The Art and Science Behind the Infusion Therapy Standards of Practice

Lisa A. Gorski MS, HHCNS-BC, CRNI®, FAAN

Lynn Hadaway MEd, RN-BC, CRNI®

Mary E. Hagle PhD, RN-BC, FAAN
Disclosures

• Lynn Hadaway: Speaker and/or consultant for:
  – 3M
  – B Braun
  – Bard Access Systems
  – Baxter
  – BD Medical
  – Covidien/Medtronic
  – Excelsior
  – Fresinius Kabi
  – InfraRed Imaging
  – LineGard Medical
  – Lippincott Williams Wilkins
  – Terumo
  – VATA
  – Velano Vascular

• Lisa Gorski: Speaker and/or consultant for:
  – 3M
  – BD Medical
  – Covidien/Medtronic
  – Genentech
  – ivWatch
  – VATA

• Mary Hagle: Speaker for:
  • 3M
Objectives

• Describe the methods for revising the 2016 Infusion Therapy Standards of Practice.
• Discuss the ranking of levels of evidence.
• Identify new standards and major changes in existing standards.
2016 Standards Committee

- **Chair - Lisa Gorski, MS, RN, HHCNS-BC, CRNI®, FAAN**

- **Lynn Hadaway, Med, RN-BC, CRNI®**

- **Mary E. Hagle, PhD, RN-BC, FAAN**
  - Nurse scientist, 2011 edition of the standards

- **Mary McGoldrick, MS, RN, CRNI®**
  - Home care, hospice, infection control & prevention

- **Marsha Orr, MS, RN**
  - Parenteral nutrition, educator, 2011 edition of the standards

- **Darcy Doellman, MSN, RN, CRNI®, VA-BC**
  - Pediatrics
INS Mission & History of INS Standards

• Mission
  – Develop and disseminate standards of practice
  – Provide professional development opportunities and education
  – Advance best practice through synthesis and research
  – Support professional certification
  – Advocate for the public
2016 INS Standards: Revision Process

• “Live Meetings”
  – September 2013: 2-day Kick-off meeting –
  – May 2015: 2-day meeting to review draft in preparation for peer review – 2015

• Conference Call Meetings & Ongoing Communication
  – Quarterly, then monthly, then weekly
  – Thousands of emails
  – In between, intensive literature searches, reading, and writing, then revisions to create 1st draft
Revision Process

• Interprofessional External Review
  – Draft sent to INS members, nurses in other specialties, physicians, pharmacists, lawyers, other types of clinicians, industry partners
  – ~ 800 comments received from 60 reviewers
  – Committee read and evaluated each comment
  – Revised the applicable standard, additional literature searches if required
  – Finalized content for internal editors review
  – Review by editors from publisher, Wolters Kluwer
Additional Work

• Revision of the *Policies and Procedures for Infusion Therapy*

• Two separate resources
  – Policies and procedures are NOT the same as Standards

• Acknowledgement – Britt Meyer contributions to P/P
Foreward by Vineet Chopra MD

• “..the knowledge, data, and wisdom in our specialty are brimming. For infusion and vascular access nurses all over the world, there has never been a better moment to be in the front lines of patient care.”

• “As a physician researcher dedicated to improving the safety of patients who require vascular access and infusion-based therapies, the Standards has informed the work that I do, the questions I ask, and the clinical care I provide. Quite simply put, there is nothing else like it.”
From the “Infusion **Nursing** Standards of Practice” to the “Infusion **Therapy** Standards of Practice”

- ‘Infusion therapy does not “belong” to one group of clinicians, but it is the responsibility of any clinician who is involved in the practice.’

- Standard 3. Scope of Practice
  - Clear definition of roles, responsibility, and accountability for each clinician in accordance with regulations, organizational policy
  - Collaboration among the healthcare team
  - Address nurses, unlicensed assistive personnel, radiologic/respiratory technician/technologist/therapist, paramedics

CITATION FOR STANDARDS:
2016 Table of Contents

64 Standards – divided into 9 sections
1: Infusion Therapy Practice
2: Patient & Clinician Safety
3: Infection Prevention & Control
4: Infusion Equipment
5: Vascular Access Device (VAD) Selection & Placement
6: VAD Management
7: VAD-Related Complications
8: Other Infusion Devices
9: Infusion Therapies
Appendices

- Infusion Team Definition
- New illustrations
- Glossary greatly expanded
  - Definitional information from previous document moved to glossary
New/Changed/Deleted Standards: 2011-2016

• New Standards to 2016
  • 4: Infusion Team
  • 22: Vascular Visualization
  • 23: CVAD Tip Location
  • 47: Nerve Injuries

• Renamed Standards from 2011
  • 2: Special Populations (neonatal, pediatric, pregnant, older adults)
  • 51: Catheter Damage (addresses embolism, repair, exchange)

• Deleted Standards from 2011
  • Ethics (incorporated into Standard 1: Patient Care)
  • Older Adult/Neonatal & Pediatric (addressed as above)
  • Policies, Procedures and/or Practice Guidelines (incorporated into Standard 1: Patient Care)
  • Administration of Investigational Drugs (addressed in Standard 12: Informed Consent)
## Crosswalk document is available on the INS Web site at the INS Learning Center

### INFUSION THERAPY STANDARDS OF PRACTICE CROSSWALK: 2011/2016

<table>
<thead>
<tr>
<th>2011</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>NURSING PRACTICE</td>
<td>Renamed: SECTION ONE: INFUSION THERAPY PRACTICE</td>
</tr>
<tr>
<td>1. Practice Setting</td>
<td>1. Renamed: Patient Care—revised to include standards, ethics, and policies and procedures</td>
</tr>
<tr>
<td>2. Neonatal and Pediatric Patients</td>
<td>2. Renamed: Special Patient Populations—includes neonatal, pediatric, pregnant, and older adult patients</td>
</tr>
<tr>
<td>3. Older Adult Patients</td>
<td>Deleted as separate standard and incorporated into Standard #2</td>
</tr>
<tr>
<td>4. Ethics</td>
<td>Deleted as separate standard and incorporated into Standard #1</td>
</tr>
<tr>
<td>5. Scope of Practice</td>
<td>3. Scope of Practice</td>
</tr>
<tr>
<td>6. Competency and Competency Validation</td>
<td>4. NEW STANDARD: Infusion Team</td>
</tr>
<tr>
<td>7. Quality Improvement</td>
<td>5. Competency Assessment and Validation</td>
</tr>
<tr>
<td>8. Research and Evidence-Based Practice</td>
<td>6. Quality Improvement</td>
</tr>
<tr>
<td>9. Policies, Procedures, and/or Practice Guidelines</td>
<td>Deleted as separate standard and incorporated into Standard #1</td>
</tr>
<tr>
<td></td>
<td>8. Patient Education</td>
</tr>
<tr>
<td></td>
<td>9. Informed Consent</td>
</tr>
<tr>
<td></td>
<td>10. Documentation in the Medical Record</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>PATIENT CARE</td>
<td>Renamed: SECTION TWO: PATIENT AND CLINICIAN SAFETY</td>
</tr>
<tr>
<td>10. Orders for the Initiation and Management of Infusion Therapy</td>
<td>Deleted</td>
</tr>
<tr>
<td>11. Patient Education</td>
<td>Moved to Section One—Standard #6</td>
</tr>
<tr>
<td>12. Informed Consent</td>
<td>Moved to Section One—Standard #9</td>
</tr>
<tr>
<td>13. Plan of Care</td>
<td>Deleted</td>
</tr>
<tr>
<td></td>
<td>11. Adverse and Serious Adverse Events</td>
</tr>
<tr>
<td></td>
<td>12. Product Evaluation, Integrity, and Defect Reporting</td>
</tr>
<tr>
<td></td>
<td>13. Medication Verification</td>
</tr>
<tr>
<td></td>
<td>14. Latex Sensitivity or Allergy</td>
</tr>
<tr>
<td></td>
<td>15. Hazardous Drugs and Waste</td>
</tr>
</tbody>
</table>
Format of the Standards – Not changed but less repetition

• **Standards and Practice Criteria**

• **Standards**
  – Expectations of practice applicable to infusion therapy in all settings
  – Glossary definition:
    • **Standard.** Authoritative statement enunciated and promulgated by the profession by which the quality of practice, service, or education can be judged.
“Section” Standards

• Apply to all Standards in the section – reduces repetition evident from 2011
• Section Standards for Sections 4-9
• Address competency, need for specific protocols/policies
• Example from Section 4: Infusion Equipment
  – “To ensure patient safety, the clinician is competent in the use of infusion equipment, including knowledge of appropriate indications and contraindications and manufacturer’s directions for use.”
Format of the Standards

• Practice Criteria
  – Provide specific guidance in the implementation of the corresponding Standard
  – Each Practice Criterion is supported by evidence
  – Each Criterion is rated as reflecting the strength of the body of evidence
Evidence: Appraised & Rated

Standards are *not* rated

- Expectations of practice applicable to infusion therapy in all settings
- Address areas such as competency, need for organizational policies and procedures, etc.
Practice Criterion: Based on high quality evidence

• Reflects the body of evidence available and retrievable at the time of review
• Rating Scale: I, IA/P, II-V, Regulatory
• References for each Practice Criterion are listed
Searching for best evidence

- Each Standard and its Practice Criteria: Individual search
  - Databases
    - Cochrane Library
    - CINAHL (Cumulative Index to Nursing and Allied Health Literature)
    - PubMed / MEDLINE
    - Web of Science
  - Key words and subject headings
  - Searches were limited to:
    - English-language articles
    - Peer-reviewed journals
    - Published between 2009 and July 2015
Evaluating evidence

• Highest quality used: Research
  – Meta-analysis or systematic review
  – Individual studies and quality of the study

• Non-research
  – QI or clinical articles
  – Case reports or position papers
  – Textbooks or case reports on anatomy / physiology
Rating the strength of evidence

- When there is evidence
  - Individual studies
  - Body of evidence

- When high level of evidence has inconclusive findings

- When the evidence is minimal
  - Committee Consensus

- Regulatory
<table>
<thead>
<tr>
<th>Strength of the Body of Evidence</th>
<th>Evidence Description*</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Meta-analysis, systematic literature review, guideline based on randomized controlled trials (RCTs), or at least 3 well-designed RCTs.</td>
</tr>
<tr>
<td>IA/P</td>
<td>Evidence from anatomy, physiology, and pathophysiology references as understood at the time of writing.</td>
</tr>
<tr>
<td>II</td>
<td>Two well-designed RCTs, 2 or more multicenter, well-designed clinical trials without randomization, or systematic literature review of varied prospective study designs.</td>
</tr>
<tr>
<td>III</td>
<td>One well-designed RCT, several well-designed clinical trials without randomization, or several studies with quasi-experimental designs focused on the same question. Includes 2 or more well-designed laboratory studies.</td>
</tr>
<tr>
<td>IV</td>
<td>Well-designed quasi-experimental study, case-control study, cohort study, correlational study, time series study, systematic literature review of descriptive and qualitative studies, or narrative literature review, psychometric study. Includes 1 well-designed laboratory study.</td>
</tr>
<tr>
<td>V</td>
<td>Clinical article, clinical/professional book, consensus report, case report, guideline based on consensus, descriptive study, well-designed quality improvement project, theoretical basis, recommendations by accrediting bodies and professional organizations, or manufacturer directions for use for products or services. Includes standard of practice that is generally accepted but does not have a research basis (eg, patient identification). May also be noted as Committee Consensus, although rarely used.</td>
</tr>
<tr>
<td>Regulatory</td>
<td>Regulatory regulations and other criteria set by agencies with the ability to impose consequences, such as the AABB, Centers for Medicare &amp; Medicaid Services (CMS), Occupational Safety and...</td>
</tr>
</tbody>
</table>
REVIEW, REVIEW, & Review

• Committee reviewed each Standard
  – Offered additional evidence
  – Agreed on evidence rating

• Outside review by experts in topic areas
  – Revisions based on review
  – New evidence search as needed

• Committee review of revisions and evidence rating
Body of Evidence for the Evolving Science of Infusion Therapy

• INS Standards 2011
  – Level I (highest) evidence – 3.8% of rankings
  – Level V evidence – 67%

• INS Standards 2016
  – Level I (highest) evidence – 5.8% of rankings
  – Level V evidence – 46%
  – 350 more references
A look at selected 2016 Standards

NOTE: Information provided includes selected excerpts of Standards and Practice Criteria, not the complete content from any Standard.
Standard 1. Patient Care

• Standards
  – Applies to all settings where vascular access are placed, managed, or infusion therapies are administered
  – Practices established in organizational policies, procedures, practice guidelines, and/or standardized written protocols/orders
  – Attention to patient safety and quality
    • Individualized, collaborative, culturally sensitive, age appropriate
  – Ethical principles as foundation for decision-making
  – Decisions including device/product selection, are not subject to commercial or other conflicts of interest.
4. Infusion Team

- Scope of service to meet patient and organization needs
- VAD insertion and management assigned to individuals/teams with infusion therapy education, training, and validated competency
- Peripheral catheter insertion by team = increased insertion success, decreased hospital acquired BSI, local infection, occlusions, and accidental removals
- Team managing VADs decrease BSI and related costs, phlebitis and infiltration, and increase patient satisfaction
- More studies needed to expand and increase level of evidence ranking
Standard 5. Competency Assessment & Validation

• Standard
  • As a method of public protection to ensure patient safety, the clinician is competent in the safe delivery of infusion therapy and VAD insertion and/or management within his/her scope of practice.
  • Clinician responsible and accountable for attaining and maintaining competence
  • Competency assessment and validation is performed initially and on an ongoing basis
Standard 5. Competency Assessment & Validation

• Practice Criteria
  – Competence goes “beyond psychomotor skills to include application of knowledge, critical thinking skills, decision making”
  – Use a combination of different measurement techniques such as self-assessment (promote self-efficacy, confidence), written tests (knowledge), clinical scenarios (critical thinking), psychomotor skills (simulation, observation in work environment preferred for invasive infusion procedures) Qualifications for role of competency assessor --the person validating the specific skill should be competent with the skill.
8. Patient Education

• Practice Criteria
  – Effective educational plan based on identified goals
  – Selection of effective ways to validate appropriate knowledge and skill acquisition
  – Use of educational resources that are understandable (e.g., health literacy, cultural congruence)
  – Ensure web sites used are reputable, usable and accessible
  – Advise regarding benefits and challenges (e.g. safety, privacy, misinformation) associated with use of social media to obtain health advice and information
Standard 26. VAD Planning – A critically important, fundamental Standard

Standards:

• “.. appropriate VAD is selected to accommodate the patient’s vascular access needs based on the prescribed therapy or treatment regimen; anticipated duration of therapy; vascular characteristics; and patient’s age, comorbidities, history of infusion therapy, preference for VAD location, and ability and resources available to care for the device”

• VAD selection occurs as a collaborative process among the interprofessional team, the patient, and the patient’s caregivers

• Fewest number of lumens, least invasive, smallest outer diameter
The pH issue

- After performing a literature review, unable to substantiate 2011 Standards recommendation that “therapies not appropriate for short peripheral catheters/midlines include infusates with a pH of < 5 or > 9”

Infusion Nurses Society (2011) Infusion nursing standards of practice. JIN 34(S), S1- S110.
VAD Planning translated into the Policy/Procedure Manual

• “..overarching goal …choose the least invasive VAD that has the greatest likelihood of reaching end of the planned infusion therapy with the fewest number of replacements and the lowest rate of complications.”

• “Selection of the most appropriate VAD, and site of placement, are critical decisions that impact the clinical outcome as well as the patient experience and satisfaction with care.”

• “..a complex decision that requires critical thinking and analysis; the decision is generally not based on a single factor, such as the drug or solution category of vesicant or irritant.”

Individual Standard Changes

• **Standard 17:** Compounding and Preparation of Parenteral Solutions and Medications
  – Meets USP <797>
  – “Immediate-use” criteria
  – New details about IV push medications

• **Standard 18:** Medical Waste and Sharps Safety
  – Consider use of passive safety-engineered devices for needlestick injury prevention.
  – Hazardous Drugs and Waste now in Standard 15

• **Standard 19:** Standard Precautions – **NEW**!
  – Used when non-intact skin and mucous membranes of clinician is potentially exposed to blood/body fluids
Individual Standard Changes

Standard 22 Vascular Visualization:

• Visible light devices for transillumination
  – Cold light source needed

• Near-infrared light devices
  – More informed decisions about peripheral veins, bifurcation, tortuosity

• Ultrasound
  – Peripheral sites – requires longer catheters
  – Addresses CVADs
  – Dynamic or “real-time” use is recommended
  – Sterile TSM dressing (peripheral sites), sheath cover and gel
Individual Standard Changes

Standard 23 CVAD Tip Location:

- Determined prior to infusion initiation and when clinical signs and symptoms suggest tip malposition
  - Documented and made available to all organizations
  - Location with the greatest safety profile in adults and children is the cavoatrial junction
  - Anthropometric measurements to determine desired catheter length
Individual Standard Changes

Standard 23 CVAD Tip Location:

– Avoid suboptimal tip locations
  • Many venous tip location identified for CLABSI data collection and reporting, but these should be used when anatomical or pathophysiological changes prohibit CAJ location

– Post-procedure chest x-ray or ECG
  • Documented competency for assessment of tip location on both
Individual Standard Changes

Standard 33 Vascular Access Site Preparation and Device Placement:

• Short peripheral catheters
  – Committee Consensus: Consider increased attention to aseptic technique, including strict attention to skin antisepsis and use of sterile gloves….lack of evidence comparing BSI rates with or without use of sterile gloves, longer dwell times have raised concerns regarding risk for BSI ..furthermore contamination of nonsterile gloves is documented”
Individual Standard Changes

Standard 33 Vascular Access Site Preparation and Device Placement:

- Midline catheters: Consider use of maximal sterile barrier precautions with midline catheter insertion
- Short peripheral and midline catheters
  - Skin antiseptic - > 0.5% CHG in alcohol preferred
Individual Standard Changes

Standard 33 Vascular Access Site Preparation and Device Placement:

• Central line bundle for insertion
• Completion of standardized checklist by someone other than inserter; empowered to stop procedure for identified breach
• Standardized supply cart or kit with all needed supplies
• CVAD insertion on opposite side if pacemaker present, assess pacemaker function before and after CVAD insertion; no practice guidelines available
Individual Standard Changes

Standard 34 Needleless Connectors (NC):

• NC between the VAD hub and administration set used for continuous infusions is unknown
• Avoid use of NCs with rapid flow rates of crystalloid solutions and RBCs as their presence can greatly reduce flow rates
• Disinfect prior to EACH entry
• Includes manual and passive disinfection practices
Individual Standard Changes

Standard 34 Needleless Connectors:

• Use of passive disinfection cap

• Committee Consensus: After removal, multiple accesses of the VAD may be required to administer a medication (eg, flush syringes and administration sets) and require additional disinfection before each entry. Scrubbing time, technique, and agents for disinfection of the needleless connector between subsequent connections is unknown due to a lack of research. Consider using a vigorous 5- to 15-second scrub time with each subsequent entry into the VAD, depending upon the needleless connector design.
Individual Standard Changes

Standard 35 Filtration:
• Consider filtration in critically ill patients; reduction in systemic inflammatory response syndrome in pediatric ICU patients

Standard 36 Add-on Devices:
• Avoid use of stopcocks
• Reduce contamination by using a stopcock with integrated needleless connector
Individual Standard Changes

Standard 37 VAD Stabilization:

• Includes adhesive based and subcutaneous devices
• Tape, sutures not effective alternatives
• Standard, nonbordered polyurethane and gauze and tape dressings – insufficient evidence as stabilization devices
• Do NOT use rolled bandages
• NEVER readvance a dislodged VAD into vein
Standard 37 VAD Stabilization:

- Risk of medical adhesive related skin injury (MARSI) associated with the use of adhesive-based ESDs.
- Anticipate potential risk for skin injury due to age, joint movement and presence of edema.
- Use of barrier solutions to reduce the risk of MARSI.
  - Do not use tincture of benzoin due to increased risk of MARSI because it may increase the bonding of adhesives to skin causing skin injury when the adhesive-based ESD is removed.
Individual Standard Changes

Standard 40 Flushing and Locking:

• Flush with normal saline, aspirate for blood return, clear medication from lumen, prevent contact between incompatible solutions
  – Minimum volume = twice internal volume of catheter system
  – Larger volume may be needed

• Lock solutions
  – Peripheral catheters – normal saline in adults; heparin 0.5 to 10 units per mL OR normal saline for neonates and pediatrics
  – Midline catheters – insufficient evidence for recommendation
  – CVADs – heparin 10 units per mL OR normal saline
  – Volume = internal volume of catheter system plus 20%
Individual Standard Changes

Standard 40 Flushing and Locking:

• Antimicrobial lock solutions
  • Therapeutic and prophylactic uses
  • Use standardized formulations
• ASPIRATE all solutions
Individual Standard Changes

Standard 41 VAD Assessment, Care, & Dressing Changes:

• CVADs, midlines assess at least daily
• Short peripheral catheters assessed
  – Minimally every 4 hours
  – Critically ill, sedated, or cognitive deficits – every 1-2 hours
  – Neonatal and pediatrics – every hour
  – Vesicant infusion – more often that every hour
Individual Standard Changes

Standard 41 VAD Assessment, Care, & Dressing Changes:

• CHG dressing on CVADs when primary source of infection is extraluminal route

• 2% CHG bathing for patients more than 2 months of age with CVAD when other strategies not effective

• **Committee Consensus Recommendation:** Perform dressing changes on short peripheral catheters if the dressing becomes damp, loosened, and/or visibly soiled and at least every 5 to 7 days.
Individual Standard Changes

Standard 43 Phlebotomy:

• Greatly expanded!

• Blood conservation strategies to reduce blood loss and hospital-acquired anemia

• Tourniquet time less than 1 minute
  – Insert peripheral catheter, secure and dress, then draw sample after insertion, NOT during insertion

• Discard and push-pull (mixing) method addressed

• No routine sampling from CVAD infusing parenteral nutrition
Individual Standard Changes

Standard 44 VAD Removal:

• Peripheral and nontunneled CVAD need assessed daily
• Removed for unresolved complications, discontinuation of infusion therapy, no longer necessary for plan of care
• Peripheral catheter – remove if not used for 24 hours
• List of clinical indications for removal of peripheral and midline catheters
Individual Standard Changes

Standard 44 VAD Removal:

• List of criteria for justification of continued use of CVAD

• VAD inserted under suboptimal aseptic conditions – label as such for removal ASAP or with 24 to 48 hour

• CVAD unresolved complications and need for continued infusion therapy requires collaborative decision
Standard 47 Nerve Injuries:

- Paresthesia during venipuncture – immediate removal
- Respiratory difficulty, unusual presentations of pain or discomfort – high index of suspicion for nerve injury
- Anatomically, veins and nerves are located close together. Sites with greatest risk listed
Individual Standard Changes

Standard 47 Nerve Injuries:

• No subcutaneous probing or multiple passes to enter vein
• Neurovascular assessment
  – Neuroma
  – Compartment syndrome
  – Complex regional pain syndrome
Individual Standard Changes

Standard 48 CVAD Occlusion:

• Previously – Catheter clearance
• Regular patency assessment includes blood return
• Catheter salvage is preferred over removal
• Criteria to
  – Reduce risk of CVAD occlusion
  – Identify signs
  – Investigate potential causes
• Do NOT leave a CVAD or lumen with occlusion untreated
• Collaboration with pharmacists and LIP for appropriate management
Individual Standard Changes

Standard 51 Catheter Damage (Embolism, Repair, Exchange):

- Merger of 3 previous standards
- Risk versus benefit assessment for repair or exchange
- Catheter embolism
  - Pinch-off syndrome for subclavian sites
- Catheter repair
  - Only with manufacturer-specific repair kit
  - Regular assessments of integrity of repair
- Catheter exchange
  - Only if no evidence of infection
  - Maximal barrier precautions
  - Confirm tip location after exchange
Individual Standard Changes

Standard 52 CVAD- Associated Thrombosis:

- PICCs = greater risk of DVT in critical care and oncology patients
- Measure vein diameter for PICCs
  - Catheter to vein ratio 45% or less
- Majority of CVAD thromboses are clinically silent
- For PICC measure upper arm circumference before insertion and when clinically indicated
  - Measure 10 cm above antecubital fossa
- For CVAD with DVT, do NOT remove when catheter is correctly positioned at CAJ, is functioning with a blood return, and no evidence of infection.
Standard 53 CVAD Malposition:

- 4 types
  - Primary malposition – during insertion
  - Secondary malposition – during dwell
  - Intravascular malposition
  - Extravascular malposition

- Growth of infants and children with CVAD results in suboptimal tip locations over time

- Scout scan for power-injectable PICC before contrast injection

- Blood return is critical component of assessment

- Management requires collaborative plan before removal based on where tip is located
Implementation of the Standards...

• More than a matter of putting the Standards in the unit, area, or clinic!

• Change is hard and affects patients, clinicians, and materials.

• The next session will address the steps and facilitators & barriers to implementing the Standards.