Recommendations for Frequency of Assessment of the Short Peripheral Catheter Site

Lisa Gorski, RN, MS, HHCNS,BC, CRNI®, FAAN

Objectives

• Discuss the risks associated with peripheral IV placement and dwell time.
• Describe specific recommendations for the frequency of peripheral IV site assessment based upon patient and infusate characteristics.

Outline

• Background and rationale for position paper development
• Brief overview: consequences of peripheral IV complications and pertinent INS Standards
• Review of literature
• Position Paper: Recommendations for frequency of site assessment and rationale
What is a position paper?

- Written statement that articulates a viewpoint, position, or policy of an organization
- Explains/justifies recommendations or course of action
- Not a Standard

The Problem

- Lack of specific guidelines for frequency for site assessment is a problem
- Great variation in practice
- Frequent assessment of the site allows for rapid action and less risk for serious tissue damage, a risk associated with the common complication of infiltration

Do nurses check IV sites?

- Sample of 459 nurses in 3 hospitals completed a survey – “Missed Nursing Care Survey”
- Assessment (overall) reported to be missed by 44% of respondents
  - IV site care and assessment according to hospital policy missed 62% of the time
    - Hand hygiene missed 30% of the time
- Reasons for missed care:
  - Labor resources (85%), materials, communication

INS SOP

- Standard 47 Phlebitis
  - Practice Criterion A: The nurse should **routinely** assess all vascular access sites for symptoms of phlebitis, including pain, tenderness, erythema, warmth, swelling, induration, purulence, or palpable venous cord.

- Standard 48 Infiltration and Extravasation
  - Practice Criterion A: The nurse should **routinely** assess all vascular access sites for symptoms of infiltration and extravasation.


Site Rotation

- Major change in 2011 INS SOP and one impetus for development of the Position Paper
  - The nurse should consider replacement of the short peripheral catheter when clinically indicated, the decision to replace the short peripheral catheter should be based on assessment of the patient’s condition; access site; skin and vein integrity; length and type of prescribed therapy; venous care; integrity and patency of VAD; dressing; and stabilization device.


What this INS Position Paper addresses:

- Limited to recommendations on how often to assess the “short” peripheral IV (PIV) site
- Does not address midline peripheral catheters
- Limited to infusions (i.e. not IV push)
- Recognizes that regular assessment is **just one factor** in reducing the risk of PIV complications but it is a critical factor in allowing quick intervention in the event of a complication
PIV Complications: Potential Consequences

Definitions
- **Extravasation**: Inadvertent infiltration of a vesicant solution/medication into surrounding tissue.
- **Infiltration**: Inadvertent administration of a nonvesicant solution/medication into surrounding tissue.

- **Infiltration/extravasation without rapid recognition/appropriate treatment can result in:**
  - Full thickness skin loss
  - Muscle/tendon necrosis
  - Permanent scarring
  - Loss of extremity function
  - Amputation
  - Chronic pain/neuropathy
  - Surgery

- Case studies
  - IV fluid infiltration – 3 infants with tissue blanching, decreased CRT, severely restricted active/passive ROM required fasciotomies with full recovery
  - “the role of vigilant nursing to detect these injuries [infiltrations] cannot be understated”
  - Infiltration/extravasation injuries are medical emergencies that have potential to cause serious disability, diminish QOL

- **Phlebitis**
  - Pain
  - Treatment
  - Surgery

- **Infection: local, BSI**
  - Morbidity and mortality associated with septicemia

- **Nerve damage (insertion related/extravasation related)**
  - Loss of extremity function
  - Chronic pain/neuropathy

References:
Risk Factors

Risk Factors: Age

- Very young
  - Small diameter/fragility of veins
  - Mobility
  - Developmental level

- Older adults
  - Thinning of epidermis
  - Decreased dermal thickness – decrease in number of nerve endings resulting in less perception of pain

Risk Factors

- Cognition/LOC
  - Prevalence of cognitive impairment
  - Delirium
  - Sedative/analgesic medications

- Infusate characteristics
  - pH
  - Osmolarity
Risk Factors

• Catheter location
  – Areas of flexion
  – External jugular
• Health care setting
  – Who is monitoring?
  – Example: home infusions

REVIEW OF SELECTED LITERATURE IN RELATION TO FREQUENCY OF ASSESSMENT

Literature Review

• National Association of Neonatal Nurses (NANN)
  – Hourly assessment of peripheral IV sites
  – Observation for any signs of erythema, edema, pain with flushing, increased resistance
  – Note that NANN also cites increasing pump pressure readings as part of assessment – however, infusion pumps should not be relied upon to detect infiltration/extravasation

Literature Review

• Pediatric textbook references recommend a frequency of either hourly or every 1 to 2 hour site assessment
• Survey of 12 pediatric hospitals by INS Task Force, 10 hospitals reported policies recommending hourly assessment for pediatric patients receiving infusions

Bowden VR, Greenberg CS. Pediatric Nursing Procedures. 2nd ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2008: 360

Literature Review

• Oncology Nursing Society
  – Intermittent infusions of vesicant medications should be limited to under 60 minutes
  – Visual assessment of site and blood return verified every 5-10 minutes during infusion

Oncology Nursing Society (ONS). Chemotherapy and Biotherapy Guidelines and Recommendations for Practice. 3rd ed. Pittsburgh, PA: ONS; 2009

Literature Review

• The CDC recommends at least daily evaluation of the insertion site by palpation through the dressing to discern tenderness and by inspection if a transparent dressing is used
• CDC recommendations are in the context of the risk for vascular-related infections/phlebitis and does not address other peripheral IV risks.

Patient Education

• A critical factor in risk reduction
• The alert and oriented patient, and/or family members/caregivers, should be provided with information about the PIV, potential risks, and instructed to promptly report signs or symptoms such as swelling, redness, pain, and/or paresthesias/numbness or tingling in the extremity.


INS POSITION PAPER

• “An IV infusion should not be painful if the drug is diluted and slowly injected through a catheter that has been properly selected, inserted, and secured. Pain on injection is an immediate indication to stop. Most severe complications occur because the infusion continues while staff consider other explanations for the pain.”

Position Paper

Recommendation: WHAT to assess

- When an infusion is running (whether continuous or intermittent*), PIV sites should be routinely assessed:
  - For redness, tenderness, swelling, drainage, and/or the presence of paresthesias, numbness, or tingling at the specified frequency listed below.
  - Assessment should include visual assessment, palpation, and subjective information from the patient.
  - If there is tenderness at the site, the dressing may be removed to more carefully visualize the site.

Position Paper

Recommendation: HOW OFTEN to assess

- Frequency of Assessment:
  - At least every 4 hours
    - Patients who are receiving nonirritant/nonvesicant infusions and who are alert and oriented and who are able to notify the nurse of any signs of problems such as pain, swelling, or redness at the site
    - Locked PIV for intermittent infusions: assess with every access/infusion or minimally BID

Position Paper

Recommendation: HOW OFTEN to assess

- Frequency of Assessment:
  - At least every 1-2 hours
  - Critically ill patients
  - Adult patients who have cognitive/sensory deficits or who are receiving sedative-type medications and are unable to notify the nurse of any symptoms
  - Catheters placed in a high-risk location (e.g., external jugular, area of flexion)
Position Paper
Recommendation:
HOW OFTEN to assess

• Frequency of Assessment:
  • At least every hour
  • Neonatal patients
  • Pediatric patients
  • More frequently: Every 5-10 minutes
    – Vesicant infusions – includes vasoconstrictor agents

Position Paper
Recommendation:
HOW OFTEN to assess

• Frequency of Assessment:
  • With every home/outpatient visit
    – For patients receiving peripheral infusions at home as
      overseen by home care or outpatient nurses
      – Note that continuous PIV infusions at home are unusual
    – Patient/family education especially critical – include the
      following topics:
      – What to look for: redness, tenderness, swelling, or site drainage
      – To check the site at least every 4 hours during waking hours
      – Ways to protect the site during sleep and activities
      – How to stop the infusion if signs/symptoms occur
      – To promptly report to the nurse
      – The organization’s 24-hour contact telephone numbers

Position Paper
Recommendation:
What about temperature?

• The possibility of catheter-associated bloodstream infection should be considered
  when there is fever in any patient with a PIV even in the absence of site redness,
  tenderness, swelling, or drainage
• Check temperature at a frequency according to organizational policy/procedure
  – AND more often based on nursing judgment.
Thank You!

• To the Task Force Members:
  – Dora Hallock
  – Susan Kuehn
  – Phyllis Morris
  – Jean Russell
  – Lisa Skala

• To the INS reviewers, including the INS Board Members, who critically reviewed and provided valuable input in the development of the paper

• To Chris Hunt, INS VP, for the Task Force support and “behind the scenes” coordination of the work

QUESTIONS?