



<p>Team Name: Regional Acute Care</p> <p>Team Lead: Collaborative Practice Lead</p> <p>Approved by: Regional Lead-Acute Care &amp; Chief Nursing Officer</p>	<p>Reference Number: CLI.4510.PL.012</p> <p>Program Area: Across Care Hospitals</p> <p>Policy Section: General</p>
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*Use of pre-printed documents: Users are to refer to the electronic version of this document located on the Southern Health-Santé Sud Health Provider Site to ensure the most current document is consulted.*

*Patients were engaged in the development of this policy.*

**POLICY SUBJECT:**

Vascular Access Assessment

**PURPOSE:**

To provide an evidence based standardized approach for vascular access assessments.

**BOARD POLICY REFERENCE:**

Executive Limitation (EL-02) Treatment of Clients

**POLICY:**

Vascular access is the most common invasive procedure undergone by patients in the health system. Treatment therapies that involve vascular access increase a patient’s risk of infection and other complications. Therefore, it is recommended best practice for health care professionals (HCPs) to perform a systematic patient vascular access assessment prior to vascular access device (VAD) insertion in all health care settings, regardless of duration of therapy. Selection of the most appropriate VAD starts at the earliest opportunity and is a collaborative, ongoing process among the health care team, the patient, and the patient’s caregiver(s).

VADs are classified based on the insertion site, location of the device and catheter tip placement. Peripheral vascular access devices (PVADs) include short and long peripheral intravenous catheters (PIVs) and midline catheters. Central venous access devices (CVADs)

include peripherally inserted central catheters (PICCs), implanted vascular access ports, tunneled-cuffed catheters and non-tunneled catheters.

When a systematic vascular access assessment identifies a patient with difficult intravenous access (DIVA), a Southern Health-Santé Sud (SH-SS) vascular access specialist is consulted. In SH-SS, only HCPs with the skill and competency included in their standard scope of practice (i.e., physicians) or HCPs with additional certification and competency in ultrasound guided peripheral intravenous (USGPiV) and PICC insertion will perform these skills. USGPiV and PICC insertion is not part of the standard scope of practice for nurses in SH-SS.

#### **DEFINITIONS:**

**Peripheral Intravenous (PIV) Catheters:** An over-the-needle catheter with a hollow metal stylet (needle) positioned inside the catheter; generally inserted in superficial veins using the standard of practice for PIV insertion which is the visual inspection, palpation and landmark method.

**Ultrasound Guided Peripheral Intravenous (USGPiV) Catheters:** Insertion of a long PIV catheter using ultrasound to guide placement.

**Midline Catheters:** A catheter inserted into a peripheral vein of the upper arm via the basilic, cephalic, or brachial vein with the terminal tip located at the level of the axilla. Insertion of this type of catheter is not done in SH-SS.

**Central Venous Access Device (CVAD):** A catheter that is inserted into a peripheral or large vein of the upper extremities, chest or groin with the tip advanced to a central position, either the superior or inferior vena cava. Types of CVADs are:

- **Peripherally Inserted Central Catheter (PICC):** Inserted through veins of the upper extremity in adults and children; for infants, may be inserted through veins of the scalp or lower extremity; catheter tip is located in the superior or inferior vena cava, preferably at its junction with the right atrium, regardless of insertion site.
- **Implanted Vascular Access Device (IVAD):** Also called an Implanted Port. A catheter inserted into a vein, attached to a reservoir located under the skin.
- **Tunneled, Cuffed Catheter:** A type of 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 (e.g. Hickman or Broviac catheters).
- **Non-Tunneled:** A type of CVAD for short-term use that is inserted directly through the skin, usually via the axillary-subclavian, internal jugular, or femoral vein.
- **Hemodialysis Catheters:** For dialysis only (or other uses as specifically ordered by the physician).

- May have 1 to 3 lumen(s) and may be tunneled or non-tunneled. May be inserted in femoral, jugular or subclavian veins and sutured in place. Only nurses certified in dialysis access dialysis catheters.
- Nurses not certified in dialysis may access dialysis catheters as a last resort ONLY in emergency situations when all other venous access routes have been attempted. A specific physician's order is required. Consultation with dialysis staff is recommended.
- When a "dialysis type" catheter is inserted for use other than for dialysis, there must be a written order from the physician indicating the purpose of the alternate use and the maintenance protocol.

**Extravasation:** The inadvertent infiltration of vesicant solution or medication into surrounding tissue.

**Infiltration:** The inadvertent administration of a non-vesicant solution or medication into surrounding tissues.

**Vesicant:** An agent capable of causing blistering, tissue sloughing or necrosis when it escapes from the intended vascular pathway into surrounding tissue.

**Health Care Professional (HCP):** Refers to all HCPs including those regulated by the Regulated Health Professionals Act (RHPA) engaged in actions whose primary intent is to enhance health, including those who promote and preserve health, those who diagnose and treat disease, manage health and includes professionals with specific areas of competence.

**Vascular Access Specialist:** A HCP with the skill and competency included in their standard scope of practice (i.e., physicians) or HCP with additional certification and competency in ultrasound guided peripheral intravenous (USGPIV) and PICC insertion.

**IMPORTANT POINTS TO CONSIDER:**

- The least invasive VAD with the smallest outer diameter and fewest number of lumens needed for the prescribed therapy is selected.
- Vessel health and preservation is prioritized when planning vascular access.
- Vascular visualization technology is employed to increase insertion success of the most appropriate, least invasive VAD, minimizing the need to escalate to an unnecessary, more invasive device and to reduce insertion related complications.
- Factors that increase difficulty with locating veins include, but are not limited to:
  - Disease processes that result in structural vessel changes (i.e., diabetes mellitus, hypertension),
  - History of frequent venipuncture and/or lengthy courses of infusion therapy,
  - Variations in skin between patient populations, such as darker skin tones and excessive hair on the skin,
  - Skin alterations, such as the presence of scars or tattoos,
  - Patient's age,
  - Obesity and/or
  - Fluid volume deficit.

- Vascular access device complications include:
    - Phlebitis,
    - Infiltration and extravasation,
    - Nerve injury-Immediately remove IV catheter if nerve damage related to insertion is suspected (ie., severe electrical shock-like pain, numbness or tingling),
    - Occlusion,
    - Infection- Vascular access devices (VADs) are a high risk to cause healthcare-associated infections (HAIs). Using Aseptic Non-Touch Technique (ANTT) for VAD insertion, care and maintenance is best practice for reducing the risk of infection,
    - Catheter damage,
    - Air embolism,
    - Catheter associated deep vein thrombosis,
    - Malposition-Immediately remove IV catheter and apply pressure if an artery is inadvertently accessed and/or
    - Catheter associated skin injury.
- Significant complications (i.e., nerve injury, arterial puncture) should be captured through the occurrence reporting process.

**PROCEDURE:**

**1. Patient Assessment**

- History of vascular access
  - Frequent venipuncture
  - Lengthy courses of infusion therapy
  - Previous vascular access complications
- Disease processes that result in structural vessel changes (i.e., diabetes mellitus, hypertension)
- Current medications
- Anatomy
- Obesity
- Fluid volume deficit
- Activity level-use of upper extremities (i.e., if no mobility in one arm, better to use opposite arm)
- Skin tone/integrity, skin alterations (i.e., scars, tattoos), excessive hair on skin
- Patient preference and lifestyle
- Age and developmental stage
- Mental health status (including substance use)
- Presence of needle phobia
- Presence of family/caregiver support
- Cognition
- Need for pain management strategies

**2. Assess Clinical Indications**

- Method of administration – continuous, intermittent or IV push
- Number of infusion therapies (single versus multiple)
- Anticipated duration of therapy

- (<4 days): Insert a PIV catheter when all the above elements indicate peripherally compatible therapy.
- (5-14 days): A long PIV catheter inserted with ultrasound in adult patients when all the above elements indicate peripherally compatible therapy. A long PIVC may remain appropriate if patient's vasculature, patient's preference, and local health care outcomes support this practice.
- (>15 days): Consider insertion of a PICC. PIVs may remain appropriate when all the above elements indicate peripherally compatible therapy and if patient's vasculature, patient preference, and local health care outcomes support this practice.
- PH and Osmolality
  - PIV therapy should ideally be isotonic and of physiological pH. When this is not achievable, PIV infusion of pH extremes and osmolarity should be avoided to reduce vascular endothelial damage.
  - Identify medications that should and should not be given through peripheral veins.
- If a patient presents with an implanted vascular access port, it should be accessed as the preferred IV route, rather than inserting an additional VAD, unless contraindicated (e.g., existing complication with the device).
- Available resources for VAD care and maintenance

### 3. Review of Vesicant Medications

Determine if the planned therapy poses an infusate risk or if the medication is a vesicant.

Consultation with a pharmacist may be required.

- For infusates with irritant or vesicant potential, see SH-SS "Extravasation Management of Non-Chemotherapeutic Medications" [CLI.6010.SG.003](#) policy for further detail and "Extravasation List of Irritant Drugs" [CLI.6010.SG.003.SD.01](#) for infusates with irritant or vesicant potential.
- Do not use peripheral catheters for continuous vesicant therapy or infusates with an osmolarity greater than 900 mOsm/L. Use a restricted dextrose and protein concentration (less than/equal to 10% and/or 5%, respectively) if it is medically necessary to administer parenteral nutrition (PN) through a peripheral device.

### 4. Device Selection

Use the [Canadian Vascular Access Association Difficult Peripheral IV Access Scoring Tool](#) to assist with assessment.

- Use a device with the minimum number of lumens
- Select the smallest gauge catheter to accommodate prescribed therapy

### 5. Site Selection

Assess the patient's vascular structure and integrity at and above the insertion site. Sites to be avoided include:

- Area of flexion (except trauma or emergency cases where this is not possible)
- Chest wall, digits or breasts
- Lower legs
- Insertion area that is painful on palpation

- Vein that is compromised (thrombosis, redness, cording, bruising, infiltration, phlebitis, engorgement)
- Extremity with a planned or actual arteriovenous fistula/graft site
- Extremity affected by lymphedema, paralysis, extravasation, acute infection, tissue injury or acute trauma
- Consider previous history of breast cancer surgery and any potential sites for tissue donation

See “UK Vessel Health and Preservation 2020” (CLI.4510.PL.012.SD.01) poster for algorithm to assist with determining most suitable vascular access to meet patient care needs.

**SUPPORTING DOCUMENTS:**

[CLI.4510.PL.012.SD.01](#) UK Vessel Health and Preservation 2020

**REFERENCES:**

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[CLI.6010.SG.003](#) Extravasation Management of Non-Chemotherapeutic Medications

[CLI.6010.SG.003.SD.01](#) Extravasation List of Irritant Drugs

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