### Purpose
To provide guidelines for assisting with umbilical line insertion.

### Policy Statement
The umbilicus may be used for arterial or venous access.

Umbilical venous lines may be inserted for the following indications:
- Emergency or long term vascular access,
- Medication administration,
- Frequent blood sampling,
- Central venous pressure,
- Exchange transfusion.

Umbilical arterial lines may be inserted for the following indications:
- Frequent sampling of arterial blood is required,
- Continuous monitoring of arterial blood pressure,
- Exchange transfusion.

*Insertion of umbilical arterial/venous catheter is an advanced skill to only be performed by Physicians and Nurse Practitioners*

### Applicability
All Covenant Health Neonatal Nursery staff.
Equipment
Sterile gown, sterile gloves
Procedure hats and masks for all persons in the immediate area
Umbilical arterial/venous catheter tray
Umbilical Tie
Iris Forceps
Disposable Scalpel Blade
3mL syringe for each catheter port
Flush solution (refer to heparin policy for priming recommendations)
1” non-allergenic tape; Duoderm® Extra-Thin wafer
Sutures
Antimicrobial Umbilical Dressing

Antiseptic swab sticks:
- 2% Chlorhexidine Gluconate & 70% Isopropyl Alcohol for infants greater than 28 weeks
- 2% Chlorhexidine Gluconate for infants less than or equal to 28 weeks
Sterile drain gauze & sterile saline for infants less than/equal to 28 weeks

Umbilical catheters:

<table>
<thead>
<tr>
<th>Catheter Selection</th>
<th>Greater than 1500 grams</th>
<th>Less than 1500 grams</th>
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<tbody>
<tr>
<td>UAC</td>
<td>#5.0 Fr</td>
<td>#3.5 Fr</td>
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<tr>
<td>UVC</td>
<td>Single lumen</td>
<td>Single, Double or Triple lumen</td>
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</tbody>
</table>

Additional Equipment for Umbilical Venous Line Insertion
- Extension set with “positive pressure device” for each lumen
- IV solution and Infusion pump

*Double lumen umbilical venous catheters may be used in critically ill neonates to allow administration of inotropes or medications

Additional Equipment for Arterial Line Insertion
- Mosquito forceps with plastic tip protectors (to be left at bedside)
- Medfusion pump
- Blood pressure transducer set up & monitoring equipment (refer to heparin policy for infusion recommendations)

Procedure

<table>
<thead>
<tr>
<th>ACTION</th>
<th>RATIONALE</th>
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<tbody>
<tr>
<td>1. Perform hand hygiene. Gather equipment. Prepare infusion and monitoring equipment as necessary. Refer to Heparin Use policy for standard flush solution or patient care orders if another solution has been ordered.</td>
<td>A continuous infusion that is heparinized is used to minimize thrombus and prolong the life of an umbilical arterial catheter.</td>
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<tr>
<td>2. Perform two patient identifier</td>
<td>Ensures correct patient</td>
</tr>
<tr>
<td>3. Prepare infant on overhead warmer. Restrain/contain limbs with 4x4”s,</td>
<td></td>
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</table>
blankets, Diaper or Posey restraints. Attach ECG, SpO2 and ISC monitoring.


5. Assemble sterile tray using aseptic technique:
   1. Add antiseptic swab sticks (3) to tray. Add sterile saline to tray cup if baby is ≤ 28 weeks gestation
   2. Add appropriate umbilical catheter(s)
   3. Add items to be placed on the sterile field – umbilical tape, iris forceps, scalpel blade, syringes, suture, and drain gauze if baby is ≤ 28 weeks gestation.

   Systemic infection may occur due to poor aseptic technique or use of contaminated equipment or solutions.

6. Assemble equipment to be placed beside sterile field – i.e. flush solution.

7. Prepare bridging tapes with Duoderm® wafer for securing umbilical line. Neonatologist/designate may request a suture for securing a line. In infants less than 28 weeks a suture is used to minimize tape placement on fragile skin. Bridging tapes help to secure umbilical lines in correct position and minimize their movement in the vessel. The use of a wafer helps to minimize skin damage from tape removal in infants with immature skin.

8. Assist neonatologist/designate to gown, glove, and draw up flush solution.

9. Circulate and assist “inserter” as required.

10. Neonatologist/designate will:
    1. Flush each catheter lumen with flush solution using 3 mL syringe.
    2. Cleanse the area (including umbilical cord stump and cord clamp) with

   Air emboli will be introduced unless the catheter and lines are flushed and free of air. In infants < 28 weeks gestation, remind Neonatologist/designate to prevent
chlorhexidine/alcohol swabs. For infants ≤ 28 weeks, a drain gauze is used to protect the skin and the skin is cleansed with sterile saline or water immediately after antiseptic is dry to prevent skin burns.

3. Tie an umbilical tape loosely around the cord, if possible, place around Wharton jelly rather than skin. The nurse may be asked to hold the cord clamp up with sterile forceps to facilitate this procedure.

4. Cut the cord and tighten the cord tie as necessary to control bleeding.

5. Drape the patient completely with sterile towels.

6. Isolate the artery/vein and dilate with an iris forceps.

7. Insert the catheter to the measured length (distance from shoulder to umbilicus plus the length of the cord stump in centimeters for UAC’s and from xiphoid to umbilicus plus 2 cm plus length of cord stump for high positioned UVC.)

8. Remove drapes.


11. Assist the inserter to stabilize the catheter using the bridging technique unless sutured/taped in place.

12. Draw ordered bloodwork.

13. Attach to infusions & monitoring lines as applicable.
   - Umbilical arterial lines may be infused immediately.
   - Umbilical venous lines may be infused with glucose solutions or enhanced dextrose solutions alone unless emergency drug administration is required pending x-ray confirmation.

14. Ensure chest x-ray and abdominal x-ray is ordered and done to confirm catheter position. The catheter may be pulled back by physician/clinical nurse specialist if malpositioned - but not pushed in.

Umbilical venous lines are ideally placed in the IVC or below the liver before infusions with medications. Sick babies may not have any other venous access and require a steady supply of glucose ASAP or an emergency medication before x-ray confirmation is available.

UAC catheters are positioned high (between T-6 and T-10) or low (below L3) to avoid obstructing the mesenteric or renal arteries. UVC position is ideally above the liver in IVC, but not in the heart. Low UVC tip is placed below the
Umbilical Line Insertion: Assisting

Related Documents

RELATED POLICIES & PROCEDURES
Heparin Use
Blood pressure monitoring, Arterial Lines
Corporate policy, Identification of Patient Resident or Client Using Two Identifiers VII-B-25

References


Revisions
July 2005
October 2015
Umbilical Line Insertion: Assisting

Date Approved
October 2015

Policy Group
Cardiovascular

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Signing

Original Signed

GAIL CAMERON
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MATERNAL, NEONATAL & CHILD HEALTH PROGRAMS
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GREY NUNS & MISERCORDIA HOSPITALS

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October 2015

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