CARE OF A TUNNELED CATHETER (HICKMAN® & BROVIAC®)
with a Needleless Connector (MicroClave® Clear)
Table of Contents

Part 1 – Learning about the Catheter ............................................................................................................. 2

Part 2 – Caring for Your Child’s Catheter ....................................................................................................... 3
  A. Preventing Infection ............................................................................................................................... 3
  B. Bathing .................................................................................................................................................... 4
  C. Site Care for First 4 Weeks ..................................................................................................................... 4
  D. Dressing Changes .................................................................................................................................. 6
  E. Once your Child’s Catheter Has Healed ................................................................................................. 6
  F. Flushing the Catheter .............................................................................................................................. 7
  G. Changing the needleless connector (MicroClave® Clear) ................................................................. 7

Part 3 – Sensitive Skin Care .......................................................................................................................... 9

Part 4 – Getting More Supplies .................................................................................................................... 10

Part 5 – Problem Solving ............................................................................................................................. 11
Part 1 – Learning about the Central Venous Catheter

The tunneled central venous catheter is a narrow, plastic-like, hollow tube. It is placed under the skin in one of the veins just under the collarbone. It is held in place by a cuff that lies under the skin. The tip of the catheter is placed just above the heart (see picture below).

Uses for a tunneled catheter include the following:

- Drawing blood
- Chemotherapy
- IV (intravenous) fluids
- Blood transfusions
- IV (intravenous) nutrition

Benefits

- Comfort – Fewer needle sticks are needed.
- Safety – Secure access into the bloodstream that can be maintained as long as it is needed.
- Independence - Many treatments can be done on an outpatient basis.

Catheter Placement

Your child’s catheter will be placed in the operating room, Ambulatory Surgery, or in the Department of Interventional Radiology. Placement often takes about 30 minutes. There is some waiting and observation time. The entire process may take 2 – 4 hours.

A local anesthetic is used to numb the area. For children, general anesthesia is used. The first incision is made just below the collarbone. This is where the catheter enters the large blood vessel that leads to the heart. This place is called the “entrance site.” (See picture to the right).

The entrance site will have paper “stitches” called steri-strips or “glue” called Dermabond® holding it closed. Do NOT remove. These will fall off as the site heals.

The rest of the catheter is tunneled under the skin where the second small incision is made. This is the “exit site” where the catheter exits the body. At the exit site, a few stitches will be placed to hold it in place until the tissue can heal. These stitches may be removed by your child’s nurse or doctor in about one month.
At the exit site, the catheter may be separated into 2 or 3 individual channels called lumens (see picture below).

**After Placement**

- A chest x-ray will be taken to confirm proper placement.
- Your child may feel some neck and/or shoulder pain and stiffness for a couple of days. Pain medicine may be ordered for your child.
- It is normal to have a small amount of bleeding, oozing, or blood around the exit site for 1 – 2 days. If the bleeding increases or does not stop, contact your child’s nurse or doctor.
- Check with your child’s health care team before resuming any strenuous activity.

**Part 2 – Caring for Your Catheter**

**A. Preventing Infection**

- To prevent infection, your child will need to keep the exit site very clean and the opening to the catheter (hub) sterile. Your child’s nurse will show you how to do this.
- Always clean your work area with soap and water. Let it dry before setting up supplies.
- Wash your hands well with soap and water for 60 seconds. Be sure to clean under your nails. You may want to use a nail brush. Rinse well. Dry your hands with a clean towel.
- Use only tubing, IV bags, and other supplies that are sterile.
- Never touch the end of the catheter or the connection end of the needleless connector with your fingers.
- Do not use a needleless connector or syringe if it has been touched by your fingers or any other non-sterile object.
- Always clean the top of the needleless connector (hub) with an alcohol wipe using a ‘juicing’ method for 10-15 seconds and let dry before accessing.
- Handle gauze pads or transparent dressings only at the edges.
- Check **expiration dates** on your medicines and supplies.
- Always store your supplies in a clean, dry place.
B. Bathing

- Your child will be able to shower in 24 – 48 hours. Tap water contains small numbers of germs. You must protect your child’s catheter and hub from water. You will need to keep the catheter covered with a waterproof type of dressing.
  - These may include: tegaderm, Micropore® patch, Ziplock® bag, or AquaGuard®. You can order the AquaGuard® at 1-800-426-1042.

- The catheter should never be below the level of water in the tub when your child is bathing.

- Swimming is not allowed. Check with your child’s health care provider. (?)

Other Helpful Points

- Never use scissors, pins, or sharp objects near your child’s catheter.

- Carry an extra sterile needleless connector in the event your child’s connector leaks or comes off.

- Carry a rubber band and sterile gauze in case your child’s catheter breaks. In the event of a break, pinch off the catheter between the break and your child’s skin. Cover the end with sterile gauze and secure with a rubber band. If you have a cannula clamp, make sure the clamp is between the break and your child’s exit site. Call your child’s health care team right away.

- If your child’s skin becomes irritated from the tape or the dressing, ask about other skin care options, which may include skin prep.

- Keep the catheter coiled or looped and taped to your child’s chest at all times to prevent the catheter from being pulled out or damaged.

C. Site Care & Dressing Change for First 4 Weeks (While the stitches are in)

Note: Pre-packaged central line dressing kits may be provided.

Supplies

- 1 ChloraPrep® skin antiseptic
- 1 gauze dressing (2x2 or 4x4) or 1 transparent adhesive dressing
- clean and sterile gloves (2 sets)
- skin prep (optional)
- Biopatch® – donut shaped patch that contains a disinfectant (optional).
  - If a Biopatch® is used the patch can stay on the site for seven days unless it is soaked with blood or fluid. If wet or soiled, change the patch earlier.
Steps
1. Prepare a clean work surface.

2. Gather supplies.

3. Wash your hands well for 60 seconds.

4. Put a mask on yourself, your child and anyone helping to hold your child during the dressing change.

5. Put on the 1st pair of sterile gloves. Prepare your dressing change kit. Open any packages you will be using and place the hand sanitizer packet and 2nd pair of sterile gloves to the side.

6. Next, carefully remove the old dressing. Adhesive remover may be used to loosen the old dressing. Peel dressing toward the site without pulling on the catheter.

7. Remove used gloves. Clean your hands with the hand sanitizer packet. Put on the 2nd pair of sterile exam gloves.

8. Inspect the exit site for redness, swelling, drainage, tenderness, and/or warmth. Call your child’s health care team, if any of these are present. Also, report dry skin, rash, or irritation from the dressing.

9. If there is a lot of drainage or dried blood around the exit site, clean the area with alcohol swabsticks.

10. Pinch the wings on the ChloraPrep® to release the liquid into the sponge pad. Do not touch the pad. Gently press the sponge against the skin near the exit site until you can see the liquid on the skin. Use a back and forth friction rub for 60 seconds to all the skin covered by the dressing. Let air dry for 30 seconds. Do not blot, wave at, or blow-dry the site.

11. Apply skin prep to edges of dressing field, avoiding the area where the Biopatch® (if used) will contact your child’s skin. Let dry.

12. Apply Biopatch®, if necessary. If not using a Biopatch®, skip to step 13

   • (Directions here for how to apply Biopatch)

13. Apply new dressing (see “Dressing Types” below for details)

14. Loop and tape the catheter to skin to prevent the catheter from dangling
D. Dressing Types

Gauze Dressing

When gauze dressing is used, the dressing should be **changed every day** and sooner if it is loose wet, soiled, or if any drainage is present.

1. Open the sterile gauze package.

2. Pick up the gauze. Be careful to touch only the very edges or the outside part that will not come in contact with your HICKMAN® catheter exit site.

3. Place the gauze over your child’s exit site.

4. Tape the edges of the gauze or, if directed, cover the gauze completely with tape.

Transparent Adhesive Dressing

**Change at least every seven days** or sooner if it is loose, wet, soiled, or if any drainage is present.

1. Peel the backing from the transparent dressing and apply to site. Be careful not to touch the adhesive side to anything but the exit site.

2. Place the dressing over the catheter tube first. Then gently smooth other the rest of the dressing.

**Note:** Sorbaview® is a type of transparent dressing often used in children.

E. Site Care Once your Catheter Has Healed (4 weeks after insertion)

In about four weeks, your child’s exit site should be well healed and the stitches will sometimes be removed. If your child’s stitches are still in after this time, please ask your child’s health care team about removing them.
F. Flushing the Catheter

- The catheter must be flushed at least once a day. If the catheter has multiple lumens; each must be flushed.
- Additionally, the catheter must be flushed after each use.

Supplies

- Pre-filled 5 mL heparinized saline (concentration: 10 units per mL) syringes
- Alcohol wipes
- Needleless connector (MicroClave Clear®) (every 3 days or when blood is not cleared with flushing, or as directed by your homecare nurse)
- Clean gloves.

Steps

1. Gather supplies.
2. Clean the area you will be setting up supplies for flushing.
3. Wash your hands with soap and water for 60 seconds.
4. Put on clean gloves.
5. Clean the top of the needleless connector with an alcohol wipe for 15 seconds and let dry.
6. Remove the plastic cover from the syringe. Gently push out the small amount of air in the syringe. Insert the syringe filled with heparinized saline into the connector.
   
   **Note:** If the tip of the syringe touches anything other than the connector, stop, and replace the syringe.
7. Unclamp the catheter.
8. Begin flushing by using a push-pause-push method on the syringe plunger until the syringe is almost empty.
   
   **Note:** The catheter should flush easily. If you feel resistance, check to see if the clamp is open and that the tubing isn’t kinked. If there is resistance, do not force.
9. Clamp the catheter.
10. Remove the syringe.

G. Changing the needleless connector (MicroClave® Clear)

The needleless connector needs to be changed every three days or as directed by your homecare provider.
Note: Change sooner if blood is visible in the connector. The connector is sterile at the connector end.

Supplies

- Small sterile drape
- Mask
- Sterile gloves
- Alcohol wipes
- Sterile 4x4 gauze pad
- Needless connector (MicroClave®)

Steps

1. Wash your hands for 60 seconds.

2. Make sure all lines are clamped.

3. Remove the plastic cover from the syringe. Push air out of the syringe. Open a 4x4 sterile gauze and drop it onto the sterile field.

4. Put on mask and sterile gloves.

5. Open the needleless connector package. Grab one piece of sterile gauze to pick up the saline syringe. Connect the syringe to the end of the connector. Twist on completely. If the tip of the syringe touches anything other than the end of the catheter, stop, and replace the syringe.

6. Fill the needleless connector with saline solution by pointing the blue protective cap found at the other end of the connector up towards the ceiling. This will remove all air from the connector. Leave the syringe filled with saline attached to the connector and place in sterile field.

7. Open one of the alcohol pads. Hold another sterile 4x4 gauze in your non-dominant hand and pick up the line above the old connector.

8. Cleanse the connection between the old connector and the line for 15-20 seconds using a juicing motion. Let it dry. Continue to hold the line.

9. Remove the old needleless connector from the catheter. Hold the line without touching the end of the catheter opening.

10. Remove the blue protective cap from the new needleless connector. Attach the new connector to the end of the catheter. Do not over tighten. One firm turn onto the line is sufficient.

11. Unclamp the line.

12. Flush the line using push- stop- push method with the remaining flush solution already attached to the needleless connector.
13. As you complete the flush, clamp the line while holding down the plunger and remove syringe at the same time.

14. If your child’s catheter has multiple lumens; repeat these steps for each lumen.

**Part 3 – Sensitive Skin Care**

Follow these steps if your child’s skin becomes red, irritated, or has open sores.

**Supplies**

- Hibiclens® single use packets CS#1215001 do they need a CS number for home? or bottle if available. **Do not use Chloraprep when your child’s skin is sensitive – the high alcohol content will irritate the skin more.**
- 4x4 sterile gauze for cleaning/drying
- 1 roll of paper tape or Hytape (pink) tape or 1 small transparent adhesive dressing
- 2x2 or 4x4 sterile gauze for dressing
- Clean and sterile gloves (if stitches are still in place)
- No-sting skin prep
- Adhesive tape remover
- Sterile water if indicated

**Steps**

1. Wash your hands for 60 seconds.

2. Open 4x4 gauze package. Pour chlorhexidine onto one of the sterile 4x4 squares. You may need to dilute it with sterile water.

3. Put on sterile gloves if your child’s stitches are still in place; otherwise, no gloves are needed.

4. Gently scrub the exit site with the soaked gauze squares for 30 seconds. Gently blot dry with the other package of dry 4x4 sterile gauze.

5. Let air dry completely. Do not wave at or blow dry the area.

6. Apply a dressing according to dressing change Section C. Make sure to apply no-sting skin prep around the area where the adhesive will be placed. Your child’s health care team will help you decide which dressing is best for your child.

**Gauze**

Skin that is very irritated with open sores should be covered with gauze, not left open to the air. When you place gauze, make sure to either use a no-tape method (which your child’s health care team can teach you) or make sure the tape is not in direct contact with the irritated skin. Try to place the tape in a different area each time you change your child’s dressing; use the least amount of tape that you can. This will give your child’s skin a chance to heal.
Part 4 – Getting More Supplies

You may be given three days’ worth of supplies. Your child’s health care team will ensure that further supplies will be arranged through the correct supplier.

**Hickman® Catheter Supply Checklist**

Use this checklist to take inventory of your home supplies. Your child’s nurse will help you figure out what you need and order **refills.**

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>3 DAY SUPPLY</th>
<th># ON HAND</th>
<th># NEEDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Needleless Connectors (MicroClave Clear®)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prefilled Heparinized saline (10 units/ml) syringes</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol Wipes</td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ChloraPrep® skin antiseptic</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2x2 and/or 4x4 Gauze Squares</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Band-Aids®</td>
<td>0 – 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hibacleanse packets, sterile water</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Tape 1”</td>
<td>1 roll</td>
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<td></td>
</tr>
<tr>
<td>Transparent Adhesive Dressing</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clean Gloves</td>
<td>1 box</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sterile Gloves</td>
<td>1 box</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sharps® Container (available in CS) if using needles for mixing medicines or have syringes contaminated with blood</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biopatch® (optional)*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Securement Device (to keep catheter looped and secured)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*If a Biopatch® is used on an infected appearing site or a new catheter, the patch can stay on the site for 7 days unless it is soaked with blood or fluid. If soiled, change the patch earlier.
Part 5 – Problem Solving (Signs of Problems)

Call your child’s health care team right away if there are any of the problems listed below.

- Fever and/or chills
- Shaking and/or chills after flushing your child’s catheter
- Constant blood in the catheter tubing
- Swelling of face, neck, chest, or arm
- Drainage, redness, swelling, severe pain, or bleeding at the exit site
- Sudden chest pain or difficulty breathing

- Problems/difficulty flushing, such as meeting resistance when you push on the plunger of the syringe
  - First, make sure the catheter is unclamped and the catheter is not kinked
  - If you still cannot flush the catheter, stop using and call the doctor.

- Damage to the HICKMAN® catheter such as a leak, hole, cut, or crack in the tubing; see Helpful Points on page 5 for details.

- Displacement or lengthening of catheter at the exit site
- Cuff is visible from the exit site
- HICKMAN® catheter is accidentally pulled out;
  - Apply pressure with gauze to the exit and entrance sites as shown in picture on page 2.
  - Call the doctor right away.

Personalized Dressing Plan, if different from above:

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______________________________________________________________________________
Your health care team may have given you this information as part of your care. If so, please use it and call if you have any questions. If this information was not given to you as part of your care, please check with your doctor. This is not medical advice. This is not to be used for diagnosis or treatment of any medical condition. Because each person’s health needs are different, you should talk with your doctor or others on your health care team when using this information. If you have an emergency, please call 911. Copyright © 2016 University of Wisconsin Hospitals and Clinics Authority. All rights reserved. Produced by the Department of Nursing. HF#7592