

## Umbilical vessel catheter removal, neonate

Revised: August 19, 2021

### ■ Critical Notes!

#### Facility Specific Notes:

It is within the LSBN scope of practice for clinical RN to remove catheter.

#### Goggles or mask with face shield should be utilized

Refer to the following procedure for additional information:

- [Umbilical vessel catheter insertion, assisting, neonate](#) for line placement
- [Umbilical vessel catheter maintenance, neonate](#) for steps to zero transducer and other maintenance
- [Umbilical artery catheter blood withdrawal, neonate](#) for steps in obtaining a blood sample

Performed by: RN

### ■ Introduction

An umbilical vessel catheter is inserted into an umbilical artery or vein in a neonate to obtain frequent blood samples, continuously monitor arterial blood pressure, or administer fluids and medications. It may also be used to provide venous access for exchange transfusions. Like other access devices, an umbilical vessel catheter should be removed as soon as it's no longer needed or if a complication occurs.<sup>[1][2]</sup> The catheter should be assessed daily as a part of multidisciplinary rounds and the review of daily goals.<sup>[1]</sup> When the catheter is used primarily for nutrition and the neonate reaches 120 mL/kg of enteral nutrition, the neonatal intensive care unit team should consider catheter removal.<sup>[3]</sup> Removing the catheter as soon as possible helps reduce the risk of vascular catheter-associated infection. Optimally, an umbilical arterial catheter shouldn't be left in place for longer than 5 days. An umbilical venous catheter shouldn't be left in place for longer than 10 days.<sup>[1]</sup>

Umbilical vessel catheter removal is usually performed by a practitioner or nurse at the end of therapy or at the onset of complications. Nurses should consult their state nurse practice act to determine whether catheter removal is within their scope of practice.

◆ **Hospital-acquired condition alert:** Keep in mind that the Centers for Medicare and Medicaid Services considers vascular catheter-associated infection a hospital-acquired condition because it can be reasonably prevented using a variety of best practices. Make sure to follow evidence-based infection prevention practices, such as performing hand hygiene, maintaining sterile technique, and removing the catheter as soon as it's no longer needed, to reduce the risk of vascular catheter-associated infections.<sup>[2][4][5][6][7][8]</sup> ◆

### ■ Equipment

- Gloves
- Suture removal kit
- Sterile 4" × 4" (10- × 10-cm) gauze pad
- Optional: padded hemostat, gown, mask with face shield or mask and goggles

### ■ Preparation of Equipment

Inspect all equipment and supplies. If a product is expired, is defective, or has compromised integrity, remove it from patient use, label it as expired or defective, and report the expiration or defect as directed by your facility.<sup>[9]</sup>

### ■ Implementation

- Verify the practitioner's order for catheter removal.<sup>[10]</sup>
- Gather and prepare the necessary equipment and supplies.
- Perform hand hygiene.<sup>[2][5][11][12][13][14][15][16][17]</sup>
- Confirm the neonate's identity using at least two patient identifiers.<sup>[18]</sup>
- Provide privacy.<sup>[19][20][21][22]</sup>
- Explain the procedure to the neonate's parents or guardians according to their individual communication and learning needs to increase their understanding, allay their fears, and enhance cooperation.<sup>[23]</sup>

- Trace the tubing from the neonate to its point of origin to make sure that you're accessing the proper port.<sup>[24]</sup>
- If the catheter is attached to a transducer system to monitor pressure, turn off the pressure monitoring alarm to prevent nuisance alarms that contribute to alarm fatigue.<sup>[10] [25]</sup>
- Turn off the IV infusion pump.
- Turn the stopcock off to the neonate.<sup>[10]</sup>
- Verify the centimeter marking at the catheter-skin junction.<sup>[10]</sup>
- Open a sterile 4" × 4" (10- × 10-cm) gauze pad and suture removal kit. Place them where you can easily reach them.<sup>[10]</sup>
- Perform hand hygiene.<sup>[2] [5] [11] [12] [13] [14] [15] [16] [17]</sup>
- Put on gloves and, as needed, other personal protective equipment to comply with standard precautions.<sup>[26] [27] [28]</sup>
- Remove the dressing, tape, or catheter securement device from the umbilical vessel catheter.
- Locate the sutures while holding the catheter in place.
- Using the suture removal kit, cut and remove the sutures carefully.<sup>[10]</sup> Make sure that you remove all the suture material because retained sutures can lead to an infection.

### Removing an arterial catheter

- Grasp the catheter firmly with one hand and slowly pull it out to the 5-cm mark. Use the other hand to stabilize the cord.<sup>[10]</sup>
- Tighten the umbilical tape around the umbilical stump.<sup>[10]</sup>
- Gently withdraw the remainder of the catheter at a rate of 1 cm/minute to minimize arterial spasm.<sup>[1] [10]</sup>

◆ **Clinical alert:** Don't pull on the catheter if you meet resistance during removal. Leave it in place and notify the practitioner.<sup>[29]</sup> ◆

- If bleeding occurs, clamp the artery using your thumb and forefinger or a padded hemostat. Alternatively, tighten the umbilical tape for 3 to 5 minutes until the bleeding stops. If you can't grasp the artery, apply point pressure with the sterile 4" × 4" (10- × 10-cm) gauze pad.<sup>[10]</sup>

### Removing a venous catheter

- Grasp the catheter firmly with one hand and slowly pull it out.<sup>[1] [10]</sup>
- Apply gentle pressure using a sterile 4" × 4" (10- × 10-cm) gauze pad if the vein begins to bleed. Note that a small amount of oozing may occur, which is normal.<sup>[1] [10]</sup>

### Completing the procedure

- Inspect the catheter tip and length after removal. Compare the removed length with the inserted length and examine the catheter for damage and possible fragmentation.<sup>[30]</sup> Notify the practitioner immediately if you see or suspect catheter damage.<sup>[30]</sup>
- Position the neonate to allow for observation of the umbilical site.<sup>[10]</sup>
- Avoid covering the site or placing the neonate in a prone position for 1 hour after removing the catheter.<sup>[10]</sup>
- Monitor the removal site for signs of complications for at least 12 hours after catheter removal. Then assess the site daily.<sup>[10] [29]</sup>
- Discard used supplies in appropriate receptacles.<sup>[26] [31]</sup>
- Remove and discard your gloves and, if worn, other personal protective equipment.<sup>[26] [31]</sup>
- Perform hand hygiene.<sup>[2] [5] [11] [12] [13] [14] [15] [16] [17]</sup>
- Document the procedure.<sup>[32] [33] [34] [35] [36]</sup>

### Special Considerations

- Explain to the parents or guardians that catheter removal usually means that the neonate's condition is improving. The parents or guardians may become anxious when equipment is removed because of worries about what may happen if the neonate becomes ill again.

### Complications

Complications of umbilical vessel catheter removal include infection and excessive bleeding at the insertion site.

## ■ Documentation

Record the date and time of catheter removal, the length of the catheter removed, the condition of the catheter site and catheter, any associated blood loss, and the neonate's tolerance of the procedure.<sup>10</sup> Document teaching provided to the neonate's parents or guardians, their understanding of that teaching, and any need for follow-up teaching.

## ■ Related Procedures

- [Central venous access catheter removal](#)
- [Epidural catheter removal](#)
- [Midline catheter removal](#)

## ■ References

([Rating System for the Hierarchy of Evidence for Intervention/Treatment Questions](#))

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## ■ Facility Review

Woman's Hospital reviewed procedure on 05/03/2021. Procedure was approved by NICU Management and NICU MDs.

### Rating System for the Hierarchy of Evidence for Intervention/Treatment Questions

The following leveling system is from *Evidence-Based Practice in Nursing and Healthcare: A Guide to Best Practice* (2<sup>nd</sup> ed.) by Bernadette Mazurek Melnyk and Ellen Fineout-Overholt.

Level I: Evidence from a systematic review or meta-analysis of all relevant randomized controlled trials (RCTs)

Level II: Evidence obtained from well-designed RCTs

Level III: Evidence obtained from well-designed controlled trials without randomization

Level IV: Evidence from well-designed case-control and cohort studies

Level V: Evidence from systematic reviews of descriptive and qualitative studies

Level VI: Evidence from single descriptive or qualitative studies

Level VII: Evidence from the opinion of authorities and/or reports of expert committees

Modified from Guyatt, G. & Rennie, D. (2002). *Users' Guides to the Medical Literature*. Chicago, IL: American Medical Association; Harris, R.P., Hefland, M., Woolf, S.H., Lohr, K.N., Mulrow, C.D., Teutsch, S.M., et al. (2001). Current Methods of the U.S. Preventive Services Task Force: A Review of the Process. *American Journal of Preventive Medicine*, 20, 21-35.

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