Getting to Zero!
Central Line–Associated Infection Prevention
Multidisciplinary Workshops:
PICC Tips, Tricks & Products

November 2016
Learner Objectives

1. The Learner will be able to review the PIV algorithm and identify patients with difficult vascular access (DIVA)

2. The Learner will review PICC line indications, central line documentation and catheter sizes

3. The Learner will be able to review indications, personnel, and process for PICC dressing changes

4. The Learner will be able to identify the different products i.e. Stat Seal/Biopatch used to prevent infection of central lines

5. The Learner will be able to troubleshoot issues related to PICCs i.e. phlebitis, obstruction of flow
Learner Objective #1

- The Learner will be able to review the PIV algorithm and identify patients with difficult vascular access (DIVA)
Peripheral Intravenous (PIV) Insertion Algorithm

- Infant needs PIV access
  - 2 attempts maximum by bedside nurse
    - Unsuccessful
      - Discuss other options for access with MD**
      - Need long term access?
        - Yes
          - PICC, surgical line, midline catheter
        - No
          - Need short term access?
            - Yes
              - Consider UVC, retry PIV
            - No
              - Successful placement of PIV and infusing

- Infant identified as a difficult IV access (DIVA)
  - Skilled IV RN: 2 attempts*
    - Successful placement of PIV and infusing
    - Unsuccessful
      - Insertion likely to be difficult for similar skilled RN?
        - Yes
          - 2nd Expert IV RN to attempt 2 times OR MD/fellow may attempt PIV if skilled
        - No
          - Use infant needs PIV access pathway

*Check with NIC for most skilled IV RN on shift
Vein Selection and Preservation

- Select vein for IV cannulation: suggested order of preference
  - Back of hand: dorsal venous plexus
  - Forearm: median vein, accessory cephalic veins
  - Foot: dorsal venous plexus
  - Scalp: frontal, superficial temporal, posterior auricular

Patients identified as possible central line candidates should have the following vessels preserved if possible:
  - Ankle: small saphenous, great saphenous vein
  - Antecubital fossa: basilic or median cubital vein
Vein Selection and Preservation

- Extremity venipuncture is performed distal to proximal
- Avoid vessels across joints
- Scalp venipuncture is always performed cranial to caudal
- Can use transillumination and warm packs to increase vein size and visualization
Neonatal Veins

Frontal vein
Superficial temporal vein
Posterior auricular vein
Median cubital vein
Basilic vein
Cephalic vein
Cephalic vein
Palmar side
Median vein
Dorsal venous network with tributaries
Great saphenous vein
Dorsal venous arch
Median marginal vein
Learner Objective #2

- The Learner will review PICC line indications, central line documentation and catheter sizes
Central Venous Catheter Indications

- Neonates weighing less than 1500 gms with IV fluid needs
- Need for TPN, dextrose concentrations greater than 12.5%, continuous vasopressors or continuous analgesia sedation
- Infants unable to take sufficient PO feedings for optimal growth and anticipated need for IV fluids for 5 or more days
- Inadequate vascular access
- Need for prolonged or long term IV antibiotic therapy
- Neonates with GI, congenital, or cardiac disorder
Central Venous Catheter Selection

- Single Lumen: 1.4 Fr. Vs. 2.0Fr
  - 1.4 Fr: used for infants less than 1000gm
  - 2.0 Fr: used for infants greater than 1kg

- 2.0 Fr. double lumen vs. 2.6 Fr double lumen
  - 2.0Fr Double: team discussion needed due to nutritional factors, medication indications
  - 2.6 Fr double: used for full term infants requiring frequent blood draws
Used for near/full term infants with difficult vascular access (DIVA) who need short term IV fluids or medications
- Placed under sterile technique but NOT a central line
- Decreased number of IV attempt sticks
- Less risk of blood stream infection
- Less risk of infiltration when compared to PIV
- Less risk of mechanical and chemical phlebitis
- Can be in place for up to 30 days
Central Line Documentation

- Bedside RN is responsible for EPIC observation checklist and daily GREEN maintenance checklist for every central line (UVC, UAC, PICC, Broviac)
  - EPIC-flowsheet-search bar-type “central line insertion observation” wrench it into flowsheet
Learner Objectives 3 & 4

- The Learner will be able to review indications, personnel, and process for PICC dressing changes

- The Learner will be able to identify the different products i.e. Stat Seal/Biopatch used to prevent infection of central lines
Indications for PICC Dressing Change

- Lifting or loose tegaderm
- Dried blood under the tegaderm
- Dressing soiled with stool, urine, emesis
- Dressing needs to be changed at least every 7 days with the use of a stat seal/biopatch

RN PICC Team members and Neonatal MD Fellows are trained to change PICC/Broviac dressings
Stat Seal vs. Biopatch

- **Stat Seal**: natural hemostatic agent
  - Used for excessive bleeding at time of insertion
  - Can be used for any gestational age
  - Must be removed after 7 days

- **Biopatch**: sustained released CHG
  - Used for infants 28 weeks gestation and one week of age
  - Changed every 7 days
Intact PICC Dressings
Appropriate Stat Seal Dressings
Dressing Change Indication
Learner Objective #5

The Learner will be able to troubleshoot issues related to PICCs i.e. phlebitis, obstruction of flow
Baby Smith received a 2Fr. Single lumen left leg PICC line on DOL 8. On DOL 15 the PICC dressing was changed at 3pm and a biopatch was applied. PICC insertion site was intact. Within 8 hours of the dressing change the IV pump started to continuously indicate occlusion in the PICC line. RN notified MD fellow who flushed the PICC line successfully. IV fluids were restarted but within an hour the IV pump began to indicate occlusion again. PICC line was pulled........What else could have been the problem?
PICC Line Troubleshooting

- Catheter Obstruction
  - Clotted line vs. kinked line
  - What was the IV flow rate
    - Minimal rate for KVO must be 1.0ml/hr
  - Need for TPA/Alteplase: thrombolytic agent
    - Medication given by RN PICC team or Medical team
  - New PICC line Dressing: possible kink in the line
Mechanical Phlebitis

- Mechanical: most commonly reported within 72 hours–1 wk post line insertion
  - Signs and Symptoms
    - Edema
    - Redness
    - Palpable venous cord/cording
  - Treatments
    - Warm compresses
    - Elevate the limb
    - Line should be pulled if symptoms persist beyond 24–72 hours
Dependent Edema

- Edema can occur below the insertion site on the extremity and can be normal.

- Dressing should not be completely around the extremity to prevent blood flow restriction.
References

