EP6
Nurses incorporate regulatory and specialty standards/guidelines into the development and implementation of the care delivery system.

Provide one example, with supporting evidence, of nurses incorporating specialty standards/guidelines into the delivery of care.

Infusion Nurses Society Standards of Practice: PICC line insertion
Incorporating specialty guidelines into the practice of inserting peripherally inserted central catheters (PICC) has improved the delivery of care to patients who require this intervention.

Historically all PICC lines were inserted by interventional radiologists in the Interventional Radiology (IR) department. This service was available for patients Monday through Friday and required patients to be transported to the Interventional Radiology suite.

This process presented challenges. PICC insertion was delayed for admissions occurring Friday evening through Monday morning, with additional delays during holiday weekends. Delays with insertion meant potential delays in receiving therapy, including antibiotics, total parenteral nutrition and chemotherapy. Because the patient had to be transported from their room to IR, additional staff members were required if the patient had specific needs, such as isolation or mechanical ventilation. Insertion of the PICC line in IR meant using fluoroscopy, exposing the patient to radiation, and finally, discharge from the hospital was potentially delayed since the patient had to wait for IR availability for PICC line insertion.

In May 2012 Cath Lab Manager Michelle Caulfield, MSN, RN, CNML, began investigating alternative approaches to inserting and managing PICC lines. Her goal was to improve the timeliness of PICC insertion, eliminating the delays during weekends and after hours. Her visions was to provide consistency in practitioners, improved care to patients, increased patient satisfaction, and provide an opportunity for professional skillset enhancement for IR and Cath Lab clinical nurses.

The development of a PICC clinical nurse team began with a literature search that revealed the Infusion Nurses Society (INS) Standards of Practice and the Association of Vascular Access Position Statements that establish the preparation, insertion, placement, verification and stabilization practices of PICC lines.

Michelle, with the assistance of Clinical Educator Kathy Dureault, MSN, RN, CPAN, began the process of developing a standardized procedure directing the practice of PICC line insertion incorporating these specialty standards and position statements.

EP6.1 Infusion Nurses Society Standards of Practice
EP6.2 Association of Vascular Access Position Statements
The standardized procedure, STP-987, Insertion of Peripherally Inserted Central Catheters (PICC) Lines, was approved during a period of several months, from May 2012 to December 2012, as it navigated through Clinical Policy & Procedure work group, Special Procedure Committee, Pharmacy and Therapeutics Committee, Interdisciplinary Practice Committee and Hospital Policy & Procedure Committee. Nursing standards from the Infusion Nurse Society were included in SJOs standardized procedure.

- **Standard 32.1**: Indications and protocols for vascular access devices (VADs) shall be established in organizational policies, procedures, and/or practice guidelines and according to manufacturers' directions for use.
- **Standard 33.5**: Placement of central vascular access devices (CVADs), PICCs are in this category, by nurses shall be established in organizational policies, procedures, and/or practice guidelines and in accordance with rules and regulations promulgated by the state’s Board of Nursing.
- **Standard 35.2**: VAD placement shall be established in organizational policies, procedures, and/or practice guidelines and according to manufacturers’ directions for use.

EP6.3 STP-987, Insertion of Peripherally Inserted Central Catheters (PICC) Lines

In early 2013 four nurses were trained following INS education standards, which included Bard on-Line didactic education followed by clinical training simulation, observation and return demonstration by a Bard educator.

Competencies were developed and completed.

- **Standard 35.3**: The nurse shall be competent in insertion technique, infection prevention measures, identifying potential complications, implementing nursing interventions, and in assisting the licensed independent practitioner with VAD placement.
  
  o **STP-987**: PICC/MLC placement may be performed by an RN who has completed an accredited didactic training course, and has been validated by a preceptor with at least three successful placements.
  
  o **STP-987**: A preceptor is a certified PICC practitioner who has successfully placed at least 50 PICCs after his/her initial clinical validation.
  
  o **STP-987**: Initial Evaluation/Skill Validations: Initial documented competency in performing the procedure by the preceptor.
  
  o **STP-987**: Ongoing Evaluation: Continuing evaluation is based on quality outcomes. Skill Validation is repeated when practice changes occur.

The standardized procedure, utilizing the Infusion Nursing Standards of Practice, was used to guide their delivery of PICC line care from preparation, insertion, placement, verification and stabilization practices.

Today, our PICC nurse team is educated and trained on the entire PICC insertion process based on STP-987, Insertion of Peripherally Inserted Central Catheters (PICC)
Exemplary Professional Practice

Lines. Electronic documentation reflects the required components of the standardized procedure. Audits are completed and reported annually to ensure compliance. Occasionally when the PICC nurse assesses the patient’s reason for PICC line insertion, it is determined that a less invasive line, i.e., peripheral IV, will meet these needs (hydration, pain medication) and the RN is able to successfully insert a less invasive line appropriate for therapy and avoid unnecessary PICC line placement. Having the PICC nurse assesses patients for catheter needs and utilizing the INS Standards of Practice has improved the delivery of care for these patients.

- **Standard 32.2:** The nurse shall select the appropriate type of catheter (peripheral or central) 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.
  - STP-987: Purpose: To facilitate the insertion of a Peripherally Inserted Central Catheter in patients who require reliable venous accesses for typically 5 days or more infusion therapy of vesicant’s, and/or solutions/medication with the osmolality of ≥500 mOsm per liter or pH ≤ 5 or ≥9.

- **Standard 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.
  - STP-987: If unable to successfully thread tip to Superior Vena Cava (SVC), the placement of Midline Catheter (MLC) is appropriate for patients with poor venous accesses requiring infusion therapy of non-vesicants and isotonic solutions.

Currently, the PICC nurse team consists of Leila Ibushi-Thompson, AD, RN; Twila Goodwin, BSN, RN, VA-BC; and Merwyn Arafiles, BSN, RN. This team utilizes the INS Nursing Standards of Practice that are incorporated into STP-987.

**Nurses incorporating specialty standards guidelines into the delivery of care**

A specific patient example of the PICC nurses incorporating these standards into the care delivery process is seen on July 7, 2015 when PICC nurse Twila Goodwin, cared for A.L., a 69-year-old female admitted to the hospital for a urinary tract infection. The patient was being prepared for discharge. A physician order was written for PICC line placement prior to discharge from the hospital. Upon receiving the order, Twila reviewed the patient’s chart and noted that the plan was to continue IV antibiotics for two weeks after discharge.

- **Standard 35.1:** The nurse shall place a vascular access device (VAD) upon the order of a licensed independent practitioner in accordance with the rules and regulations promulgated by the state’s Board of Nursing and organizational policies, procedures, and /or practice guidelines.
  - STP-987: A physician’s order is required for PICC insertion
  - STP-987: A PICC consult should be responded to within 24 hours by the assigned certified RN.
**Standard 32.1:** Indications and protocols for vascular access devices (VADs) shall be established in organizational policies, procedures, and/or practice guidelines and according to manufacturers’ directions for use.

- **STP-987:** The function of this policy is to authorize the qualified Registered Nurses at St. Joseph Hospital (SJO) to insert Peripherally Inserted Central Catheters (PICC).

The order for the PICC line was verified in the electronic medical record; the H&P, lab results, and chest X-ray were reviewed to determine if there were any contraindications for placing the PICC line. Prior to beginning the procedure, Twila discussed the need for a PICC line with the patient and family. She explained that the reason for the PICC line was because A.L. would need a reliable IV access for the two-week duration of antibiotics as ordered by the physician. The risks and benefits of the PICC line placement were discussed, as well as the proper care for PICC line and responsibilities of the patient after discharge. After all questions regarding placement and care of PICC line were answered and patient verbalized understanding, Twila obtained a written consent from the patient.

Ultrasound was then used to scan the arm to find an appropriate vein for PICC line placement in the upper extremity. The vein chosen must be easily compressible and large enough for PICC line placement to allow adequate blood flow around the catheter to decrease the chance of blood clot development. After finding an appropriate vein for placement, Twila marked the site and measured externally to the level of the superior vena cava (SVC). The recommended tip location for PICC line placement is in the lower one third of the SVC close to the cavoatrial junction.

**Standard 33.3:** Site selection for vascular access shall include assessment of the patient’s condition; age; diagnosis; comorbidities; condition of the vasculature at 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.

**Standard 33.1:** Site selection for all vascular access devices (VADS) shall be established in organizational policies, procedure, and/or practice guidelines

- **STP-987:** Position patient and perform ultrasound pre-scan. Select a vein based on patient assessment and pre-scan. Note the maximum vessel depth at catheter insertion site as displays on ultrasound. Accurately mark planned insertion site on patient’s arm.
- **STP-987:** Determine external measurement. When possible ensure patient has both shoulders on the bed without rotating during measurement procedure. To prevent inaccuracy, measure directly on patient’s skin, avoiding clothing, bedding, dressing, ECG electrodes and other medical or personal equipment. In cases where target vessel depth is significant, maximum vessel depth may be added to measured path to determine final external measurement.
- **STP-987:** Other measurement techniques may be used depending on PICC RN clinical judgment.
ECG electrodes and the Sherlock navigation equipment are then placed on the patient in preparation for placing the PICC line. The baseline ECG is evaluated to ensure that the P-wave is present and identifiable. This step is necessary for confirmation of the tip location when the PICC line is placed. In this case, the P-waves were present and easily identified. Before proceeding with placement, the package is carefully examined to confirm integrity and expiration date.

- **Standard 32.4**: The nurse shall not alter the vascular access device outside the manufacturer’s directions for use.
  - **STP-987**: Prior to beginning the procedure, examine the package carefully before opening to confirm integrity and expiration date.

Next, the Time-Out Procedure was performed to ensure proper identity of patient, verbalizing the order and procedure to be done, and final review of allergies. Since A.L. was alert and oriented, this process was completed with her participation and agreement.

Twila then donned the hat, mask, sterile gown and gloves. After prepping the skin with chlorhexidine (CHG), the patient is draped with a maximum barrier, full body drape and the sterile field is prepared. The ultrasound probe and cable are covered with a sterile cover and then placed onto the field. The PICC line catheter is flushed with sterile saline and cut to the measurement that was determined prior to setting up the sterile field.

- **Standard 35.5**: Maximal sterile barrier precautions, including mask, sterile gown, cap, sterile gloves, protective eyewear, and large full-body drapes, shall be used with the insertion of CVADs.
  - **STP-987**: Prepare insertion site and sterile field. Wash hands. Don hair cover, face mask and sterile gloves.
  - **STP-987**: Don sterile gown and sterile gloves
  - **STP-987**: Cover the probe and cable with the sterile probe cover and place on sterile field. Cover the remote control with the sterile probe cover and place on sterile field.

- **Standard 35.4**: The nurse shall prepare the intended VAD insertion site with antiseptic solution using aseptic technique.
- **Standard 35.6**: Antiseptic solutions in a single unit configuration shall be used.
  - **STP-987**: Remove underdrape and Chloraprep from tray. Place underdrape beneath arm and prep skin site with CHG with friction 6 inches beyond proposed insertion site. Reapply prior to line insertions with CHG, ensuring skin prep is completely dry prior to line insertion.

Using the ultrasound to visualize the vein, Twila then injected 1% lidocaine subcutaneously at the insertion site. The modified Seldinger Technique was used to place the PICC line. After obtaining access into the vein, the needle was removed and a guide wire placed through the access device into the vein. The introducer was then placed over the guide wire to gain access to the vein. With the introducer in place, the guide wire was removed.
• Standard 34.4: Use of local anesthesia shall be established in organizational policies, procedures, and/or practice guidelines, and in accordance with the rules and regulations promulgated by the state’s Board of Nursing.

• Standard 34.1: Local anesthesia shall be considered based upon nursing assessment of patient condition, needs, risks, and benefits.

• Standard 34.2: When local anesthesia is ordered or necessary, the agent and method that is least invasive and carries the least risk for allergic reaction or infection shall be considered first.

• Standard 34.3: The nurse shall be competent to administer local anesthesia for vascular access device placement and access.
  o STP-987: Lidocaine 1%, inject in aliquots subcutaneously around insertion point, up to 5 mLs.

• AVA Position Statement: The Use of Seldinger or Modified Seldinger Technique, in Combination with Real-Time Imaging Modalities for Peripherally Insert Central Catheter and Midline Placements by Clinicians
  o STP-987: Perform microintroduction. Remove guidewire and dilator from microintroducer. Insert catheter.

At this point, the ultrasound is switched into the Sherlock Mode so the system is able to track the PICC line as it was being placed into the desired location. Twila monitored the Sherlock device as she threaded the PICC line through the introducer into the vein toward the level of SVC by measurement. Maximum P-wave elevation with no deflection in front of the P-wave indicates proper placement into the SVC with the tip near the cavoatrial junction. The image is frozen on the screen and Twila then printed this screen shot for documentation into the patient's chart. In this case, no chest X-ray was needed for verification of proper tip position since Twila confirmed the location of the tip using 3CG technology.

• Standard 35.8: Tip location shall be determined radiographically or by other approved technologies prior to initiation of infusion therapy.
  o STP-987: Electrocardiogram Tip Confirmation system (ECG TCS) may be used by the RN for verification. If unable to confirm placement with ECG TCS, order chest x-ray for tip confirmation

After confirmation, Twila ensured blood return from all lumens, flushed each lumen with normal saline, and applied sterile caps. The PICC line was then secured with a Statlock and a Biopatch was applied at the insertion site. A non-occlusive dressing was then placed over the line with the date, time, initials and the external length of the PICC line noted on the dressing.

• Standard 36.1: VAD stabilization shall be used to preserve the integrity of the access device, minimize catheter movement at the hub, and prevent catheter dislodgment and loss of access.

• Standard 36.2: VADs shall be stabilized using a method that does not interfere with assessment and monitoring of the access site or impede vascular circulation or delivery of the prescribed therapy

• Standard 36.3: The use of stabilization methods shall be established in organizational policies, procedures and/or practice guidelines.
• **Standard 36.4**: The nurse shall be competent in proper use and application of VAD stabilization methods and devices.
  - **STP-987**: Aspirate and flush PICC line as per Care of the Central Venous Catheter Policy.
  - **STP-987**: Secure catheter with Statlock and confirm that exit site marking is accurate.
  - **STP-987**: Place Biopatch at catheter insertion site.
  - **STP-987**: Place non-occlusive dressing over Biopatch and write the date, time, initials, and external length on the patch.

The procedure was documented in the electronic medical record and report was given to the RN caring for the patient including location, size of PICC line, external length of PICC line exposed at insertion site, and confirmation that the PICC line was ready for use. A.L. now had a reliable IV access to continue her antibiotics at home and the rest of the team was able to proceed with preparing her for discharge.
  - **STP-987**: Documentation: IV solutions and medication given pre-insertion or post-insertion to flush line with NS. Vital signs and any significant history outside of norm, but normal for patient; procedure notes. Any patient teaching or follow-up to be done post-insertion.

EP6.4 Documentation of PICC Procedure: Assessment and Utilization of Standards in Practice

By following and implementing the procedural steps, the PICC nurse team demonstrates incorporation of specialty standards and position statements into the delivery of care for patients requiring a PICC line insertion.