

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



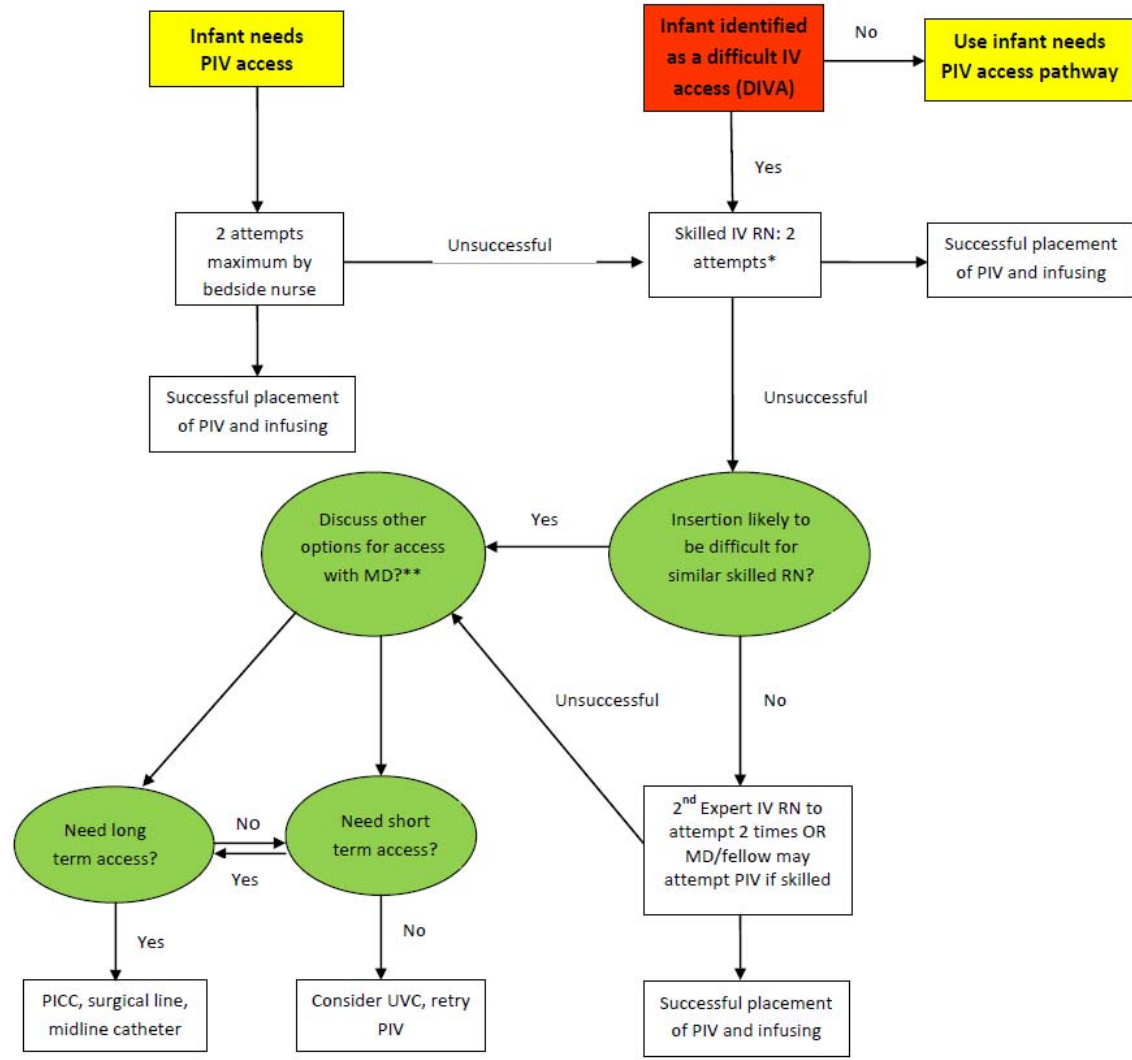
Learner Objective #1

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



PIV Algorithm

Peripheral Intravenous (PIV) Insertion Algorithm



*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

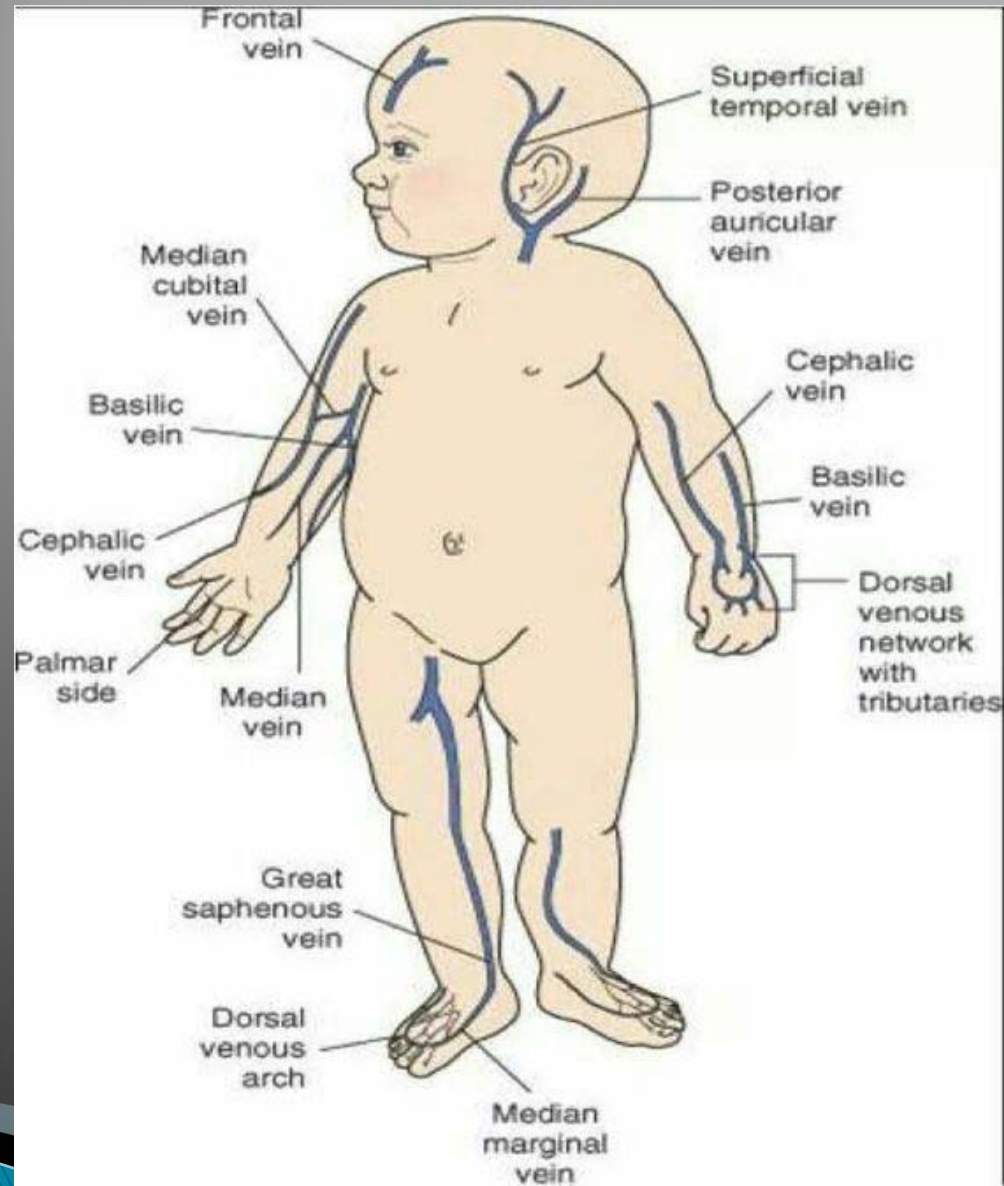


Vein Selection and Preservation

- ▶ 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



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



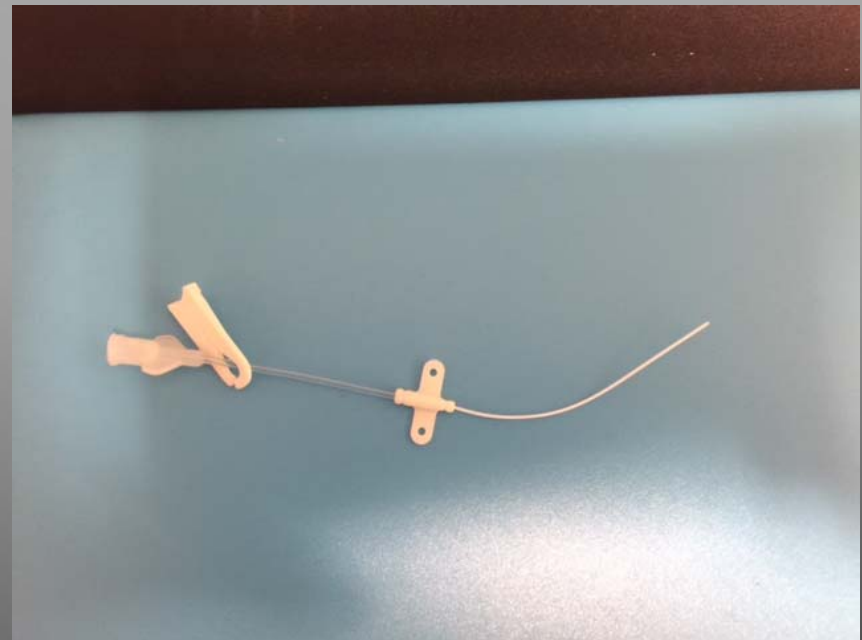
Central Venous Catheter Selection

- ▶ 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



2.0Fr. Vygon Leaderflex

- ▶ 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

BRIGHAM AND WOMEN'S HOSPITAL
Version 4.0 (02/2016)

Patient sticker

BWH NICU Central Line Daily Maintenance Checklist

Central line (CL) type: UVC UAC PICC Broviac Other (please specify):

Date CL was placed (will count as day 1)

CL day	Date	CL day	Date	CL day	Date	CL day	Date
Enteral feeding volume (in mL/kg/day)		Enteral feeding volume (in mL/kg/day)		Enteral feeding volume (in mL/kg/day)		Enteral feeding volume (in mL/kg/day)	
Do we need the line today? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Reason:		Do we need the line today? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Reason:		Do we need the line today? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Reason:		Do we need the line today? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Reason:	
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Did you glove before accessing the line? <input type="checkbox"/> Yes <input type="checkbox"/> No		Did you glove before accessing the line? <input type="checkbox"/> Yes <input type="checkbox"/> No		Did you glove before accessing the line? <input type="checkbox"/> Yes <input type="checkbox"/> No		Did you glove before accessing the line? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Did you scrub the hub for 15 sec w/CHG and let dry for 30 sec? <input type="checkbox"/> Yes <input type="checkbox"/> No		Did you scrub the hub for 15 sec w/CHG and let dry for 30 sec? <input type="checkbox"/> Yes <input type="checkbox"/> No		Did you scrub the hub for 15 sec w/CHG and let dry for 30 sec? <input type="checkbox"/> Yes <input type="checkbox"/> No		Did you scrub the hub for 15 sec w/CHG and let dry for 30 sec? <input type="checkbox"/> Yes <input type="checkbox"/> No	
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RN Initials: AM: _____ Date/Time: _____
 RN Initials: PM: _____ Date/Time: _____
 RN Initials: AM: _____ Date/Time: _____
 RN Initials: PM: _____ Date/Time: _____

Flowsheets

Summary
Chart Review
Care Everywh...
PMS Viewer
Care Team P...
Results Rev...
Synopsis
Work List
MAR

Flowsheets
Intake/Output
Notes
Education
Plan of Care
Orders
Patient Instru...
Delivery Sum...
Navigators

Procedure Plan... Mode: Accordion | Expanded | View All
 Before the proce...
 During the proce...
 After the proced...
 Break in Sterile...
 Roles

Admission (Cur...
11/2/16
1300

Procedure Planning
 Consent documented separately
 Time-Out occurred?
 Line Insertion Site
 Emergent Placement

Before the procedure, the operator will:
 Confirm hand sanitizing or antimicrobial soap immediately prior
 Disinfect procedure site per protocol
 Allow site to dry for 30 seconds
 Operator(s): hat, mask, sterile gown/gloves, eye protection
 Assistant/Monitor: hat, mask & standard precautions (if M. ask for entering sterile field)
 Use sterile technique to drape from head to toe. Pediatrics use judgment to

During the procedure, the operator will:
 Maintain a sterile field
 Guide wires, dilators removed and intact
 Flush and Cap line before removal of drapes

After the procedure, the operator will:
 Sterile dressing applied per protocol
 Sticker applied to line

Break in Sterile Procedure?
 Break in sterile procedure?

Roles
 Operator
 Supervisor
 Monitor/Cheever

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 PICCC 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 PICCC Team members and Neonatal MD Fellows are trained to change PICCC/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



PICC Line Troubleshooting

- ▶ 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

- ▶ Gorski, L., Hadaway, L., Hagle, M.E., McGoldrick, M., Orr, M., & Doellman, D. 2016. Infusion Therapy Standards of Practice, 39(1S).
- ▶ MacDonald, M.G. & Ramasethu, J. 2007. Atlas of Procedures in Neonatology, 4th edition pp. 84–88.
- ▶ Petitt, J. & Wycoff, M. M. 2015. National Association of Neonatal Nurses Peripherally Inserted Central Catheters: Guidelines for Practice, 3rd edition. pp. 40–53.

