Umbilical Venous/Arterial Catheter Insertion (NICU), Assisting

Site Applicability: SPH NICU

Skill Level: RN- NICU

Need to Know:

1. Umbilical catheters (UC) are inserted for administration of fluids, medications, and obtaining blood gas specimens
2. The physician inserts and removes the umbilical catheter.
3. The RN assists with the insertion procedure and monitors fluid intake.
4. Two x-ray views are required to confirm line placement-AP and lateral.
5. Kelly forceps located at infant bedside in case of accidental separation of tubing from umbilical catheter/stopcock
6. Infants 32 weeks gestation or less admitted from LDRP, will have their umbilical catheters placed while inside the food grade polyethylene bag (for thermoregulation).

PRACTICE GUIDELINE

Equipment & Supplies

1. NICU emergency cart
7. Alaris CareFusion Smart Pump
3. Intravenous Solutions (as ordered)
4. Umbilical Catheter Tray
5. Sterile gown (for physician)
6. Sterile gloves (for physician)
7. Mask (2)
8. Caps (2)
9. CAVI wipe for cleaning work surface.
10. 2 x 2 Gauze
11. Single or double lumen umbilical catheter (size 3.5 Fr or 5 Fr)
12. 3.0 silk suture
13. Chlorhexidine antiseptic solution 0.5%
14. 3 mL prefilled 0.9% NS (Normal Saline) syringe (s)
15. 3 way stopcock
16. One 5 mL syringe
17. One 3 mL syringe
18. Disposable scalpel blade
19. Umbilical Tape
20. 10 mL prefilled 0.9% NS (Normal Saline) syringe
21. Duoderm Extra Thin Dressing
22. Paper tape
23. Blood collection tubes
24. Coloured tape to label IV & UC lines

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STEPS	RATIONALE
1. Bring NICU emergency cart to admission stabilette/incubator area	
1. Perform hand hygiene	
2. Prepare IV solution as ordered by physician using aseptic technique.	See NICU Intravenous Fluids, Preparation and Administration,
3. Assemble and organize equipment/supplies.	Physician will identify umbilical catheter size.
4. Identify patient using 2 unique patient identifiers prior to procedure	NICU-Newborn Identification
5. Restrain infant in supine position	Use developmentally appropriate positioning. Legs should be together. Place the diaper roll under the knees. Restrain legs with a cloth over infant's thighs and secure by placing tape across the legs and the bed. More vigorous infant will require a nurse to place her hand underneath sterile field to restrain legs. Arms should be slightly abducted and flexed when restrained.
6. Adjust radiant warmer lights to give maximum visualization and ensure warmer in servo-mode.	Ensure infant eyes are covered. Reflector securing probe needs to be visible to maintain infant's temperature.
7. Obtain baseline vital signs and perform focused physical assessment	Document baseline findings as they will be used as a comparison for future assessments should procedural complications arise. Leave BP cuff in place
8. Clean working surface with CAVI wipe and dry with paper towel	To prevent contamination and to decrease risk from central catheter related bloodstream infection during the insertion of central catheters.
9. Mask and wash hands for 1 minute.	
10. Prepare tray using aseptic technique and open umbilical catheter tray on top of NICU emergency cart Add the following to the tray: • designated umbilical catheter size • one 10 mL prefilled l 0.9% NS (Normal Saline) syringe • one 3-way stopcock • one 5 mL syringe • one 3 mL 0.9% Normal Saline prefilled	Umbilical catheterization is a sterile procedure

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syringe • one 3-0 silk suture • 2 x 2 gauze • one 3 mL and one 5mL syringe • Chlorhexidine gluconate 0.5% antiseptic solution • Umbilical tape • Disposable scalpel blade	
11. Assist physician to gown, glove and drape.	
12. Assist as required to: • measure the depth of catheter insertion • hold umbilical cord with Kelly forcep away from abdomen • Ensure physician cleaned the umbilicus cord and the adjacent skin with antiseptic chlorhexidine 0.5% solution • Physician will place umbilical tape loosely around base of umbilical cord Clean/prepare site with chlorhexidine .05% solution for 30 seconds. Allow site air dry for up to 60 seconds.	If infant is in food grade polyethylene, make small slit on the bag when physician is ready. Dry exposed surface and expose the chord area. After the insertion procedure, reseal bag with tape Umbilical tie can be tightened if there is excessive bleeding after cord cut Antiseptic solution can cause burns to the skin. Ensure gauze soaked with antiseptic solution is wrung out and not dripping with antiseptic solution. Watch dependent skin areas for pooling of antiseptic solution. Remove linen that is saturated with antiseptic solution once procedure complete
13. Monitor infant's response to procedure (apex, respirations and colour)	If infant is experiencing bradycardia, apnea or desaturation, stop procedure and assess
14. Once catheters is sutured in place: • Physician connects end of umbilical catheter to 3 way stopcock • Physician obtains blood samples as needed and deposits in appropriate labeled container • Intermittently flush catheter using the 10 mL 0.9% NS (Normal Saline) syringe to keep the catheter patent or **start** ordered maintenance infusion at ordered rate prior to x-ray confirmation. • Label UC lines using colored tape to identify infusion	Do not start critical infusions (DOPamine) prior to x-ray confirmation.

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15. Remove sterile drapes. Document on Nursing Flow sheet number on umbilical catheter/s at level of umbilicus <u>If arterial umbilical catheter in situ:</u> Inspect toes, buttocks and back for any signs of circulatory compromise	With transient ischemia seen as mottling or bluish discoloration, warm moist towels may be applied to the opposite limb to encourage a sympathetic (vasodilation) response in the affected limb. Under no circumstances should heat be applied to the affected limb When ischemia persists for greater than 5 to 10 minutes, notify physician immediately. Umbilical arterial catheter may need to be removed immediately.
16. Secure umbilical catheter	This stabilizes umbilical catheters so that accidental tension will not displace catheter
17. Loop catheter in tape and a “bridge” fashion (See illustration below)	DuoDERM extra thin dressing is used as a skin barrier.
18. Loosen the umbilical tape slowly and observe for bleeding.	If bleeding occurs, tighten the umbilical tape and reassess in 30 to 60 minutes.
19. Leave diaper unsecured at sides	Diaper must not be fastened in such a way as to obscure view of the umbilical stump. Toes must be visible for circulatory assessment, socks or booties are not to be worn
20. Confirm all connections are secure and stopcock in proper position for infusions	
21. X-ray to confirm placement catheter	
22. If two catheters are in situ, they must be secured	
23. Discard equipment and supplies appropriately	Remove all sharps from tray prior to sending to sterile processing.

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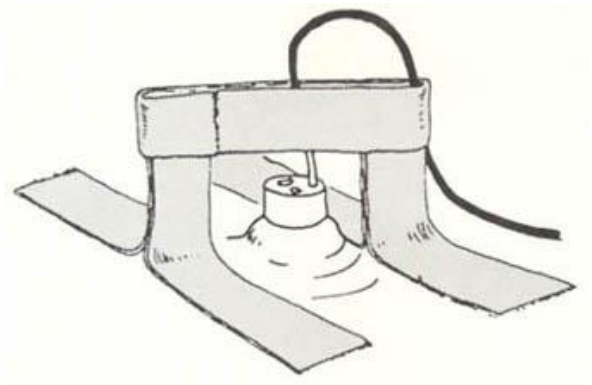
Bridge Taping Method for Securing Line



1. Cut 2 pieces of DuoDERM extra thin dressing and place on abdomen on either side of the umbilical stump. Secure two pieces 1/2 inch of paper tape to the DuoDERM as illustrated to form a vertical support. Consider using one-inch tape in term infants.

2. Using 1/4 inch paper tape secure catheter to vertical support about umbilical stump forming a loop at the catheter

Documentation:

1. Nurses Flow sheet (OB109)
   - Date and time
   - Physician name who completed procedure
   - Catheter type and size
   - Insertion procedure and depth of catheter insertion
   - IV fluids infusing and IV flow rate
   - Time x-ray done
   - Infant response to procedure
   - Record Blood Tests
   - Circulation of buttocks, legs, toes before and after catheter placement

References:

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Groups Consulted:

RN - NICU
Pediatrician

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