

Tenckhoff Catheter

Instruction Manual and Information Guide

This booklet is a guide and personal tool to help you understand and take part in the care of patients going home with a Tenckhoff Catheter. You can use this booklet to help you learn more about:

- Catheter care.....page 3
- Troubleshooting problems with the catheter page 15
- Common nursing questions and concerns.....page 17
- Who and when to call for help page 21

About this Information Guide and Instruction Manual

This guide was created by a team of health care professionals for nurses and family members who provide care for individuals with a pleural Tenckhoff catheter. Most of the important information regarding Tenckhoff catheter care is included in this guide.

Have any questions or concerns?

Phone: _____

Part 1 AFTER PROCEDURE- CATHETER CARE

- Draining the catheter (page 3)
- Flushing the catheter (page 9)
- Dressing changes (page 10), Suture removal and Adaptor changes (page 13)

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Part 1

AFTER PROCEDURE - CATHETER CARE

After the Tenckhoff catheter has been inserted, there is important care to provide. This part of the guide has information on:

- Draining the catheter
 - Drainage description, equipment and procedure
- Dressing changes
- Suture removal
- Needleless adaptor changes

Draining the Tenckhoff Catheter

Important information about the drainage:

Once the Tenckhoff catheter has been inserted, the LHIN nurse will visit the patient within 48 hours. The LHIN nurse will attach the catheter to a drainage device that will collect the pleural fluid.

The colour of the patient's pleural fluid can range from a pale yellow to orange to cranberry red. This is normal.

The drainage bag must be lower than the patient's chest. This lets gravity help to drain the pleural fluid.

If the patient has any of the symptoms below, the fluid from the Tenckhoff catheter should be drained:

- Shortness of breath
- Increasing sensation of chest fullness
- Chest discomfort

How often will the catheter be drained?

The amount of the fluid that drains will be different each time. Use the amount of fluid that drained **the last time** as a guide. The patient's drainage schedule will be based on the following:

| Fluid collected on last drainage | How often it should be drained |
|----------------------------------|--------------------------------|
| More than 300 millilitres | Every day |
| Between 100 to 300 millilitres | Every other day |
| Less than 100 millilitres | Twice a week |

What equipment will be used to drain the fluid from the Tenckhoff catheter?

The equipment will include:

- A drainage device
 - The drainage device will either be a



suction bottle

or



empty sterile IV bag

- Sterile secondary intravenous (IV) tubing



secondary IV set

Alcohol or chlorhexidine swabs

Important Notes:

- You should only use the equipment to drain the catheter one time.
- Sometimes the bag may fill completely during one drainage session- this means that you must use a new tubing set and new bag each time.

What is the procedure for draining the Tenckhoff catheter?

1. The catheter will be drained for up to 1.5L by suction bottle method and then disconnected for the pt to go home.
2. At home, you will use either an (1) empty sterile IV bag or you will connect a (2) suction bottle for each drainage session.
3. The fluid usually takes from 15 to 90 minutes to drain each time for the empty sterile IV bag drainage method. The fluid will only take a few minutes to be removed with the suction bottle method. **The fluid should run freely, but some air bubbles may be seen.**
4. It is very important to keep everything clean and free of germs.



Image 1: retrieved online ¹. Healthcare provider and patient in the home environment.

¹ <https://www.usnews.com/news/healthcare-of-tomorrow/articles/2017-02-09/new-federal-rules-will-require-home-health-agencies-to-do-much-more-for-patients>

Option 1: DRAINING THE STERILE IV BAG

Below is a step-by-step process if using IV bag method:

1. You will need to gather the following equipment (image 2):

- Sterile secondary IV tubing
- Sterile IV bag

2. Wash your hands.

3. Close the roller clamp on the IV tubing.

4. Remove the cap on the end of the IV bag. Do NOT touch the end of the bag once the cap is removed.

5. Remove the cap from the pointed end of the IV tubing. Do NOT touch the end of the IV tubing once the cap is removed.

6. Insert the IV tubing into the IV bag port.

7. Open the roller clamp and let the fluid drain into the sink. You want the IV bag empty.

8. Close the roller clamp.

Now that you have drained the IV bag, you are ready to set up the procedure for draining the fluid from the Tenckhoff catheter into the empty IV bag.



Image 2: Sterile IV bag and secondary IV tubing

Option 1: DRAINING THE PLEURAL FLUID INTO A STERILE IV BAG

Below is a step-by-step process:

1. Get the patient into a comfortable position.
2. The cap on the end of the Tenckhoff catheter is called a **needleless adaptor (or MaxZero)**. Clean the end of the needleless adaptor well with an alcohol or chlorhexidine swab. Let it dry for 30 seconds.
3. Remove the cap at the end of the IV tubing. Attach the IV tubing to the needleless adaptor.
4. Put the IV bag lower than the patient's chest. This lets gravity help to drain the pleural fluid.
5. Open the roller clamp on the IV tubing and have patient take a few deep breaths and cough.
6. If the fluid does not drain, look at the tubing and needleless adaptor carefully. Check for blood strands or fibrin. If blocked, follow the steps "Change the needleless adaptor" on page 13 or "Flushing the Tenckhoff Catheter" on page 9 of this booklet.
7. Leave the bag attached and wait for 5 minutes after the fluid stops draining.
8. Close the roller clamp on the IV tubing.
9. Unscrew the tubing from the needleless adaptor cap. The cap seals automatically. Re-dress the needleless adaptor and perform dressing change as required. Follow instructions for "Dressing Changes" on page 10.
10. Measure the amount of fluid in the bag and mark down the amount of fluid that drained on the sheet at the back of the "Patient Education" booklet (page 19). Keep a record of how much drains each time.
11. Throw out the pleural fluid and equipment in the garbage.

Option 2: DRAINING THE PLEURAL FLUID INTO A SUCTION BOTTLE

Below is a step-by-step process:

1. Get the patient into a comfortable position.
2. Clean the end of the needleless adaptor well with an alcohol or chlorhexidine swab. Let it dry for 30 seconds.
3. Remove suction bottle and the attached IV tubing from packaging.
4. Put the suction bottle lower than the patient's chest and ensure all clamps are in the "closed" position.
5. Open the clamp at the base of the suction bottle first, and then slowly open the clamp on the IV tubing until a slow steady stream is flowing.
6. Monitor the patient and drainage. If the patient begins to cough, stop the drainage for a few minutes, and then reopen the clamp so the pleural fluid is draining at a slower rate. If the patient has a sensation of chest pain, or the cough does not subside with a slower flow rate- **stop the drainage.**
7. Allow the fluid to continue to flow until patient develops pain, cough does not subside with slower flow rate, fluid reaches 1.5L or fluid stops flowing.
8. Close the roller clamp and close the clamp at the suction bottle base.
9. Unscrew the tubing from the needleless adaptor cap. The cap seals automatically. Re-dress the needleless adaptor and perform dressing change as required. Follow instructions for "Dressing Changes" on page 10.
10. Measure the amount of fluid in the bottle.
11. Mark down the amount of fluid that drained on the sheet at the back of this booklet. Keep a record of how much fluid drains each time.
13. Throw out the pleural fluid and equipment in the garbage.

Flushing the Tenckhoff Catheter

The Tenckhoff catheter should be flushed ONLY if it is blocked. Do not flush the catheter at other times.

What equipment will be used to flush the Tenckhoff catheter (image 3)?

The equipment will include:

- 10cc pre-filled normal saline syringe
- alcohol swabs or chlorhexidine swabs



Always keep the end of the needleless adaptor clean and free of germs.



Image 3: Equipment required for flushing the catheter.

FLUSHING INSTRUCTIONS

Below is a step-by-step process:

1. Wash your hands.
2. Clean the whole needleless adaptor with an alcohol swab or chlorhexidine swabs.
3. Let the needleless adaptor dry for 30 seconds.
4. Remove the cap from the end of the syringe filled with saline.
5. Screw the luer lock sterile syringe onto the needleless adaptor (image 4).



Image 4: Flushing the catheter.

6. Slowly inject the saline into the Tenckhoff catheter.
7. Unscrew the syringe from the end of the needleless adaptor.
8. If the saline flushes easily and you have no shortness of breath, pain or discomfort, attach a new IV tubing and bag. Open the roller clamp. Drain the pleural fluid as usual.
9. If there is very little or no drainage once the drainage tubing and bag are connected and you feel well, detach the drainage system from the needleless adaptor and leave it until your next scheduled drainage time.

Dressing changes

After the Tenckhoff catheter is inserted, a dressing will be applied. The dressing covers the two incision sites (the entry and exit portions of the catheter). The dressing will be a 4 x 4 gauze covered with Medipore tape. This dressing is to be left on for **2 days**. After the first dressing change done post- insertion, the dressing changes are to be done every other day for the first 2 weeks or earlier if it gets wet or visibly soiled. After 2 weeks, or once the site has healed, the dressing can be changed twice a week.

Instruct the patient each day to check the dressings to ensure they are clean and dry. Things to instruct the patient to watch for are:

- **Drainage and leakage-** *What is the colour? How much? How often are you having to change the dressing? Is there an odour to the drainage?*
- **Insertion site and surrounding skin-** *Redness? Green, opaque yellow drainage? Heat? Pain? Fever greater than 38°C orally/axillary?*

Equipment for Dressing Changes (image 5)

- Sterile saline or chlorhexidine
- 4x4 gauze (x2)
- Drainage gauze (x2)
- Dressing tray
- Blue pad



Image 5: equipment for dressing changes

- Clean gloves
- 3M soft cloth tape, Medipore or paper tape (depending on patient's skin sensitivity- ask what their preference is as tape can be irritating to skin)

DRESSING CHANGE INSTRUCTIONS

Below is a step-by-step process:

1. Perform hand hygiene as per Hand Hygiene policy 4.20.002 and put-on clean gloves.
2. Explain procedure to patient and wipe the area you will be using to set up your supplies.
3. Have patient in a comfortable position that allows you to access the catheter, provide privacy.
4. Place blue pad under the patient where the dressing is.
5. Remove the old dressing, remove the tapes carefully so you do not pull on the catheter.
6. Assess the skin around the insertion site- please see page 20 for signs and symptoms of infection.
7. Assess to make sure the catheter is not dislodged (exterior length of the catheter and also the decron cuff should not be outside of the body).
8. Remove your gloves. Clean your hands with hand sanitizer and open your dressing tray and your supplies.
9. Put on new clean gloves and clean around and under the Tenckhoff catheter using sterile saline or chlorhexidine in a circular motion (starting around the insertion site moving outward). Clean the catheter as well.



Image 6: Picture of a completed dressing change

10. Place a drain gauze around the catheter at the insertion site (image 7). Apply a dry 4x4 gauze dressing over top.

11. Loop the catheter over the gauze and cover the needless adaptor with a gauze to protect the access port from contamination. Tape the gauze down and ensure the Tenckhoff catheter is all covered and protected (image 6).

Note: please do not over tape the skin, it will cause skin irritation. If you have no-sting skin-prep (or Cavilon), please apply to the patient's skin before taping to protect the skin from irritation. Allow skin-prep to dry completely before placing the tape.



Image 7: Drain gauze over insertion site.

○ If patient is being drained every day, it is recommended to leave the end of the part of the catheter where the needless adaptor is connected out of the dressing (image 8). Dressing the Tenckhoff catheter following this option would be beneficial for those who do not need to change their dressing every other day and those patients who require draining often.

○ Using omega technique (image 9), secure the catheter using 3M soft cloth tape to the skin to prevent the catheter from pulling. Also, wrap the needless adaptor in a gauze to protect the access port from contamination.



Image 8: Recommended dressing for catheters that are drained daily.



Image 9: Catheter secured using omega technique and adaptor covered with gauze.

Suture removal

To secure the Tenckhoff catheter into place for the patient, there will be a suture in place where the catheter exits the skin. This suture is removed **30 days** after the catheter has been inserted. This suture is to be removed if it has been one month, the site has healed, and edges are closed around the catheter.

If the site does not look like it is healing well or there are any signs of infection- please have the LHIN nurse assess. If the LHIN nurse is concerned about the healing and is suspicious of infection, **contact the physician's office ASAP for further instructions-** physician phone numbers located on **page 22** of this booklet.

Needleless Adaptor Change

The needleless adaptor (also known as a MaxZero Connector- image 10) should be changed:

- Every 7 days, or whenever the manufacturer recommends
- If the needleless adaptor is blocked with fibrin or a blood clot
- The catheter is not draining

It is important to instruct the patient to keep the end of the Tenckhoff catheter and needleless adaptor clean and free of germs.



Image 10: Needleless adaptor (MaxZero)

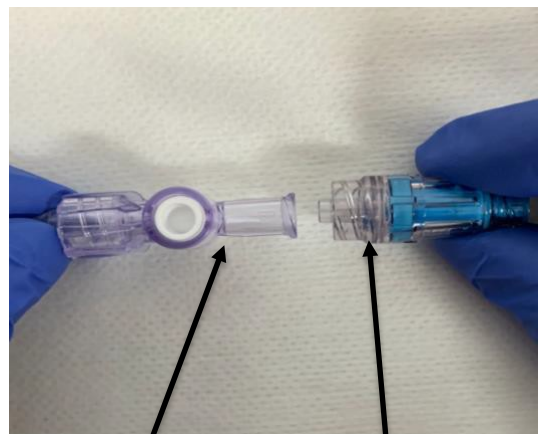


Image 11: Luer Lock Needleless Adaptor

NEEDLESS ADAPTOR CHANGE INSTRUCTIONS

Below is the step-by-step process:

1. Wash your hands.
2. Remove the tape holding the Tenckhoff catheter to the patient's side.
3. Open up the needleless adaptor package. Loosen the cap on the end of the needleless adaptor. Do not remove the cap yet.
4. Bend the Tenckhoff catheter over on itself (image 12).



Image 12: Picture of how to bend the catheter over on itself.



Never use any kind of clamp on the Tenckhoff catheter. The tubing is very soft. A clamp may damage the catheter.

5. Unscrew the old needleless adaptor from the luer lock adaptor.
6. Wipe and cleanse the luer lock with an alcohol swab. Remove the cap on the new needleless adaptor and screw it into the luer lock adaptor (image 11).



Remember, not to touch the ends of the needleless adaptor or luer lock adaptor.

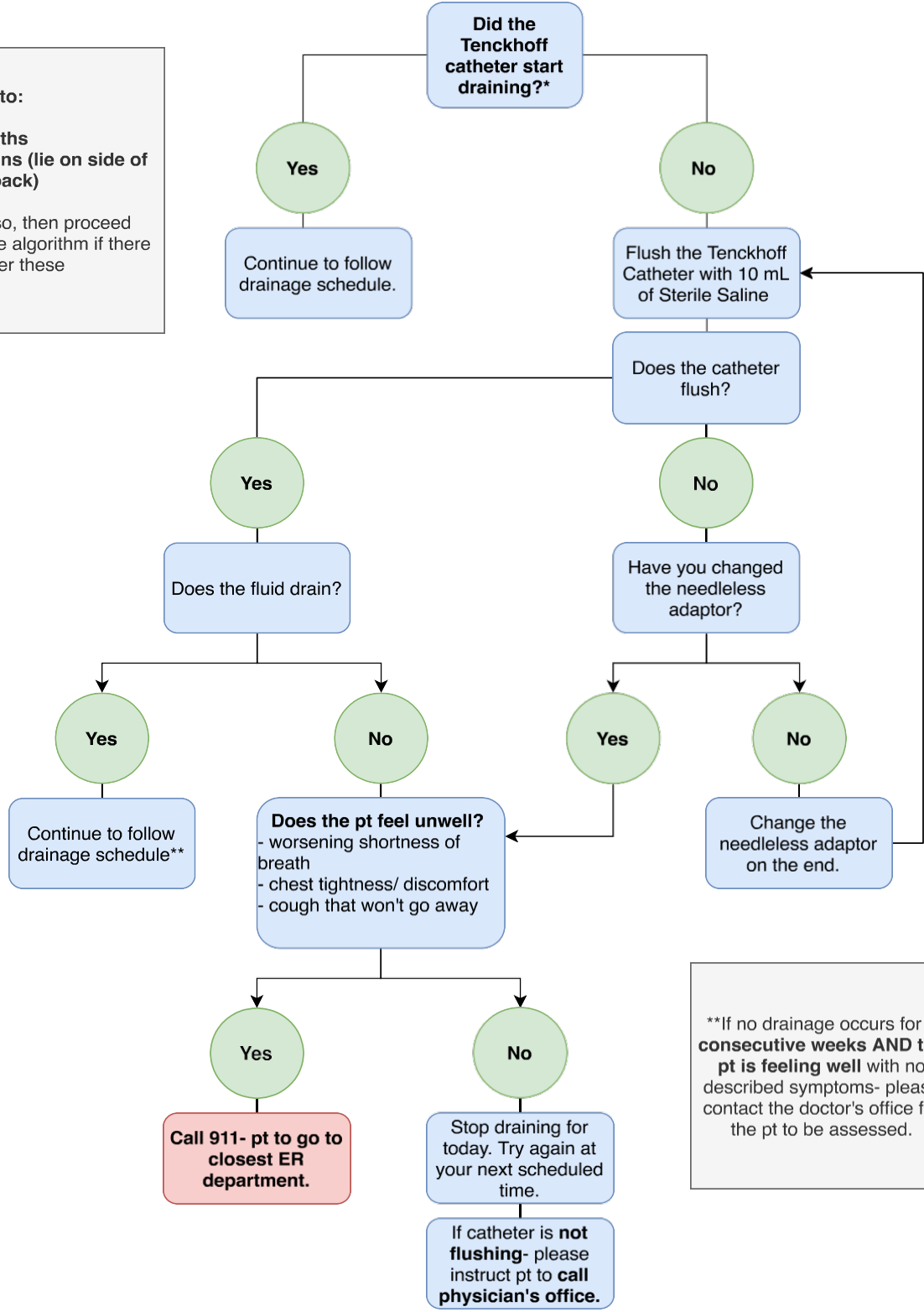
7. Tape your Tenckhoff catheter to the patient's side using fresh tape.

If the Tenckhoff catheter is still blocked after changing the needleless adaptor, try flushing it (page 9).

TROUBLESHOOTING CATHETER PROBLEMS

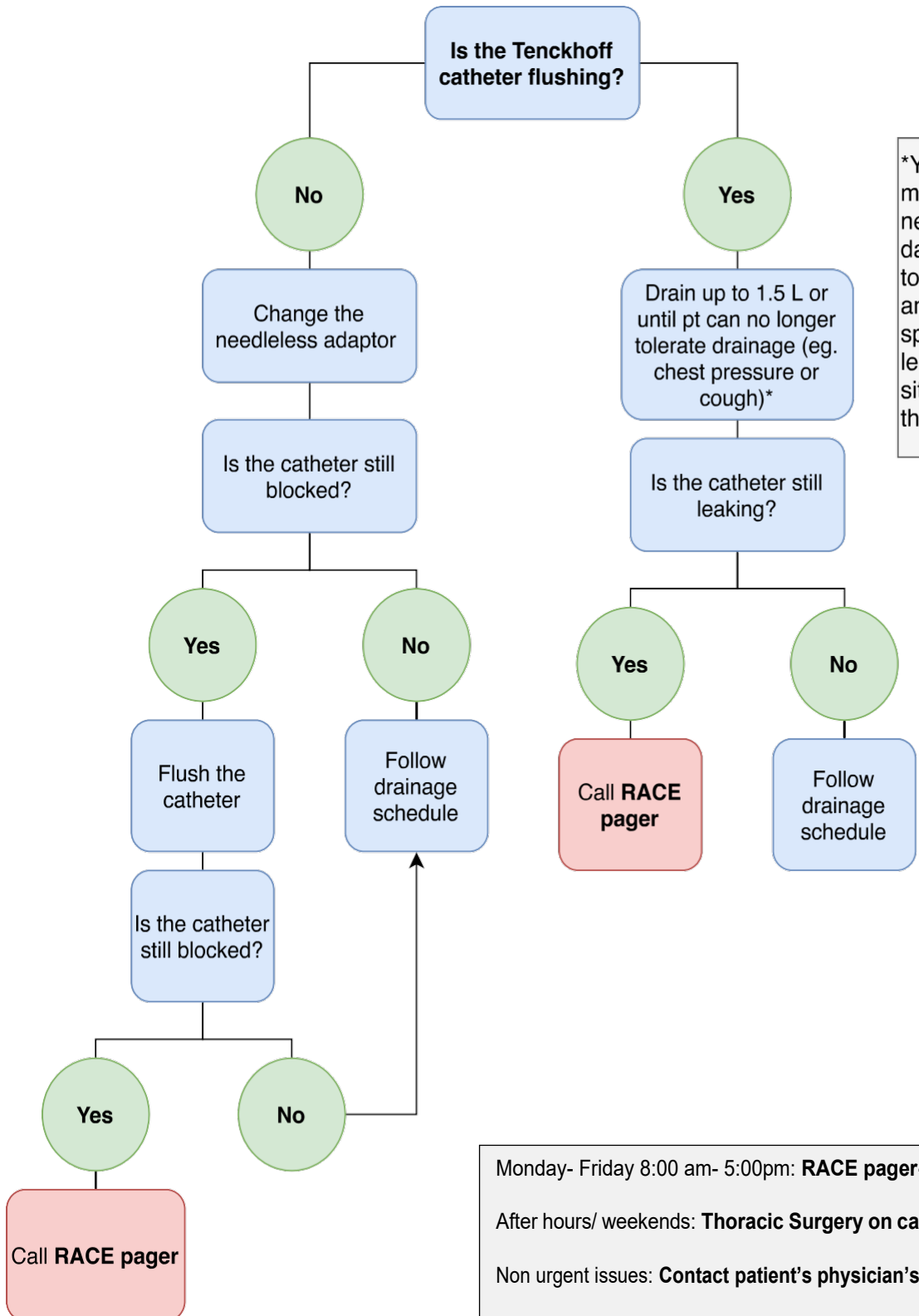
What to do if the catheter isn't draining.

* Did you ask pt to:
 - Cough
 - Take deep breaths
 - Change positions (lie on side of catheter, lie on back)
 If not, please do so, then proceed with the rest of the algorithm if there is no drainage after these maneuvers.



**If no drainage occurs for 3 consecutive weeks AND the pt is feeling well with no described symptoms- please contact the doctor's office for the pt to be assessed.

When the catheter is leaking at the insertion site:



*You can drain up to 1.5L. If more drainage is present, you need to repeat the drainage daily until amount decreases to <1.5L per day. Large amounts of fluid in pt's pleural space is a common reason for leakage at catheter insertion site. If leakage persists- follow this algorithm.

Monday- Friday 8:00 am- 5:00pm: **RACE pager- 416 790 0160**
 After hours/ weekends: **Thoracic Surgery on call- 416 340 3155**
 Non urgent issues: **Contact patient's physician's office**

Part 3

COMMON NURSING QUESTIONS AND CONCERNS

Common questions and concerns patients and family members have.

1. *“When can patient’s shower?”*

Patients are to shower with a waterproof dressing over top of the catheter to keep it dry and clean (image 13). Catheter site is to be cleansed with sterile saline only to prevent infection.



Image 13: Waterproof dressing

2. *“When will the patient's catheter be removed?”*

Varies from person to person depending on the disease process, could be from **a month to a couple of years**.

The criteria for having the Tenckhoff catheter removed is:

- **Drainage amount less than 150mL a week for a minimum of 3 weeks**
- **Symptoms manageable**
- **Chest x-ray completed indicating low amounts of fluid in the chest**

If the patient has met the above criteria, then instruct the patient to call the physician's office to make an appointment and to have their chest x-ray scheduled.






3. *“What if the fluid comes back after the doctor has removed the catheter?”*

It is **very uncommon** that it would have to be put back in. On rare occasions, the fluid may develop in the other lung.

4. *“What do the different fluid colours mean”*

Different fluid colours depend on the disease process. Different colours do not mean that something is wrong, or worse than others. The only colour that is of concern is a

pus- coloured drainage indicating infection. The different types of colours you may see are listed in the table below:

| Pleural Drainage Colours | | | | | |
|--------------------------|---|--|---|--|--|
| DRAINAGE COLOUR | Yellow | Bloody | Brown | Dark Green | White/Dark Yellow |
| APPEARANCE | “Urine”, clear  | “Cranberry juice”  | “Tea or coffee”  | “Green juice”  | Pus, opaque  |
| CONCERN? | ✓ No cause for concern | ✓ No cause for concern | ✓ No cause for concern | ✓ No cause for concern | ✗ NOT NORMAL- INFECTION. Contact the physician ASAP. |

The patient's pleural fluid colour may change overtime. This is not uncommon and should not be something to be concerned about. This is dependent on the disease process and is an expected finding.

Only time to be concerned is if you notice the fluid colour is pus-like in appearance, or you develop a fever, increased redness at site, increased pain, or other signs and symptoms of infection.

5. *“There’s something that looks like a little worm at the end of the catheter, what does it mean and what do I do?”*

This is fibrin, or bits of tissue that stick together. Clean the tip of the adaptor, attach a 10cc syringe, pull back, suction out any bits clogging the catheter end and change the adaptor. Change the adaptor once a week or more often if necessary.

6. *“The catheter fell out what do I do”*

Clean the area, cover with gauze and a dressing and tape it down, and call the doctor’s office. No need to instruct patients to go to emerge. We will arrange a time

for the patient to come in for evaluation. Call 419 340 4800 ext 3155 and ask them to page the thoracic resident on call.

7. *“The skin around the catheter is red or rashy, what do I do?”*

Please see **figure 1 on page 20** for an algorithm directing what to look for and what actions to take.

If they do not have a fever, and the drainage colour is not pus coloured- it could be related to skin irritation and document findings. Watch closely and instruct patients to avoid any lotions or scented soaps over the site.

8. *“If there is fluid coming out at the entry site of the catheter”*

Flush the catheter. Catheter could be blocked. If the catheter is flushing, and you continue to have drainage out of the entry site, examine the colour of the drainage. If you are suspecting infection (pus, yellow/green drainage, odour, heat, redness), contact the physician’s office ASAP.

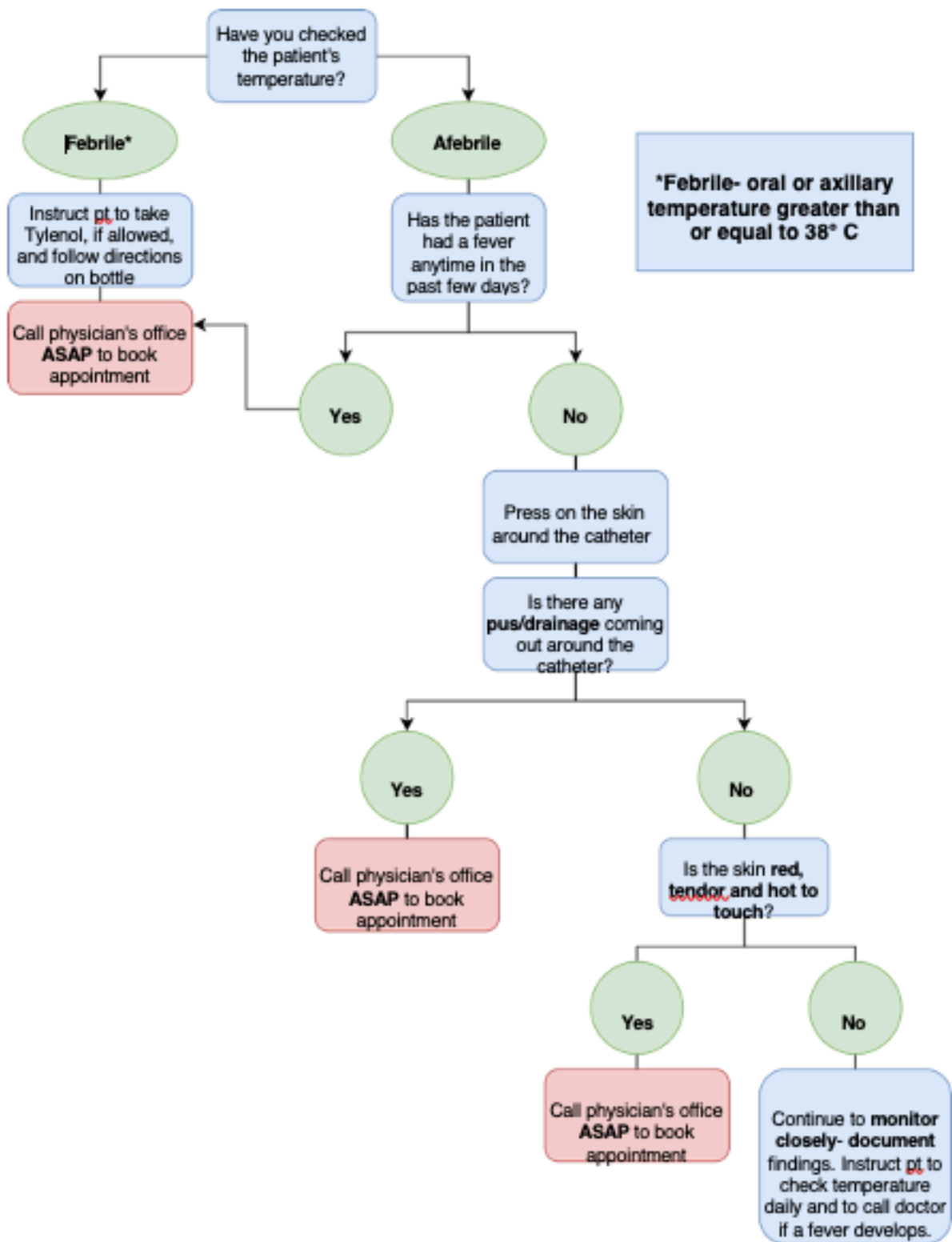
9. *“Hooked up the bag and no fluid is coming out”*

Try flushing the catheter, if no fluid is coming out, try draining the bag again in 2 days. Please refer to **drainage schedule on page 4**.

10. *“Patient has increased shortness of breath, chest tightness and pain. I have tried flushing the catheter with no success, and the patient reports worsening symptoms. What do I do?”*

Take patient’s vitals and call 911- patient may be severely ill and will need to be assessed at the hospital.

Figure 1: Assessing for Infection



Part 4

WHEN AND WHO TO CALL FOR HELP WITH THE TENCKHOFF CATHETER

This section will discuss the following:

- Signs and symptoms of infection
- Important phone numbers
- Contact process and algorithm

Signs and Symptoms of Infection

Catheter related infections can be treated with antibiotics. At times the doctor may, however, decide to remove the catheter as part of treatment of the infection. Signs and symptoms of infection are:

- Fever
- Sweating
- Redness around catheter site
- Heat at catheter site
- Increased pain at catheter site
- Purulent or yellow/green drainage from the catheter

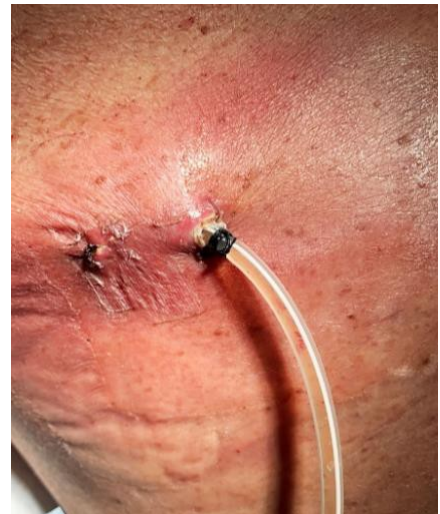


Image 14: Picture of an infected Tenckhoff catheter site.

If the drainage looks like the image above (image 14), call the physician's office and instruct the patient to book an appointment ASAP. You do not need to send the patient to emerge for a suspected infection unless they are clinically unwell and require ER assessment (i.e low blood pressure with symptoms such as syncope, pre-syncope, elevated heart rate, O₂ less than 90%). Continue to follow the drainage schedule, contact the physician, and we will give the patient further instructions/ book the patient in for an appointment ASAP.

Important Phone Numbers

Listed below are the names and contact numbers of the Thoracic surgeons at TGH if you need to get in contact with them regarding patient's care.

| | |
|-------------------------|------------------------|
| Dr. M. Cypel | 416 340 5156 |
| Dr. K. Czarnicka-Kujawa | 416 340 4800 ext. 4657 |
| Dr. G. Darling | 416 340 3121 |
| Dr. M. DePerrot | 416 340 5549 |
| Dr. L. Donahoe | 416 340 4800 ext. 6529 |
| Dr. S. Keshavjee | 416 340 4010 |
| Dr. A. Pierre | 416 340 5354 |
| Dr. T. Waddell | 416 340 3432 |
| Dr. K. Yasufuku | 416 340 4290 |
| Dr. J. Yeung | 416 340 4800 ext. 6529 |

Who to Contact and When

If the patient is having trouble with the care of their catheter (flushing, dressing changes, draining, and adapter change)? – Patient to call **LHIN nurse**.

Is the LHIN nurse having difficulties troubleshooting the catheter? LHIN nurse to contact the **Rapid Assessment of Complex Pleural Effusion (RACE)** team:

Monday- Friday 8:00 am- 5:00pm: **RACE pager- 416 790 0160**

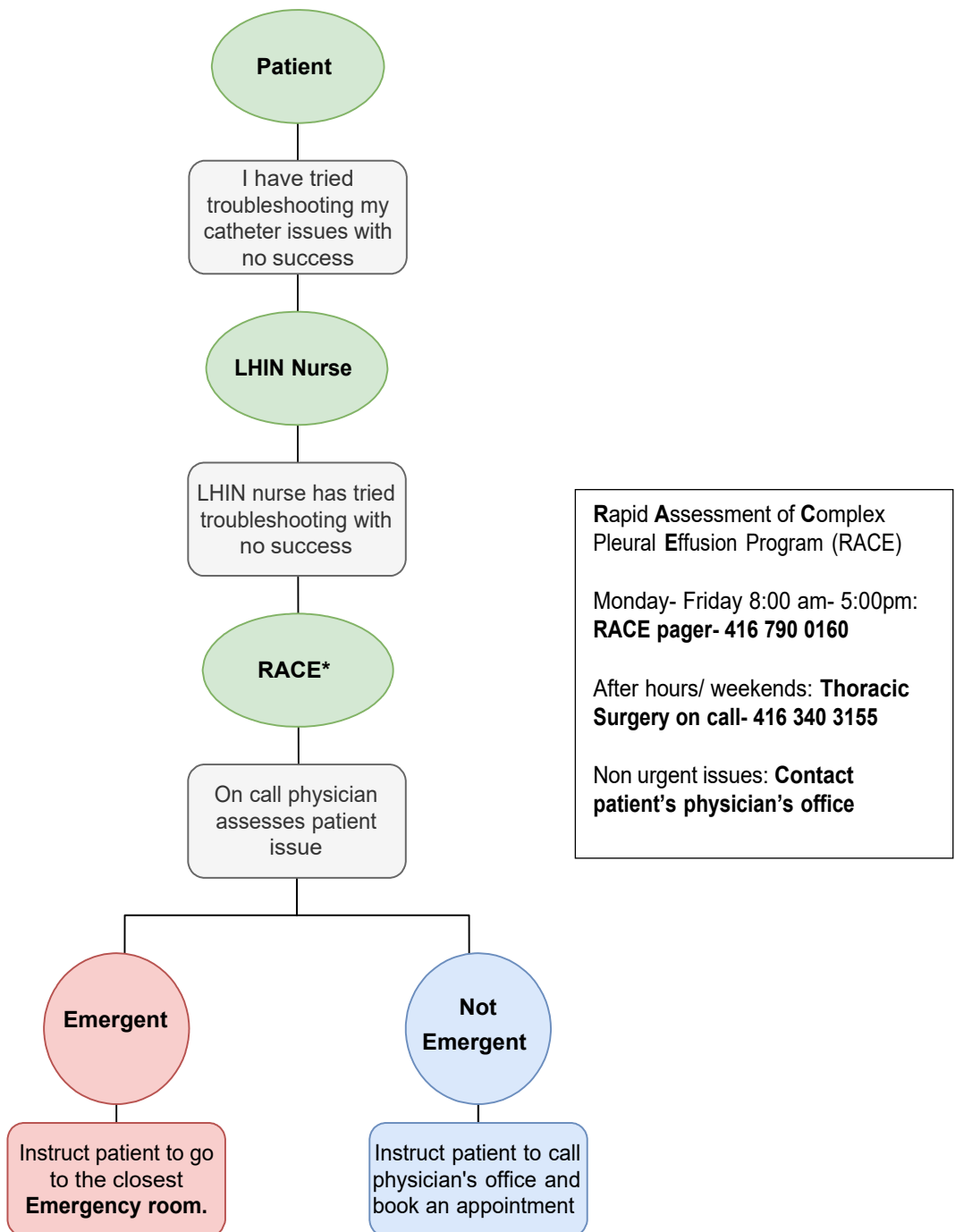
After hours/ weekends: **Thoracic Surgery on call- 416 340 3155**

Non urgent issues: **Contact patient's physician's office.**

Have you tried troubleshooting the catheter, and are having worsening difficulties breathing? Go to your closest **Emergency Department**.

Has the LHIN nurse fixed the catheter with no issue, and the catheter is draining, yet the patient continues to have issues with symptoms (i.e cough, weight loss, chest pain)? Patient to contact their **Oncologist**.

Chain of Command



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