clothing or items attached to the patient such as arm boards in a way that is safe for the patient, and visible and accessible to health workers. Re-attach the band when clothing/ item is changed or removed.

WORK HEALTH AND SAFETY – CONTROLLING EXPOSURE TO SURGICAL PLUME (GL2023_018)

GL2023_018 replaced GL2015_002

GUIDELINE SUMMARY

This Guideline provides direction to NSW Health organisations to meet their duty of care under the *Work Health and Safety Act 2011* (NSW) and *Work Health and Safety Regulation 2017* (NSW) in eliminating and minimising risk associated with surgical plume.

Each NSW Health organisation where surgical plume is created must have systems in place to identify hazards associated with surgical plume and to eliminate or minimise the risks through the implementation of appropriate controls.

KEY PRINCIPLES

This Guideline applies to NSW Health organisations and all other bodies and organisations under the control and direction of the Minister for Health or the Secretary of NSW Health where facilities under their control create surgical plume, such as in operating theatres; surgical clinics and procedural rooms, dental clinics; morgues during autopsy; laboratories/ research and testing facilities.

Surgical plume is generated during operative or other invasive procedures by energy based surgical devices such as electrosurgical (diathermy), ultrasonic and laser units when cutting, vaporising or coagulating tissue. Surgical plume can contain a mixture of hazardous components including ultrafine particulates, noxious and toxic aerosols, cellular debris, bacteria, viruses, gases, fumes and vapours.

Exposure to surgical plume needs to be assessed and controlled as it can cause potential hazards to workers and patients.

Hazard identification and risk assessment, in consultation with workers, must be undertaken to eliminate or minimise the risk of exposure for workers and patients. Surgical plume should be eliminated so far as reasonably practicable.

Plume evacuation systems are the most effective measure to remove plume at the point plume is created. Any plume that cannot be removed using a plume evacuation system should be minimised using additional controls based on the hierarchy of controls.

This risk assessment for worker/ patient exposure to surgical plume must include the physical layout of the area, equipment used for the surgery, surgical procedure being performed (length of surgery, type of tissue disrupted), ventilation of the area, specific risks for the patient and whether a plume evacuation system is installed.

Each NSW Health facility where surgical plume is created must:

- conduct risk assessments in consultation with workers
- implement controls identified through those risk assessments
- review controls at a frequency relative to the level of risk to ensure their ongoing effectiveness.

It is important to identify and procure the most appropriate plume evacuation system for the facility in consultation with workers. The plume evacuation system is to have an appropriate filtration system, alarm monitoring system, capacity to handle plume, and be easy to use without disrupting the surgical view.

The evacuation system must be maintained as per manufacturing guidelines which do not pose additional hazardous manual handling or infection control risks that cannot be controlled. Safe work procedures, checklists and training material must be developed to protect workers and patients based on the risks and controls identified in each facility.

Workers should be provided with information, instruction, training and supervision for the potential risks associated with surgical plume. This includes their role and responsibilities, safe systems of work and the use of equipment including personal protective equipment.

Control measures must be reviewed regularly, in consultation with workers who may be affected by surgical plume to ensure continuous improvement and ongoing effectiveness.

The complete Work Health and Safety - Controlling Exposure to Surgical Plume guideline is available at: https://www1.health.nsw.gov.au/pds/Pages/doc.aspx?dn=gl2023_018