Issues and Risks Associated with Short Peripheral Cannula Extended Dwell

Prepare, Place, Protect, and Preserve

Nancy Moureau, BSN, RN, CRNI, CPUI, VA-BC

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Objectives

At the conclusion of this program, attendees will be able to:
1. Describe three risks related to peripheral IV therapy device usage
2. Define the clinical implications of planning for, preparing, placing, protecting, and preserving a peripheral IV site with best practices
3. Discuss why application of each process together significantly impacts outcomes associated with short peripheral cannulas, as the whole is greater than the sum of its parts
Peripheral Catheters & Defined Risk

The placement of a short peripheral catheter (SPC) is invasive but perceived as a simple treatment procedure. For this reason, placement is performed without consideration for patient or healthcare practitioner (HCP) safety or the potential complications.

Intravenous catheter complications may be avoided or lessened in severity through clinical assessment, disinfection practices and application of flushing protocols. Complications such as irritation of the vein (phlebitis), infiltration, infection or occlusion

Factors Contributing to Peripheral Catheter Risks

Variances in Practice

Lack of standardized IV education in nursing programs
Lack of specific employee orientation or preceptorship
Lack of ongoing education & competency assessment

Clinically Indicated Changes for SPC

Longer dwell time = GREATER RISK
Potential for more severe complications

Intravenous catheters frequently fail before the end of treatment. When complications are not identified they may worsen in severity.
Impact Analysis
Peripheral Catheter Risks

» Failure to Plan device and site selection
» Failure to Prepare site
» Failure to successfully Place on 1st attempt
» Failure to Protect site and inserter
» Failure to Preserve site

Impact Analysis:
Failure to Manage Potential Risks

Plan Prepare Place Protect Preserve
Wrong site
Wrong vein
Wrong catheter
Poor aseptic technique
Failed 1st attempt
Inadequate compliance OSHA Blood exposure to contamination
Lack of stabilization

• Infiltration
• Phlebitis
• Thrombosis
• Delayed Rx
• Increased risk for local or systemic infection
• Reduced patient satisfaction
• Added time and labor costs
• Increased risk of HCW blood exposure & vessel health risks
• Loss of access, Rx delays, infection, infiltration

Proactive Management Strategies:
Mitigating the Risks of Extended Dwell

SHORT PERIPHERAL CANNULAS
3. Infusion Nursing Society Standards of Practice 2011
Jan/Feb 2011, Volume 34, Number 1S

32. Vascular access device selection

» Standard
- 32.2 The nurse shall select the appropriate type of catheter to accommodate the patient’s vascular access needs based on the prescribed therapy or treatment regimen, length of treatment, duration of dwell, vascular integrity, patient preference, and ability and resources available to care for the device.
- 32.3 The catheter selected shall be of the smallest gauge and length with the fewest number of lumens and shall be the least invasive device needed to accommodate and manage the prescribed therapy.

» Practice Criteria

- Short Peripheral Catheters
  - Usually for treatments of less than 1 week
  - The nurse should use short peripheral catheters equipped with a passive or active safety mechanism to provide sharps injury protection

Plan of Care & Mitigating Risk of Extended Dwell SPCs

- Patient History
- Chronic Illness
- Current or Future dialysis
- Patient Preference
- Avoid irritants
- Vascular Integrity
- Provide Education
- Duration of Therapy
- Usually ≤1 week
- Osmolality <600 mOsm/L
- Policy & Procedure-driven regular site assessment
- Immediate instructions
- Not a vesicant
- Venous compressible
- No redness
- No tenderness
33. Site Selection

- **Standard**
  - 33.2 The vasculature shall accommodate the gauge and length of the catheter required for the prescribed therapy.
  - 33.3 Site selection shall include assessment of the patient’s condition; age; diagnosis; comorbidities; condition of the vasculature at the insertion site and proximal to the intended insertion site; condition of skin at intended insertion site; history of previous venipunctures and access devices; type and duration of infusion therapy; and patient preference.

- **Practice Criteria**
  - **Short Peripheral Catheters**
    - Site selection should be initiated in distal areas of the upper extremities; subsequent cannulation should be proximal.

### Site Selection PIV Cannulate

- Therapies are within the recommended pH and Osmolality for PIV infusion:
  - Non-irritants: pH > 5 or < 9
  - Osmolality < 600 mOsm/L
- Vasculature should accommodate the catheter.
- Upper extremities are preferred in adults.
- Routinely initiate distal with subsequent proximal cannulation.
  - Most recent literature suggests starting in forearm instead of hand.
- Assess for prior PIV placement and ensure these sites are complication free prior to initiating a new site in the same area.

### NOT to Cannulate

- Avoid points of flexion
- Wrist placement should also be avoided due to the close proximity of nerves and arteries to veins in this area
- Avoid lower extremities to reduce the risk of deep vein thrombosis and embolism
- Avoid veins below previous sites with phlebitis or infiltration
- Avoid sclerosed, thrombosed or painful areas, “hardened veins”
- Compromised veins
- Areas of skin inflammation, disease, bruising, skin tears or skin breakdown
- Avoid arm affected by a radical mastectomy, edema, thrombosis/clots, or infection
- Avoid specific arm
- Pre-Renal patients, A/V fistulas or grafts, breast surgery with node dissection, radiation therapy, stroke
Infusion Nursing
Standard of Practice

35. Vascular access site preparation and device placement

Standard

- 35.4 The nurse shall prepare the intended VAD insertion site with antiseptic solution using aseptic technique.
- 35.6 Antiseptic solutions in a single unit configuration shall be used.

Practice Criteria

Short Peripheral Catheters

- If the intended insertion site is visibly soiled, clean the area with soap and water prior to application of antiseptic solution(s).
- The nurse should inspect the VAD for product integrity prior to insertion.
  - The nurse should consider using visualization technologies that aid in vein identification and selection.

Aseptic Non-Touch Technique

- Aseptic non-touch technique (ANTT)¹
  - Standardized technique used during clinical procedures
  - Prevents microbial contamination of aseptic key parts and key sites
  - Ensures these sites are not touched, directly or indirectly by non-sterile hands, gloves or other item

- Don’t touch insertion site/skin after cleansing!²

Prepare the Site³

- If insertion site visibly soiled, clean the area with soap and water
- Use antiseptic solution with aseptic non-touch technique
- Antiseptic solutions in a single unit configuration shall be used
- Chlorhexidine solution is preferred for skin antisepsis
- Use near infrared
- Ultrasound Guided
- Near infrared
- Use of gravity positioning
- Use of tourniquets & light stroking
- Consider using Visualization Technologies
- Warm, moist compresses
- Use of a new pair of non-sterile gloves in conjunction with non-touch technique
Infusion Nursing Standards of Practice

35. Vascular access site preparation and device placement

» Standard

- 35.3 The nurse shall be competent in insertion technique, infection prevention measures, identifying potential complications, implementing nursing interventions, and in assisting the LIP with VAD placement.
- 35.7 Only 1 vascular access device shall be used for each catheterization attempt.

» Practice Criteria

Short Peripheral Catheters

- No more than 2 attempts at vascular access placement should be made by any 1 nurse.
- The nurse should provide patient education, addressing the rationale for VAD placement; insertion process; expected dwell time; care and maintenance of the device; and signs and symptoms of complications to report.


Peripheral Catheter Insertion

» Key points

- Access vein with blood return in needle
- Retract hollow bore needle
- Advancement unit to position catheter
- Thread catheter into vein, engage safety
Infusion Nursing Standards of Practice

27. Needleless Connectors

> Standard
- 27.2 Needleless connectors attached to a catheter hub or access site shall be of luer-lock design to ensure a secure junction.
- 27.3 The nurse shall be competent in the use of needleless connector devices.
- 27.4 The nurse shall disinfect the needleless connector prior to each access.

> Practice Criteria
- The nurse should be aware that needleless connectors are identified by design (simple and complex) and function.
- The nurse should be knowledgeable about the function of needleless connector and the manufacturer’s directions for use.
- Change the needleless connector:
  - if the needleless connector is removed for any reason
  - if there is blood or debris within the needleless connector
  - prior to drawing a blood culture sample
  - upon contamination

Protect Care Giver & Extended Dwell Site with Needleless Technology

- Understand indications for technology
- Understand importance of design technology
- Understand impact of needleless technology on longer dwell
- GIK (Glasgow)
- Reduce risk of needle stick injury to caregivers
- Protocols based on product, practice and protocol cause confusion about clinical relevance of needleless connector design/features
- Implications of key opinion leaders, interpretations of terms, studies and related topics
- Activation System
- Priming volume
- Dead space
- Interstitial space
- Displacement

Simple Design: Back to Basics

> Solid, Sealed Access Surface
- Can be effectively disinfected
- No slits, crevices or gaps that can trap or allow contaminants to enter the connector

> Fluid filled
- The entire interior of a fluid filled connector is active space
- There is no empty space within the connector housing, outside of the fluid pathway, where contaminants can enter and not be flushed or disinfected

Needleless Technology & Clinically Relevant Practice

» No clamping sequence should be required
  • Connector should prevent reflux at disconnection
  • Reduces inconsistencies in practice

» Surface should be solid and sealed
  • Prevents entry of bacteria and allows effective disinfection of surface from bacteria before each access

» Connector should be fluid filled
  • Eliminates dry space within the housing that can harbor bacteria

» Connector should have a visible fluid path
  • Promotes productive flushing of the catheter, not just the connector. Flush until clear

Infusion Nursing Standards of Practice

46. Vascular access device site care and dressing changes

» Standard
  • 46.1 Vascular access device (VAD) site care and dressing changes, including frequency of procedure and type of antiseptic and dressing, shall be established in organizational policies, procedures, and/or practice guidelines.
  • 46.2 The nurse shall be competent in performing VAD site care and dressing changes.
  • 46.3 VAD site care and dressing changes shall be performed at established intervals and immediately if the dressing integrity becomes compromised, if moisture, drainage, or blood is present, or if signs and symptoms of site infection are present.
  • 46.4 A sterile dressing shall be applied and maintained on VADs.

Preserve the Site

Vessel health may be affected by the integrity of the catheter dressing and any stabilization device

Stabilization of short peripheral catheters is key to extended dwell performance

Routine site care and dressing changes are performed on short peripheral catheters when the dressing is soiled or no longer intact

Policy & Procedure should incorporate the necessity for regular and well-documented SPC assessment to mitigate potential risk of extended dwell with clinically indicated changes

Infusion Nursing Standards of Practice

44. Vascular Access Device Removal for Safety
   » Standard
     - 44.3 VADs shall be removed upon unresolved complications, therapy discontinuation, or if deemed unnecessary.
   » Practice Criteria
     Short Peripheral Catheters
     - Consider replacement of the SPC when clinically indicated and when infusion treatment does not include parenteral nutrition.
     - Replacement should be based on assessment of the patient’s condition, access site, skin and vein integrity, length and type of prescribed therapy, venue of care, integrity and patency of VAD, dressing, and stabilization of the device.

THE WHOLE IS GREATER THAN THE SUM OF ITS PARTS

What Pilots Can Teach Hospitals About Patient Safety
By KATE MURPHY. New York Times October 2006

References

2. Infusion Nursing Society Standards of Practice 2011 Jan/Feb 2011, Volume 34, Number 1.

Questions
Thank You

Nancy Moureau
nancy@piccexcellence.com