SESLHD PROCEDURE COVER SHEET

Health
South Eastern Sydney
Local Health District

NAME OF DOCUMENT	Peripheral Intravenous Cannulation (PIVC) Insertion, Care and Removal (Adults)
TYPE OF DOCUMENT	Procedure
DOCUMENT NUMBER	SESLHDPR/577
DATE OF PUBLICATION	May 2022
RISK RATING	High
LEVEL OF EVIDENCE	National Safety and Quality Health Service Standards: 1 – Clinical Governance 3 – Preventing and Controlling Healthcare Associated Infections 4 – Medication Safety 6 – Communicating for Safety NHMRC (2010) Australian Guidelines for the Prevention and Control of Infection in Healthcare NSW Ministry of Health Guideline - GL2013_013 Peripheral Intravenous Cannulation (PIVC) Insertion and Post Insertion Care in Adult Patients
REVIEW DATE	May 2024
FORMER REFERENCE(S)	SESLHDPR/234 - Peripheral Intravenous Cannulation
EXECUTIVE SPONSOR or EXECUTIVE CLINICAL SPONSOR	Director, Clinical Governance and Medical Services
AUTHOR	SESLHD Infection Prevention and Control Committee and Infection Control Policy Working Party
POSITION RESPONSIBLE FOR THE DOCUMENT	Infection Control Policy Working Party SESLHD-InfectionControl@health.nsw.gov.au
FUNCTIONAL GROUP(S)	Infection Control
KEY TERMS	Peripheral intravenous cannula, PIVC, IV, adult, cannulation, escalation, infection
SUMMARY	A local procedure to supplement the NSW Ministry of Health Guideline - Intravascular Access Devices (IVAD) – Infection Prevention & Control PD2019_040.

Peripheral Intravenous Cannulation (PIVC) Insertion, Care and Removal (Adults)

SESLHDPR/577

1. POLICY STATEMENT

This document is written to complement the NSW Ministry of Health Policy Directive PD2019_040 - Intravascular Access Devices (IVAD) – Infection Prevention & Control. This document aims to reinforce safe practices whilst addressing the local needs and should be used in conjunction with NSW Ministry of Health Guideline GL2013_013. Ensure an assessment is undertaken for all patients requiring a PIVC to ensure correct selection of device (See Appendix 1).

This procedure does not stipulate management of PIVC for children. Please refer to Sydney Children's Hospital Intravenous Cannulation and Venepuncture Procedure-Number 1/C/13:9077-01:02 for advice available at: https://www.schn.health.nsw.gov.au/our-policies/index/clinical/i

2. BACKGROUND

PIVC is one of the most common invasive procedures performed in a healthcare setting. However, it is also a procedure associated with morbidity and rarely mortality. Morbidity and mortality from a PIVC is preventable by adhering to standardised practices such as hand hygiene and aseptic technique. Multiple attempts at peripheral intravenous cannulation increase the risk of mechanical and infective complications such as bacteraemia or sepsis. An escalation procedure to minimise this risk must be followed in the event that difficult vascular access is identified and there are two failed cannulation attempts.

3. RESPONSIBILITIES

Only trained or experienced clinicians who can demonstrate competency and recognition of prior learning are able to insert a peripheral intravenous cannula. These include:

- Medical Officers
- Medical Radiation Scientists – Radiographers and Nuclear Medicine Technologists
- Registered Nurses / Registered Midwives
- Specialty and extended practice Enrolled Nurses.

Every person has responsibility for the health and safety of our patients. To ensure our patient safety standards are met and sustained, the following responsibilities are assigned:

3.1 Clinical Governance Unit

- Promote safe peripheral vein cannulation, documentation and post insertion care
- Promote the peripheral vein cannulation procedure within SESLHD
- Ensure dissemination and implementation of the procedure within organisations
- Ensure that auditing practices are routinely undertaken
- Ensure that PIVC related infections entered into the Incident Management System (ims+) are monitored.

3.2 Clinical Stream Manager will:

- Promote safe peripheral vein cannulation, documentation and post insertion care
- Promote this procedure within SESLHD clinical departments.

3.3 General Managers will:

- Ensure successful implementation of this procedure within their organisation(s)
- Ensure that an unsuccessful insertion escalation procedure is developed for each healthcare facility
- Ensure that any healthcare associated Staphylococcus aureus bacteraemia related to a PIVC is investigated and that all PIVC related infections are entered into ims+
- Ensure that clinical staff inserting PIVC devices are trained and assessed to insert PIVC in accordance with this procedure.

3.4 Nurse Managers/Nurse Unit Managers will:

- Ensure that equipment that can assist with safe and effective insertion of an intravenous cannula into a peripheral vein for both patient and clinician is available.

3.5 Educators will:

- Provide education and training on the correct and safe intravenous cannulation of peripheral veins and documentation.

3.6 Clinical and Medical Staff will:

- Complete education and training to ensure knowledge and practical skill for peripheral intravenous cannulation
- Assess every patient to determine appropriate intravenous access
- Identify patient, explain the procedure, obtain verbal consent and ascertain any allergies
- Ensure documentation is carried out as per this procedure
- Maintain aseptic technique during PIVC insertion, access, and removal. Refer to local escalation protocols in the event of two unsuccessful attempts.

4. PROCEDURE

4.1 Infection Prevention and Control Principles

The prevention of infection is important in optimising outcomes and minimising risks associated with the use of PIVCs. These elements include but are not limited to: the use of personal protective equipment, hand hygiene, aseptic technique, and correct disposal of equipment and medical waste.

4.2 Aseptic Technique

- Refer to SESLHDPD/271 - Aseptic Technique policy.

4.3 Work Health and Safety

- The use of safety needle devices and closed Intravenous Therapy (IVT) systems should be implemented and the correct disposal of sharps and medical waste followed
- Ensure the correct use of PPE for insertion, access, and removal to prevent occupational exposures.

4.4 Patient and vein assessment and site selection (see Appendix 1)

- Check for contraindications e.g. arteriovenous (AV) fistula, lymph node clearance history, presence of thrombus/phlebitis, impaired circulation, implantable devices e.g. pas-portTM etc.
- Avoid lower limbs, areas of flexion, and the anterior aspect of the wrist. Select a vein, suitable to cannula size and therapy required. The smallest size IVC appropriate to therapy should be used
- Select the most distal area of the vein appropriate allowing subsequent cannulations to progress proximally
- Ensure device selection is suitable to therapy required and consider alternative venous access:
  - If intravenous therapy is to continue for longer than six days
  - If the patient has poor venous access
  - Multi-lumen access required
  - Treatment includes administration of vesicant solutions, (i.e. solutions that if infiltrated by escaping the vein are capable of causing pain, ulceration, necrosis and sloughing of damaged tissue) consideration must be given to referring the patient for insertion of an alternate vascular access device such as a Midline or Central Venous Access Device. These alternate devices should be considered where ongoing infusion of solutions with a pH range outside of 5-9 or an osmolarity greater than 500 mOsmols/L are prescribed.

4.5 Escalation of difficult PIVC access

- When difficult vascular access has been identified and a maximum of two failed attempts have occurred or when complications arise and the patient deteriorates, escalation procedures to minimise patient harm should be initiated. Refer to Appendix 3 for local protocols.

4.6 Flushing of PIVC and post insertion care

- Use sterile 0.9% saline for injection in a 10ml syringe to flush PIVC after insertion, before and after each medication/infusion is given, and at least twice per day if not otherwise used
- Document flushes as per local protocols on medication chart/ eMEDs
- If the PIVC is being accessed more than twice a day, a continuous infusion to ‘keep vein open’ (KVO) should be maintained, unless contraindicated. Contraindications to KVO infusion should be document in medical record.
- PIVC continuous infusions should be maintained as closed systems.

- To minimise discomfort and avoid potential dislodgement, infection or occlusion of site, no temporary disconnections to be performed (e.g. showering, transfers, mobilisation).

4.7 PIVC documentation post insertion

- Phlebitis or inflammation of the vein usually results from trauma of cannulation or ongoing administration of medications and fluids which irritate the vein. Signs include localised redness and swelling, pain along length of vein and vein feeling hard and cord-like. A VIP score is utilised to monitor the patient for phlebitis. If a cannula has a VIP of two or more it must be removed, otherwise this may lead to more severe complications for our patients such as localised infection, sepsis and necrosis.
- In the event that a localised or systemic infection is diagnosed as per SESLHDPD/280 - Mandatory reporting requirements of peripheral intravenous cannula (PIVC) or /central venous access device (CVAD) infections in the incident information management systems (IIMS), an ims+ must be entered
- The VIP score must be completed once per shift
- PIVC documentation requirements post insertion for ICU include documenting using:
  - eRIC for insertion – Complete the PIVC insertion form including label and all tabs
  - eRIC for ongoing review – Complete the V.I.P template each shift
  - eRIC for removal – this involves selecting stop on the line duration form
  - Cannula dressing - date and time of insertion must be written on the dressing at time of insertion
  - Additional information required in the eRIC nursing progress notes includes but is not limited to;
    - how many attempts were taken to successfully cannulate and information regarding escalation pathway if attempts were unsuccessful
    - Interventions taken if VIP score exceeds 2 or more or if infection is suspected
    - Post removal observations.

- PIVC documentation requirements post insertion for all other departments (non ICU) include documenting using:
  - iView for insertion – this includes completing the label and all tabs so that date and time of insertion, size and location/site of device, Inserter details, dressing condition and VIP score (in the comments section) are recorded post procedure
  - iView for ongoing review - this includes completing the Cannula dressing intact, Patent and Capped tabs and adding the VIP score to the comment section
  - iView for removal - this includes completing the Removed Date/time, Removal location and Removed By tabs and then inactivating the cannula on iView
  - Cannula dressing - date and time of insertion must be written on the dressing at time of insertion
  - Additional information required in the eMR nursing progress notes includes but is not limited to;
    - how many attempts were taken to successfully cannulate and information regarding escalation pathway if attempts were unsuccessful
    - Interventions taken if VIP score exceeds 2 or more or if infection is suspected
    - Post removal observations

- If device exceeds dwell time of 72 hours, a medical officer should document a rationale to leave the device in situ. Options within the escalation pathway should be exhausted before a decision is made to leave a device for more than 72 hours.

4.8 Indications for routine removal of PIVC and post removal documentation

- The PIVC should be reviewed daily to determine whether it is still required. Standard precautions must be used during removal of PIVC.
- Situations where the routine removal of PIVC should be considered (in consultation with the treating team) include [With exception to PIVC inserted at SGH that meet the **DIVA criteria,** refer to SGH CLIN691 peripheral intravenous cannulation (sterile insertion) - clinically indicated dwell time for diva (difficult intravenous access)]
  - Change from IV to oral medication and/or cessation of IV Fluids and PIVC no longer required
  - If Visual Infusion Phlebitis (VIP) score exceeds two or more
  - If local infection or sepsis is suspected, a swab of the insertion site, and blood cultures may be ordered by the medical officer
  - If insertion date cannot be determined from iView or eRIC (ICU staff)
  - If device inserted in an emergency situation and dwell time exceeds 24 hours and there is no medical officer documentation indicating device should be left *in situ*
  - If device otherwise exceeds dwell time of 72 hours and there is no medical officer documentation indicating that the device should be left *in situ.*
- Removal details, including date and time must be documented in iView or eRIC (ICU staff). Entering removal details into iView will generate a task in care compass which reminds staff to check removal site at 24 and 48 hrs
- PIVC documentation from ICU is included in eRIC discharge documentation
- Condition of PIVC site at time of removal should be documented in iView comments section including reason for removal (e.g. PIVC no longer required, infection, or VIP score two or more)
- Ongoing monitoring of condition of PIVC site for at least 48 hours post removal should also be documented in eMR clinical notes or using eRIC (ICU).

4.9 Patient Information Brochures

- Patient Information brochures should be made available to every patient requiring PIVC insertion
- Caring for your Cannula brochures are available in multiple translations and are accessible via the Multicultural Health Communication webpage.

4.10 Discharge Planning With A PIVC In Situ

PIVCs should not be left *in situ* post discharge unless documented arrangements have been made. In the rare exception that this occurs; there must be a documented plan in place for ongoing monitoring and removal of the PIVC. The patient should be provided with Caring for your Cannula brochures and be supplied with information about their PIVC and who will be responsible for their PIVC dressings, care and administration of therapy and removal.

4.11 ims+ follow-up of PIVC site infections

As per SESLHDPD/280 - Mandatory reporting requirements of peripheral intravenous cannula (PIVC) or /central venous access device (CVAD) infections in the incident information management systems (IIMS).

5. AUDIT

National Standard 3 audits as per individual facility audit schedules.

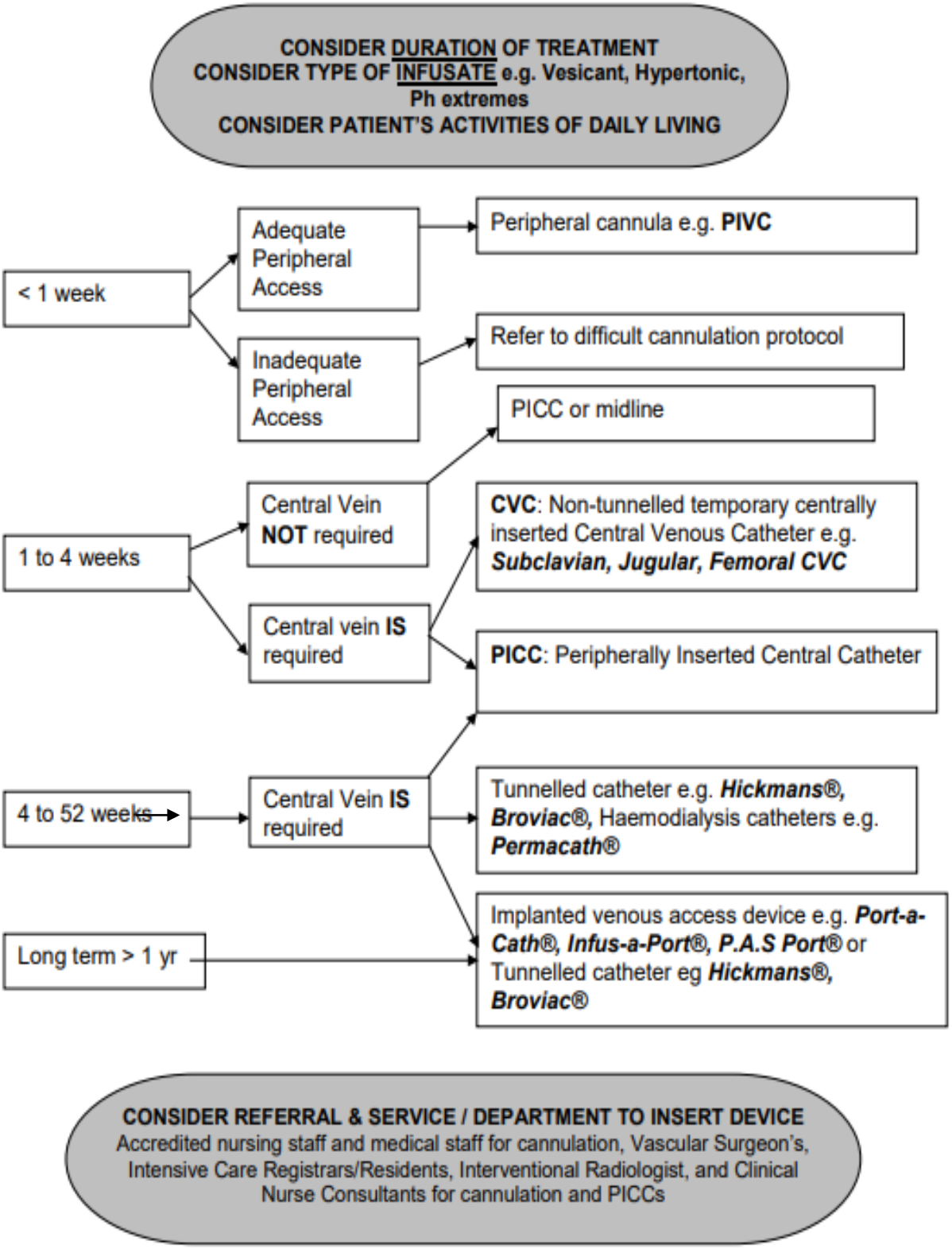
6. REVISION AND APPROVAL HISTORY

Date	Revision No.	Author and Approval
December 2009	0	Monika Kebsch, Nurse Manager, Workforce, St Vincent's' Hospital Approval granted in October 2009 at the Area Clinical Council meeting
January 2013	1	Inclusion of additional wording removal as soon as possible after they are no longer clinically required in the policy statement as approved by the Infection Control Consultants Forum and recommended by St George Hospital SAC report (1342511-20)
February 2017	2	Endorsed by Executive Sponsor for Draft for Comment
May 2017	2	Submitted to MES for review and approval prior to submission to SESLHD Clinical and Quality Council for endorsement
June 2017	2	Approved by Clinical and Quality Council
December 2020	3	Minor review. Escalation of difficult PIVC and PIVC documentation post insertion. Update of references.
May 2021	3	Approved by Executive Sponsor.
July 2021	4	Minor review: monitoring of PIVC site for 48hrs post removal. Change endorsed by the SESLHD Infection Prevention and Control Committee. Approved by Executive Sponsor.
May 2022	5	Minor review. Escalation of difficult PIVC access, PIVC documentation post insertion. Included information around SGH process in Section 4.8. Updated references. Approved by Executive Sponsor.

7. REFERENCES

- NSW Ministry of Health Policy Directive PD2019_040 - Intravascular Access Devices (IVAD) - Infection Prevention and Control
- NSW Ministry of Health Policy Directive PD2017_013 - Infection Prevention and Control Policy
- Clinical Excellence Commission - Infection Prevention and Control Handbook 2020.
- SESLHDPD/280 - Mandatory reporting requirements of peripheral intravenous cannula (PIVC) or /central venous access device (CVAD) infections in the incident information management systems (IIMS)
- SGH-TSH CLIN038 Peripheral Intravenous Cannulation - Accreditation Process
- SESLHDPR/470 - Sodium chloride 0.9% intravenous (IV) flush
- Clinical Excellence Commission 2015. National Standard for User-Applied Labelling of Injectable Medicines, Fluids and Lines
- Caring for your Cannula brochures
- Australian Guidelines for the Prevention and Control of Infection Prevention in Healthcare
- https://www.nhmrc.gov.au/about-us/publications/australian-guidelines-prevention-and-control-infection-healthcare-2019
- SGH CLIN691 peripheral intravenous cannulation (sterile insertion) - clinically indicated dwell time for diva (difficult intravenous access)

Appendix 1: Appropriate device selection



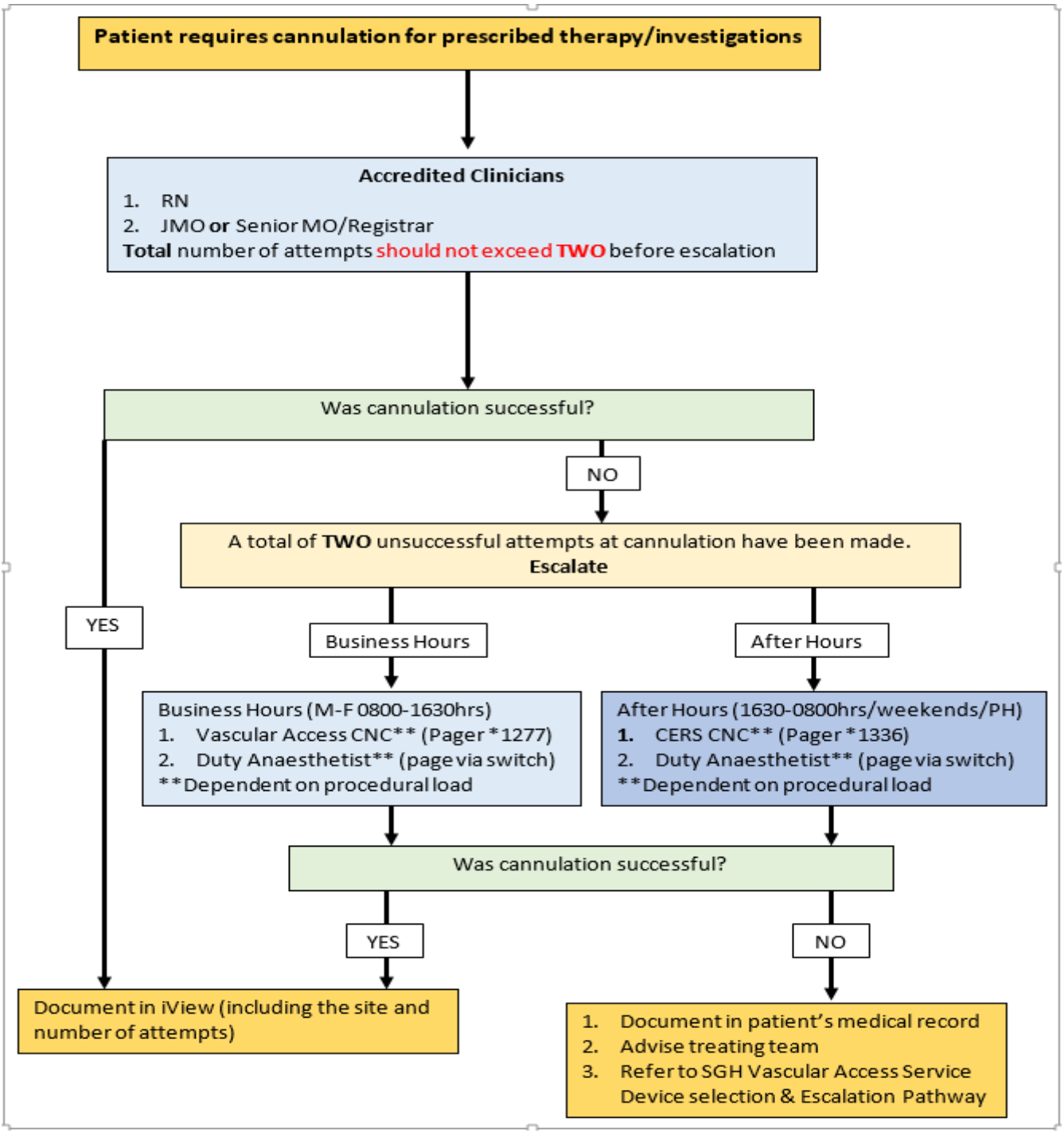
Appendix 2 – Visual Infusion Phlebitis Score (VIP score)

V.I.P. Score (Visual Infusion Phlebitis Score) Developed by Andrew Jackson, 1997		
0	I.V site appears healthy	**No signs of Phlebitis** **Observe Cannula**
1	**One of the following is evident** Slight pain near I.V. site or slight redness near I.V.site	**Possible first signs of phlebitis** **Observe Cannula**
2	**Two of the following is evident** Pain near I.V. site Erythema Swelling	**Early stage of phlebitis** **Resite cannula**
3	**All of the following are evident** Pain along path of cannula Erythema Induration	**Medium stage of phlebitis** • **Resite cannula** **Consider treatment**
4	**The following are evident and extensive** Pain along path of cannula Erythema Swelling Palpable venous cord Pyrexia	**Advanced stage of phlebitis (or start of thrombophlebitis)** • **Resite cannula** **Consider treatment**
5	**All of the following are evident and extensive:** Pain along the path of the cannula Erythema Swelling Palpable venous cord Pyrexia	**Advanced stage of thrombophlebitis** • **Initiate treatment** • **Resite cannula**

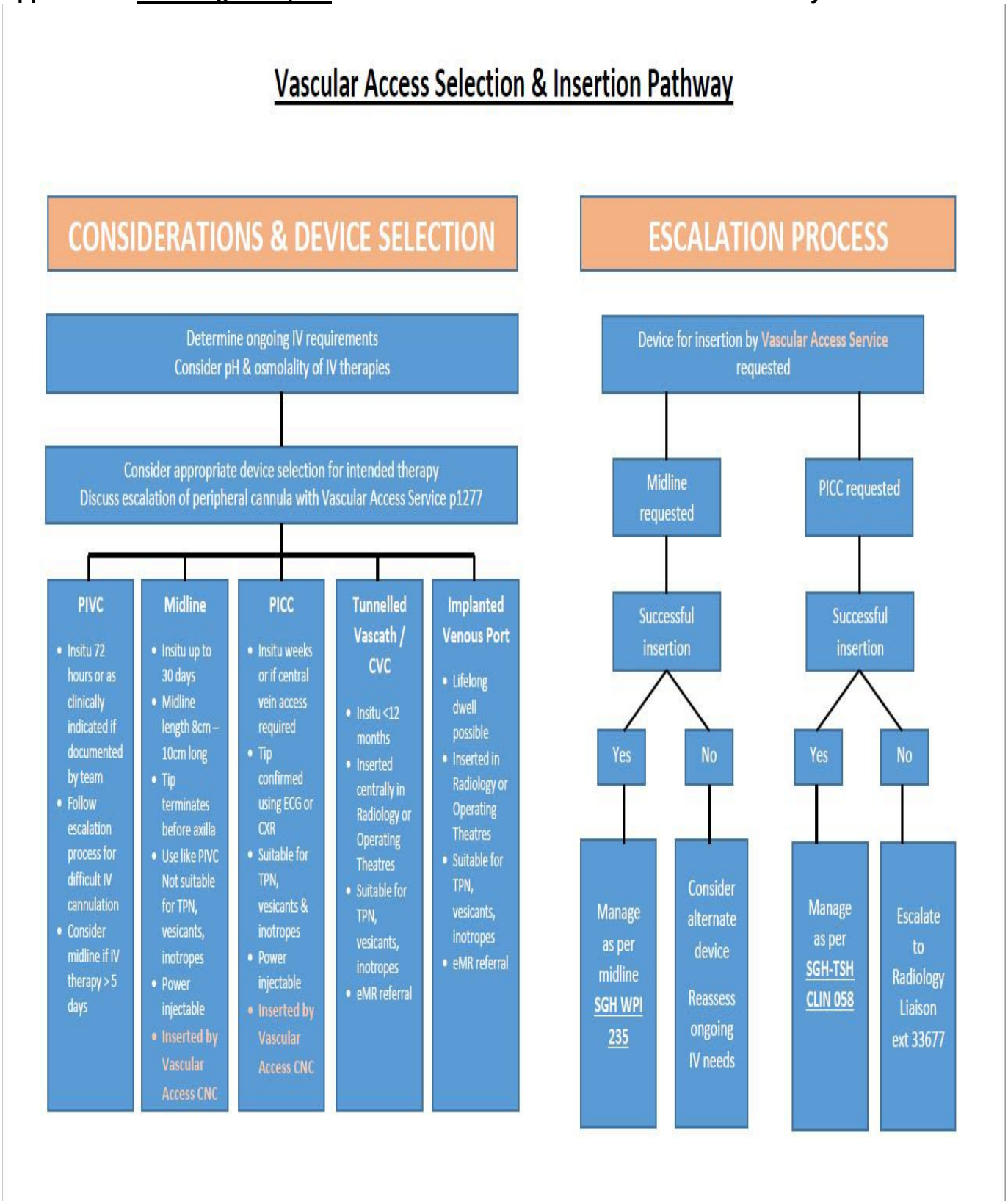
Appendix 3 – Local Escalation plans
St George Hospital

PRIOR TO ATTEMPTING CANNULATION, PLEASE CONSIDER:-

1. Is a peripheral cannula the most appropriate device for intended therapy?
2. How long is the therapy intended for?
3. Are there any patient factors that indicate a peripheral cannula may not be the most appropriate device? E.g.: needle phobia, limb exclusion (surgery / nodal clearance / amputation / hemiparesis / fistula)
4. Does the patient have known difficult venous access?



Appendix 4 - St George Hospital Vascular Access Selection & Insertion Pathway



Appendix 5 - Local Escalation Plans

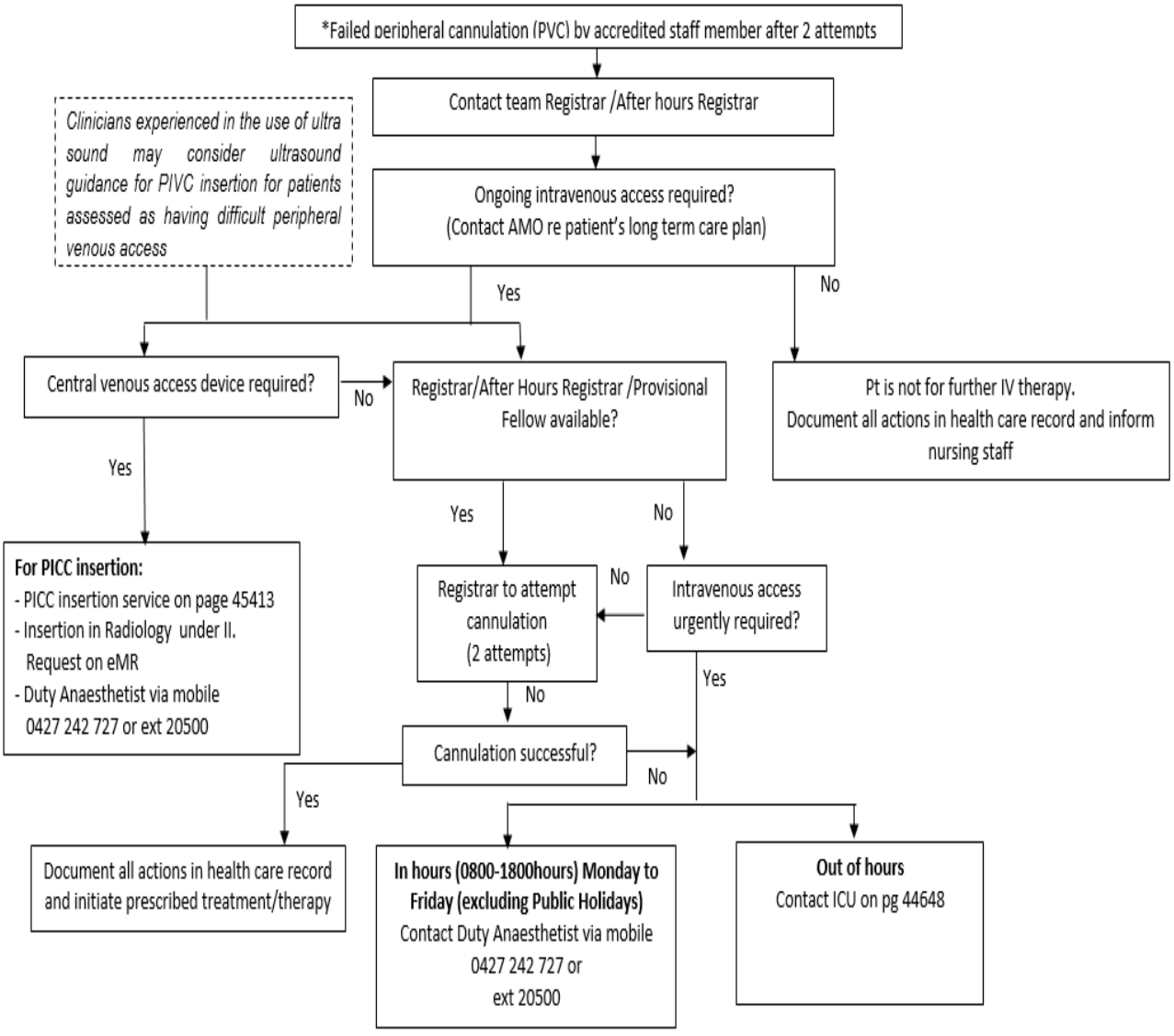
Prince of Wales

Prince of Wales Hospital and Community Health Services

Health
South Eastern Sydney
Local Health District

Escalation procedure for difficult Peripheral Intravenous Cannula insertion

Consider learning opportunities for other clinicians. Ensure JMO or RN are present for cannulation for teaching purposes



Approved by POW/SSEH Policy and Procedure Review Committee- November 2020. Revision due: December 2023

Appendix 6 - Local Escalation Plans

War Memorial Hospital

Uniting

War Memorial Hospital

Cannulation Pathway Flowchart as per https://www.seslhd.health.nsw.gov.au/sites/default/files/documents/SESLHDPR577.pdf

PRIOR TO ATTEMPTING CANNULATION, PLEASE CONSIDER:-

1. Is a peripheral cannula the most appropriate device for intended therapy?
2. How long is the therapy intended for?
3. Are there any patient factors that indicate a peripheral cannula may not be the most appropriate device? Eg: needle phobia, limb exclusion (surgery / nodal clearance / amputation / hemiparesis / fistula)
4. Does the patient have known difficult venous access?

Clinicians
(in order of attempts)

Business Hours
(M-F 0800 – 1700hrs)

1. Certified ward RN/RMO
2. Advanced Trainee
3. GFS Nursing
4. Consultant

After Hours
(1700 – 0800 / weekends / PH)

1. Certified ward RN
2. GFS Nursing (till 20:30 weekdays, 18:30 weekends)
3. RMO
4. Consultant on call for advice
5. Emergency Department POW/SVH

MAXIMUM 2 insertion attempts in TOTAL before escalation

PATIENT REQUIRES CANNULATION FOR PRESCRIBED THERAPY / INVESTIGATIONS

Cannulation was successful

Document in iView
(include the site and number of attempts)

Two unsuccessful attempts at cannulation have been made by EITHER nursing/medical staff

1. Document in patient's medical record
2. Advise Consultant/ request advice
3. To Emergency Department at POW or SVH for cannulation if essential

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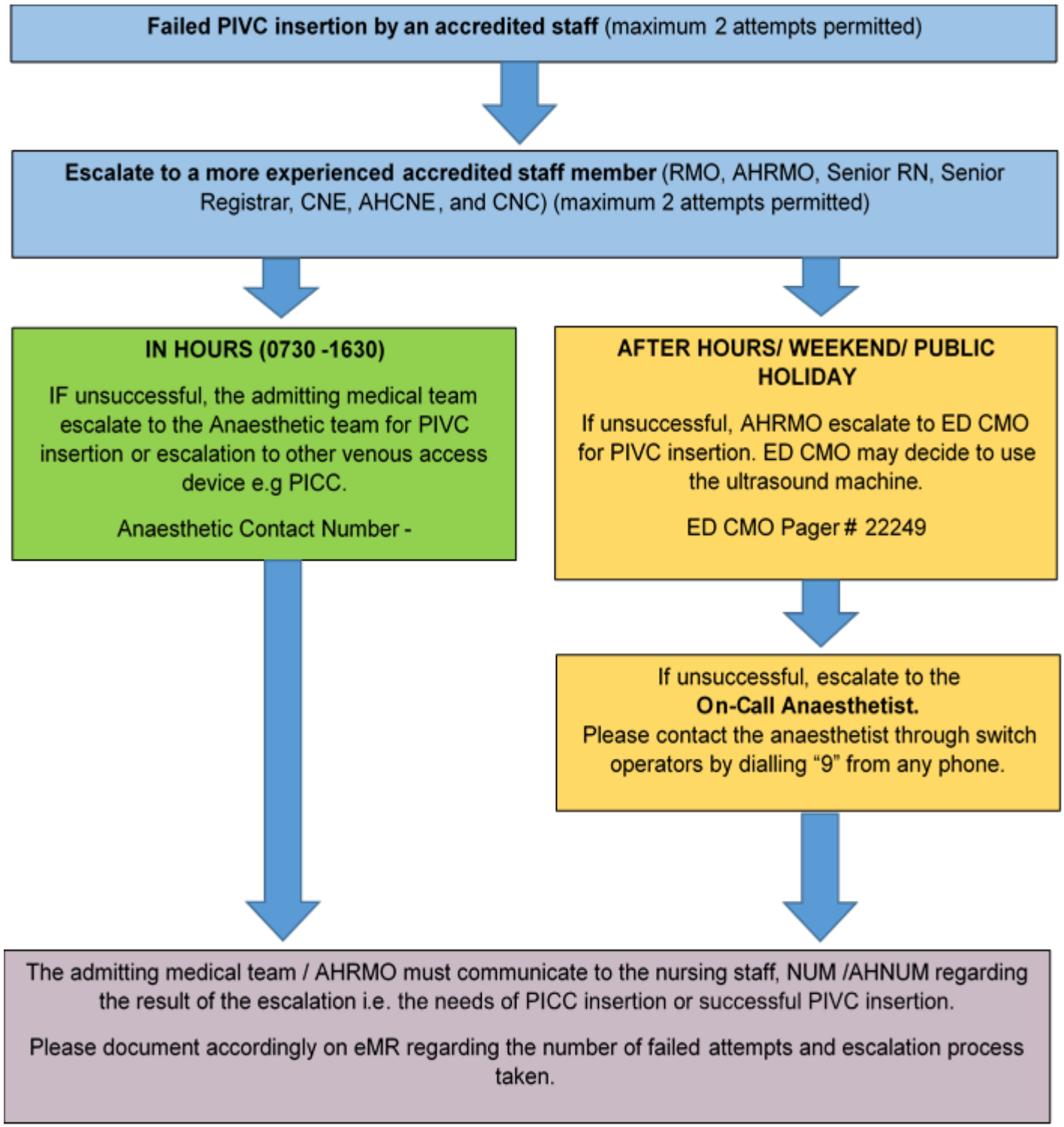
Appendix 7 - Local Escalation Plans
Sydney/ Sydney Eye Hospital

Sydney Hospital/Sydney Eye Hospital



04.12.20 Approved by the SSEH Director of Clinical Services for publication

Appendix 8 - Local Escalation Plans
Royal Hospital for Women

RHW PIVC ESCALATION PROCESS

Failed PIVC insertion by an accredited staff member (maximum 2 attempts permitted)

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Escalate to a more experienced accredited staff member (SRMO, AHRMO, Senior RN, Senior Registrar, CNE, AH-CNE, and CNC) (maximum 2 attempts permitted)

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IN HOURS (0730 -1630)
IF unsuccessful, escalate to the Anaesthetic team for PIVC insertion or escalation to other venous access device e.g PICC.
Anaesthetic Contact Number – pg: 45253

↓

AFTER HOURS/ WEEKEND/ PUBLIC HOLIDAY
If unsuccessful, escalate to Anaesthetic team.
AH O&G Registrar #44081
AH Anaesthetic Pager # 44084

↓

If unsuccessful, escalate to the **On-Call Anaesthetist.**
Please contact the anaesthetist through switch operators by dialling "9" from any phone.

↓

The admitting team/AHRMO must communicate to the nursing staff, NUM/AHNUM regarding the result of the escalation i.e. the needs of PICC insertion or successful PIVC insertion.
Please document accordingly on eMR regarding the number of failed attempts and escalation process taken.

CONSIDER CENTRAL VENOUS ACCESS DEVICE (CVAD) CHOICE
If CVAD is required:
In hours: Admitting medical team or senior clinician to contact interventional radiology and request insertion on eMR.
After hours: escalate to on call Anaesthetist through switch operators by dialing "9" from any phone. On call Anaesthetist to determine if insertion can be attended in Operating Theatres or if Interventional Radiology are required.

Appendix 9 - Local Escalation Plans. The Sutherland Hospital