



Umbilical Line Access: Checklist  
Pediatric Emergency Medicine  
Competency Based Evaluation

Staff Being Evaluated: \_\_\_\_\_

Instructor: \_\_\_\_\_

Date: \_\_\_\_\_

Skill Description	Done Incorrectly/ Not Done	Done Correctly
Preparation & Equipment Check	-	-
Verbalizes/demonstrates use of appropriate PPE	0	1
<b>Verbalizes: Indications for UVC placement:</b> <ul style="list-style-type: none"><li>- Need for emergent administration of medications or intravenous (IV) fluids during resuscitation</li><li>- Inadequate vascular access</li><li>- Neonates weighing &lt;1500 grams (for parenteral nutrition immediately after birth)</li><li>- Therapeutic hypothermia</li><li>- Need for total parenteral nutrition, dextrose concentrations greater than 12.5%, continuous vasopressors or continuous analgesia for sedation (unless EPIV or PICC is more appropriate)</li><li>- Need for prolonged IV antibiotic therapy (unless EPIV or PICC is more appropriate)</li><li>- Need for exchange transfusion</li><li>- Neonates with GI, congenital, or cardiac disorders, as indicated by clinical condition (with exception of GI contraindications listed below)</li></ul> <b>Verbalizes Contraindications for UVC placement:</b> <ul style="list-style-type: none"><li>- Omphalitis</li><li>- Omphalocele</li><li>- Necrotizing enterocolitis</li><li>- Peritonitis</li><li>- Acute abdominal pathology</li></ul>	0	1

<p><b>Chooses Appropriate Equipment:</b></p> <ul style="list-style-type: none"> <li>- Umbilical catheterization tray (includes umbilical tape, antiseptic solution, forceps, scalpel and 3.0 silk sutures on a small, curved needle)</li> <li>- Chlorhexidine (if using for skin cleansing)</li> <li>- Umbilical Catheter(s): 3.5 Fr. or 5 Fr. single or double lumen, 2.5 Fr. Single lumen</li> <li>- Sterile Barriers: drapes, gowns, gloves (powder and latex free), hat and mask</li> <li>- Needleless IV port adapters: claves</li> <li>- T-Connector (for arterial catheters and one port of venous catheters, to connect Hummi)</li> <li>- Heparinized saline (1/2 NS with heparin 0.5 units/mL)</li> <li>- Syringes (1-, 3-, 5-ml, and/or 1-ml heparinized blood gas syringe) – enough to flush each lumen of catheter and draw blood for labs</li> </ul>	0	1
<p><b>Measurement and Positioning of Umbilical Catheter:</b></p> <ul style="list-style-type: none"> <li>- For umbilical venous catheters, double lumen 3.5 Fr. catheters are generally used in infants weighing &lt;1.5 kg and 5 Fr. catheters in infants weighing ≥1.5 kg. For umbilical arterial catheters, 2.5 Fr catheters are generally used in infants weighing &lt;1 kg and 3.5 Fr in infants weighing ≥1 kg.</li> <li>- An umbilical venous catheter is in correct position at the level of the diaphragm.</li> <li>- The umbilical venous catheter length in centimeters is calculated from Shukla’s formula as <math>\frac{1}{2} (3 \times (\text{birth weight in kg}) + 9) + 1\text{cm}</math> [5].</li> <li>- Alternatively, measure the distance from the umbilicus to the xiphoid and add 1cm (to account for the length of the umbilical stump remaining). [5]</li> </ul> <p><b>Central UVC:</b> Confirmed by X-ray, in the IVC, at the level of the diaphragm and below the heart</p> <p><b>Low-lying UVC:</b> UVCs that cannot be advanced beyond the liver and are not considered central and used peripherally. Only peripheral concentrations of drugs and solutions are used. A low-lying UVC may be placed for volume resuscitation or medication administration during emergent situations in the delivery room. This UVC is non-sterile and must be replaced centrally.</p>	0	1
<p><b>Procedure</b></p>	-	-
<p>Clean work surface to be used with aseptic wipes and allow to dry completely prior to set-up.</p>	0	1

Perform hand hygiene with a waterless alcohol hand rub and put on PPE (if already not done)	0	1
Open equipment and drop sterile items on sterile field. Open sterile gown and gloves.	0	1
Position the infant appropriately for the procedure (supine with extremities appropriately secured)	0	1
Place a needleless connector on the end of the UVC blue port. Place a T-connector followed by a needleless connector to the end of the clear port of the UVC, to be used with the Hummi closed blood draw system  Draw up 1/2NS with 0.5 units/mL of heparin in a sterile manner (assistant will hold non-sterile bag while MD/LIP inserts sterile needle into bag's port to draw up flush). Attach syringe to each needleless connector and flush each lumen of the catheter with heparinized saline	0	2
Do a safety pause prior to the start of the procedure.	0	1
Have an assistant grasp the cord by the cord clamp or with forceps to hold up the cord clamp.  Prepare the umbilical cord and surrounding area (diameter of 5 cm) with antiseptic solution per departmental protocol. Allow drying for two minutes prior to umbilical catheter insertion. 15. Drape the area surrounding the cord with sterile towels.	0	1
Place the umbilical tie around the base of the umbilicus and tie once.	0	1
Cut cord horizontally using a scalpel and visualize the vessels- 1 Vein, 2 arteries. The vein is thin-walled and close to periphery of umbilical stump. The two umbilical arteries are smaller, thick-walled and will need to be dilated.	0	1
Transfer supplies needed for line insertion such as flushed catheter, forceps with and without teeth, and 2x2 gauze onto the sterile field.	0	1
For umbilical venous catheter placement, grasp cord with toothed forceps avoiding vessels. For umbilical arterial catheter placement, the vessel must gently be dilated with the curved forceps. Adequate time spent dilating artery will increase likelihood of successful placement.	0	1

Insert catheter into vessel using hands or forceps. Advance to measured position (see Section IX) then draw back on syringe to ensure easy blood return.	0	1
Clear blood by flushing with 0.5 ml of heparinized saline solution		
Obtain blood samples for laboratory evaluation if needed, being careful to not introduce air into the line and flush catheter with heparinized saline solution after removal. **If unable to obtain blood return, try troubleshooting, such as removal of catheter with reinsertion, doing a cutdown or if an umbilical vein attempt placement of a second catheter next to the first catheter.	0	1
Using a 3-0 silk suture on a small, curved needle, suture the catheter to the Wharton Jelly		
Obtain an x-ray or babygram while maintaining the sterile field to verify the position of the catheter and adjust as necessary. If the umbilical catheter is too deep, it may be withdrawn to a correct position in a sterile fashion. If under sterile conditions, an umbilical catheter may be pushed in if found to be low to the correct position, but once no longer sterile the catheter must be removed.		

Total Score \_\_\_\_\_