The INS Infusion Therapy Standards of Practice

Application to Clinical Practice

AVA 2023
October 14-17 Portland, Oregon

Barb Nickel and Lisa Gorski

1. Disclosure of Relevant Financial Relationships

Barb Nickel has the following financial relationships to disclose:

- Consultant/Advisory Board for Baxter Healthcare
- Consultant/Speaker's Bureau for BD Medical
- Consultant for Kendle Healthcare

Lisa Gorski has the following financial relationships to disclose:

- Consultant/Advisory Board for: BD
- Speaker's Bureau for: 3M, BD
- Stockholder: iv Watch
- Honoraria from: FA Davis, Springer Publishers, Medbridge
- Employee of: Ascension at Home

2. Disclosure of Off-Label and/or investigative Uses

I will discuss the following off label use and/or investigational use in my presentation:
Alteplase for midline occlusion

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Speaker Biographies

Barb Nickel APRN-CNS, CCRN, CRNI

Ms. Nickel is a Clinical Nurse Specialist at a healthcare center in Nebraska. She is responsible for staff development, competency assessment, and process improvement to optimize outcomes in multiple areas of clinical practice, including critical care, infusion therapy, sepsis, and new graduate transition to practice. Ms. Nickel has presented nationally on infusion-related topics, is a co-author of the 2021 Infusion Nurses Society Infusion Therapy Standards of Practice, is the Chair of the INS Standard of Practice Committee for the 2024, 9th edition of the Standards, and has authored several publications on infusion therapy in the critical care setting. She also serves as faculty in a Bachelor of Science in Nursing (BSN) program, in areas of critical care and chronic illness.

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

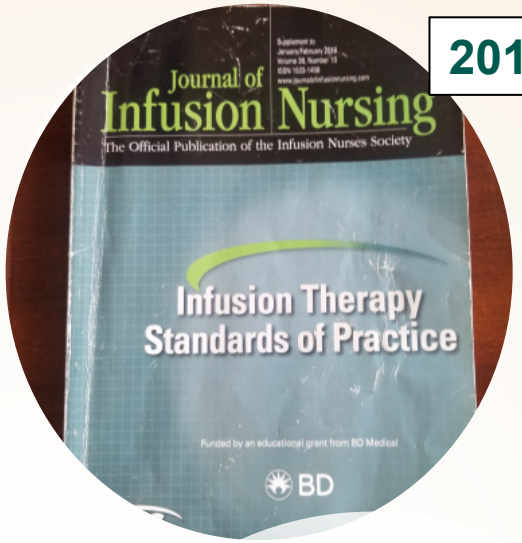
Ms Gorski has worked for more than 35 years as a clinical nurse specialist (CNS). As a CNS, she developed and continues to provide infusion-related education for home care nurses as well as direct patient care. She is the author of several books and more than 70 book chapters and journal articles on home care and infusion therapy topics. She is an INS Past President (2007-2008), past chair for the INCC Board of Directors, has served as the chair from 2011-2021 and is current co-chair of the 2024 INS Standards of Practice Committee. Ms Gorski speaks nationally and internationally on standards development, infusion therapy/vascular access, and home health care. She has had the opportunity to address the Standards in multiple live and virtual presentations in the US and other countries. .

Objectives

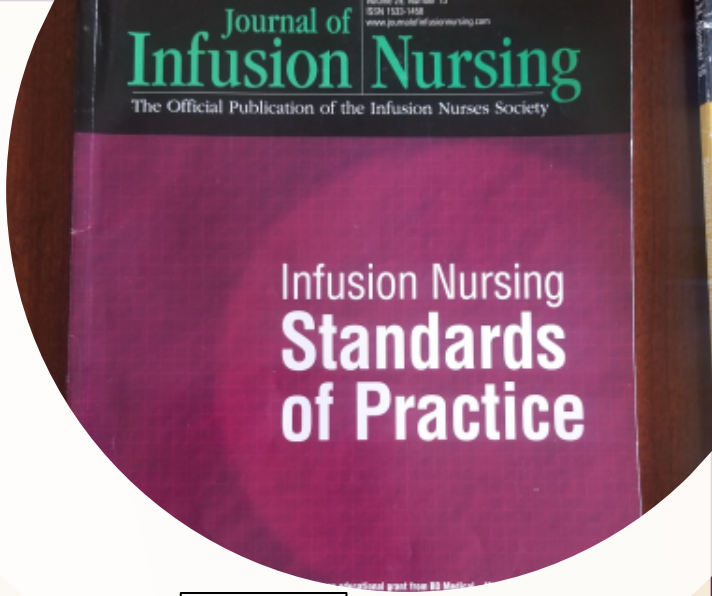
- Describe the scope and methodology of the INS Infusion Therapy Standards of Practice
- Describe the application of the *Standards* to inform clinical practice
- Identify current trends and priorities in **infusion therapy** research

INS Standards: History & Evolution

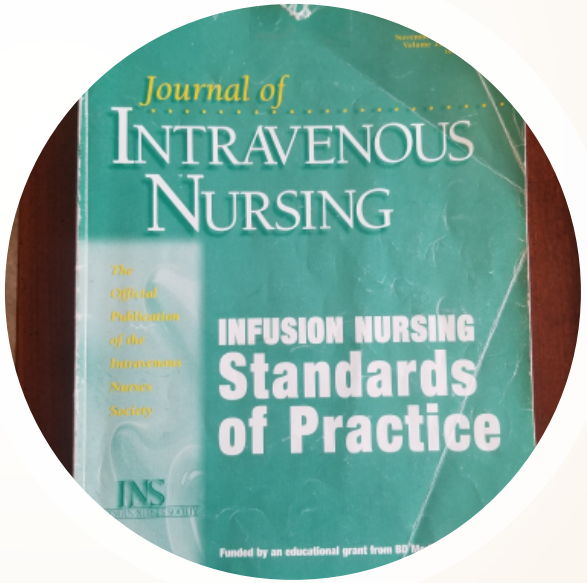
- National Intravenous Therapy Association (NITA):
  - First edition 1980 “Venipuncture Hyperalimentation Standards”
- NITA: 1984 – a one-page edition addressing home care
- Intravenous Nursing Association: 1998, 2000
- Infusion Nurses Society 2006, 2011, 2016, 2021…. 2024



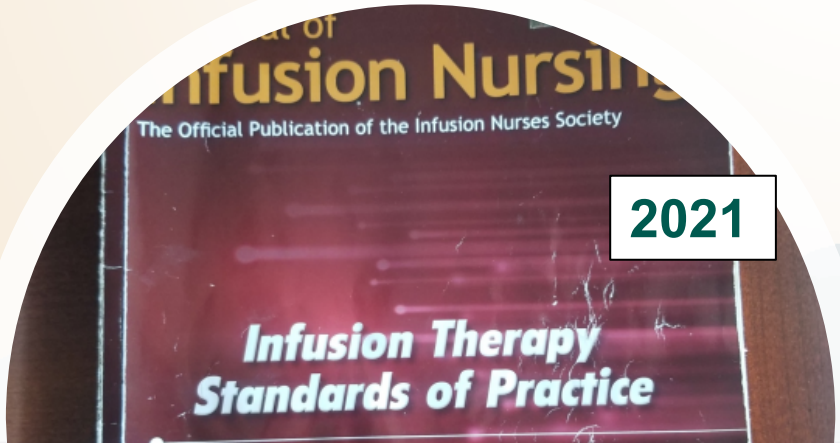
2016



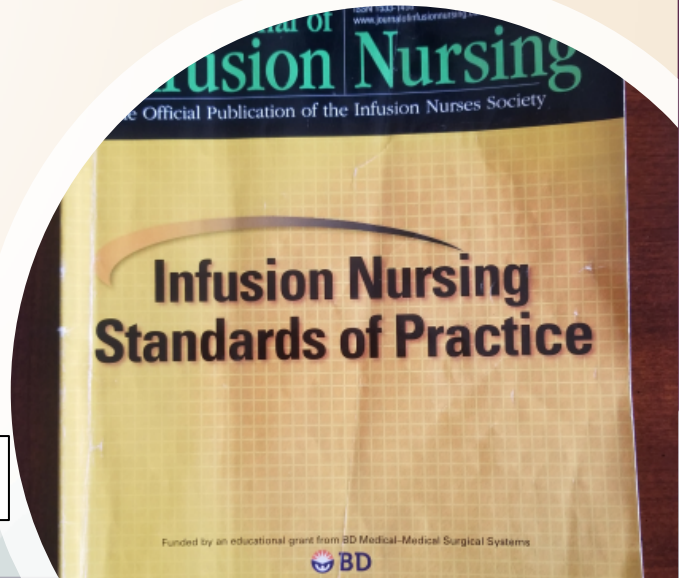
2006



2000



2021



2011

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History and Evolution: Highlights

- 2011:
  - Transitioned to becoming an evidence-based document
  - Developed the table: “Strength of the Body of Evidence”
  - Appraised the types and quality of the cited literature and rated the body of evidence for each practice criterion
- 2016:
  - Name change: *Infusion **Therapy** Standards of Practice*
  - The committee recognized that infusion therapy is the responsibility of any clinician involved in the practice whether inserting access devices, providing care and management procedures, and performing ongoing assessment and monitoring
  - Level of global interest continued to increase
- 2021:
  - Added Aseptic Non Touch Technique, Catheter Associated Skin Injury
  - Increased number of committee members
  - Added committee members from outside of the US
- 2024
  - Changed to a 3-year update cycle

Scope of the Standards

- "The Standards is vital for informed decision-making and answering many infusion therapy-related questions that are about “cause and effect,” such as which methods successfully prevent device infection.
  - Such questions are best answered by high-quality, systematic reviews and meta-analyses of randomized controlled trials since these have the least risk of bias. Yet, we must function in an imperfect world where such evidence does not always (yet) exist.
  - To their credit, the authors have created Standards that reflect the best current evidence, in the context of clinical expertise, and international variation in practice settings. Level of evidence rankings have been assigned for each recommendation to indicate its strength and the likelihood that it may change as future data comes to light.
- For infusion therapy, our hands are not tied behind out backs, rather the Standards put the strength of knowledge firmly in our hands, freeing us to use them well and wisely."
- Dr. Claire Rickard, 2021 INS *Standards* Foreword

Standards Topical Sections

- **One:** Infusion Therapy Practice
- **Two:** Patient and Clinician Safety
- **Three:** Infection Prevention and Control
- **Four:** Infusion Equipment
- **Five:** Vascular Access Device (VAD) Selection/Placement
- **Six:** VAD Management
- **Seven:** VAD Complications
- **Eight:** Other Infusion Devices
- **Nine:** Infusion Therapies

Scope of the Standards: Development

- With each new Standards Committee, we consider the prior edition table of contents and do a committee review:
  - Standard-by-Standard review and discussion
  - Is the Standard still appropriate to include?
  - Could it be renamed/refocused?
  - Do the section headers still make sense?
  - Committee Discussion: need for new Standards?

Standards vs. Practice Recommendations

- **Standards**
  - Expectations of practice applicable to infusion therapy in all settings
  - No references
  - Example: 33.1 Skin antisepsis performed prior to VAD placement.
- **Practice Recommendations**
  - Provide specific guidance in the implementation of the corresponding Standard
  - Each is rated as reflecting the strength of the body of evidence
  - Represent current recommendations based on EBP
  - Committee Consensus statements
    - When there is minimal evidence, low-rated/conflicting evidence, and committee agreement that guidance is needed for safe care
    - 2021 example

After 2 unsuccessful attempts, escalate to a clinician with a higher skill level and/or consider alternative routes of medication administration. (Committee Consensus)

Standards Committee Selection

- Masters or Doctoral prepared
- Experience as peer reviewed published author
- Expertise in clinical areas: home care, critical care, oncology, pediatrics, research
- Ability to commit to large volume of volunteer hours over an approximately 18 month period of time
- Standard revisions assigned based on areas of expertise

Methodology

Search terms reviewed, modified and used by Health Science Librarian to perform initial reference collection per standard

Each reference list was then reviewed and refined by the standard author(s)

Critical appraisals of pertinent references completed, with levels of evidence assigned to each individual reference

The 2021 references were also reviewed and appraised for inclusion or exclusion as indicated by review of more recent and potentially higher level of evidence

Initial revisions completed for each standard based on most recent and highest level of evidence

INS Standards Review Process

- Committee members review each other's work on the initial draft, with revisions made
- Chair and co-chair review all standards, with revisions made
- As this work progresses, the committee recruits expert reviewers for the public review process
- Once the initial draft is completed, editorial staff then send the draft document to each reviewer
- Once the review period is complete, these comments are collated per standard by INS editorial staff

- Public review recruitment from all areas within infusion therapy:
  - Vascular access insertion experts
  - Various clinical settings
  - Industry
  - Researchers
- Reviewers can focus on specific standards based on their expertise or they can review the full document
- Instructions are sent indicating the need to be specific in recommendations and references—which standard/PR do they pertain to. Recommendations that vary from or add to a Standard should have references included to support

Final review process

- The committee reconvenes to carefully evaluate public review recommendations and revise the standards as indicated
- Weekly committee calls during this time to discuss specific areas
- Once final revisions are done in this period, the committee then performs a final cover-to-cover read through, reviewing for consistency and flow
- Final edits are then accomplished

Application of the Standards – Informing clinical practice

Identifying trends and priorities in vascular access and infusion related research

Pain Management

Growing body of research! Need to implement into clinical practice!

- Growing body of literature supporting pain management with needle-related procedures across all age groups
  - Includes pharmacologic/nonpharmacologic interventions
- Consideration for the impact of a lack of pain management strategies among neonates and children - a few points
  - Preterm infants have sensitive developing nervous systems
  - Repeated needle related procedures in children increases the risk for development of long-term consequences such as procedural anxiety and hospital avoidance
  - Any type of distraction technique is associated with reduced anxiety and perception of procedural pain in children; reported distraction techniques include television, DVDs, videos, computers/tablets, smartphones, video games, virtual reality (VR), humanoid robots, therapeutic clowning, breathing exercises, hypnosis, and toys
  - Adolescents receive less attention to pain management

Devries, Kleidon, Gorski, Hagle survey study; results presented at 2022 INS Annual Meeting
Study Purpose: To determine if recommendations from the INS Standards have been implemented into clinical practice.
Methodology: Survey including a set of questions from the 2021 INS Standards

If you use pain management during PIVC insertion, how often do you use it for adults?

Adjusted after subtracting those NA

ANSWER CHOICES	RESPONSES		
Almost never or only if requested	50.29%	55.6%	88
<25% of the time	13.14%		23
26-50% of the time	8.00%		14
51-75% of the time	3.43%		6
75-100% of the time	15.43%	17%	27
N/A – only work with children	9.71%		17
TOTAL			175

If you use pain management during PIVC insertion, how often do you use it for children?

Adjusted after subtracting those NA

ANSWER CHOICES	RESPONSES		
Almost never or only if requested	5.14%	10%	9
<25% of the time	4.57%		8
26-50% of the time	5.71%		10
51-75% of the time	8.00%		14
75-100% of the time	25.71%	52%	45
N/A – only work with adults	50.86%		89
TOTAL			175

Site Protection

- Strategies used in addition to vascular access device (VAD) insertion site securement (may also be called secondary securement)
  - Prevent inadvertent dislodgement, protect from potential tampering
  - Protect from water exposure
  - Limited research – new products available
- Think protection, not restraint
  - The use of physical restraints (e.g., wrist restraints) impacts patient dignity and may increase or aggravate anxiety and agitation; there is a lack of data substantiating the efficacy of restraints in preventing device removal.

Subcutaneous Infusion

- Continued interest in subcutaneous as an alternative to IV in selected situations
- Includes fluids (hypodermoclysis) and a growing list of medications
- Advantages include simplicity, relatively low rate of adverse reactions, cost-effectiveness; vessel health & preservation
- Prevent hospitalization for short-term treatment of mild/moderate dehydration especially in patients receiving home care or living in facilities

Infusion therapy beyond the acute care setting

- Increasing number of antineoplastic and biologic therapies
  - Consideration for safety (i.e. hazardous drugs) and adverse reactions (e.g., prepared for potential severe reactions such as anaphylaxis)
- Transitioning patients to the home care setting
  - Safety considerations both clinician and patient
    - Clinical stability, environmental issues/hazards, presence of emergency medications
  - Ongoing monitoring – VAD, response to infusion therapy, QOL issues
  - Home care organization preparedness – education, competency (skills, knowledge), VAD appropriateness, clinical procedures
    - Antibiotics, PN, hydration, inotropes, biologics, antineoplastics, analgesics etc.
    - Skill in educating patients/caregivers

Home IV Antibiotic Therapy

- Consideration for persons who inject drugs (PWID)
- Some small studies and literature reviews
- Careful patient selection allows for home infusion
- Studies report a low incidence of VAD misuse
- Careful transition planning essential and involvement of specialists– some factors include
  - Safe housing without persons who also have substance abuse issues
  - Patient engagement
  - No illicit drug use during hospitalization
  - No violent behavior
  - Agree to return to clinic weekly
  - Agree to return for ID appt
  - Multidisciplinary assessment

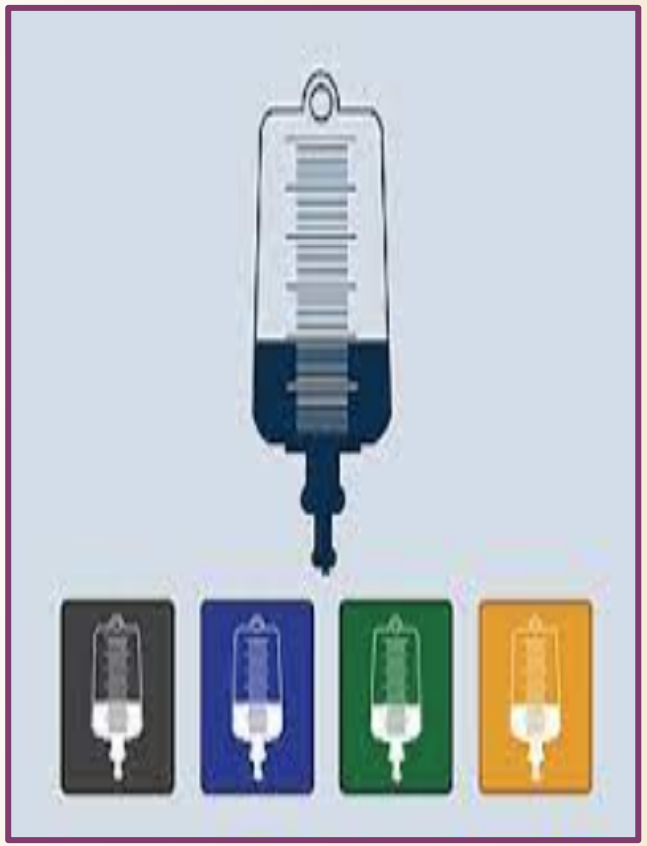
Focus on patient education

- Critical to patient outcomes
- Qualitative study (small study) – interviews and observations of patients receiving home IV antibiotic therapy
  - Misleading information during transition from hospital to home
  - Rushed instructions
  - Differences between nurse teaching sessions
  - Confusing or inaccurate written instructions

Keller SC, Cosgrove SE, Arbaje AI, et al. It's Complicated: Patient and Informal Caregiver Performance of Outpatient Parenteral Antimicrobial Therapy-Related Tasks. *American Journal of Medical Quality*. 2020;35(2):133-146. doi:10.1177/1062860619853345

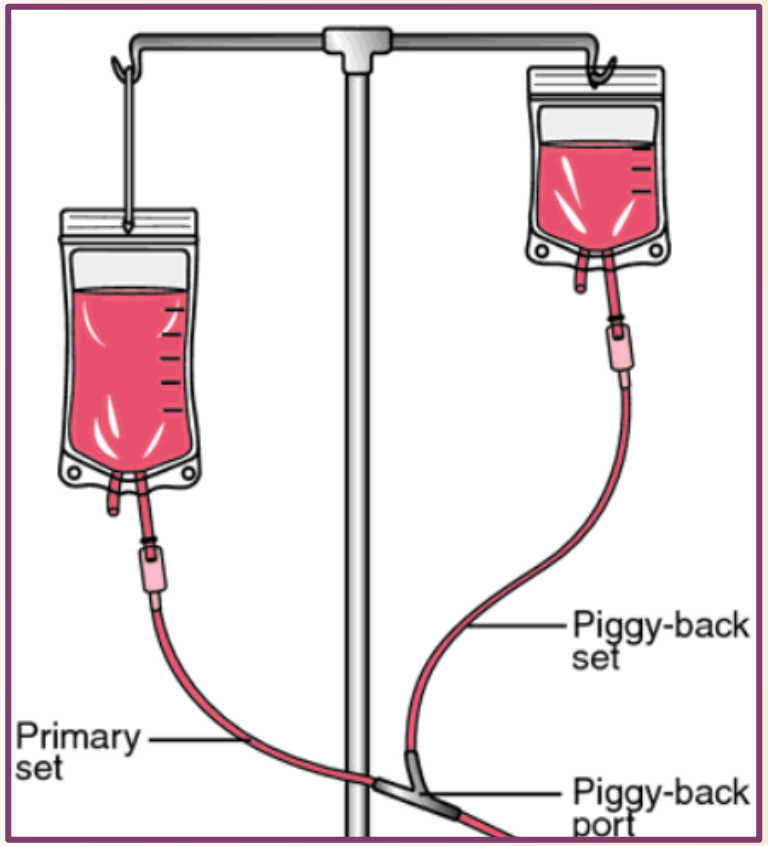
Dosing Accuracy-Administration Sets

- Importance:
  - Shared volume in tubing – know priming volume, concentration, rate of delivery
    - Avoid sudden rate changes if administering more than one medication in a line
    - Additional add-on devices, back check valves
  - Compatibility, back priming
  - High risk medications—on primary set alone
  - Small volume intermittent medications on secondary set (with primary carrier set)
  - Do not leave a 'paused' infusion connected to the patient for future use



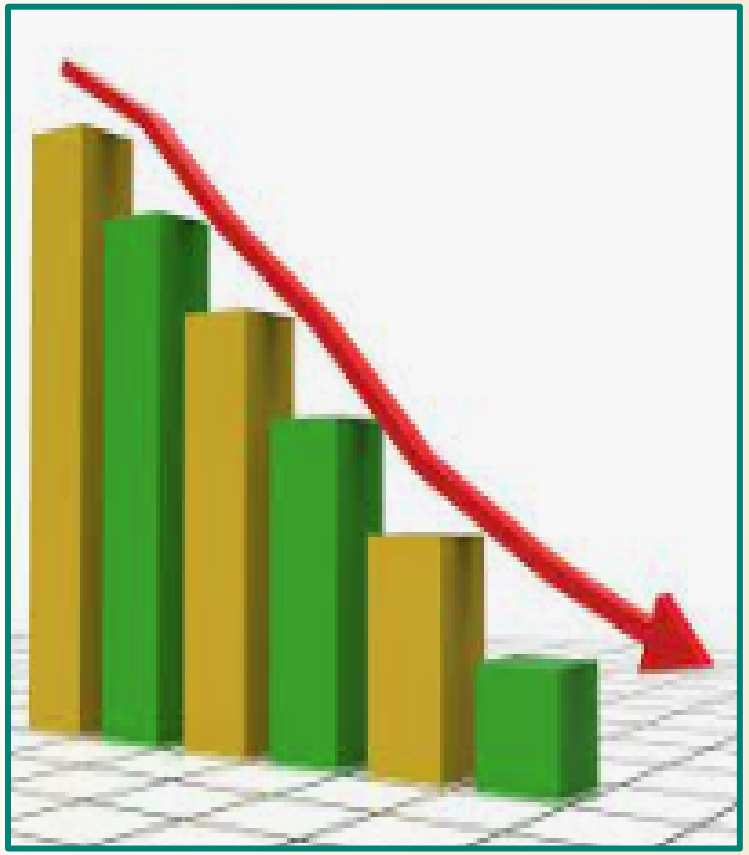
Dosing Accuracy

- What's new in infusion research:
  - Syringe exchange: head height, adjusting for patient variables
  - Stopcock, manifold, parallel extension set use
- Gaps:
  - Head height – universal knowledge gap in need of redesign, pervasive noncompliance
  - Impact of variances in infusion pump delivery on dose accuracy



Peripherally Compatible Infusions

- Importance
  - Vessel health and preservation
  - Reduction in central line utilization and related complications
  - Peripheral delivery has significant challenges:
    - Lack of standard PIVC assessment
    - Patency assessment when blood return is absent
    - Assessment frequency
    - Site selection
    - Catheter-to-vein ratio
    - Lack of standardization of documentation fields



Peripherally Compatible Infusions

- What's new in infusion research:
  - Increased volume of studies on peripheral vasopressor administration to reduce central line utilization
    - Recommended interventions, but no clear bundle for pressor delivery
  - Infiltration/Extravasation detection technology
  - Recognition that flushing technique impacts vessel health
  - Hemodilution and vessel health
- Gaps:
  - Inadequate documentation on the life span of peripheral VADs; impact on retrospective studies
  - Inadequate clinician knowledge of infusate characteristics and their impact
  - DIVA scale validation for large populations groups to improve escalation to vascular expert
  - Standardization of phlebitis scale to improve accuracy of data, early recognition
  - Assessment guidelines for procedural areas when administering high risk medications in high-risk areas
  - Peripheral parenteral nutrition, osmolarity and duration of infusion

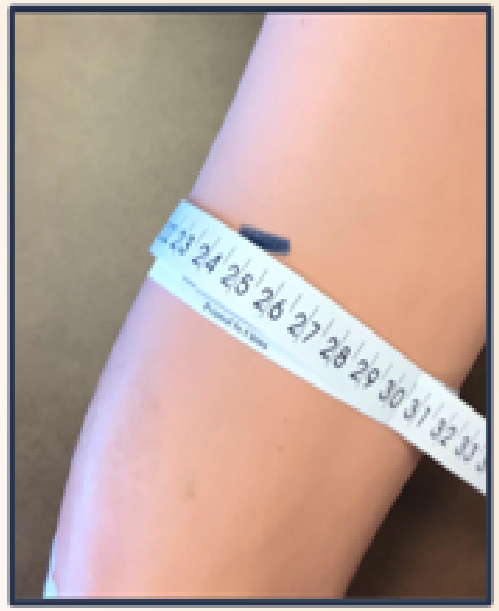
Midline Utilization

Midline 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 in children and adults; for neonates, in addition to arm veins, midline catheters may be inserted via a scalp vein with the distal tip located in the jugular vein above the clavicle or in the lower extremity with the distal tip located below the inguinal crease. 2021 INS Standards pS74

- Importance: increased use as long dwell peripheral line; maybe used as central line surrogate/CLABSI prevention strategy
  - Peripherally compatible infusate recommendations:
    - non-irritant, non-vesicant, avoid extremes of pH
  - Other concerns
    - Catheter-to-vein ratio, blood flow
    - Risk of thrombosis
    - Patency challenges
    - Depth of catheter distal tip

Use a midline catheter for medications and solutions such as antimicrobials, fluid replacement, and analgesics with characteristics that are well-tolerated by peripheral veins. Do not use midline catheters for continuous vesicant therapy, PN, or infusates with extremes of pH or osmolarity. (S76)

Midline Utilization



- What's new in infusion research:
  - Use for vasopressors
  - Use for PPN, high osmolarity solutions/medications
  - TPA use for occlusion
- Gaps
  - Retrospective studies; inadequate documentation
  - Lack of clinician knowledge on infusates and peripheral outcome identification
  - Source of premature catheter failure, thrombotic risk

Summary

"The INS Infusion Therapy Standards of Practice...synthesizes specialty knowledge and provides a global focus on the shared Standards that we expect for our patients, and demand of each other."

- Dr. Claire Rickard,
- Author 2021 *Standards* Foreword

- INS members receive free printed copy of the 2024 Standards in January of 2024; a free digital copy is also available for members!

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