YOUR GUIDE TO

Home Parenteral Nutrition (PN)

This guide will describe what you need to know about home PN. It will cover what this is, why it is important, how to prepare and run PN through your catheter, how to prevent complications, when and where to seek help, and much more. Your home PN nurse will review each section closely with you and explain what this means for you.

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Shire

Acknowledgements

Author:

Sylvie Le Bourdais, RN, M.Sc.(N)

Reviewers:

Dr Errol B. Marliss, Director of the Home Parenteral Nutrition Program of the MUHC

France Paquet RN, M.Sc.(N), CVAA (c), VA-BC (tm)

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IMPORTANT: PLEASE READ

Information provided by this booklet is for educational purposes. It is not intended to replace the advice or instruction of a professional healthcare practitioner, or to substitute medical care. Contact a qualified healthcare practitioner if you have any questions concerning your care.

This material is also available on the site of the MUHC Patient Education Office
www.muhcpatienteducation.ca

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Part 1: Learning the Basics

A special message for you

Using our experience and what patients and families have told us, we have designed this reference guide so that it is useful, practical and easy-to-read. It will cover important information about home PN, how to prepare and run (infuse) PN through your catheter, how to trouble-shoot possible problems, when and where to seek help, and much more.

Our clinical experience has shown that carefully following these instructions for your PN will help you to:

- Regain and maintain your weight and energy
- Be able to carry out your activities and return to social life
- Make sure your catheter works well (no breaks, blocks, etc.)
- Prevent serious infections
- Prevent blood sugar problems

How much and how quickly you improve will also depend on your general condition and the health problem(s) you have.

Please review this closely with your home PN health care team. Use it as a guide once you are at home. We know that managing PN at home can be stressful for patients and families.

We hope that this guide will help you feel more confident and capable, as well as offer you all the key information you might need. Remember: you are not alone. Speak to us if you have any questions or concerns. We are there to help!

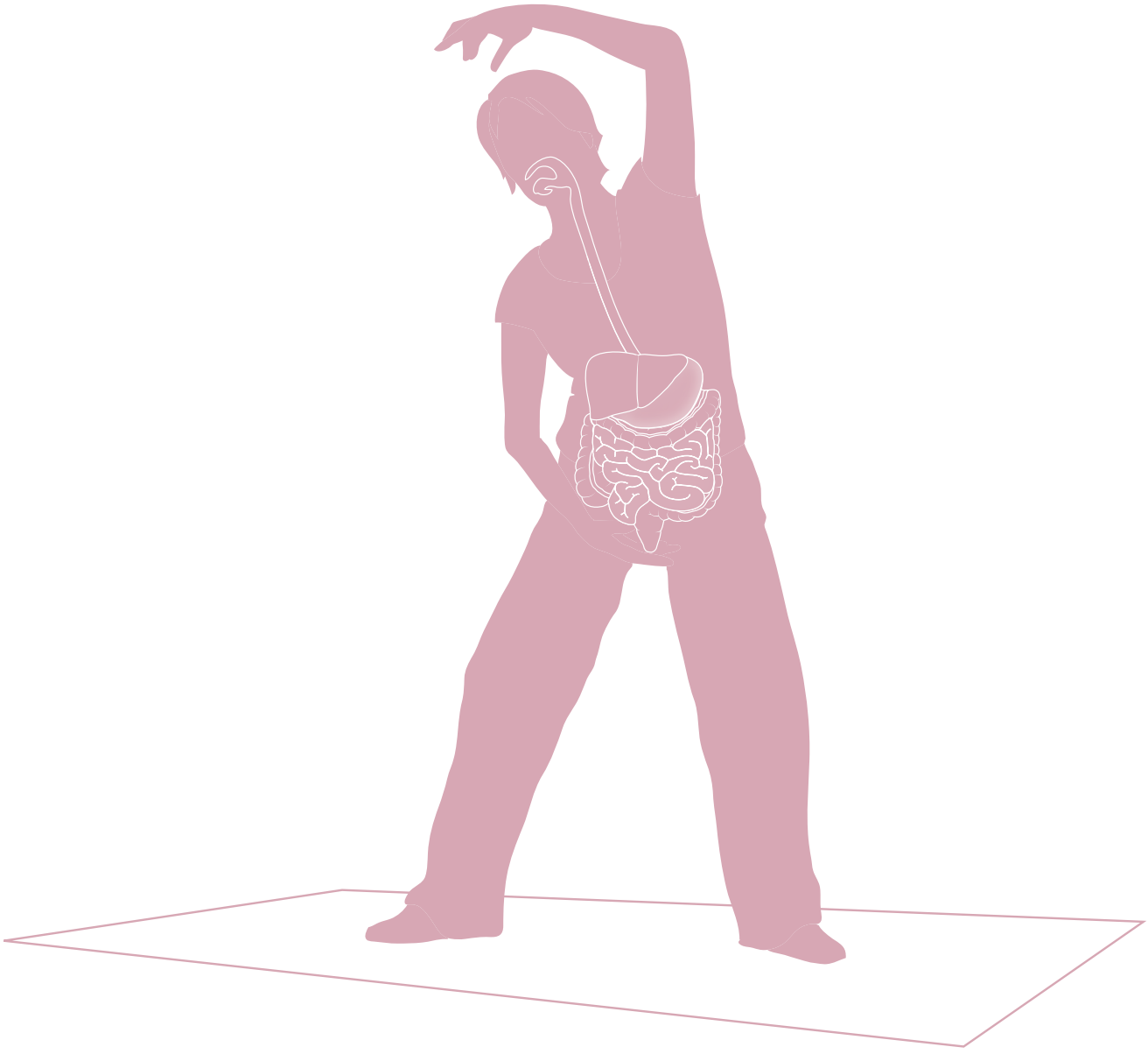
Your Home PN team
McGill University Health Centre

If you are not comfortable in French or English, please bring someone who can translate for you to all your hospital appointments.

What is parenteral nutrition (PN)?

Your digestive system is the part of your body that breaks down food into nutrients (e.g. vitamins, proteins, fats and carbohydrates). These nutrients are the key to staying healthy. They are important for you to:

- Heal and regain lost weight for your body to work well
- Avoid more serious health problems
- Have the energy you need for your day-to-day activities
- Have overall improved health and well-being



If your digestive system is not working well, your doctor may have requested Parenteral Nutrition or PN. This is another way for your body to get the nutrients it needs.

With PN, the usual "eating and digesting" steps are skipped. The liquid nutrients are injected directly into your blood.

Who is this for?

You have a disease or medical condition preventing your digestive system from working well. This will lead to more serious problems if your body is not able to properly absorb (take in and make use of) all the nutrients you need.

You might need PN if you have one or more of these:

- A large part of your intestine had to be removed. Reasons for this include severe Crohn's disease, a blocked blood flow to your bowel, a bowel injury and several other diseases.
- You have been losing too much fluid from an ostomy (opening made on the abdomen to pass stool) or a fistula (when a passage, which normally should not be there, develops between two structures in your body).
- You have all your intestine, but have had prolonged diarrhea.
- You have had bowel damage from radiotherapy.
- Your bowel is blocked so food cannot pass through, and it stops you from eating.
- Your intestine has trouble absorbing nutrients (called malabsorption).
- Your intestine is not blocked but has problems moving food forward normally (a motility disorder).

Your doctor may suggest that you have home PN for any of these reasons.

Depending on your health situation, you might have:

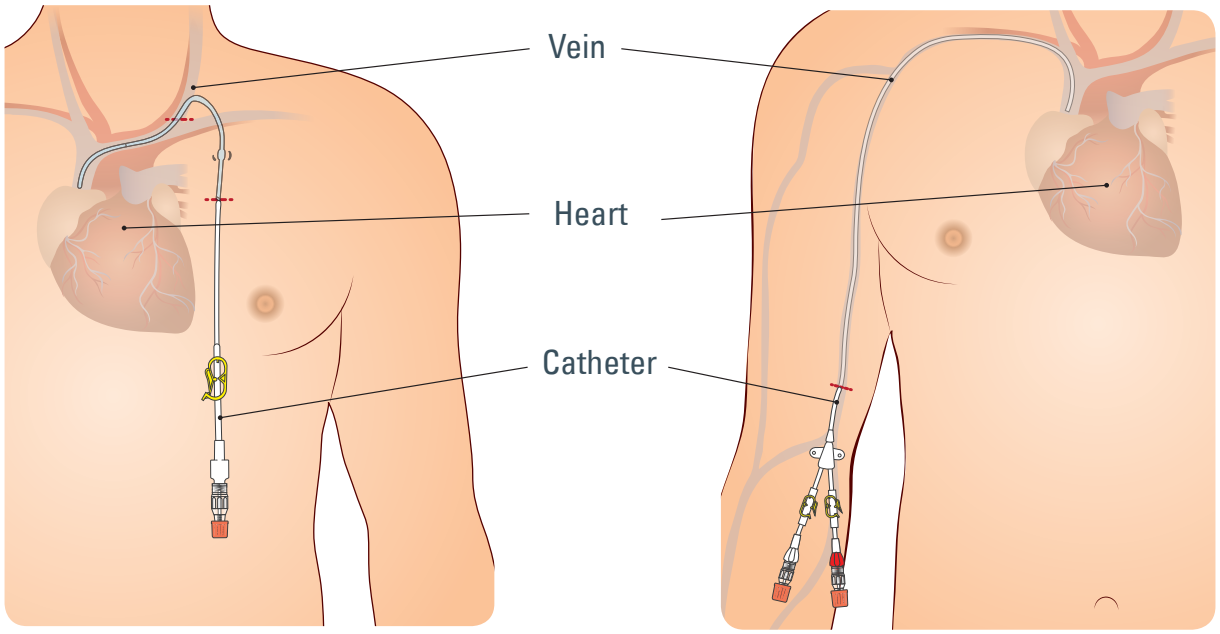
- PN only (with no eating or tube feeding), or
- PN with some eating or tube feeding, or
- PN only for a limited period of time. (the reason for requiring it is under control)
- PN for life.

Your PN team will assess all your health problems and your body's nutritional needs, to determine the best home PN treatment plan for you. It will be discussed with you, and the team will listen carefully to your concerns.

How does it work?

The bag of PN contains the nutrients your body needs that are in the same form as when they are absorbed once food is digested in the intestines. It is as though they were pre-digested, and go from the bag directly into the blood. From the bag, the solution passes through a tubing, then through a catheter that passes through the skin and into a blood vessel (vein).

Tunneled catheter **PICC**



The **catheter** is inserted into a large blood vessel and ends near your heart. There are a few kinds of central lines (catheters) and they all end at the same place. They are inserted in the Radiology Department. Your heart pumps blood out from this very large blood vessel to the rest of your body.

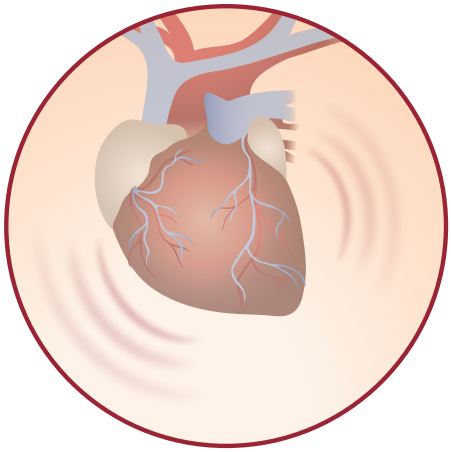
This brings the PN to all of the tissues of your body.

The tunneled catheter and the PICC (Peripherally Inserted Central Catheter) are illustrated above.

Did you know?

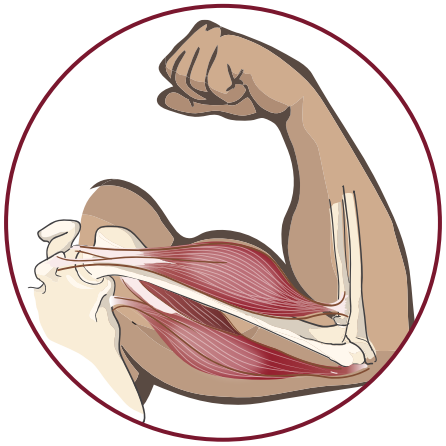
To avoid serious infections, it is **VERY IMPORTANT** that your PN solution and all equipment remain sterile so no germs can enter your body. See section **"How to prevent infection"** to learn more.

What is in PN & what does it all do?

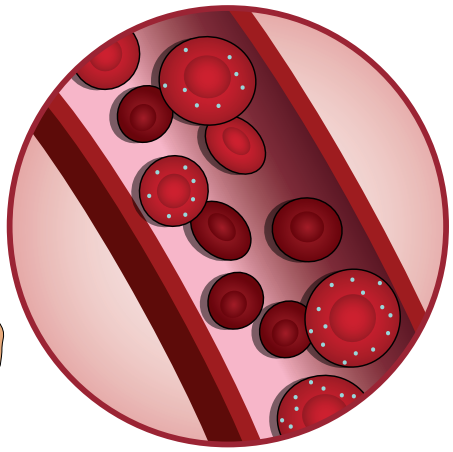


Electrolytes

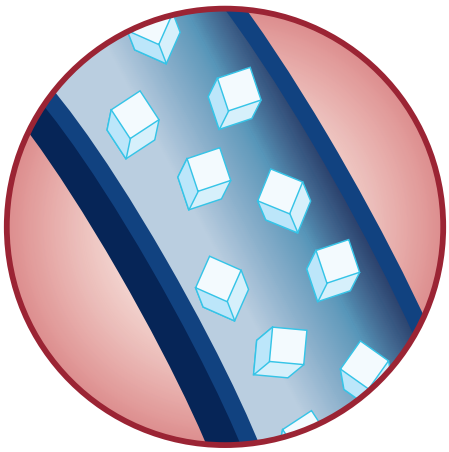
Water



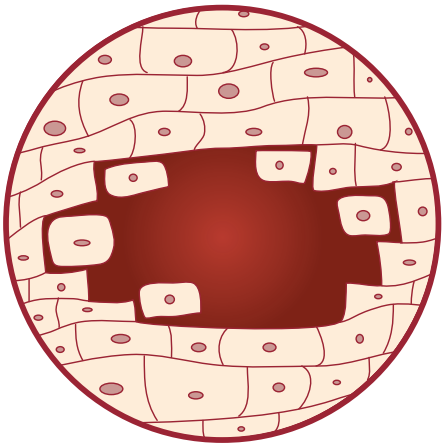
Protein



Trace Elements



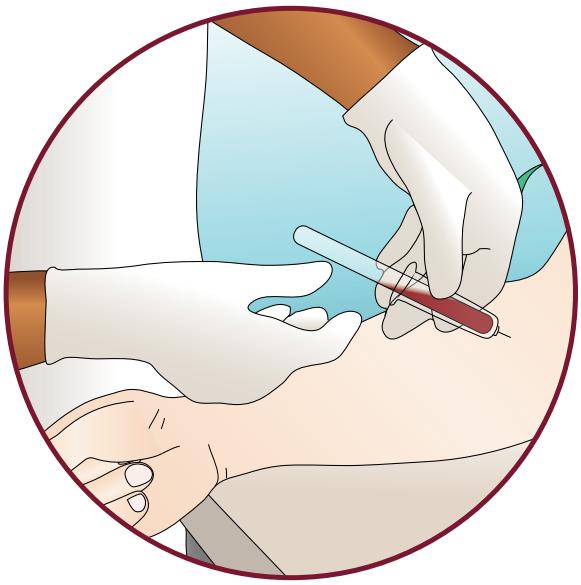
Sugar



Vitamins & Healthy Fats

How do we decide what to put into the PN bags?

Your body might need different amounts of each of these ingredients over time. Your home PN treatment team will weigh you, measure your blood pressure, heart rate and temperature, and ask you to have regular blood tests. This will tell us how well all your organs are working.



After analysis and discussing the results carefully with you, they will make changes, if needed, in the amounts that you receive. These, along with the energy sources, are changed to be sure that your body always stays in balance and has everything it needs.

1. Sources of energy (calories):

Sugar

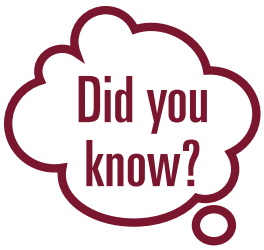
Our main source of energy comes from sugar. The sugar in PN is called dextrose. (Note that the sugar in your blood is called glucose!) We have to be careful when there are large amounts of dextrose in the PN, as this can lead to high sugar **(hyperglycemia)** or too low sugar **(hypoglycemia)** level in the blood (e.g.if your infusion is stopped too suddenly). Left unchecked, this can lead to serious short-term and long-term health problems.

Protein

Your body needs protein to build, maintain and repair every cell in your body. You may need more protein when you are healing (e.g. after a surgery) or recovering from an illness (e.g. an infection). The protein in PN is in the form of amino acids.

Fat

The fat in PN is called **lipids.** This is also an important source of energy. The lipids you receive in PN look like a milky white liquid. Lipids play a key part in keeping you healthy. Among many other things, they help with healing and lower your chances of infection.



People who receive PN can decide (with their medical care team), how much they want to weigh. We do this by adjusting the amounts of energy in your PN!

2. Water

We have more water than anything else in our body! It makes up to 60% of our weight. We normally lose a certain amount of water when we sweat or breathe as well as in our stool and urine. You might need to have more water when you are not well (e.g. during a fever, after a bad burn, with diarrhea and/or vomiting). Your treatment team might recommend you have less water if your body has too much, as can happen with heart and kidney disease.

Did you know?

As every person is different, your PN is unique to you. Your body is also constantly adapting to:

- The nutrients and the water that you are losing from your bowel
- How much you eat or drink
- Changes around you (e.g. weather)
- Your level of activity (e.g. how active you are from day to day)
- Your health (e.g. a medical condition you might have)
- Medications that you take

3. Electrolytes

Sodium (Na)

You need this to keep the right balance of water throughout your body.

Potassium (K)

You need this especially for your heart and muscles to stay healthy and work well. Too much or too little can be extremely dangerous!

Chloride (Cl)

This is needed to keep the proper balance of the other electrolytes in your body.

4. Minerals

Calcium (Ca)

You need this for healthy teeth and bones. It is also important for your nerves and muscles to work well. Calcium also helps your body to make blood clots, if necessary (e.g. very important to stop bleeding).

Magnesium (Mg)

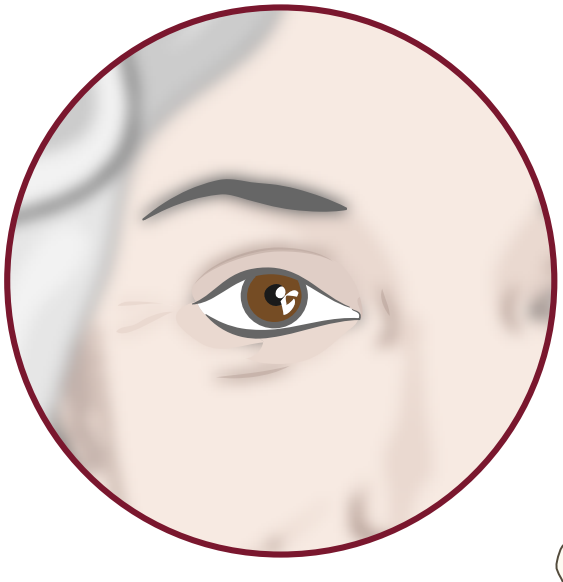
You need this for your muscles and other tissues to work well.

Phosphate (PO4)

This is important for bone health and strength. It allows your body to make use of sugar (glucose) and fat for energy. It provides some of the same benefits as potassium and magnesium.

5. Micronutrients:

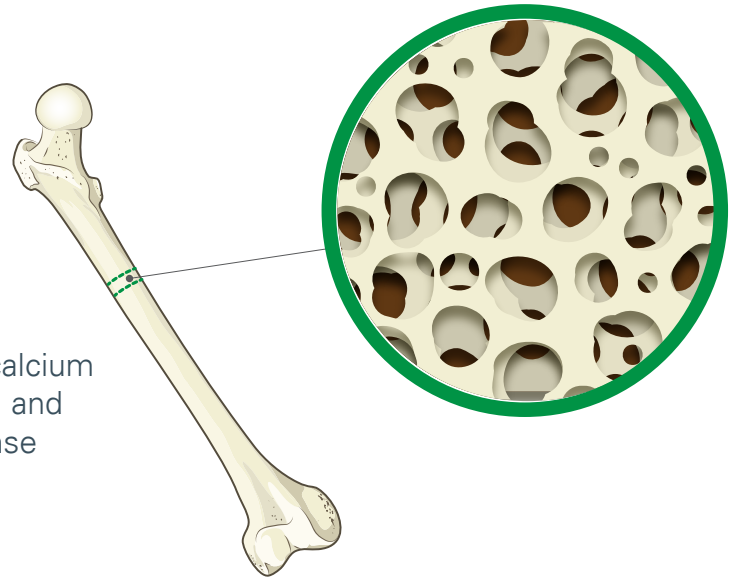
Your body requires many micronutrients. However, as the word suggests, unlike sugar, fat and protein, your body needs these in tiny amounts. Micronutrients are essentially the vitamins and "trace elements" found in food. Your body needs many of these, as all of these have effects in most tissues in your body. Below we describe the main ones:



Vitamins

Vitamin A:

Is needed for vision, immune function and building up tissues.

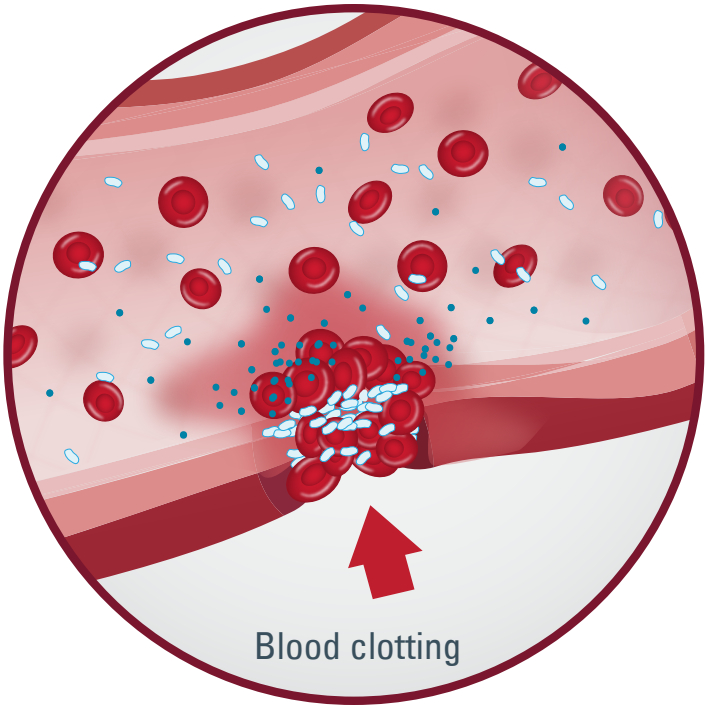


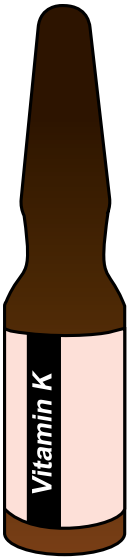
Vitamin D:

Helps your body to absorb calcium to improve your bone health and your immune system (defense against infection).

Vitamin E:

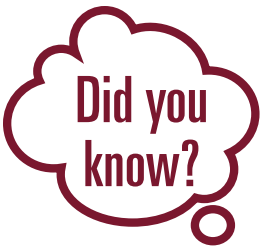
Is an "antioxidant" that protects the tissues from certain molecules. It helps maintain normal blood clotting.





Vitamin K:

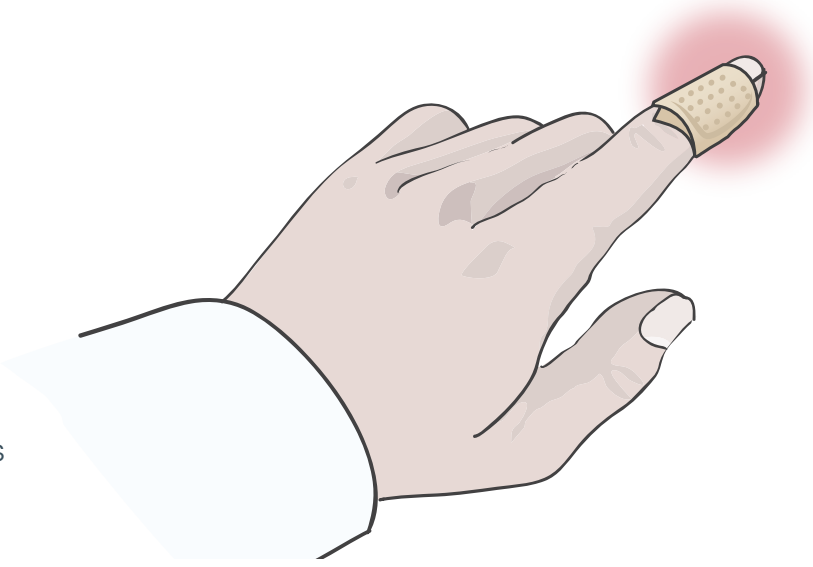
Helps your body to make blood clots that stop bleeding. Vitamin K also contributes to bone health.



Vitamins A, D, E and K are "fat soluble". If your intestine is not able to absorb fat (because it is not working well or is too short), your body will not be able to retain them.

Vitamin B:

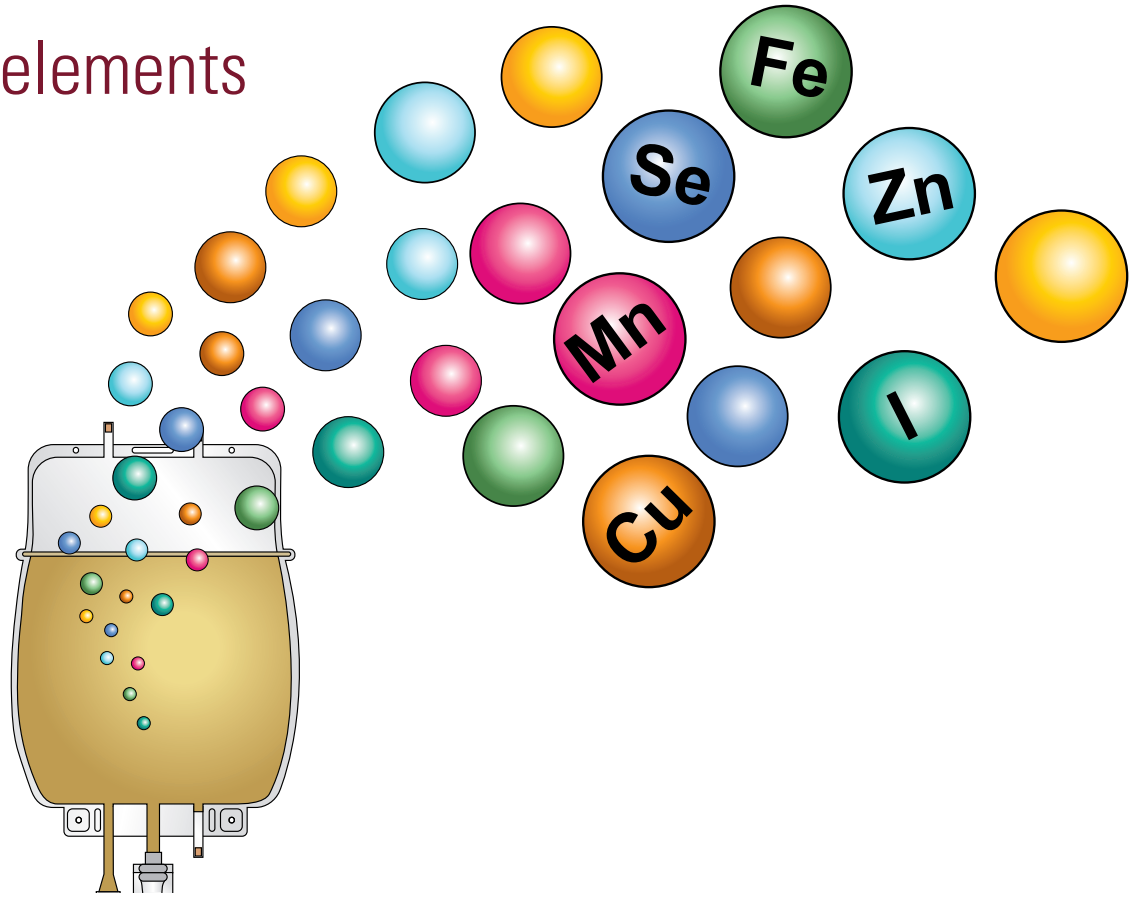
There are 6 different B vitamins that have effects throughout the body. They are essential for all cells to get energy from the fuels in your blood. Vitamin B12 is required to make new red blood cells.



Vitamin C:

Is an antioxidant with many functions including wound healing.

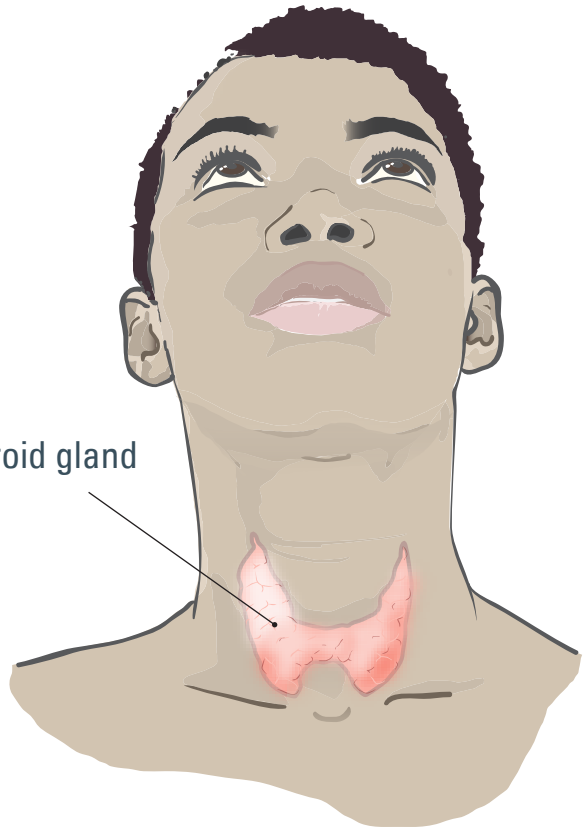
Trace elements



The following trace elements could be in your PN solution:

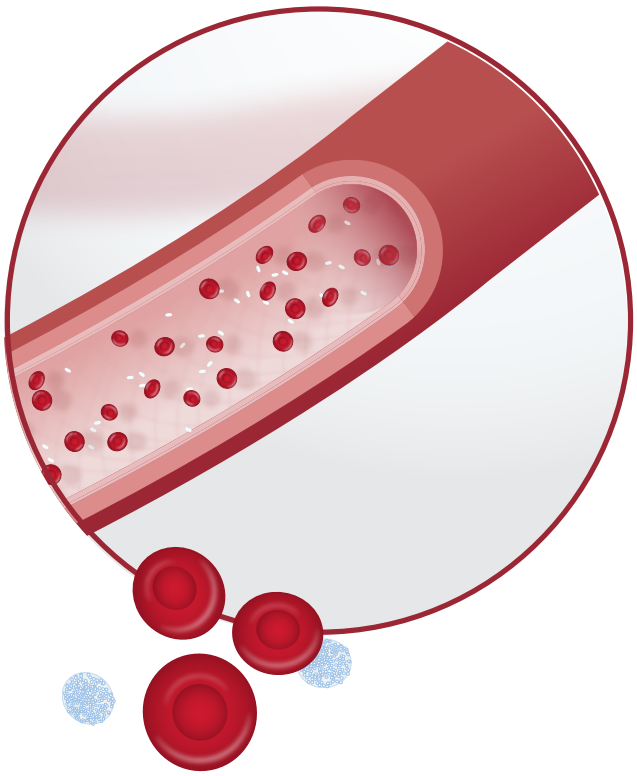
Zinc (Zn):

Is required throughout the body for metabolism of protein, sugar and fat and for maintaining healthy skin and hair.



Iodine (I):

Is an essential part of thyroxine, the hormone from the thyroid gland. It controls your metabolism, which slows if there is not enough.



Iron (Fe):

Is needed to make healthy blood cells (e.g. to prevent anemia, a condition where you do not have enough red blood cells).

Manganese (Mn):

Forms molecules which (just like antioxidants) work to detoxify certain others in our body that harm cells. However, manganese can affect the brain if too much is present. Most of our patients get enough without it having to be added to PN.

Selenium (Se):

Like vitamin E, is a major "antioxidant" in all cells and assures normal thyroid gland function.

Chromium (Cr):

Helps your body break down and use the energy that comes from glucose (sugar in your blood). It also has other important benefits.

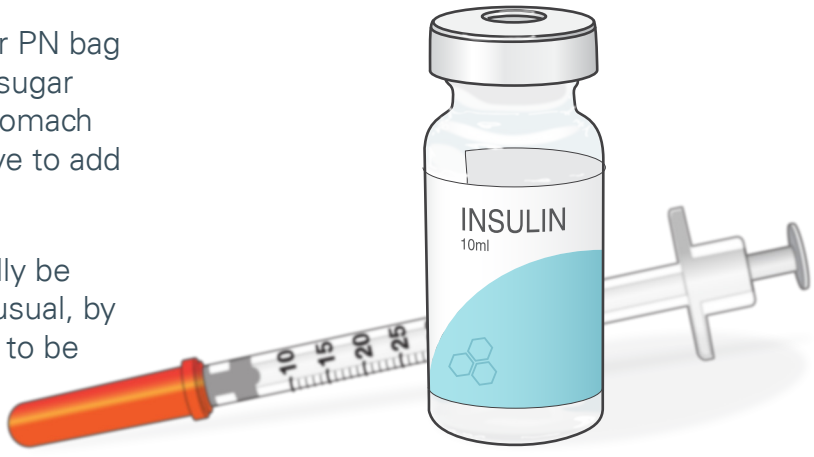
Copper (Cu):

Works with iron to make healthy red blood cells. These blood cells carry oxygen (drawn in through your lungs when you breathe) to all the cells of your body.

6. Medications:

You may have to add insulin to your PN bag if you have diabetes or your blood sugar goes above normal. Also, if your stomach makes too much acid, you may have to add a medication that will reduce it.

Many other medications can actually be absorbed enough when taken, as usual, by mouth. The doses might just have to be adjusted.



Did you know?

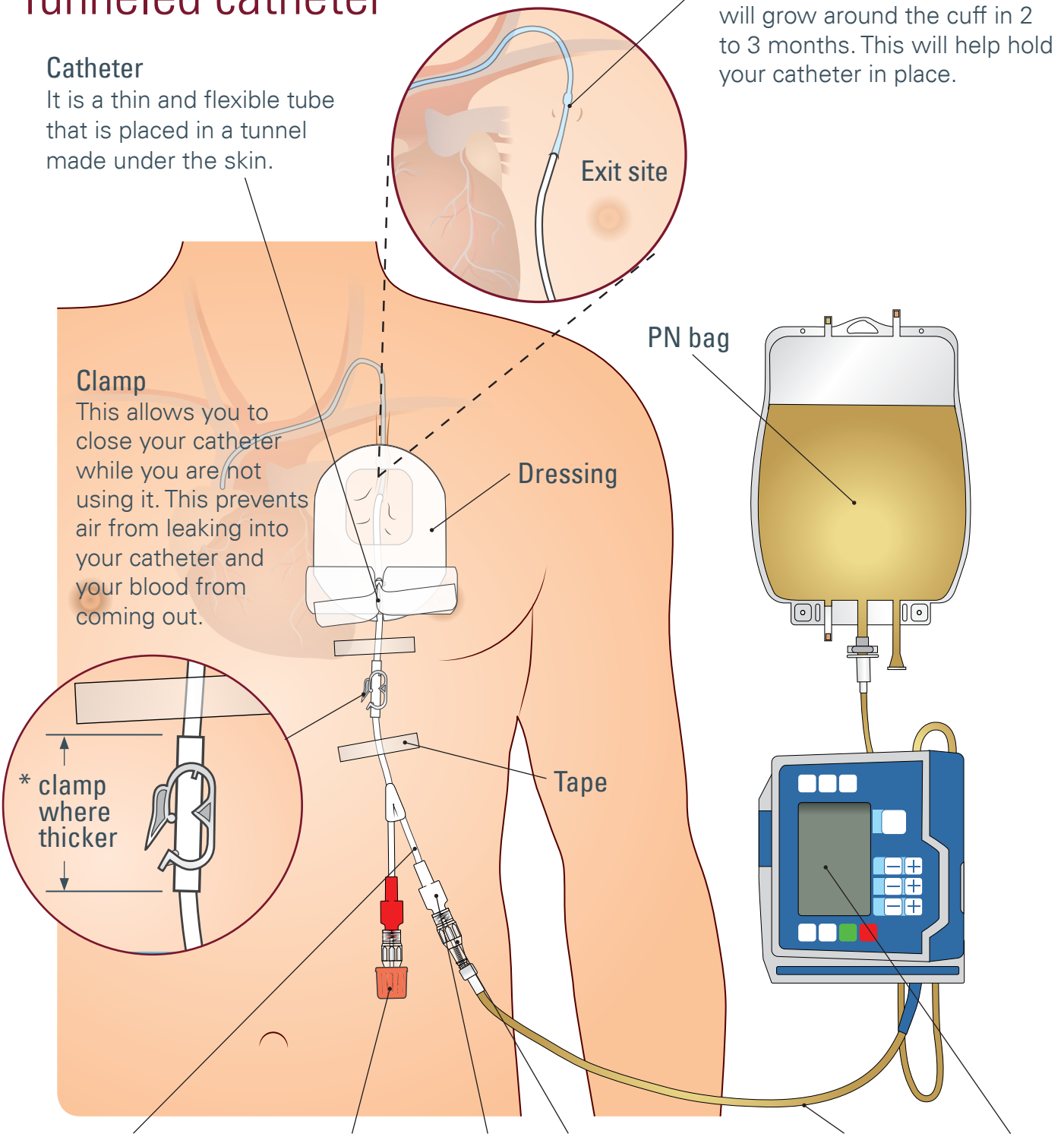
Not all vitamins can be stored together in the same container. For this reason, you will be given up to 3 different containers. They can be put together in the PN bag but you will need to add them on the same day that you infuse it.

PN parts and pieces

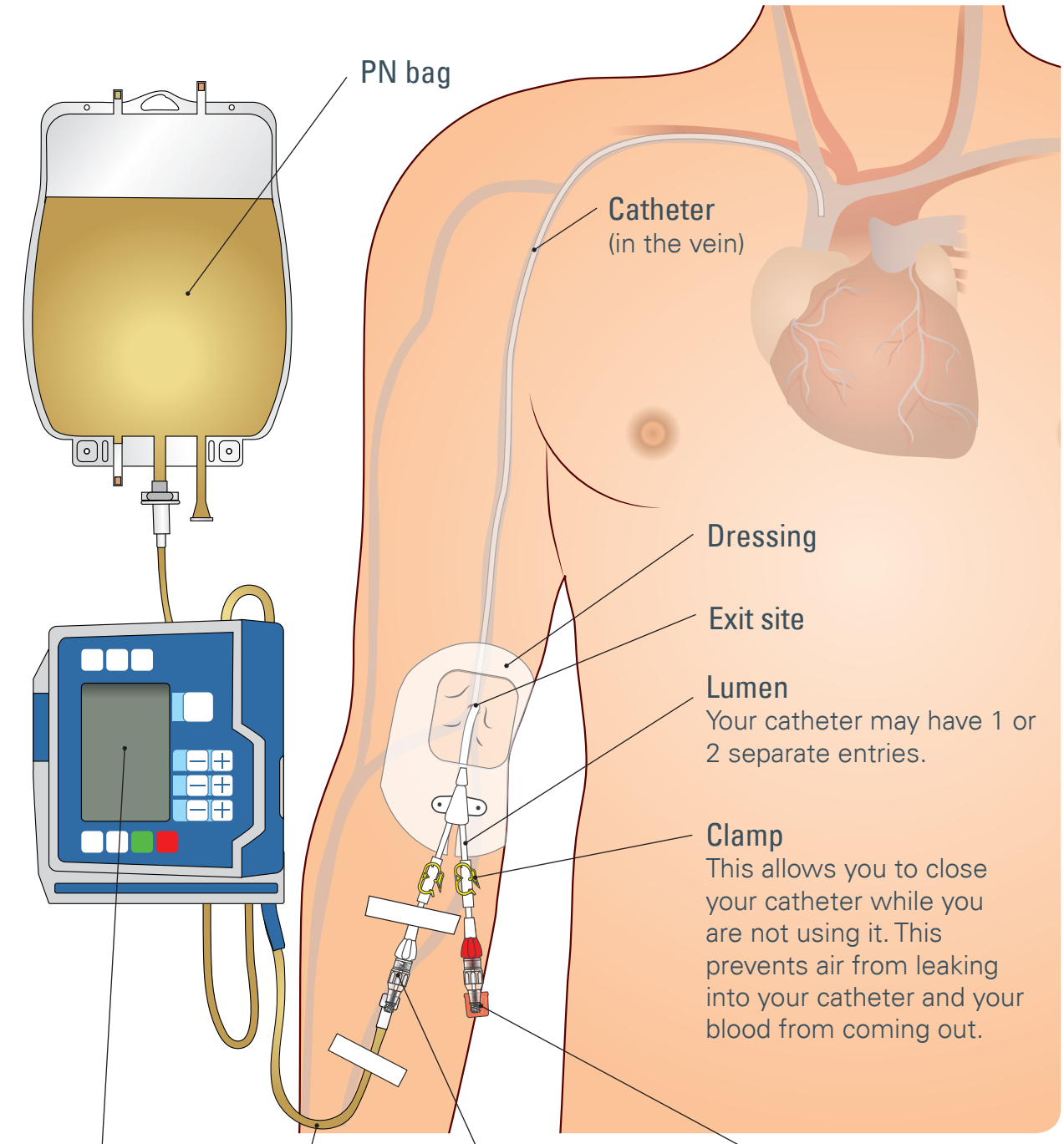
Tunneled catheter

Dacron cuff
The Dacron cuff will be +/- 3 cm under your skin. The tissues will grow around the cuff in 2 to 3 months. This will help hold your catheter in place.

Catheter
It is a thin and flexible tube that is placed in a tunnel made under the skin.



PICC (Peripherally Inserted Central Catheter)



Your PN bag

How is it prepared?

As your body is unique, your PN solution will be made just for you (and no one else).

Your doctor, together with the Home PN treatment team, will carefully prepare your PN prescription. To do this, they will calculate every single ingredient you need for a well-balanced nutrition. This "recipe" will be fine-tuned regularly to make sure you stay in balance each day. (See section **"What is in PN & what does it all do?"** to learn more)

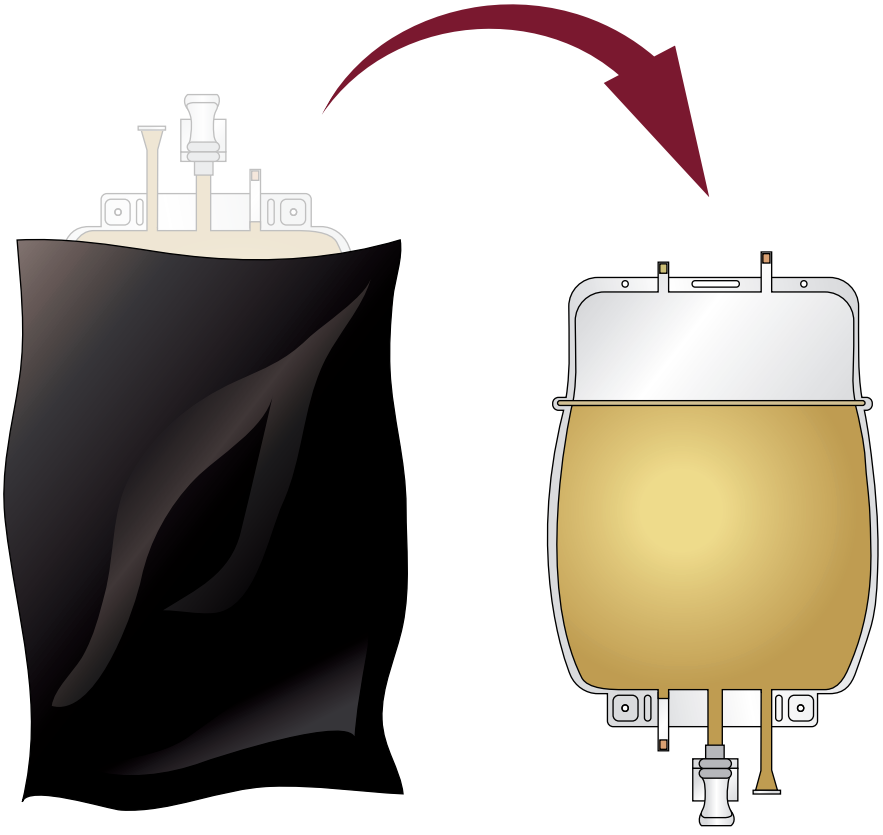
This prescription is sent to the supplier, who will then prepare your PN solution. The pharmacist will add all the important ingredients (except vitamins) you need to your solution.

Once your PN solution is ready, the supplier will contact you to deliver it to you at home after they confirm a time with you. It will be done on a regular basis (about every 2 weeks if your condition remains stable).

Did you know?

If you need to add any medications to your PN solution, your Home PN nurse will show you how to do this, along with adding your vitamins.

Your PN bags will be individually wrapped in dark plastic bags (to protect them from light). As the bags are made of plastic, take care to handle them gently. Protect them from sharp objects.



DO NOT use your bag if you notice any of the following:

- There is a leak (you notice liquid or the bag is sticky to touch)
- There are particles seen in the solution (crystals or ice)
- The solution looks yellowish (before you add the vitamins)
- The lipids seem to have an oily layer or are not smooth in appearance like cream
- The lipids and the solution were mixed before the separator was removed by you
- The label on the bag does not have your name on it
- The expiry date on the label has passed

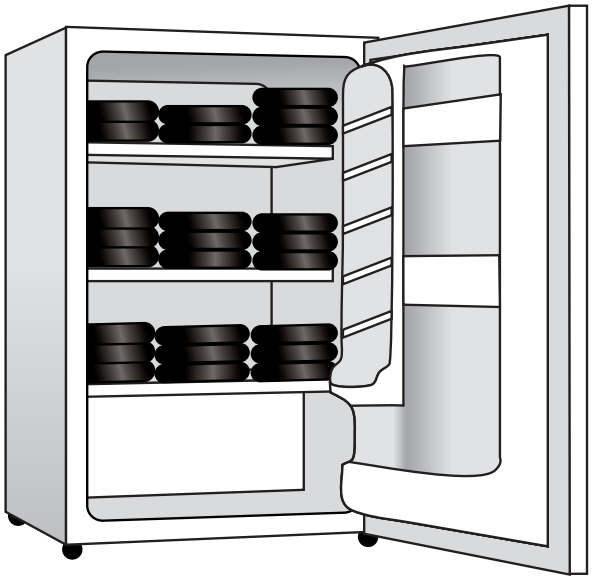
Call the supplier and your nurse if you see any of the above!

How should I store it?

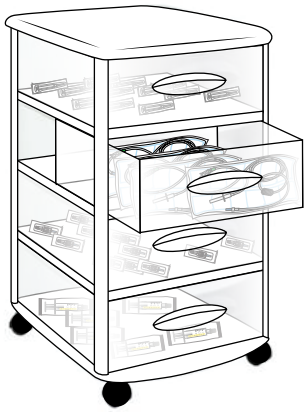
You will need to store your PN bags, your multivitamin, and possibly, famotidine and insulin in the fridge.

Vitamin K ampules are kept at room temperature.

The supplier will provide you with a special fridge just for your PN supplies:



- ***DO NOT*** use this fridge for anything other than your PN supplies (to avoid contact with bacteria or impurities). **No food allowed.**
- ***DO NOT*** stack more than 3 PN bags on top of each other (to maintain good air circulation within the fridge).



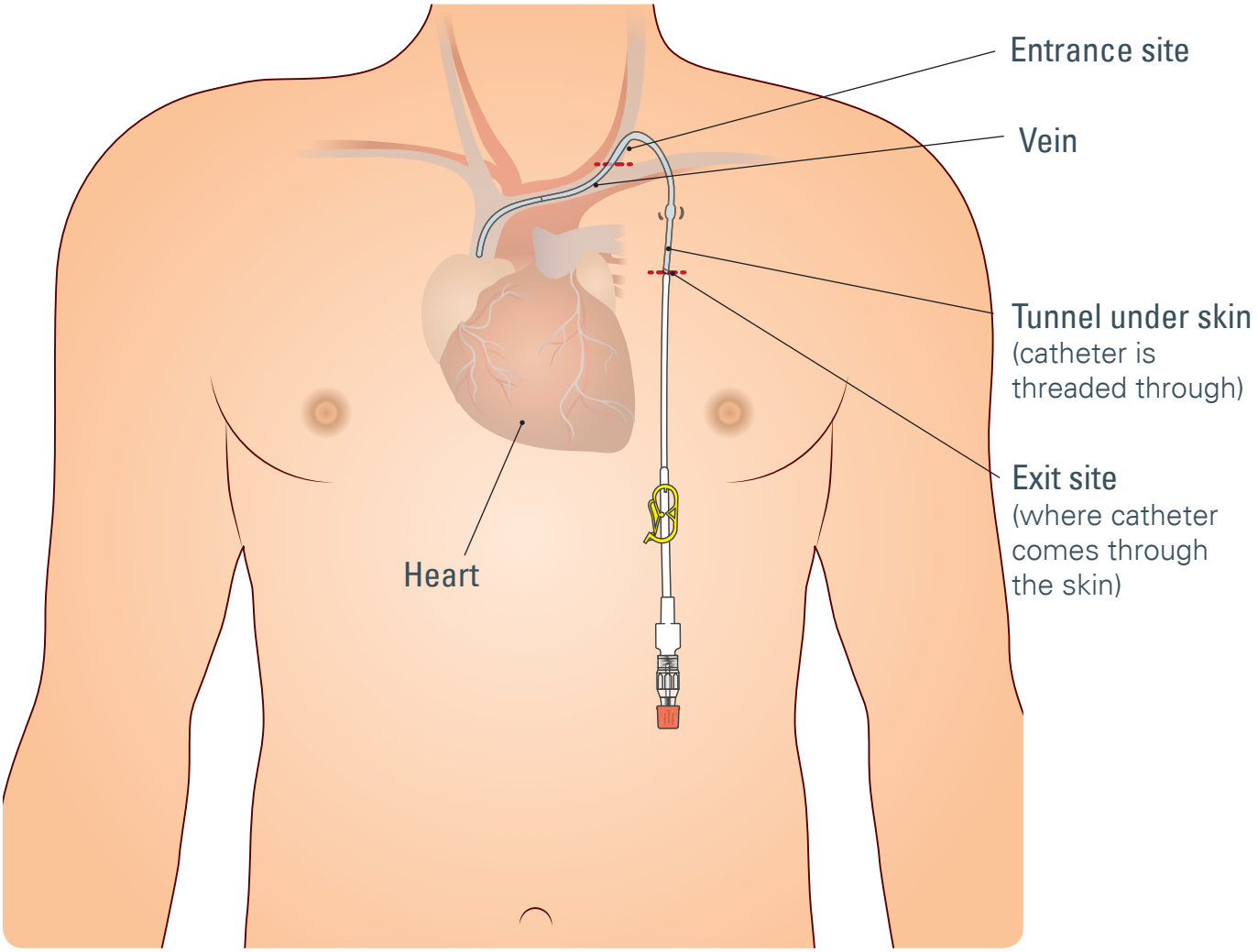
Keep in mind that you will also need storage space only for your PN supplies that do not need to be in the fridge (e.g. tubing, syringes, dressings, etc.)

Your Tunneled Catheter (central line):

What is it?

Your PN solution (or liquid food) is injected directly into the blood through a special tube. This will be either a tunneled catheter or a peripherally inserted central catheter (PICC). Your Home PN team will decide what will be the best tube for you.

The following pages will describe each of these catheters and what each would look like for you.



A tunneled catheter is a special tube that will be placed into one of the large blood vessels that goes to your heart. This large vessel carries a larger amount of blood compared to other veins in your body, which will help your blood to thin out (dilute) the PN solution quickly. In this way, the solution will not irritate your veins. Your heart will pump the PN out to the rest of your body.

How is it inserted?

Your tunneled catheter will be placed in your vein in Radiology or in the Operating Room (less often). By doing this procedure in one of these areas, we will be able to:

- Lower the risk of an infection.
- Use an x-ray machine to check the exact position of the catheter, once it is in your vein.

To insert a tunneled catheter, the experienced doctor will do the following:

1. Clean your skin, and then freeze it with an injection. This way, you will feel less pain.
2. Make two tiny incisions. The one near your collarbone is called the entrance site. This is where the catheter enters your vein. The second incision, the exit site, is made lower down on your chest.
3. Create a small tunnel under the skin that connects the two openings.
4. Push the catheter through this tunnel into the vein, starting from the exit site and advance the tip to just above the heart.
5. Take an X-ray to check the exact position of the catheter tip in the vein.
6. Flush the catheter with a solution to make sure it is working properly.
7. Stitch both incisions (cuts) closed and place a bandage over each.

What does it feel and look like?

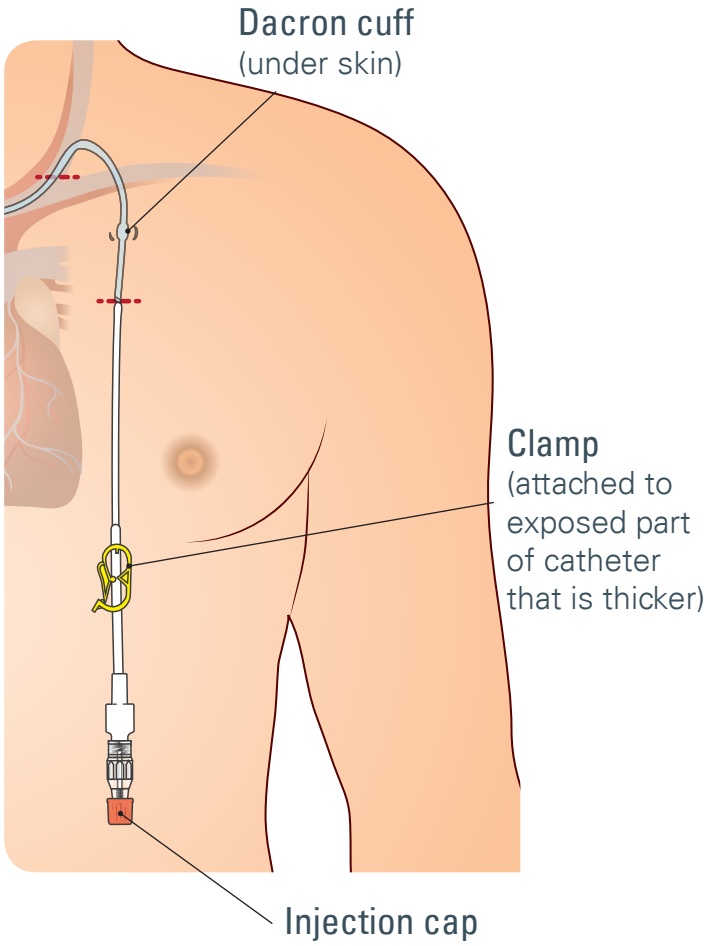
For about 1 week after it is inserted, the area around the 2 incisions will be sore and can be bruised. Once they have healed, you should no longer feel any pain.

When you place your hand over your chest just above the exit site, you may feel a slight bulge. This is the Dacron cuff.

Sutures will be removed at the Home PN clinic about 8 weeks after insertion.

If you see blood under the dressing, call your CLSC. They will need to change your dressing every 48 hours to help keep bacteria from growing.

If the dressing is in place and there is no blood, it will need to be changed once a week by you, if you received the teaching, or by the CLSC.



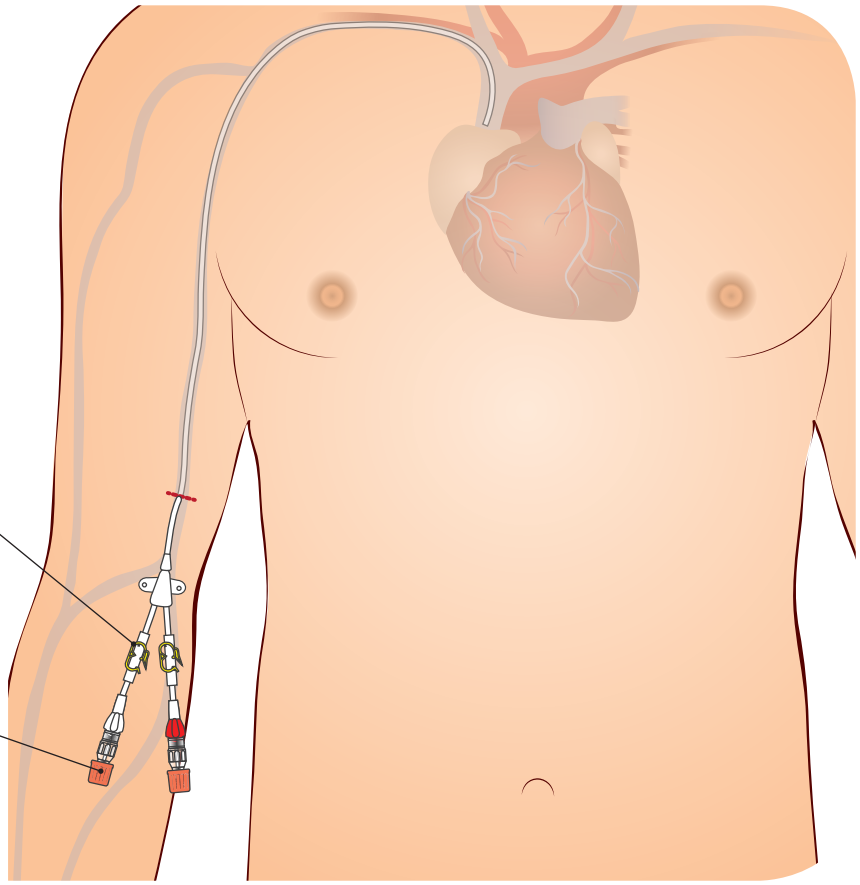
Peripherally Inserted Central Catheter (PICC):

What is it?

A peripherally inserted central catheter (or PICC) is a tube that is inserted into a small blood vessel in your arm (that is, a peripheral vein). The tube (catheter) is carefully pushed up through your vein until its tip reaches a large blood vessel, just above your heart.

This large vessel carries a larger amount of blood compared to other veins in your body, which will help your blood to thin out (dilute) the PN solution quickly. In this way, the solution will not irritate your veins. Your heart will then pump the PN out to the rest of your body.

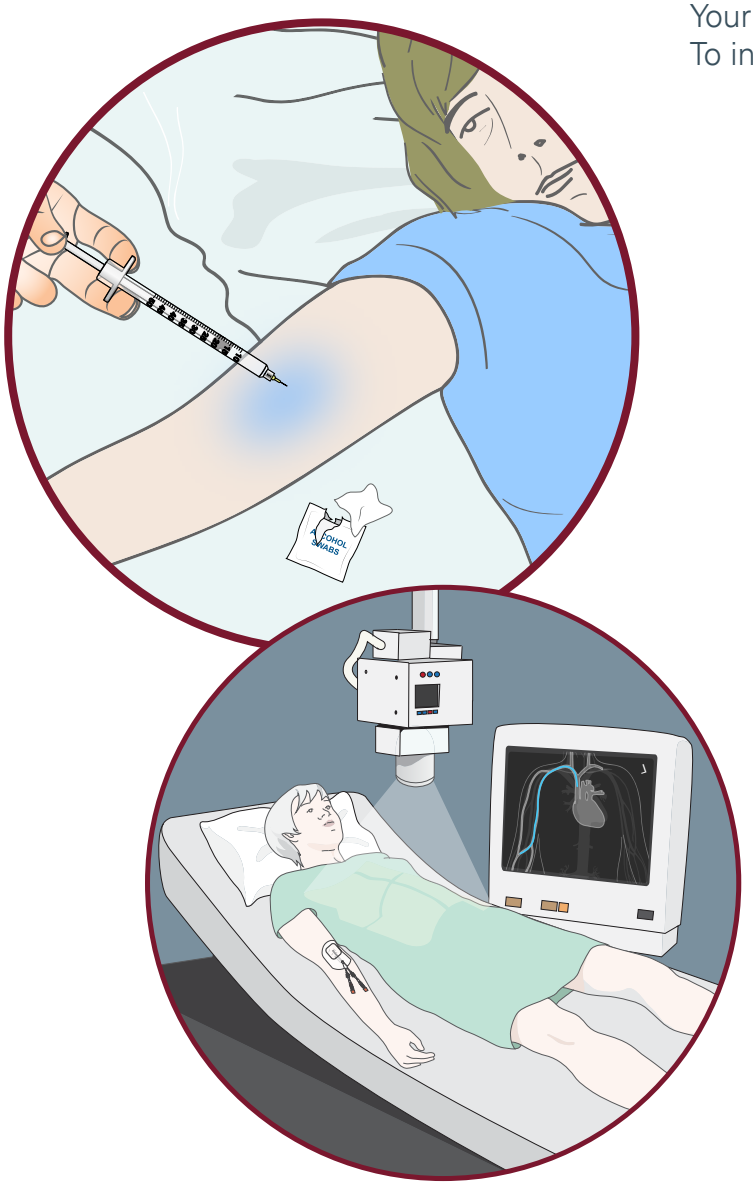
A PICC is usually used for a short period of time, or because it is the best option for you. It can be used for many months and later changed to a tunneled catheter. Your treatment team will explain why they chose a PICC for you.



Did you know?

The end of your PICC ends just above your heart in the same place as a tunneled catheter.

How is it inserted?



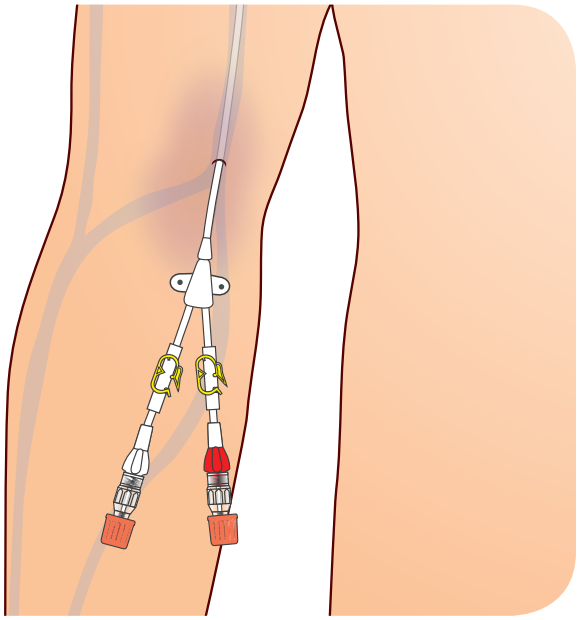
Your PICC will be placed in your vein in Radiology. To insert a PICC, your doctor will:

1. Clean your skin, and then freeze it with an injection. This way, you will feel less pain.
2. Use an ultrasound machine to find the vein.
3. Make a tiny incision (cut), which is where the catheter enters your vein.
4. Push the catheter through the vein, starting from the exit site and push the tip to just above your heart.
5. Take an X-ray to check the exact position of the catheter tip in the vein.
6. Flush the catheter with a solution to make sure it is working properly.
7. Place a dry bandage (or dressing) over the cut in your arm (exit site) to prevent your catheter from moving out of place.

What does it feel and look like?

After it is inserted, the area around the cut in your arm (exit site) may be sensitive. You may see a bruise for a few days and notice a small amount of blood leaking from the exit site.

Once it has healed, you should no longer feel any pain.

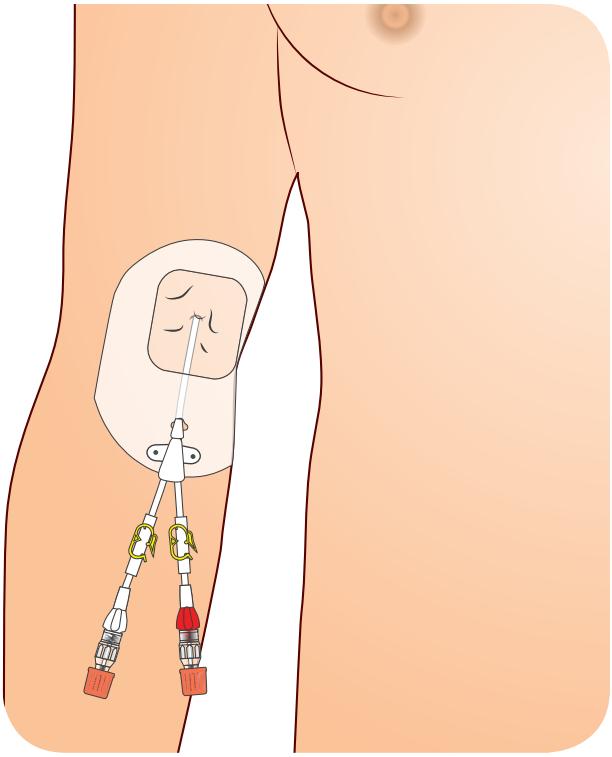


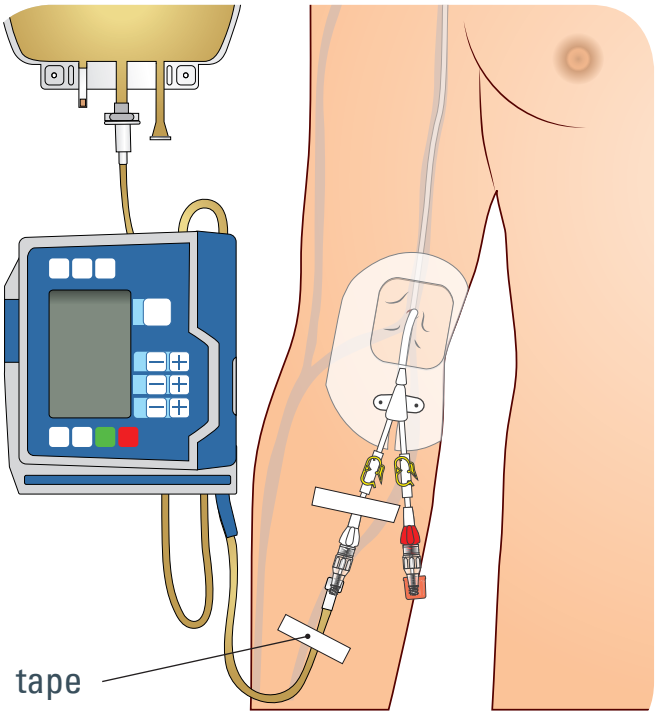
How do I take care of my PICC?

Caring for your bandage (dressing):

- Check your dressing every morning to make sure that it is properly in place (sticking well and free of blood or crust). If it isn't, call your CLSC to get the dressing changed as soon as possible.
- If you see blood under the dressing, call your CLSC. They will need to change your dressing every 48 hours to help keep bacteria from growing.
- If the dressing is in place and there is no blood, you will have a regular appointment once a week with your CLSC to have it changed.

* Do not change the dressing yourself. This needs to be done by a trained health care professional.



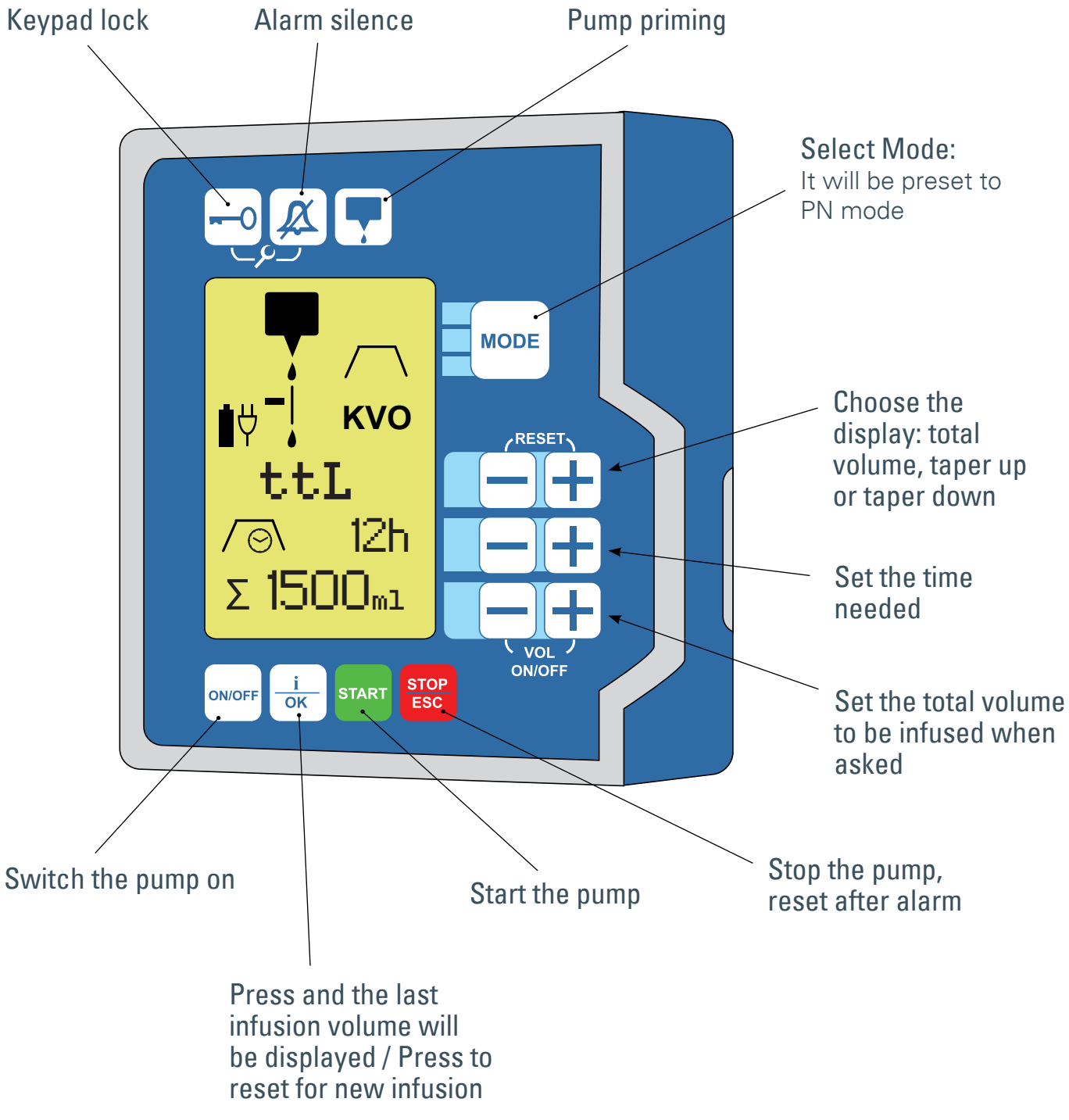


Caring for your PICC and tubing:

- Always secure your PICC and tubing onto your skin with tape, (in at least 2 places), while you are infusing your PN. This way, if your PICC gets caught on something, you will not pull your catheter out.
- If your catheter comes partly out, inform your team as soon as possible. (See section **"Your catheter looks longer than it used to be"** to learn more.)

Your Ambix® Pump

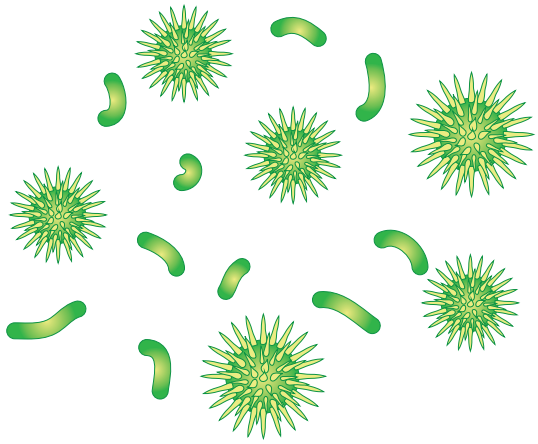
You need an infusion pump to be able to deliver the PN solution into your body in a very controlled way. There are many types of pumps. The Ambix® pump, which you will use, has a mode specifically for home PN. (See section **"Programming and starting the pump"** to learn more.)

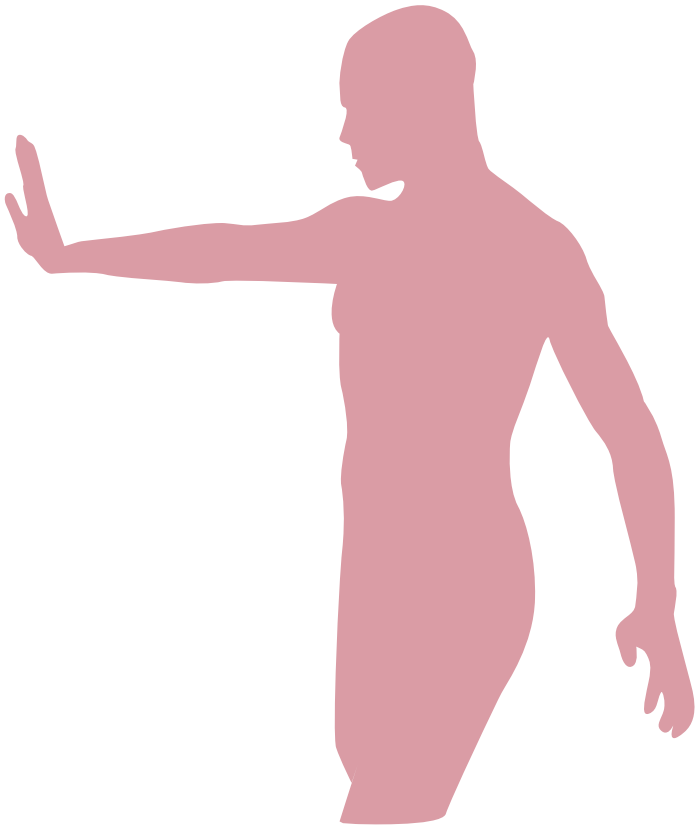


How to prevent infection

"Clean" versus "sterile": what's the difference?

Your immune system keeps your body healthy and well-balanced. It does this by preventing tiny germs such as bacteria, yeast, and viruses from causing infection. These germs are all around us. They can live in water droplets, in blood, on the skin, in the mouth, in the intestines and on all surfaces. They even float through the air. If we had no immune system to protect us from these germs we could not live.





Your skin is your first line of defense against germs. Ordinary washing keeps us "clean" but germs are still present. When your catheter is placed in your body, we break this line of defense by making an incision in your skin. For this reason, to keep germs from coming into your body through your catheter, you will need to take special care. We call this special care: "sterile technique".

To better understand sterile technique, it is helpful to understand the difference between the terms “sterile”, “clean”, and “contaminated”:

Sterile

To make something sterile, it must be cleaned very carefully, using either heat and/or chemicals. This will free it of all germs. To stay sterile, this item can only come in contact with other sterile items.

For example: Anything that touches the inside of your catheter must be sterile. This includes your PN solution, needles, the inside of your syringes, and the ends of your tubing.

Clean

To make something clean, you must have removed all visible dirt and most (not all) germs from it with soap or alcohol.

For example, when you clean your hands, your work surface, and your PN fridge, you remove many of the germs, but not all of them.

Did you know?

If a clean item touches a sterile item, the sterile item is no longer sterile. It is only clean.

Contaminated

When a clean or sterile item touches a dirty or unsterile item, we call this “contamination”. You can contaminate an item and not even realize it.

For example: Air contains germs and small bits of dust. Germs and dust can settle onto and contaminate your sterile items while you are using them. Talking, sneezing or coughing can also contaminate your work area. This is why you must close windows and wear a mask while working with sterile items.

How to keep your work area clean

Cleanliness is absolutely essential to lower your risks of infection.

To keep your work area clean:

- Keep it separate from high-traffic areas in your home. Choose an area that is free of dust and drafts. This will prevent germs and dust from contaminating your equipment.
- If anyone is present in the room with you during sterile procedures, they must wear a mask.
- Use a smooth, non-porous work surface to work. This kind of surface does not trap bacteria. A large plastic or glass tray or a large metal cookie sheet work well, but they must be used only for this.
- Clean your work surfaces with 70% alcohol before you start any procedure.

How to keep sterile items sterile

To make sure your sterile items stay sterile:

- Always check expiry dates on your supplies before you use them. Throw away any expired supplies. Order your supplies 1 month at a time.
- Throw away any sterile packages that have holes or are not sealed. These are considered contaminated.
- Do not use sterile packages that have become wet or damp (even if they have dried out now!). The moisture allows germs to enter.
- Keep all ostomy care equipment (if applicable) in a place away from your PN work area.
- Always throw away the items that you think or know are contaminated. This will prevent your sterile and clean supplies from becoming contaminated too.
- When opening, connecting sterile items, always take care that your sterile items only touch other sterile items or surfaces.
- Do not use PN solutions that are the wrong colour, have separated, or have particles in them.

Hand washing

The purpose of this hand washing procedure is to remove as many germs from the skin and nails as possible. When you are finished, your hands are considered clean, not sterile.

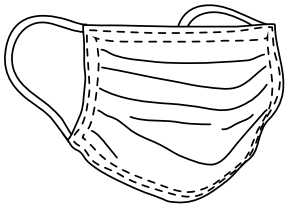
You must follow a careful hand washing technique to help keep your catheter free of infection. Your hands can transfer germs from a contaminated object to a sterile or clean object. Every procedure that requires sterile technique requires hand washing.

Although your hands may look clean, it is always important to wash your hands to remove invisible germs. Hands should always be washed before gathering your supplies and before starting a sterile technique. If at any time your hands become contaminated, you must wash them again.

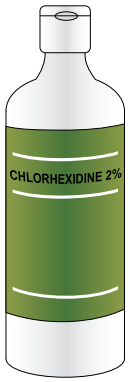
* Proper hand washing is one of the important steps you can take to prevent infection.

Hand washing technique:

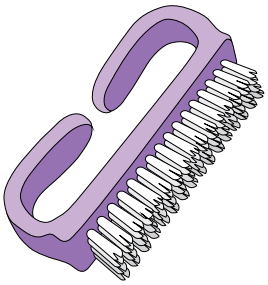
1 Gather these supplies:



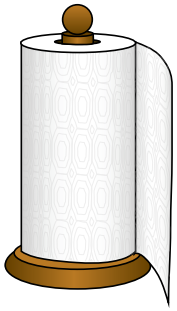
Mask



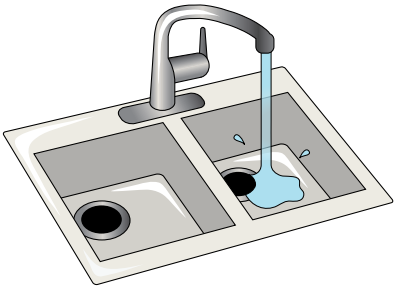
Antimicrobial Soap
(e.g. Dexidin® (2%))



Nail Brush
(to be changed every 3 months)

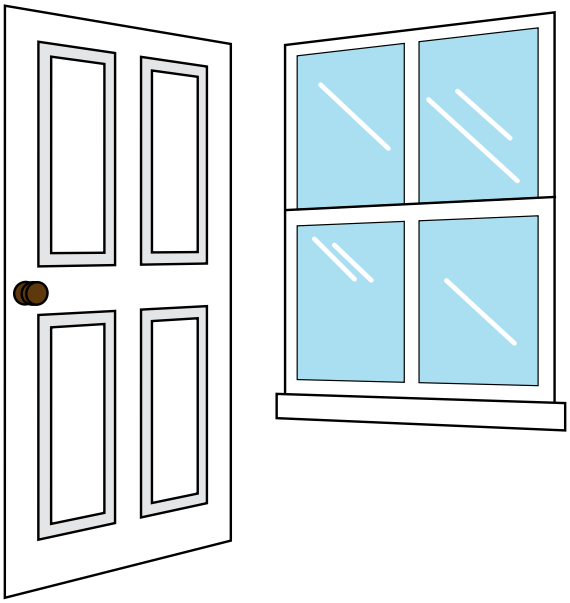


Paper Towel



Sink with warm running water

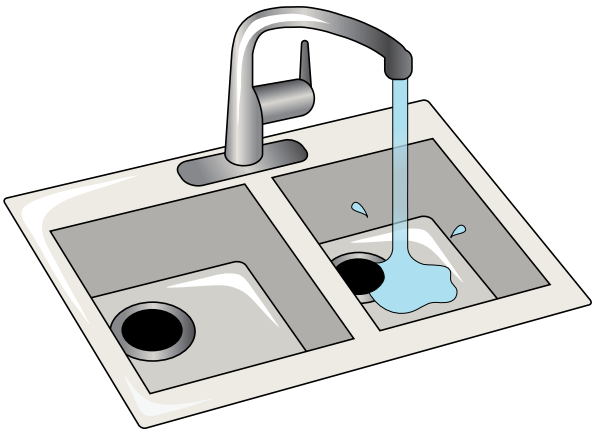
2 Put on a mask. Make sure that anyone else in the room also wears a mask.



3 Close all windows and doors and turn off fans.

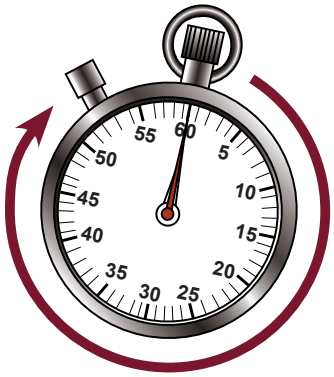
4 Remove all jewellery. If rings cannot be removed, move them up and down as you wash your fingers.

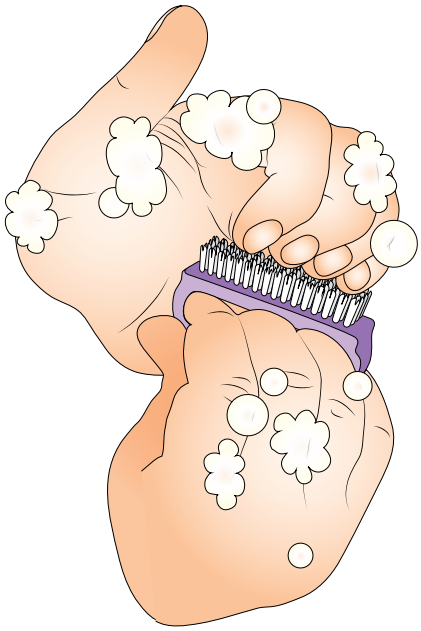
5 Turn on the tap. Regulate the temperature to warm water and leave the water running throughout the procedure. Warm water improves the cleaning action of antimicrobial soap (e.g. Dexidin®).



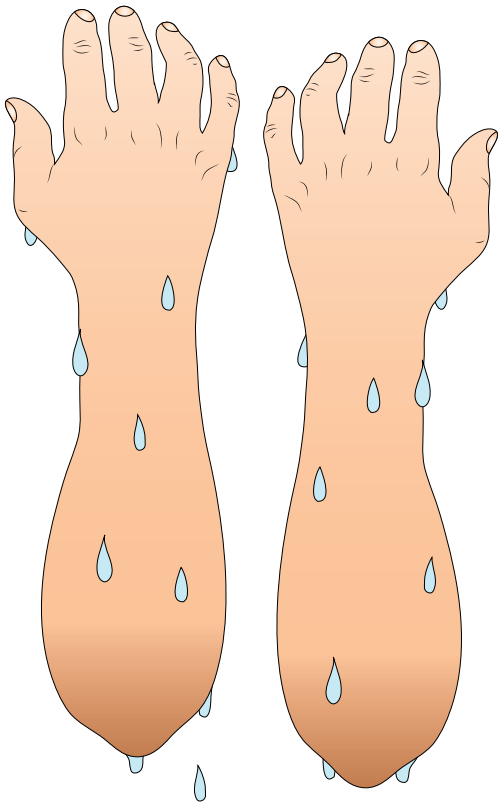
6 Wet hands and forearms under the running water, then apply the antimicrobial soap (e.g. Dexidin®). This special soap cleans dirt and kills germs.

7 Rub your hands together vigorously. This helps remove dirt and germs.

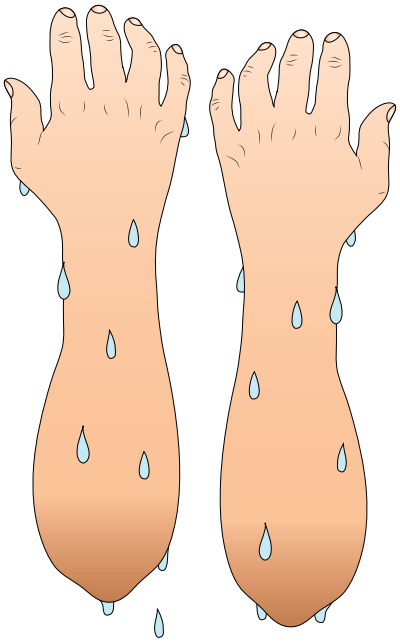




8 Vigorously scrub hands, fingers and forearms all the way to your elbows for one minute. Be sure to clean each finger, the palms of your hands and the back of your hands. Finally, use the nail brush to clean under your fingernails.

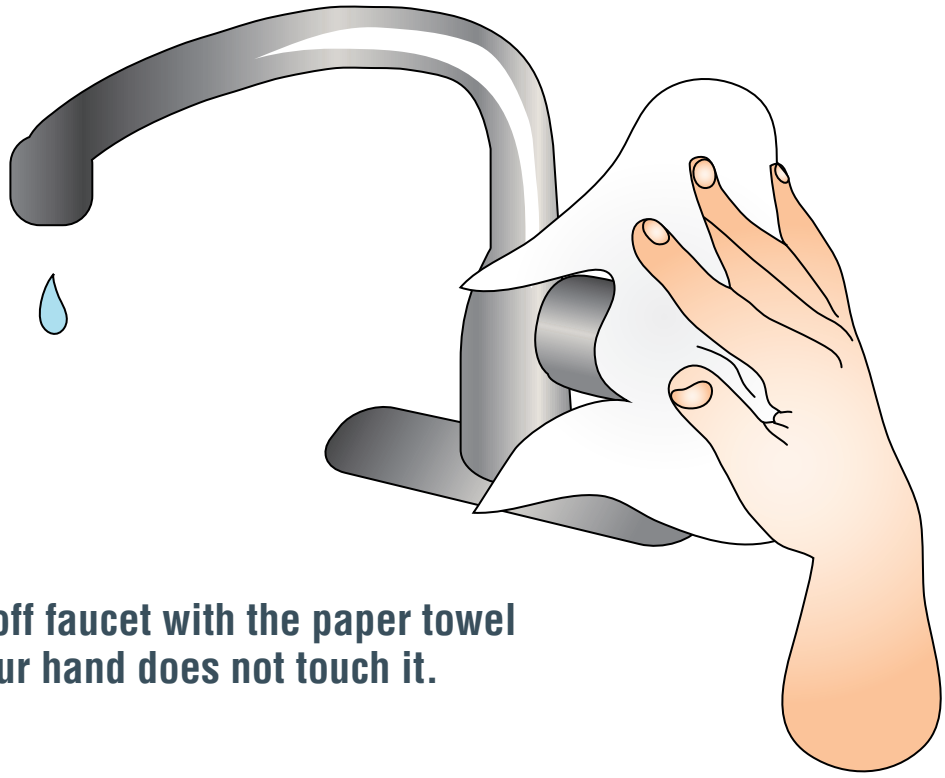


9 Rinse your hands and forearms with water. Keep your hands above your elbows at all times so the dirty water runs towards and off the elbows.



10 Reapply the antimicrobial soap (e.g. Dexidin). Repeat washing of fingers and hands and rinse, as indicated before, but without the nail brush.

11 Dry one arm at a time starting with your hands then going down towards your elbows. Use a clean paper towel for each arm.



12 Turn off faucet with the paper towel so your hand does not touch it.

13 Proceed with your sterile technique (changing your dressing, preparing your infusion, flushing your catheter, etc.)

* When your sterile technique is finished, apply lotion on your hands every day so they do not get dry and crack.

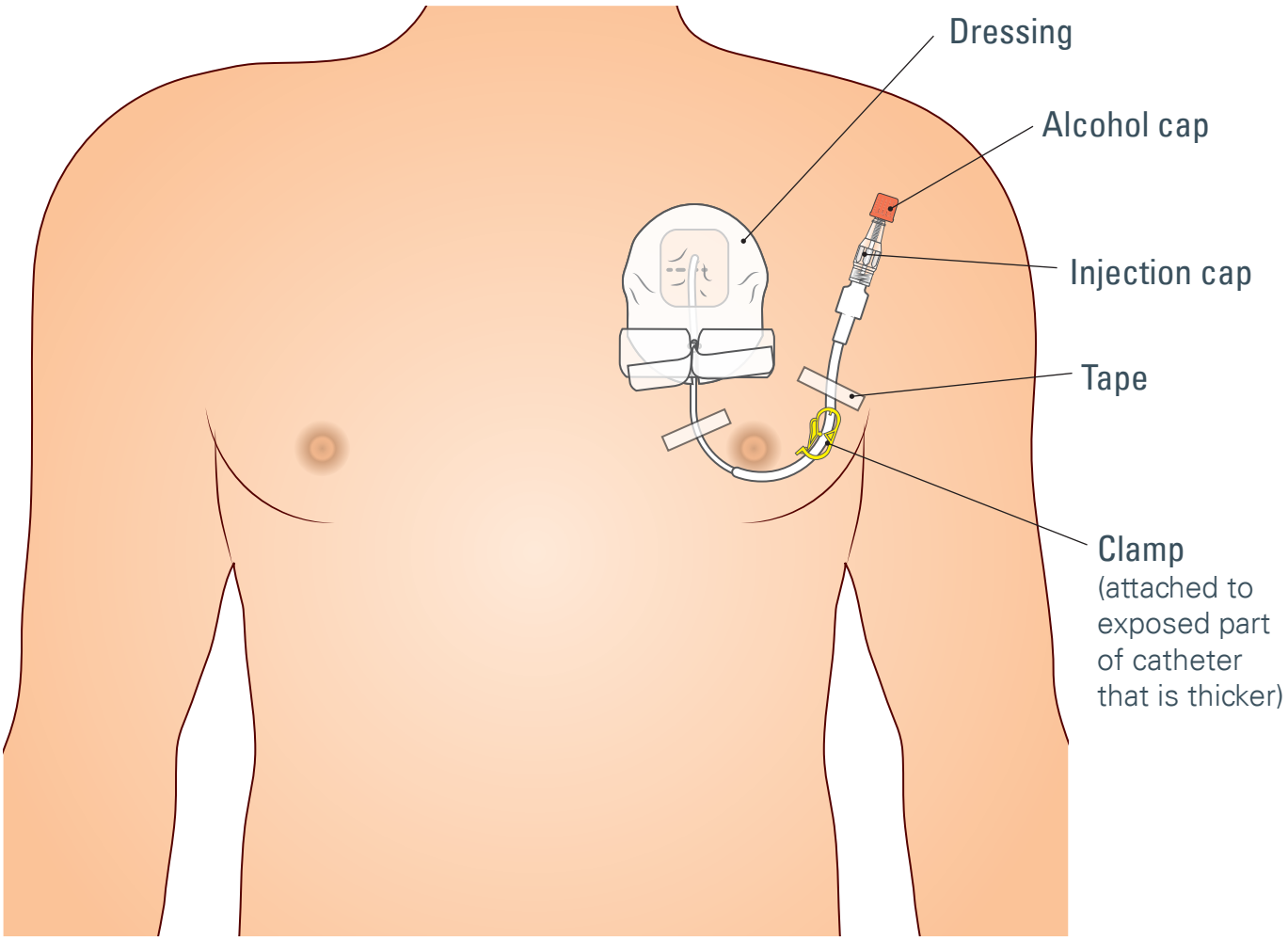
Part 2: Step-by-step guide for routine care and infusion of your PN

Routine Care

If you have a tunneled catheter...

To prevent contamination and infection, you will need to clean and care for your catheter and the skin area around it, on a regular basis.

Remember: the place where your catheter comes out of your skin is called the "exit site". Your exit site is an area where germs may enter the body and cause an infection. For this reason, it is very important to keep this area clean and covered at all times.

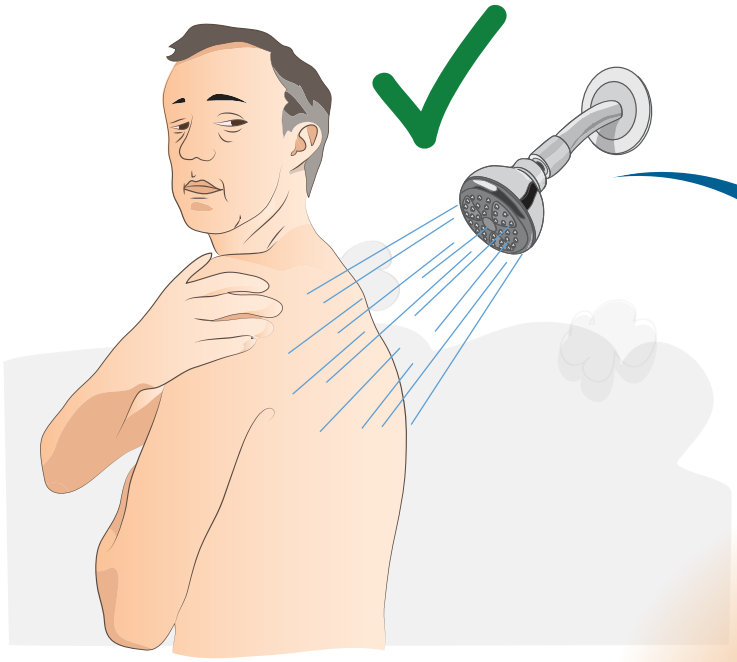


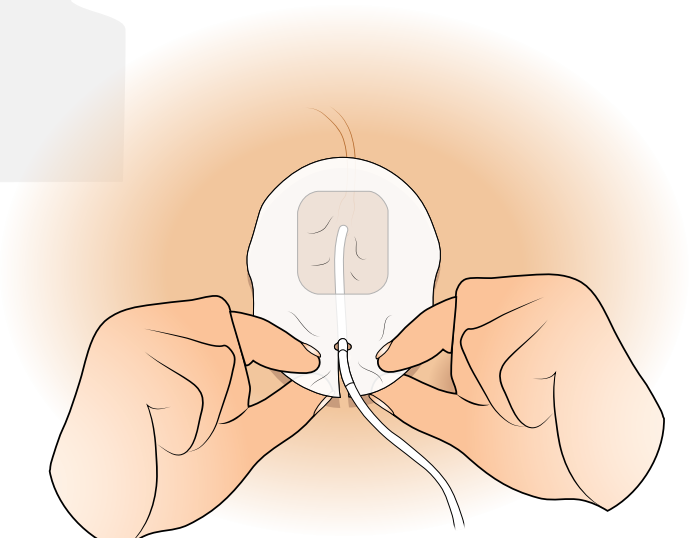
As part of your routine care:

- Your dressing (bandage) must be changed once a week and more if needed.
- Your injection cap must be changed once a week.
- Before bathing or showering, your entire dressing and catheter (roll it up), must be covered with a plastic wrap that is taped in place with waterproof tape.
- The alcohol cap must be changed every time it is removed.

Your catheter and dressing should not be submerged in water. Do not forget to inspect and change your dressing immediately after washing if necessary.

Shower with water on your back!





Did you know?

You will need to change your dressing if it is not securely in place, that is, if:

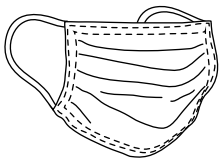
- It is loose, it is coming away from your skin or sticking to clothing.
- Water has seeped under it.
- There is liquid leaking out (oozing) from your exit site.

You will need a sterile gauze dressing if there is liquid leaking out from your exit site. If you have this type of dressing, the CLSC will change your dressing every 2 days at least, until there is no more liquid leaking out.

Changing your dressing
(once a week and more if needed.)

If you have a PICC, a CLSC Nurse will change your dressing, the injection cap and the extension since you cannot reach the PICC area yourself.

1 Gather these supplies:

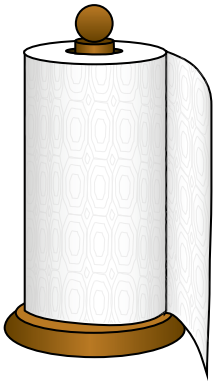


Mask

Garbage Can

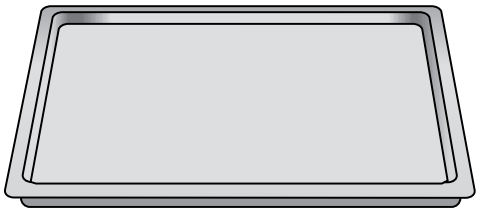
Rubbing Alcohol 70%

Cleaning Product

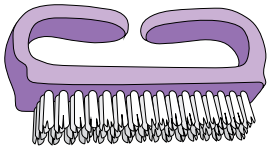


Paper Towel

Antimicrobial Soap (e.g. Dexidin®)



Tray



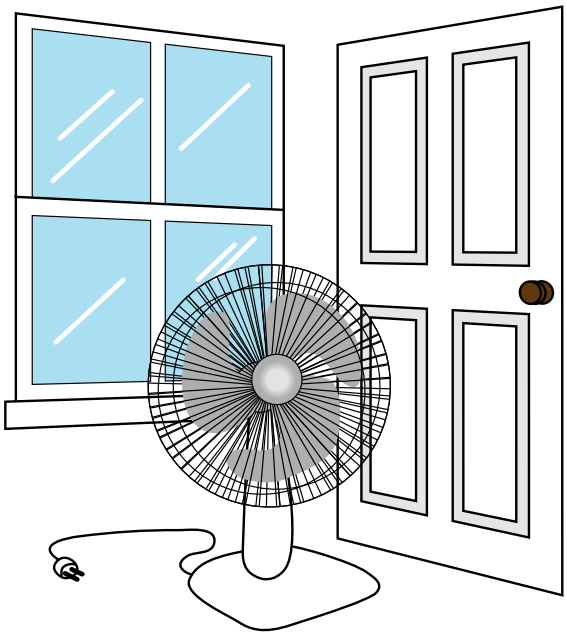
Nail Brush

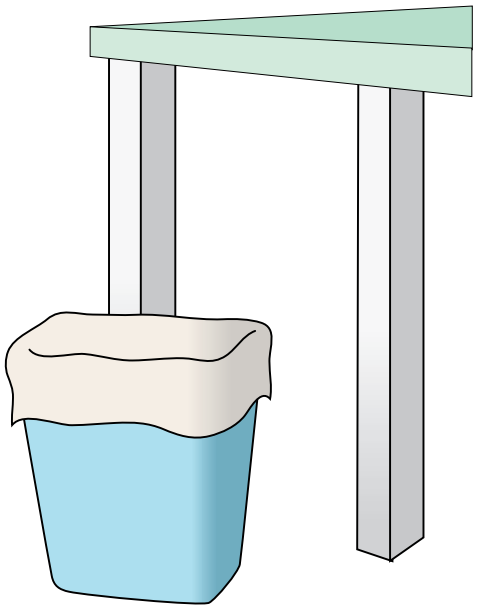
Alcohol-based Hand Cleanser (e.g. Purell®)

2 Put on a mask

Make sure that anyone else in the room also wears a mask.

3 Close all windows, doors and turn off fans.

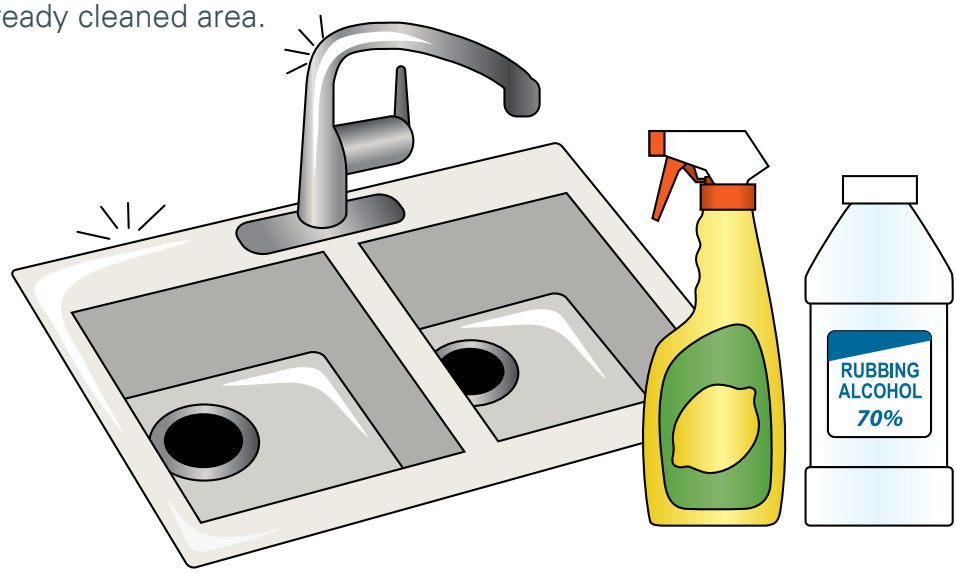




4 Place the garbage can close to your PN work area.

5 Clean the sink with your usual product and then with alcohol.

Start with faucet, sides of sink and clean your way down toward the drain. Don't come back to an already cleaned area.



6 Take off your watch and rings and do a regular hand wash.

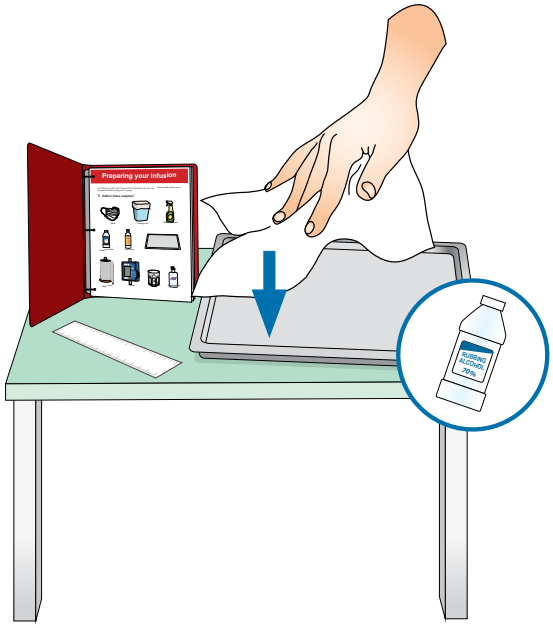
7 Clean with alcohol:

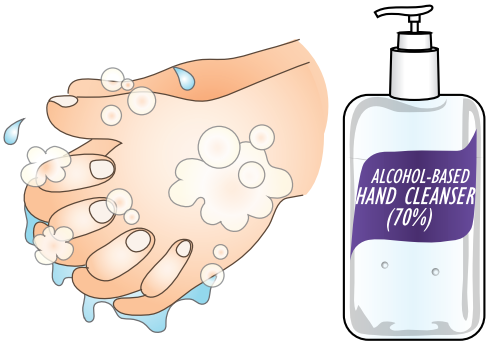
- **The alcohol bottle**
- **The antimicrobial soap bottle (e.g. Dexidin®)**
- **The alcohol-based hand cleanser bottle (e.g. Purell®)**
- **The paper towel dispenser**

Start at the top of the bottle, then sides and finish with the bottom. Don't forget to place them on a surface that's been cleaned already.

8 Clean the work table and tray with alcohol, along with your PN binder, ruler and the pages in plastic sheets that you will be using.

Clean the top of the tray first, then the bottom, make sure it does not touch your clothes.

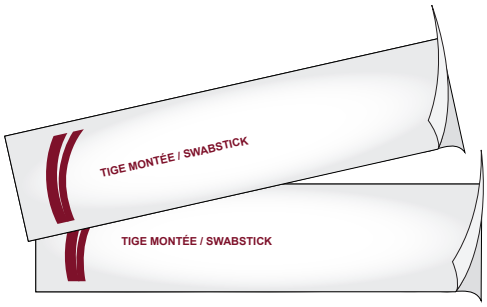




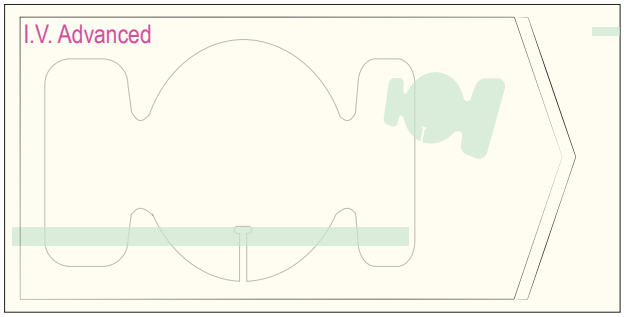
9 Clean your hands with the alcohol-based hand cleanser (e.g. Purell®).

Rub the cleanser all over your hands until completely dry.

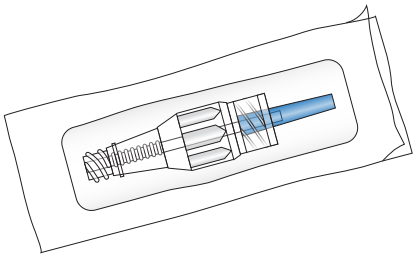
10 Gather your equipment:



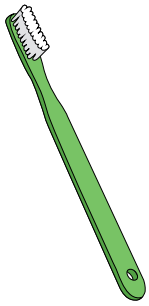
(2) Chlorhexidine Swabsticks



Transparent Dressing (IV Advanced®)



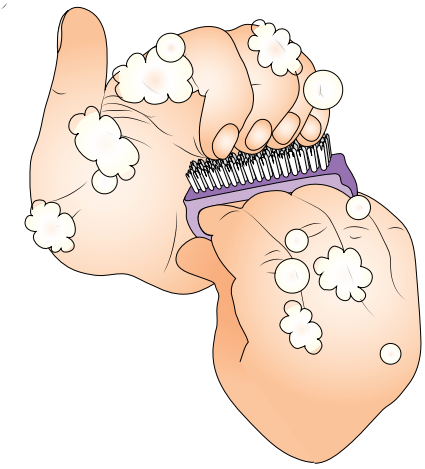
Injection Cap
(if due to be changed)



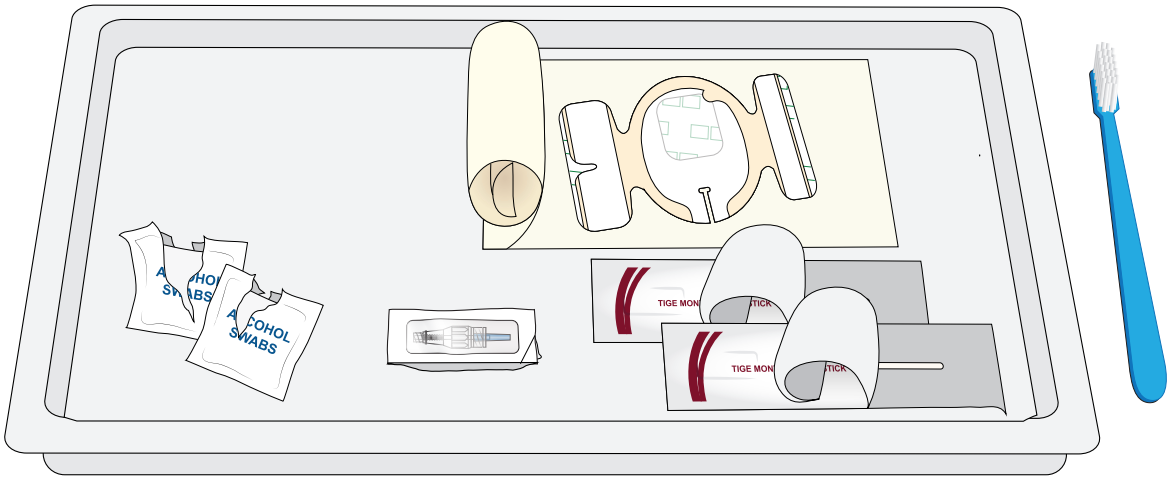
Toothbrush

(4) Alcohol Swabs

11 Wash your hands for 2 minutes using the correct hand washing technique (antimicrobial soap (e.g. Dexidin®) and nail brush)

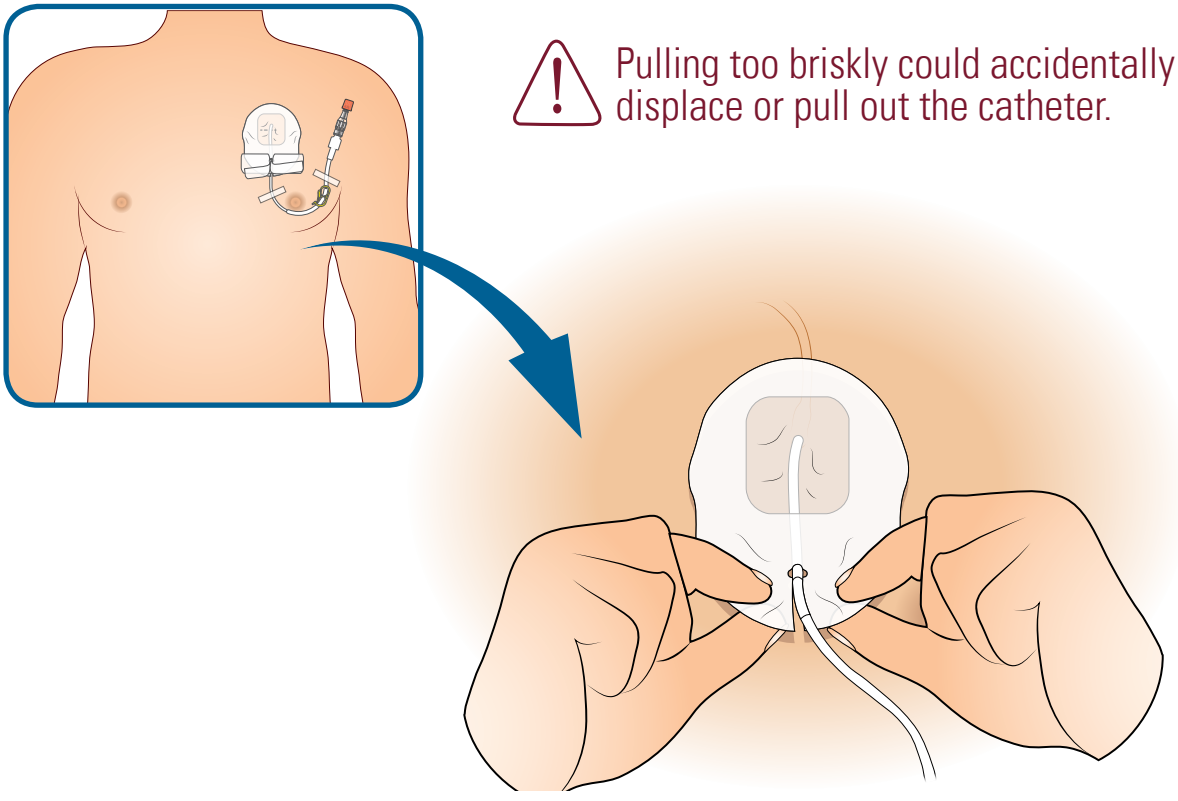


12 Open the supplies (except the injection cap) and leave items in their respective packaging on the tray. The toothbrush can be placed beside the tray.



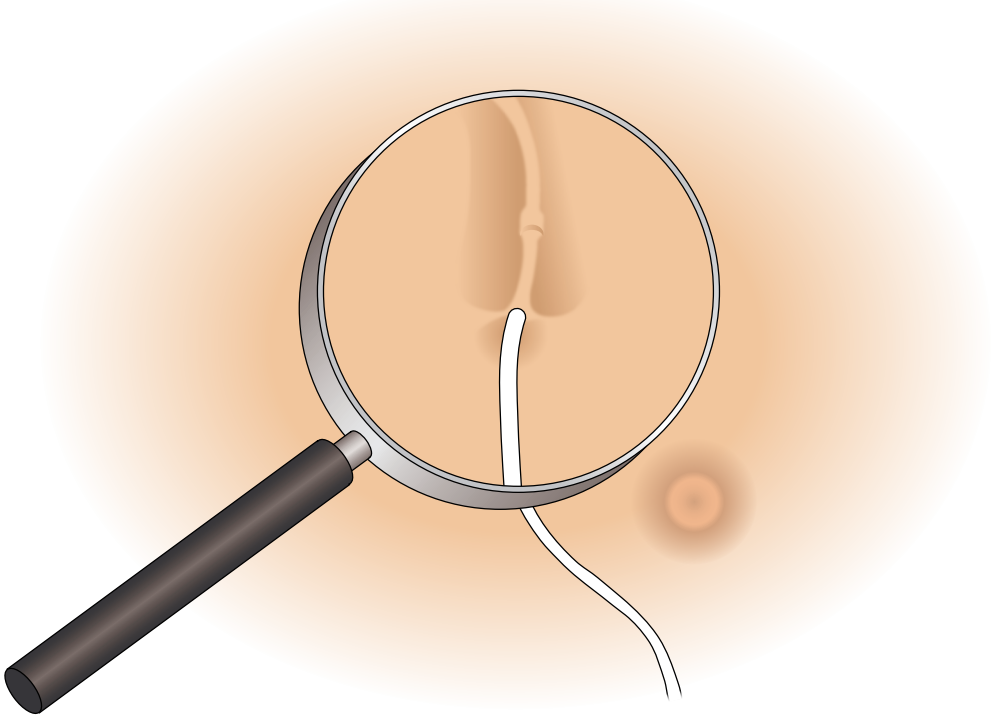
13 Remove the old dressing:

Remove the tape that is holding the catheter in place. Gently pull off the old dressing, starting at the bottom and moving up (like the picture) Throw away the old dressing.

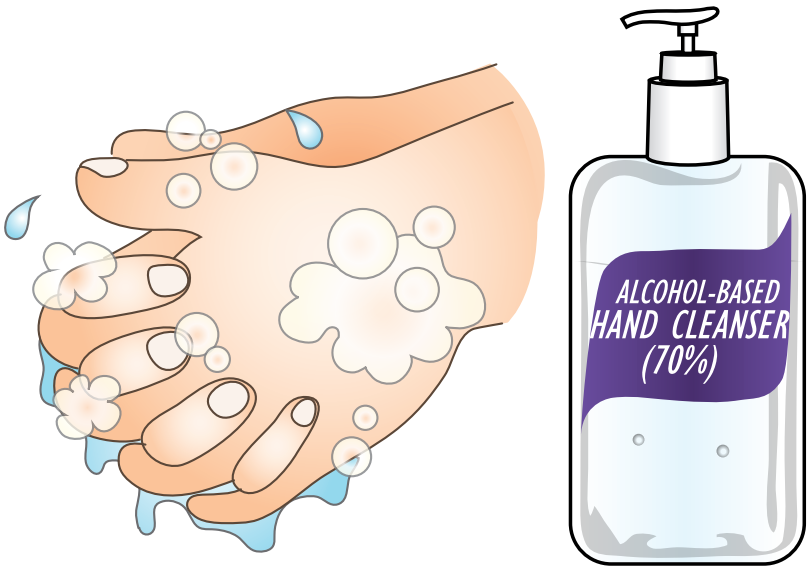


Pulling too briskly could accidentally displace or pull out the catheter.

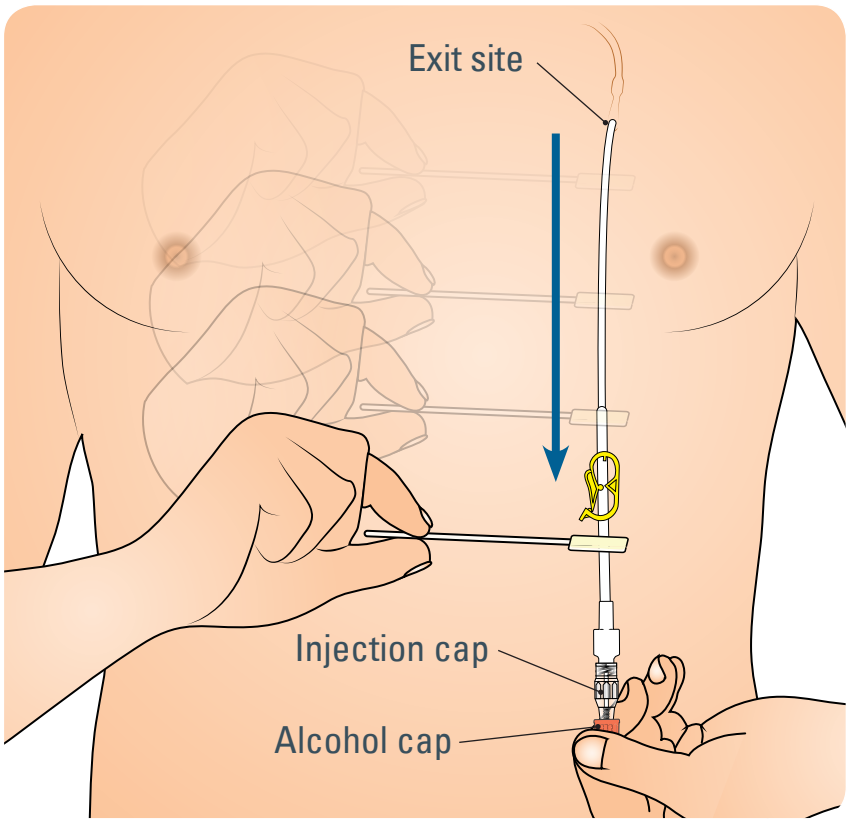
14 Inspect the site with your eyes for any signs of infection (do not remove any scabs), redness, swelling or discharge.



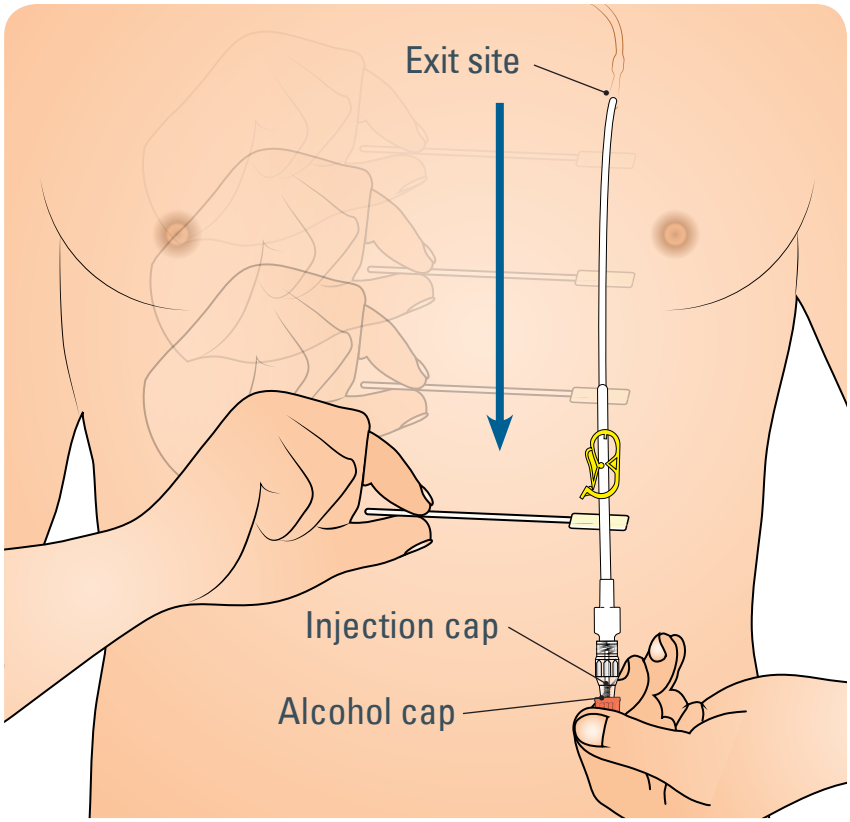
15 Clean your hands again using the alcohol-based hand cleanser (e.g. Purell®). Rub the cleanser all over your hands until completely dry.



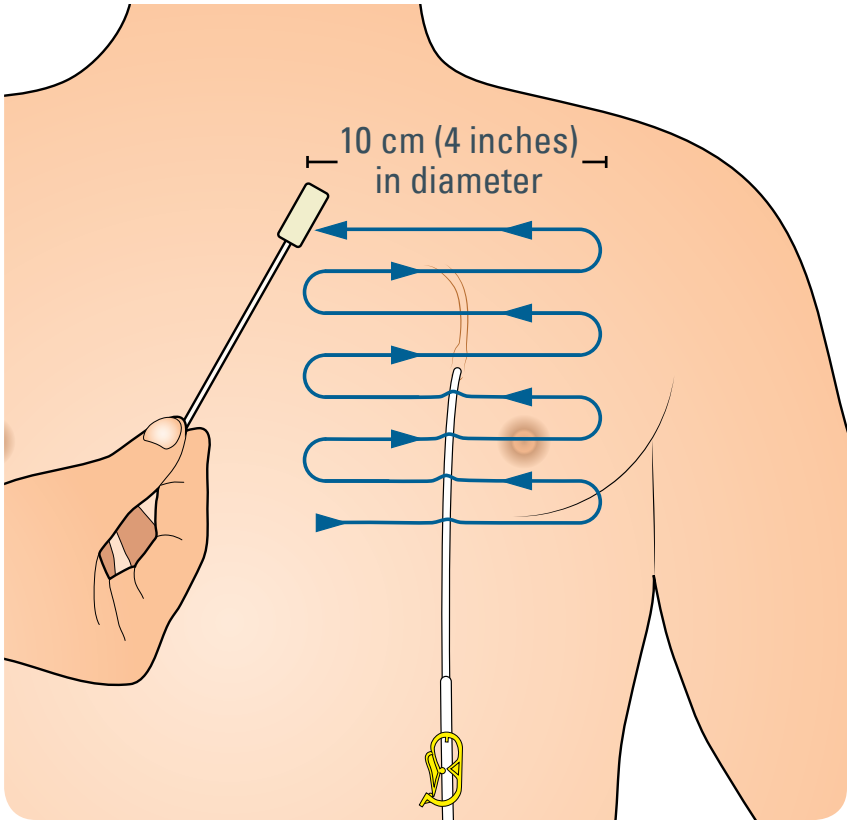
16 With one thin side of the swabstick, clean the top surface of the catheter. Start at the exit site, then work down all the way the injection cap.



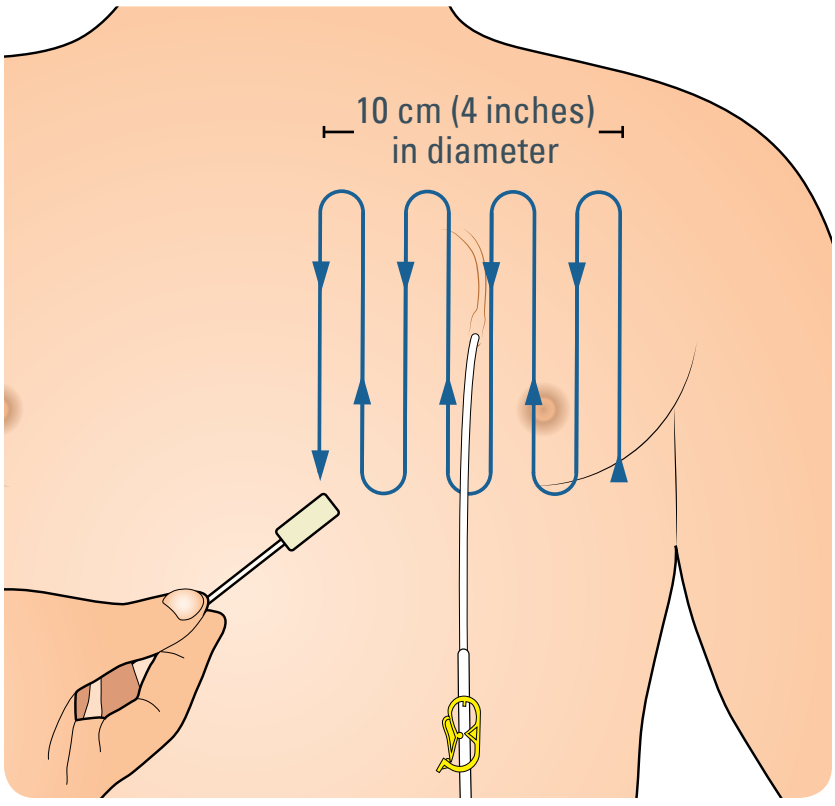
17 Use the the other thin side to clean the bottom surface of the catheter. Start at the exit site, then work all the way to the injection cap.



18 With with one flat side of the swabstick, rub your skin in a back and forth friction motion, clean around and over the catheter (about 10 cm (4 inches) in diameter) for 10 seconds.

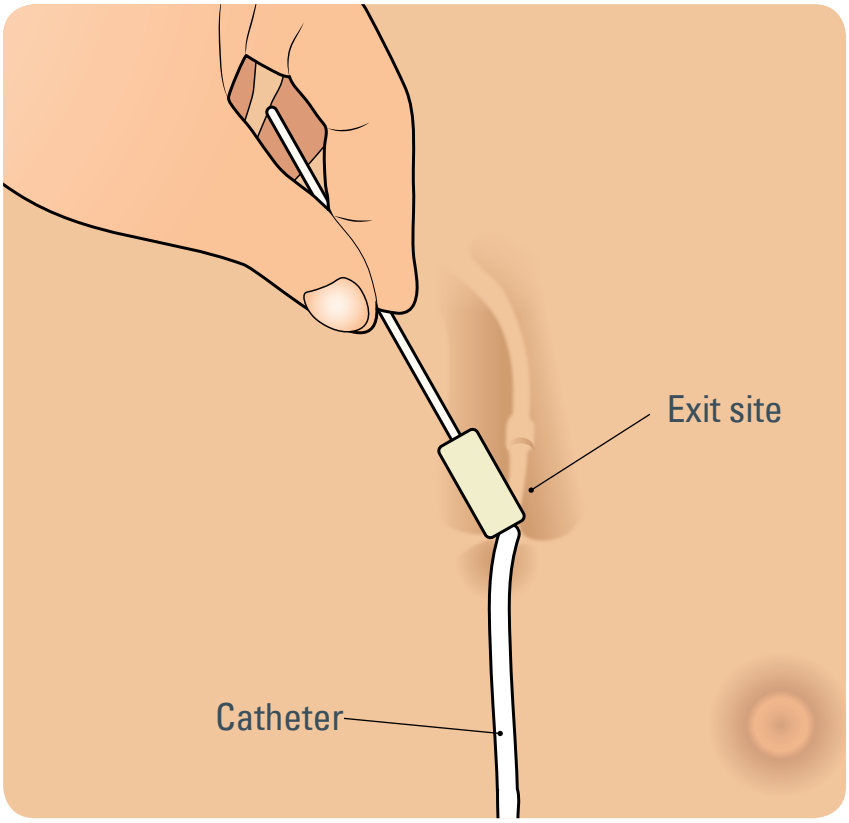


19 With the other flat side of the swabstick, rub your skin in an up and down friction motion, clean around and under the catheter (about 10 cm (4 inches) in diameter) for 10 seconds.

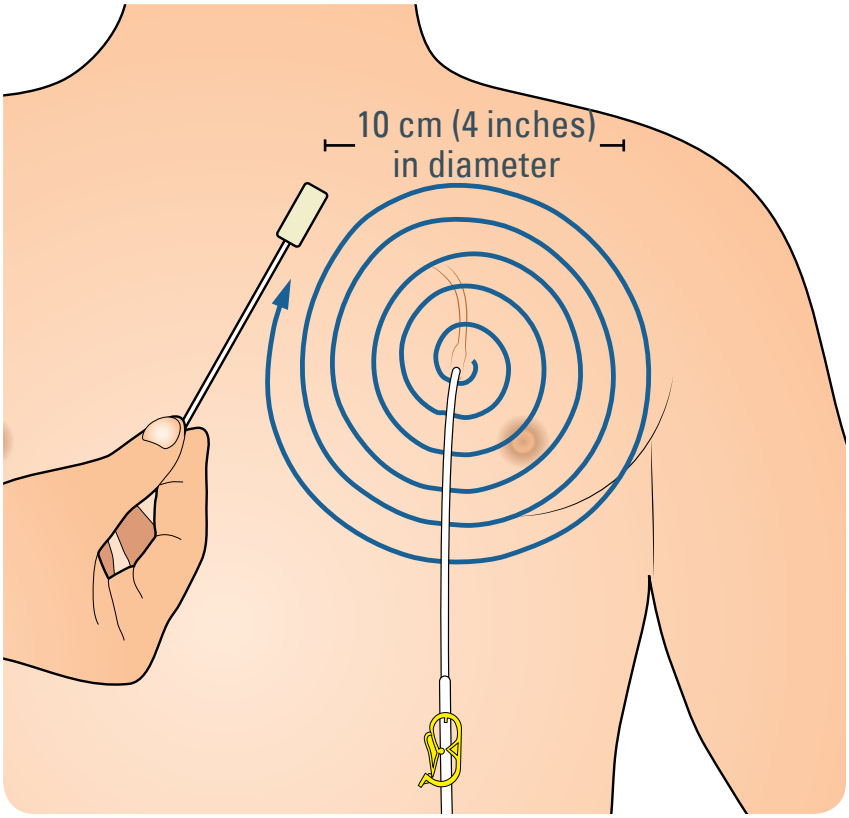


With the second swabstick:

20 **Using the tip of the second swabstick, clean the exit site of the catheter.**

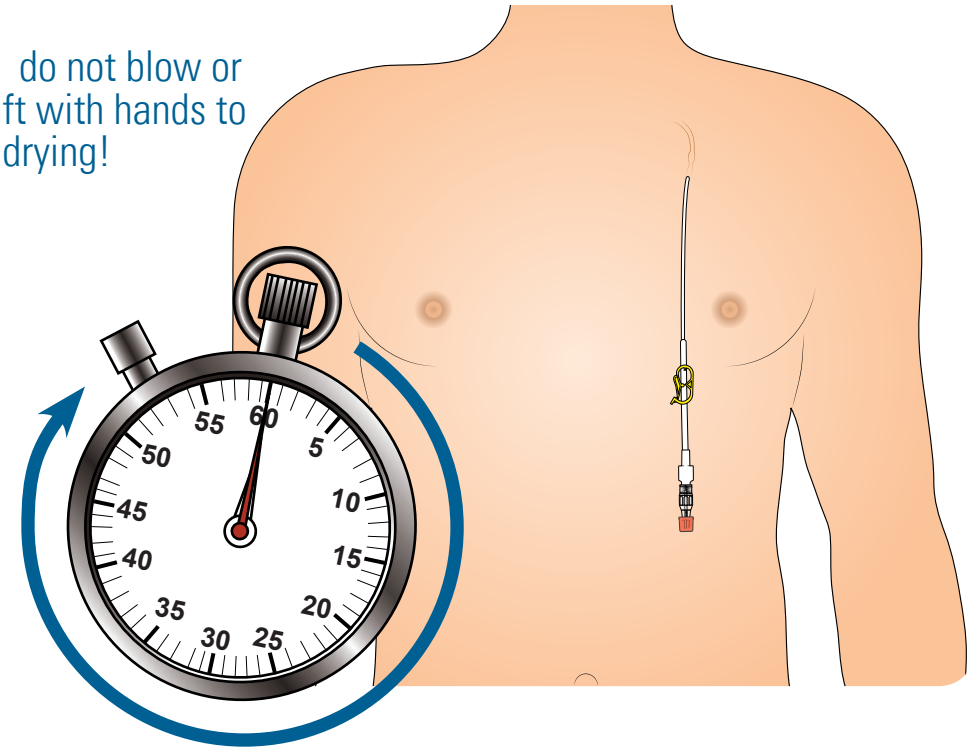


21 **Using a flat surface of the second swabstick, clean the skin in a firm, circular motion, from the exit site, under the catheter, toward the exterior (about 10 cm (4 inches) in diameter) for 10 seconds.**



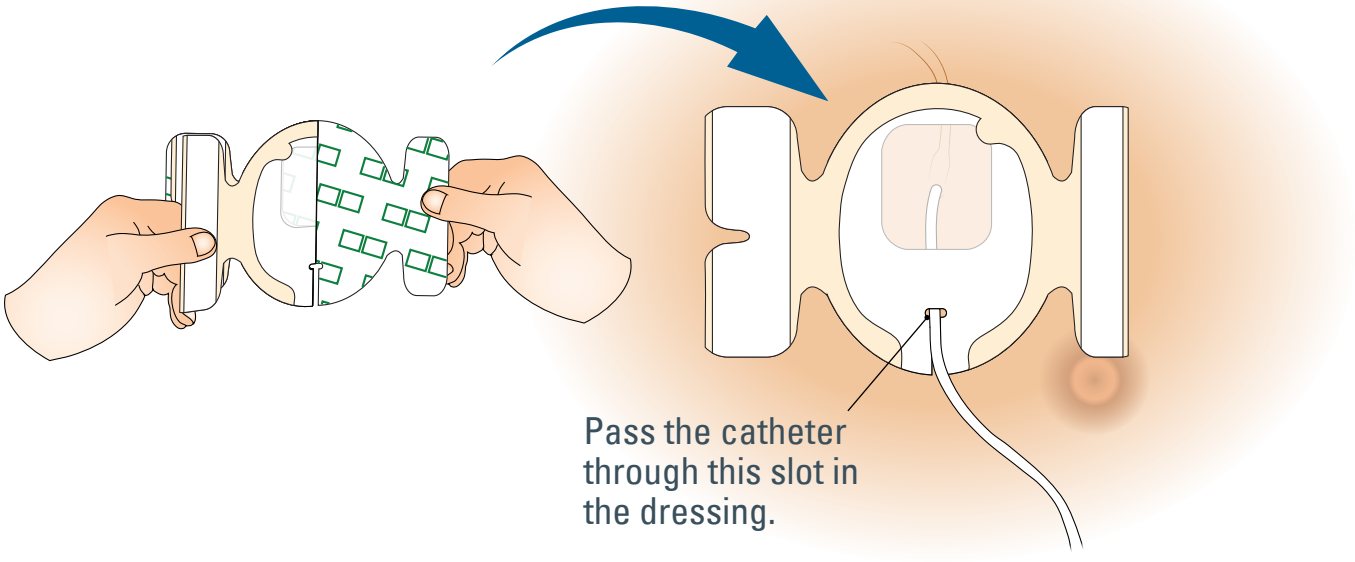
22 **After cleaning with the swabs, allow the skin to dry for at least 3 minutes – otherwise the dressing will not stick properly and could irritate your skin.**

Attention: do not blow or make a draft with hands to accelerate drying!

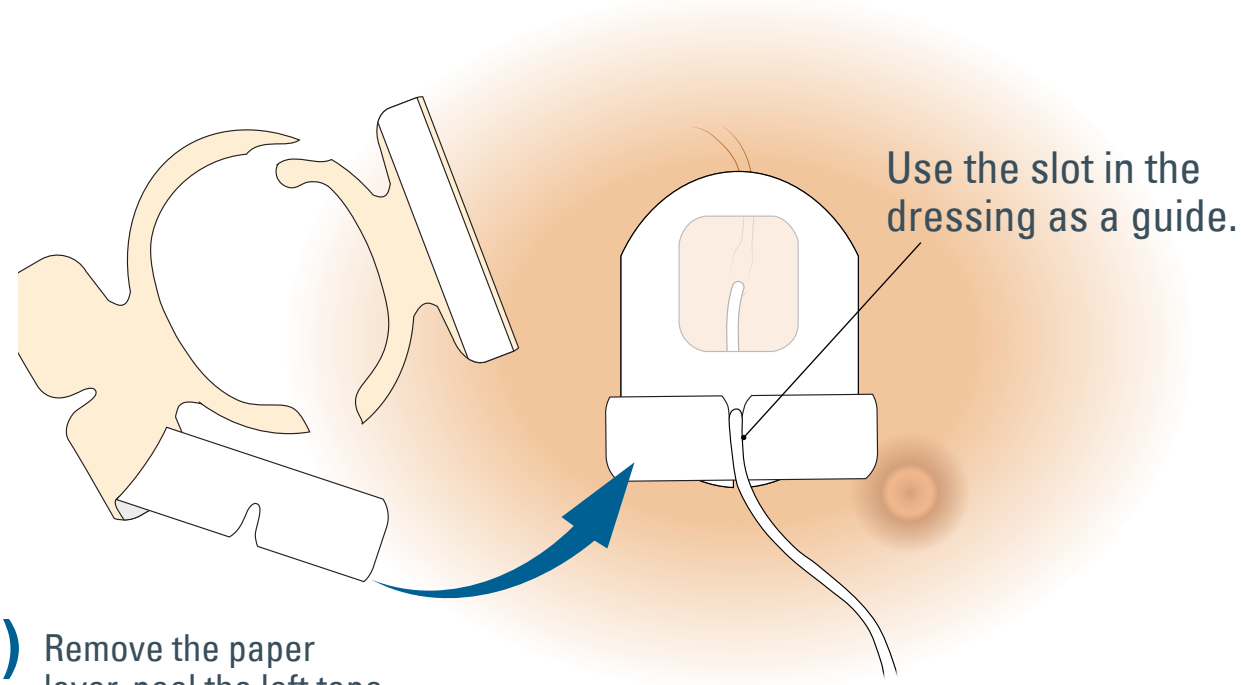


23 **Peel the wax paper backing off of the IV Advanced® dressing and apply the dressing on the exit site by gently pressing from the middle toward the outside. The catheter exit site should be in the middle of the clear part of the dressing so you can see it.**

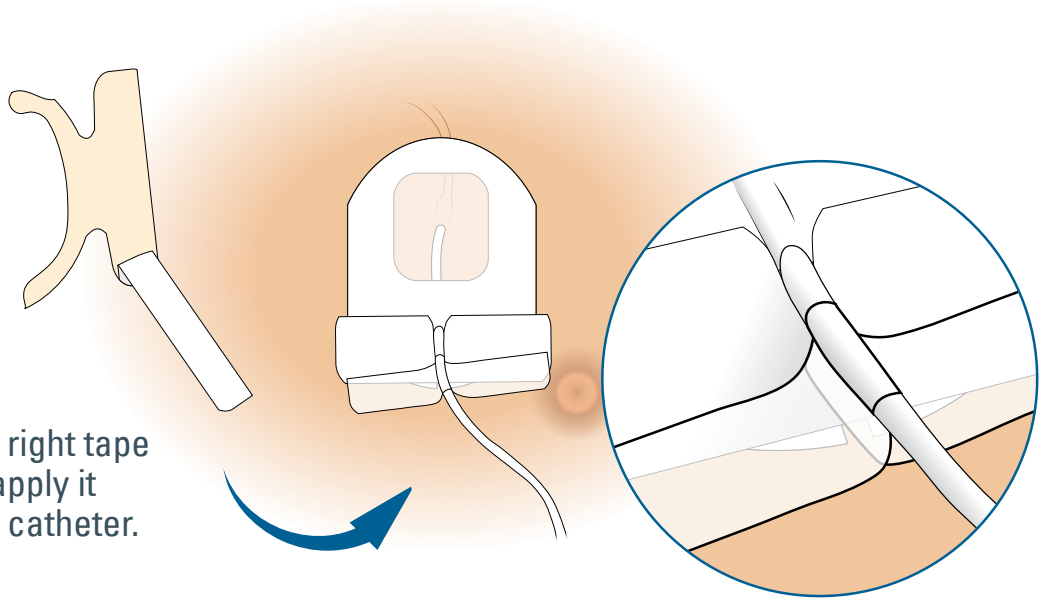
Do not stretch the dressing or the skin when applying.



24 **Reinforce the dressing where the catheter exits the dressing using the 2 tapes included on the paper layer with the IV Advanced®. Place one under the catheter and one over it to stabilize.**



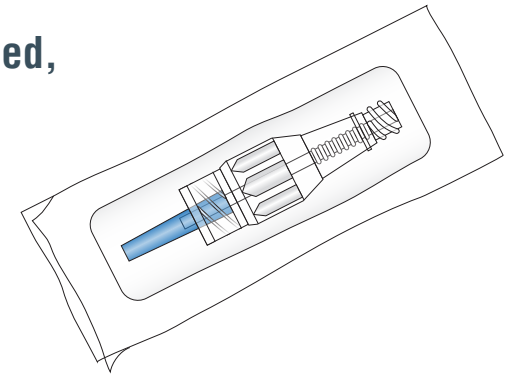
a) Remove the paper layer, peel the left tape off and apply it all the way up against the catheter to “seal it”.

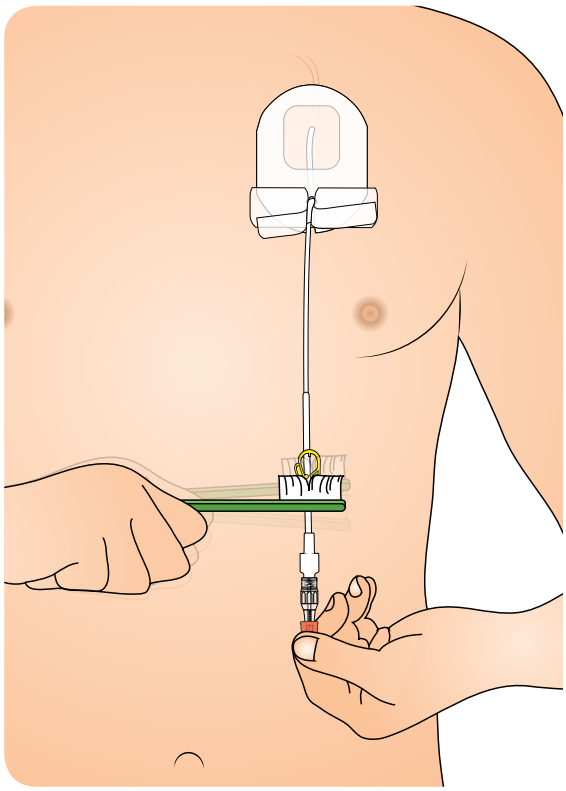


b) Peel the right tape off and apply it over the catheter.

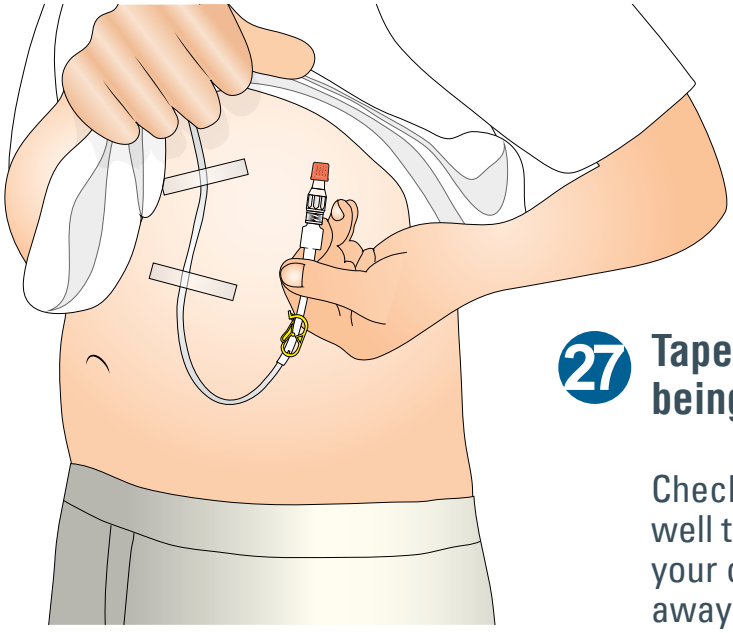
c) Apply it in such a way that anchors it in place, making the pieces touch together under the catheter but allowing for some movement.

25 If the injection cap is due to be changed, go to the next section (Changing the Injection Cap); if not, go to step 26.





26 Clean the catheter close to the injection cap with alcohol swabs if still dirty and use your toothbrush with alcohol from your bottle of alcohol to clean your clamp if dirty.

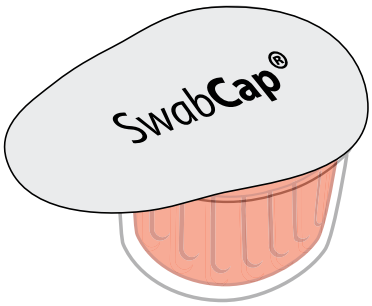


27 Tape the catheter to prevent it from being pulled accidentally at the exit site.

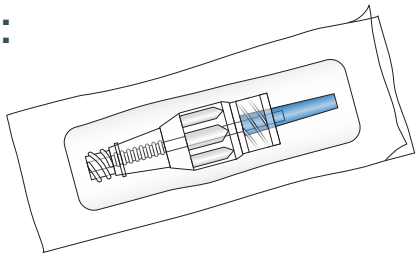
Check it regularly to make sure that it remains well taped. Tape the end of the catheter on your chest (or put it in your bra), keeping it away from your abdomen (stoma, fistula or other wound dressing).

Changing your injection cap
(once a week)

1 **Gather your equipment:**



(1) Alcohol Cap
(e.g. SwabCap®)



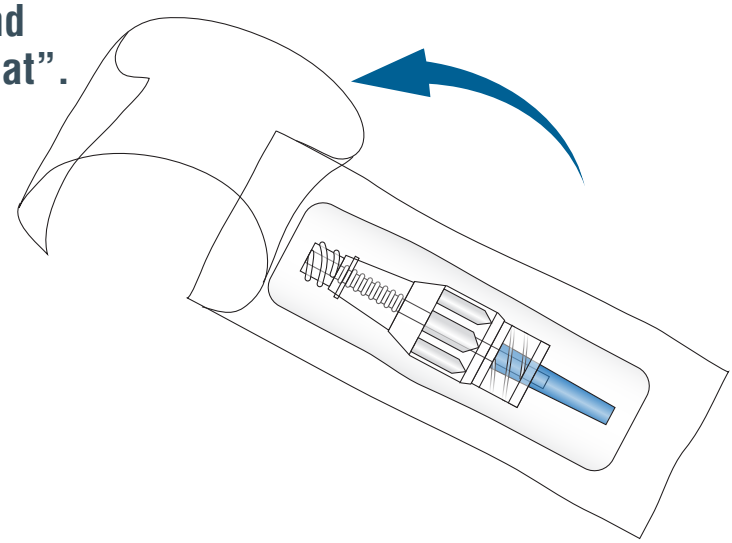
(1) Injection Cap

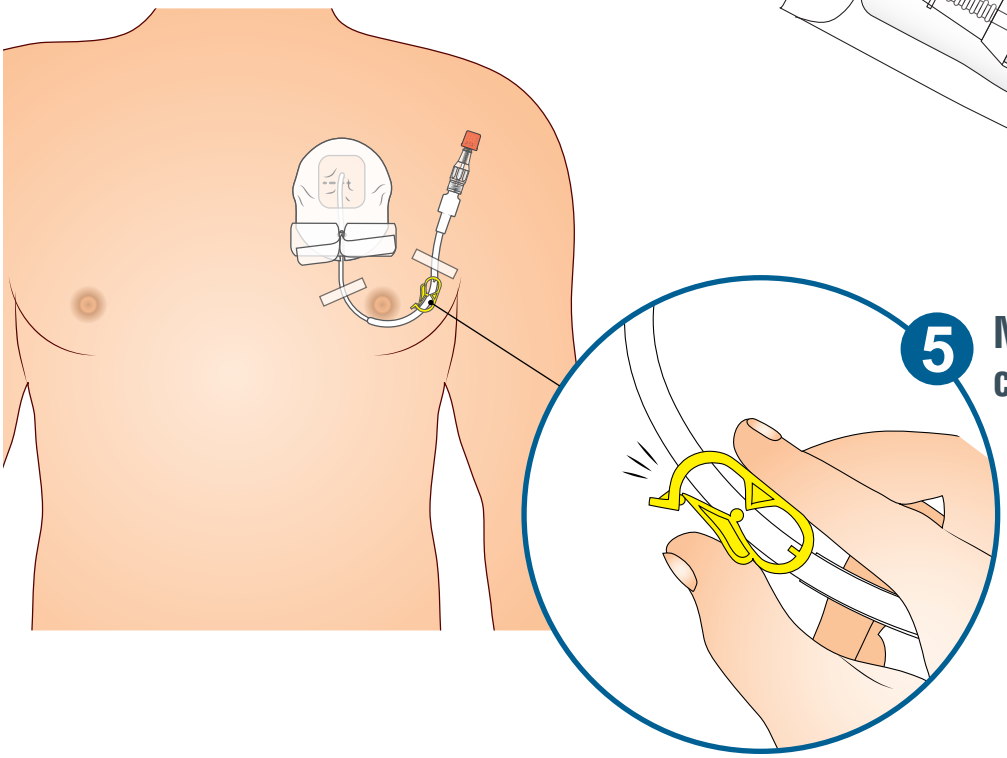
(2) Alcohol Swabs

2 **Keep your mask on.**

3 **Clean your hands using an alcohol-based hand cleanser (e.g. Purell®). Rub the cleanser all over your hands, until completely dry.**

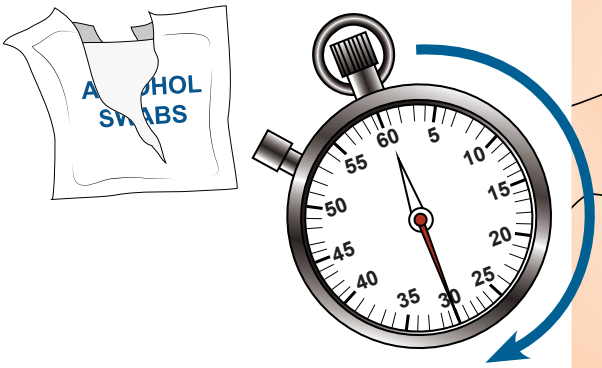
4 Open a new injection cap and leave it in its packaging "boat".

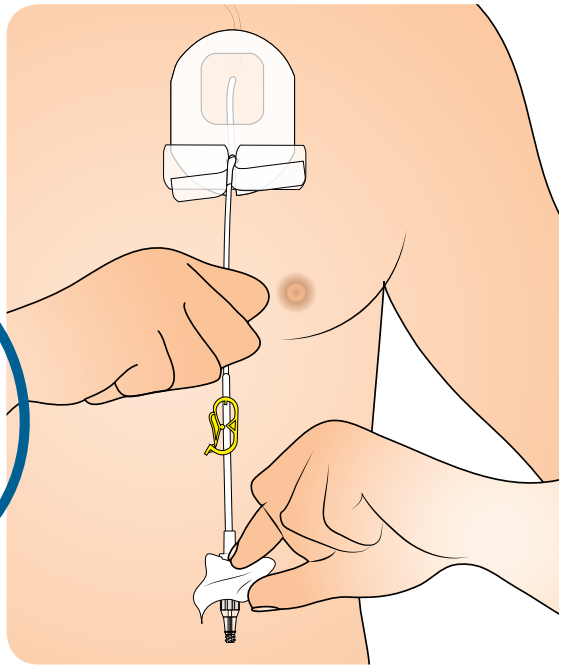




5 Make sure the catheter is clamped.

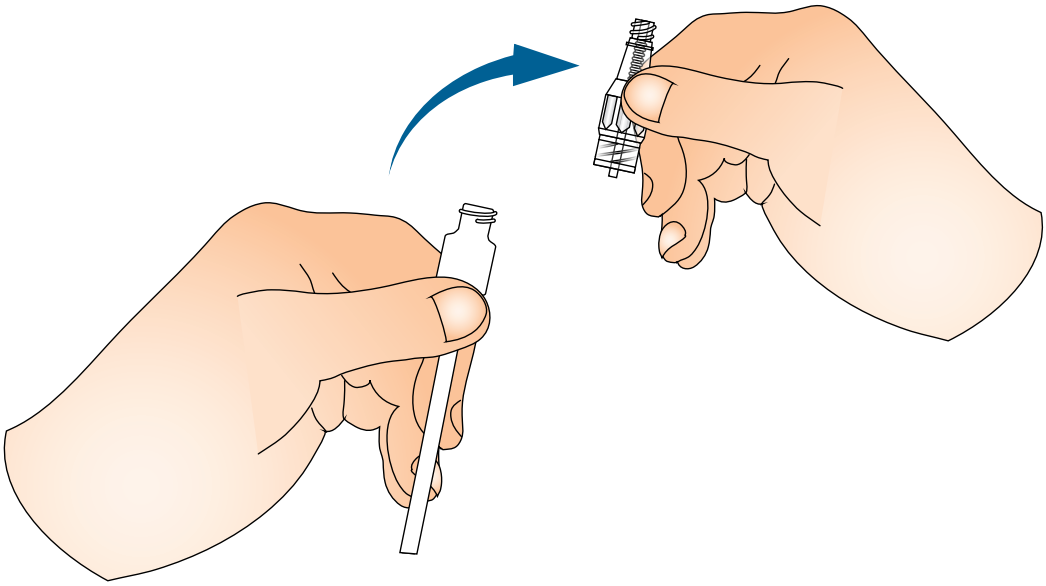
6 Clean the connection between the catheter and the old injection cap 1 time with an alcohol swab for 30 seconds.





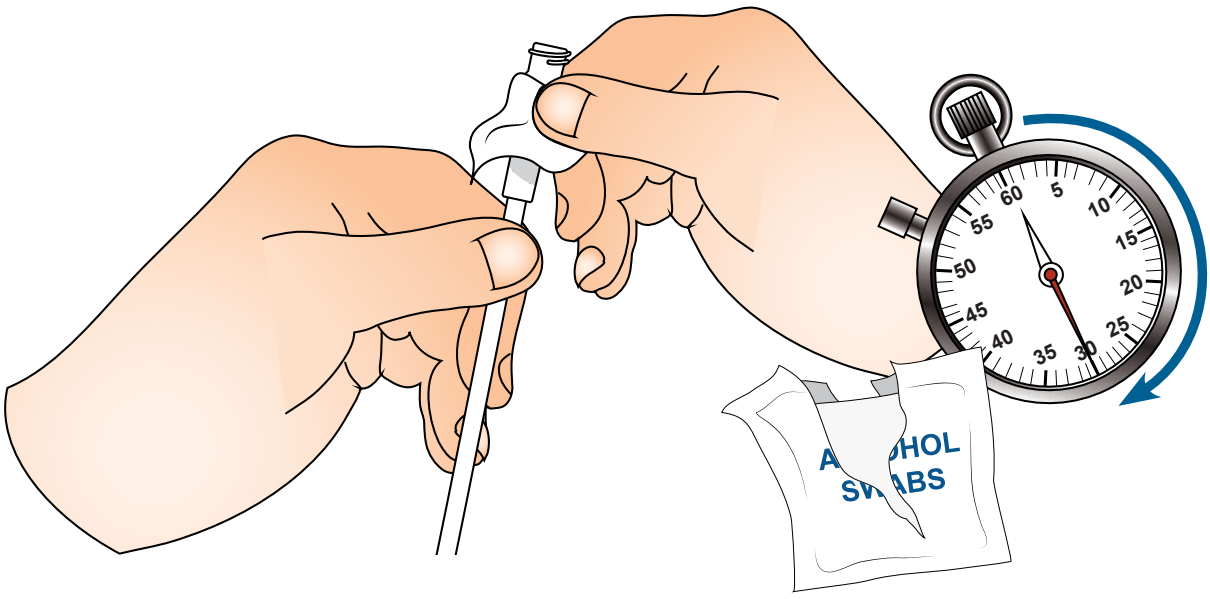
7 Continue holding while it dries for another 30 seconds.

8 **Unscrew and remove the old injection cap; do not let go of the catheter.**



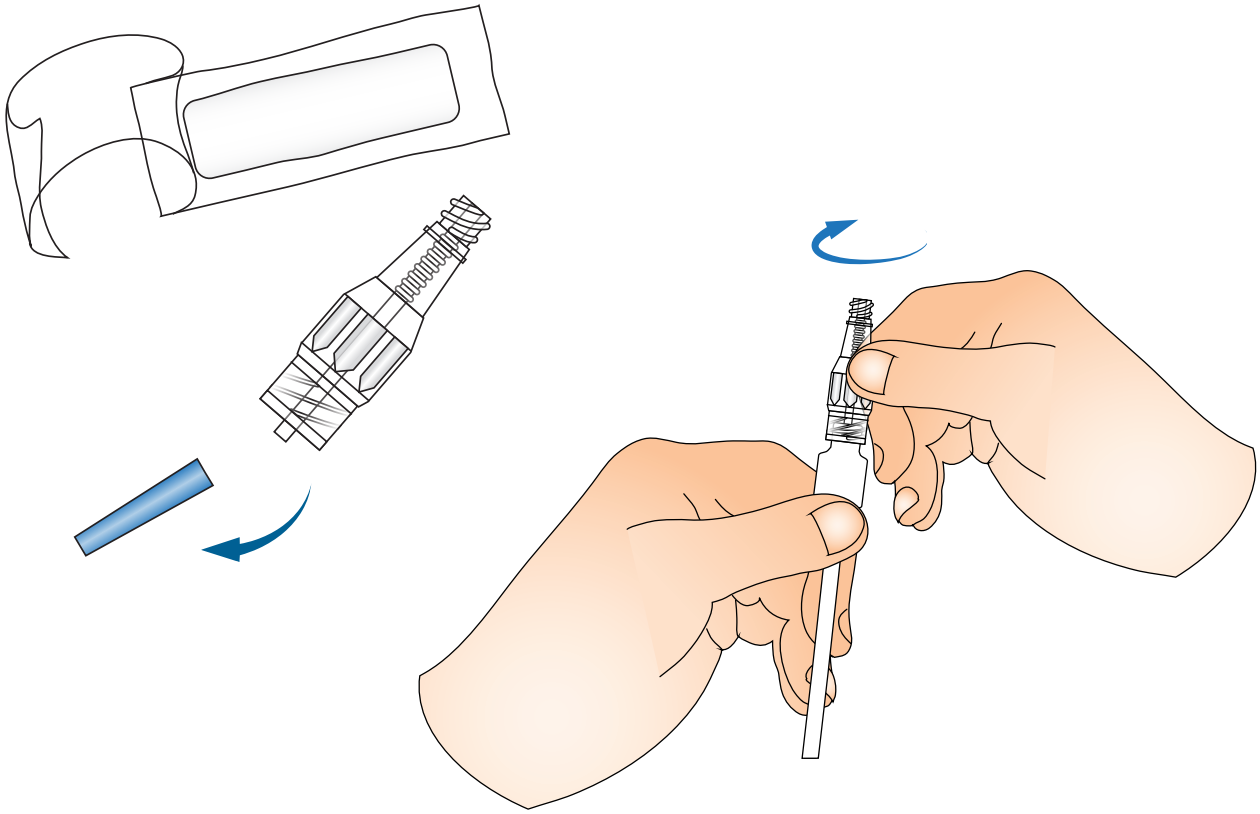
9 **Wrap swab around the end of the catheter; scrub the end for 30 seconds including the ridges.**

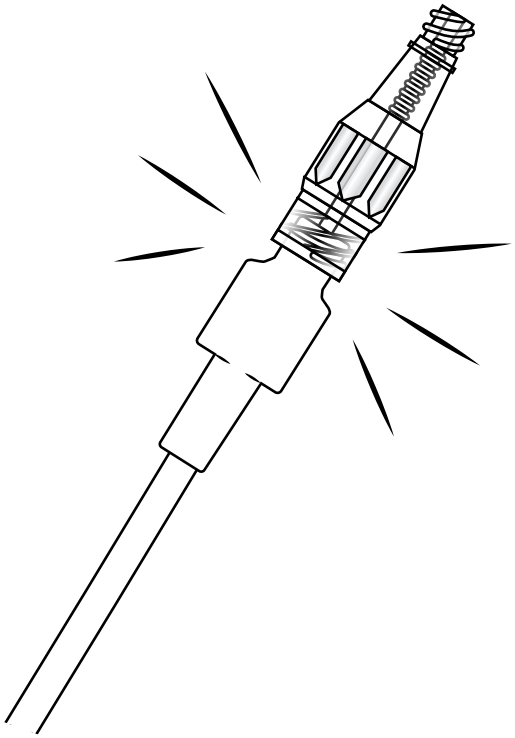
DO NOT COVER THE OPEN END



10 **Continue holding while it dries for 30 seconds.**

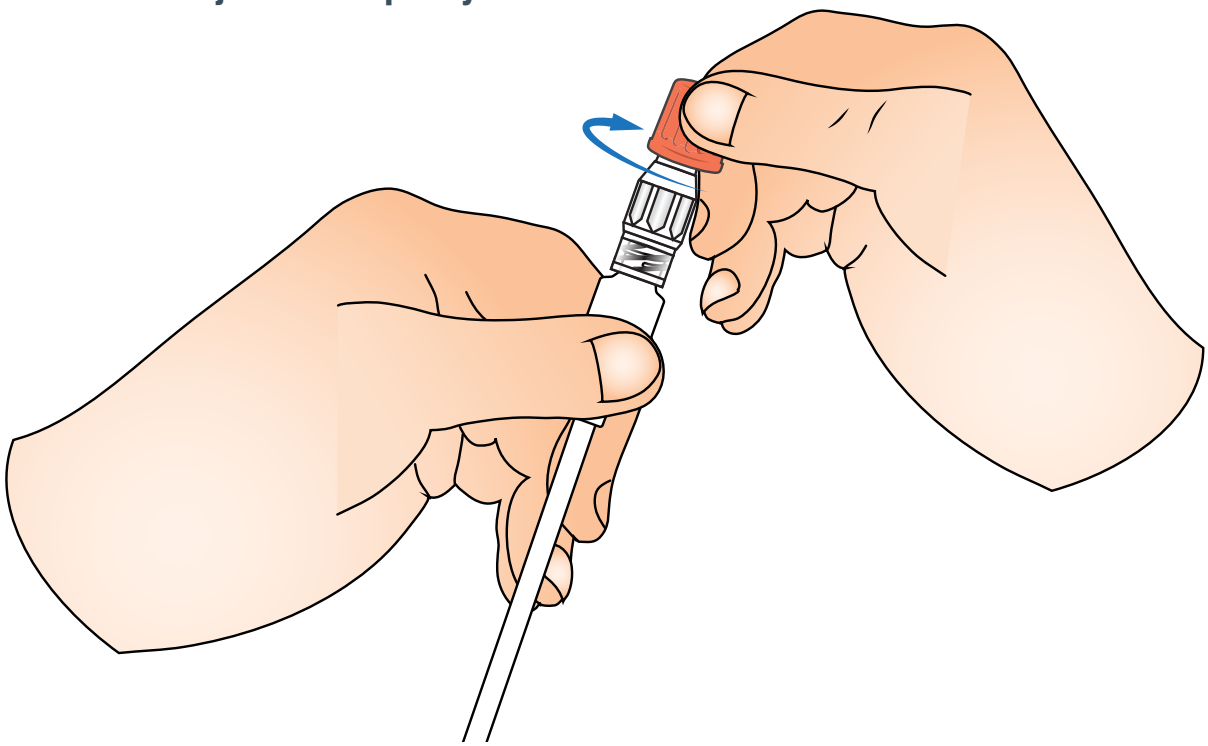
11 Remove the protective piece from the new cap and screw the new cap onto the catheter.

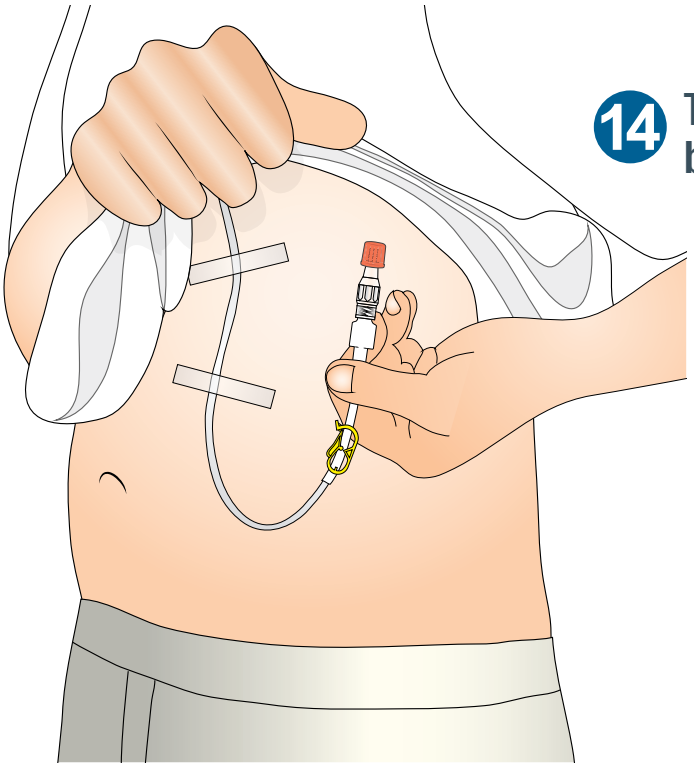




12 Check that the new cap is screwed on tightly.

13 Screw the alcohol cap (e.g. SwabCap®) on the injection cap of your catheter.





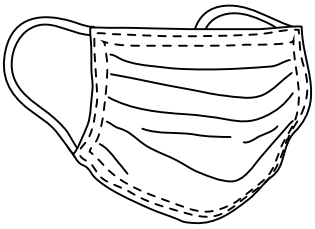
14 Tape the catheter to prevent it from being pulled accidentally at the exit site.

Check it regularly to make sure that it remains well taped. Tape the end of the catheter on your chest (or put it in your bra), keeping it away from your abdomen (stoma, fistula or other wound dressing).

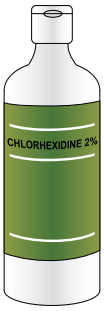
* If you have a second lumen to your catheter (another injection site), repeat the steps 4 to 13 for the second one.

Flushing your catheter

1 Gather these supplies:



Mask



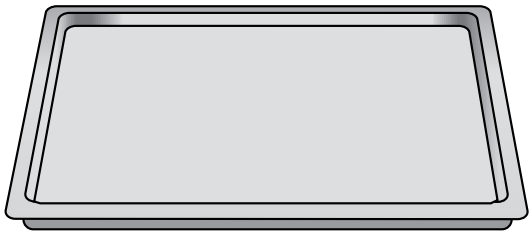
Antimicrobial Soap
(e.g. Dexidin®)

Alcohol-based
Hand Cleanser
(e.g. Purell®)

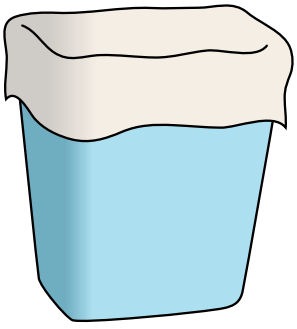
Rubbing Alcohol (70%)

Paper Towel

Cleaning Product

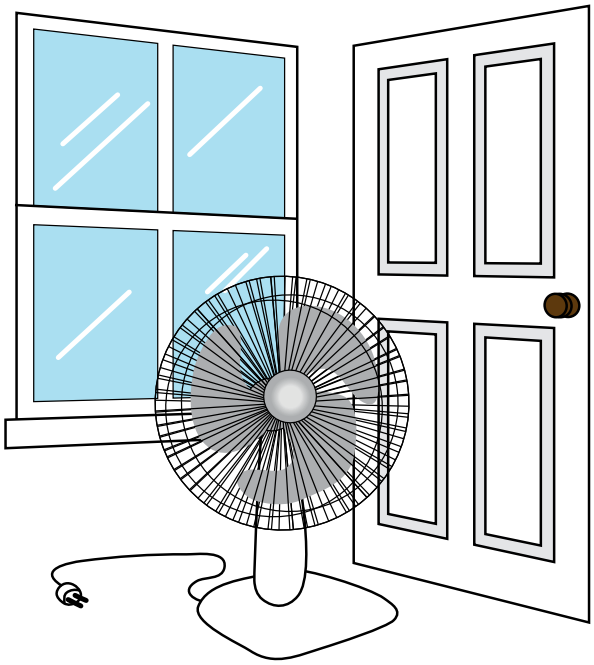


Tray



Garbage Can

2 Put on a mask. Make sure that anyone else in the room also wears a mask.



3 Close all windows, doors and turn off fans.

4 Place the garbage can and sharps container close to your PN work area.

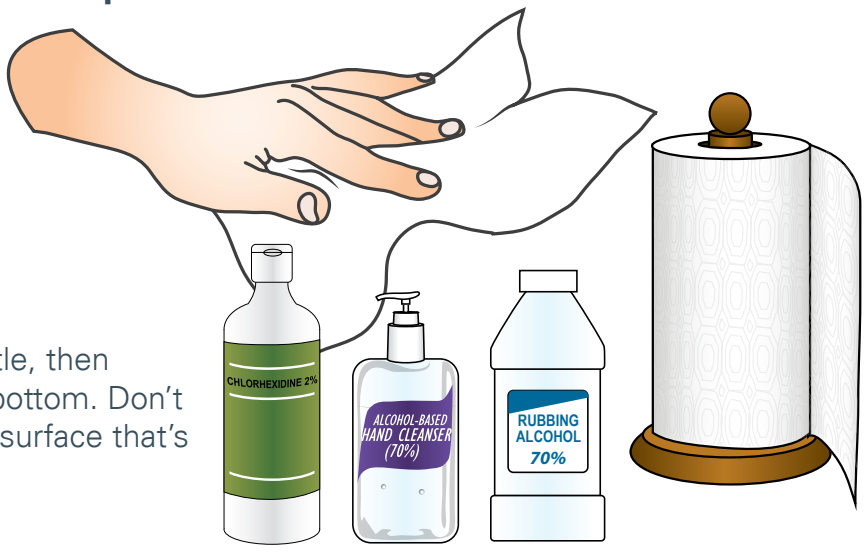
5 Clean the sink with your usual product and then with alcohol.

Start with faucet, sides of sink and clean your way down toward the drain. Don't come back to an already cleaned area.

6 Take off your watch and rings and do a regular hand wash.

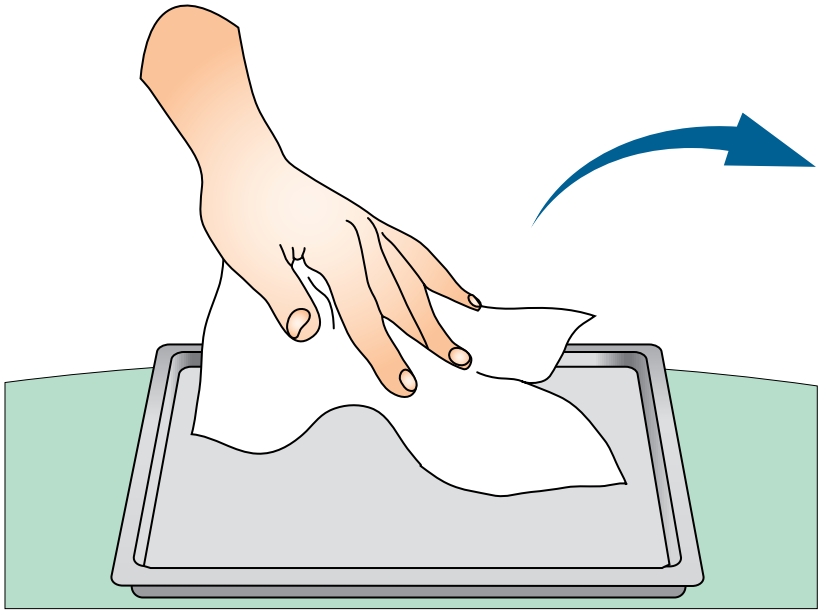
7 Clean with alcohol:

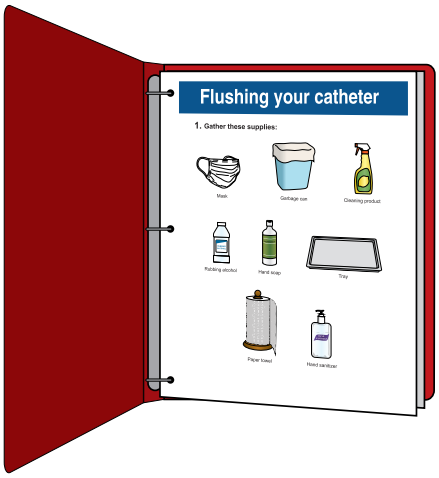
- The alcohol bottle
- The antimicrobial soap bottle (e.g. Dexidin®)
- The alcohol-based hand cleanser bottle (e.g. Purell®)
- The paper towel dispenser



Start at the top of the bottle, then sides and finish with the bottom. Don't forget to place them on a surface that's been cleaned already.

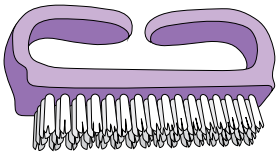
8 Clean the work table and tray with alcohol, along with your PN binder, the pages in plastic sheets and the ruler that you will be using.





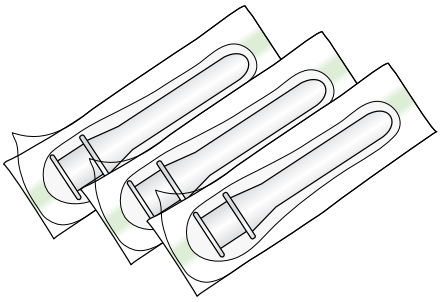
9 Clean your hands with the alcohol-based hand cleanser (e.g.Purell®). Rub the cleanser all over your hands until completely dry.

10 Gather your flushing equipment:

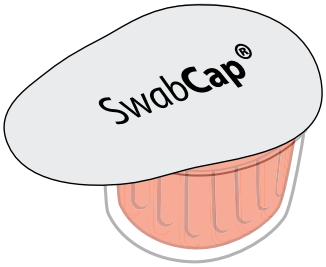


Nail Brush

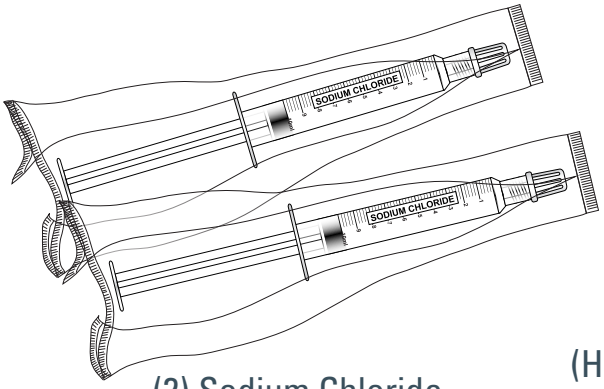
(2) Alcohol Swabs



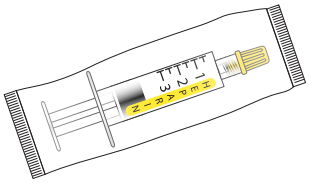
(3) Plastic Cannulas



(1) Alcohol Cap
(e.g. SwabCap®)



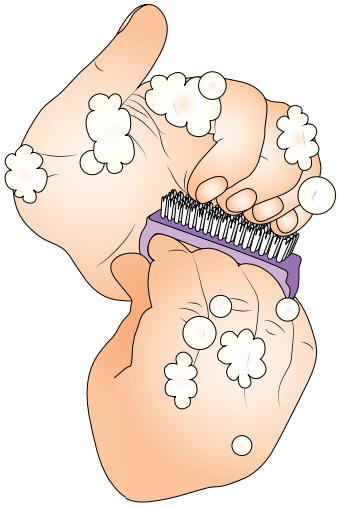
(2) Sodium Chloride
(NaCl) Syringes (10 ml)

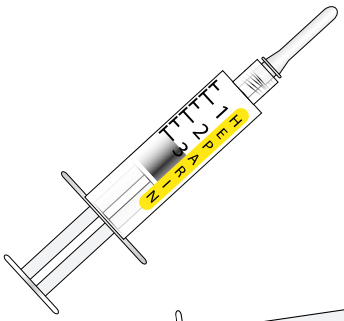


(1) Locking Solution
Syringe (3ml)
(Heparin or Sodium Citrate)

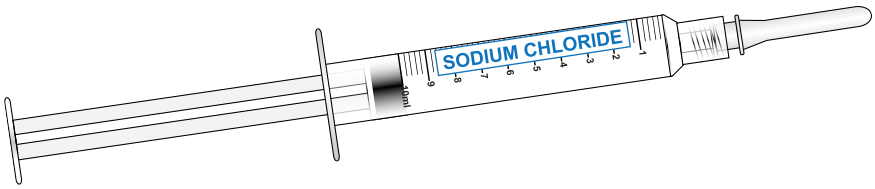
✱ Check the content and expiry date of each item!!

11 Wash your hands for 2 minutes using the correct hand washing technique, antimicrobial soap (e.g. Dexidin®) and nail brush.

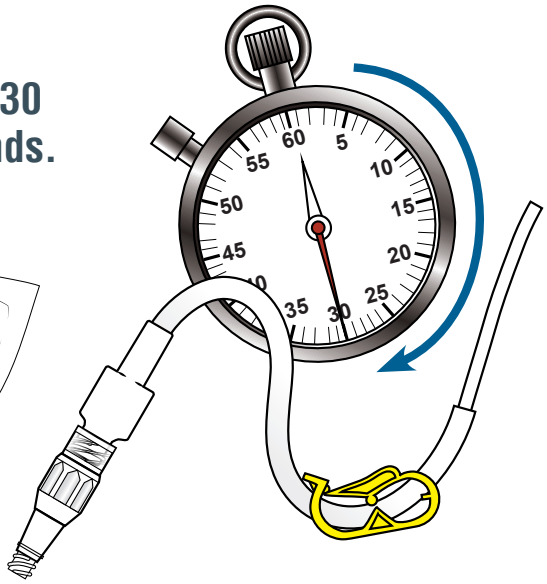


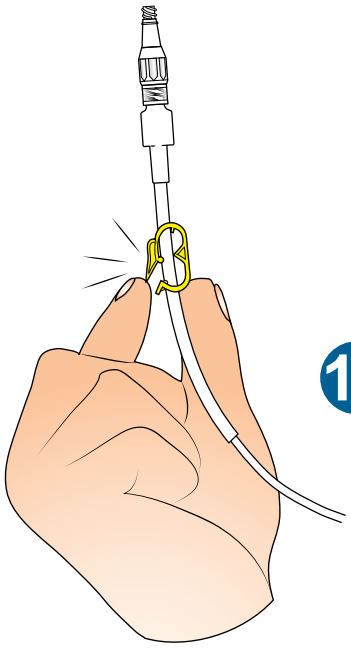


12 Prepare the sodium chloride syringes and the locking solution syringe according to procedure on pages116 and 119.



13 Scrub the injection cap of your catheter with an alcohol swab for 30 seconds; let it air dry for 30 seconds.

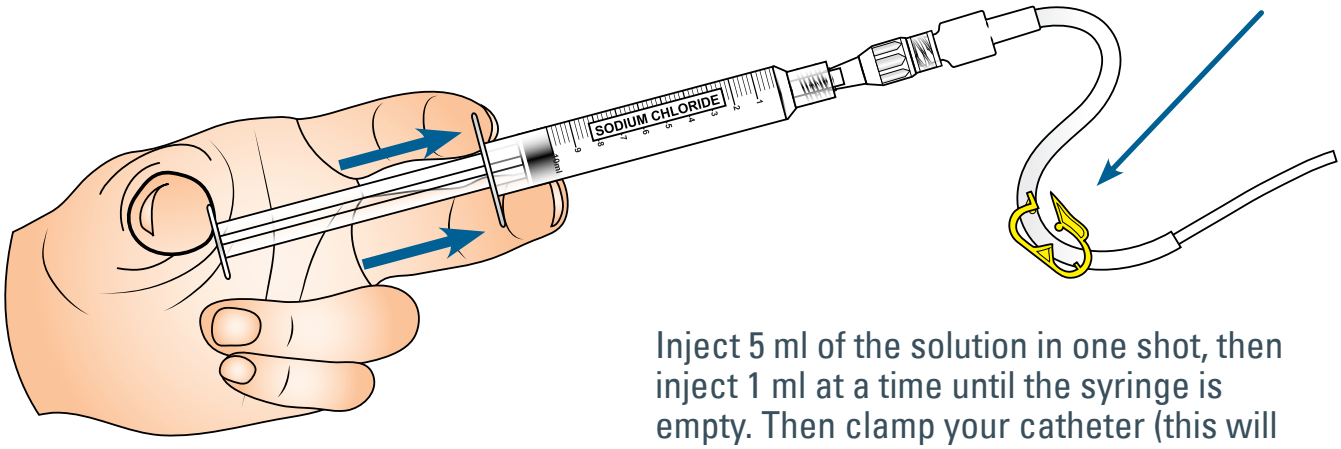




14 Open the clamp of your catheter.

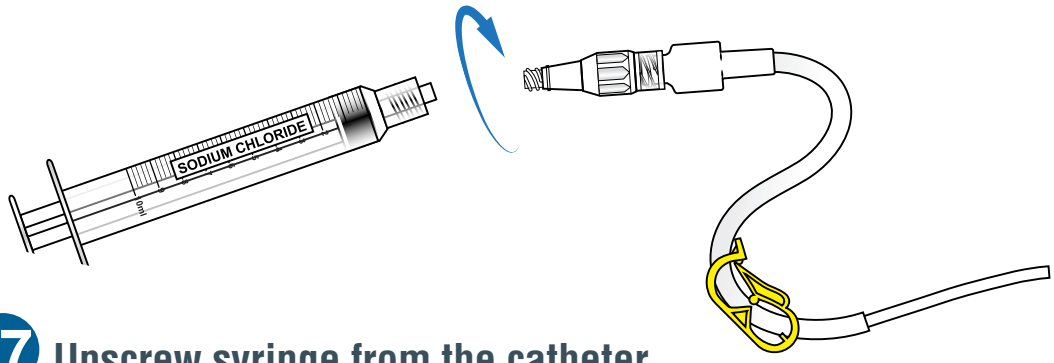
15 Remove the plastic cannula from the sodium chloride syringe.

16 Screw the syringe to your catheter and flush your catheter with 10 ml of sodium chloride.



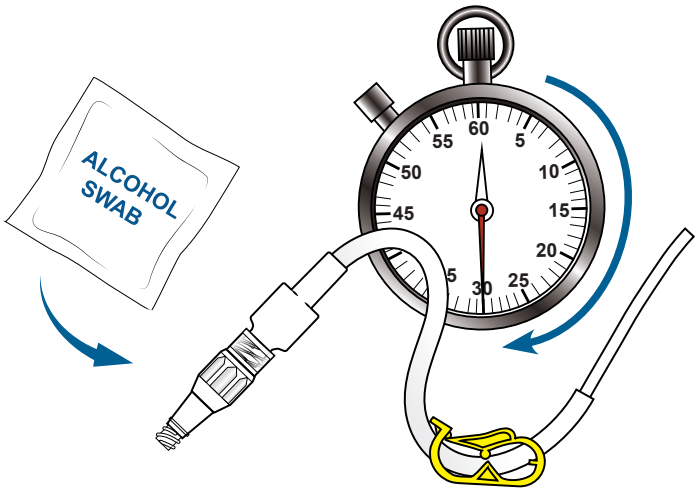
Inject 5 ml of the solution in one shot, then inject 1 ml at a time until the syringe is empty. Then clamp your catheter (this will prevent blood from entering the catheter).

When you are done, remove the syringe.

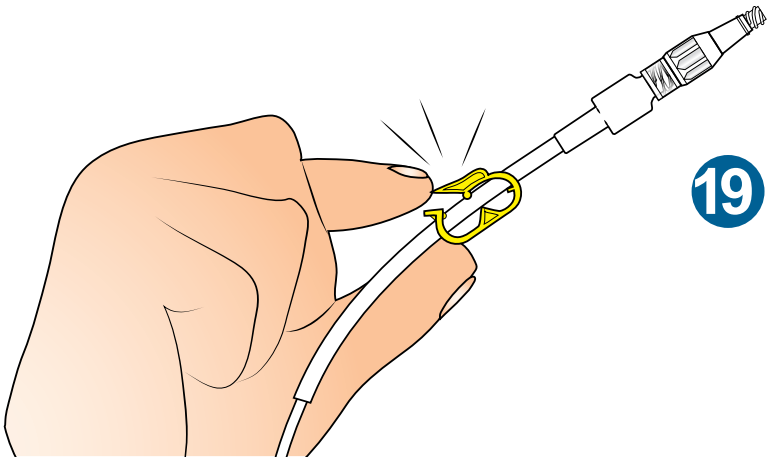


17 Unscrew syringe from the catheter.

17a Repeat the steps 13 to 17 with the second sodium chloride syringe.

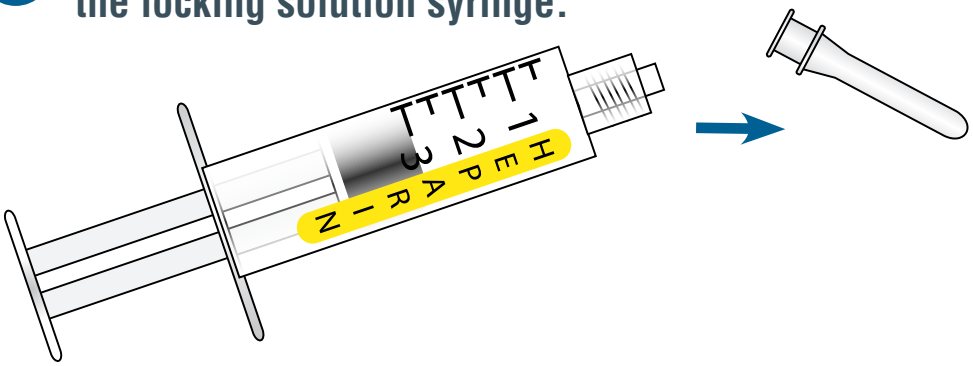


18 Scrub the injection cap again, with 1 alcohol swab for 30 seconds; let it air dry for 30 seconds.

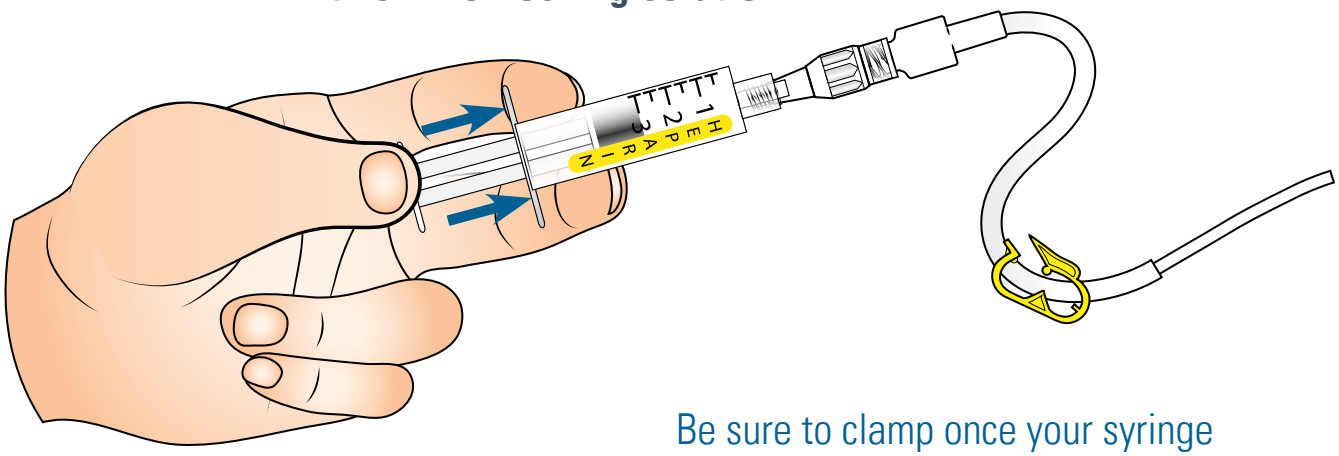


19 **Open the clamp of your catheter.**

20 **Remove the plastic cannula from the locking solution syringe.**

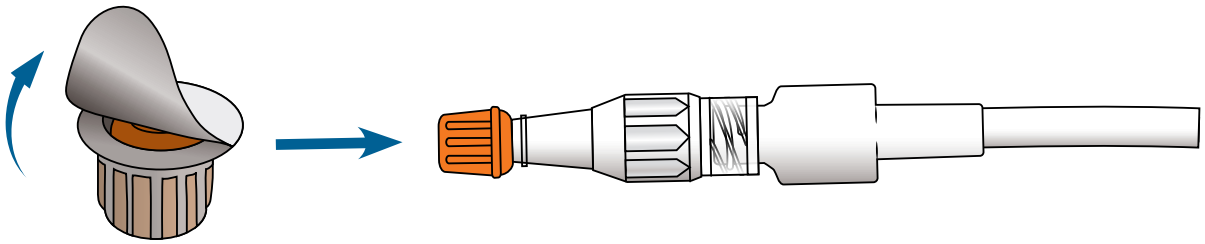


21 **Screw the syringe to your catheter and flush your catheter with 3 ml of locking solution.**

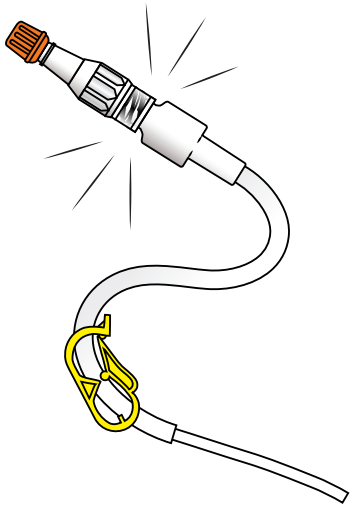


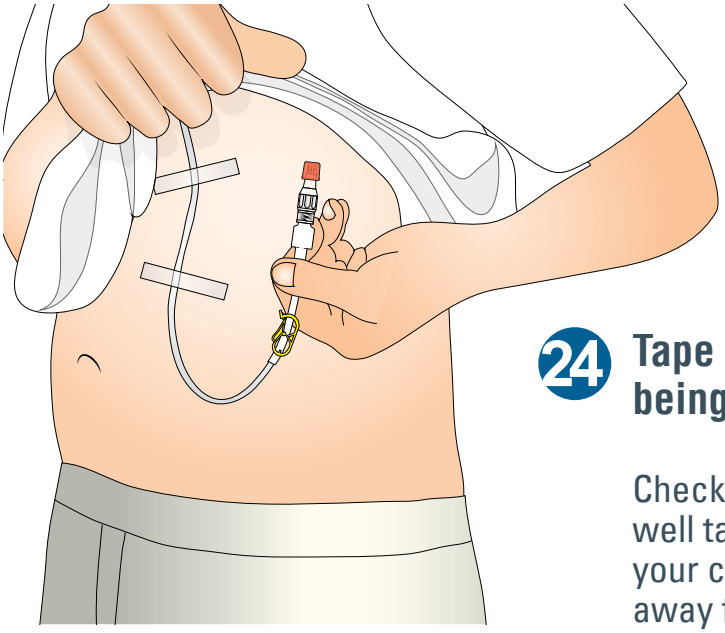
Be sure to clamp once your syringe is empty. When you are done, unscrew and remove the syringe.

22 Screw an alcohol cap (e.g. SwabCap®) onto the injection cap of your catheter.



23 Check that the injection cap is secure.





24 Tape the catheter to prevent it from being pulled accidentally at the exit site.

Check it regularly to make sure that it remains well taped. Tape the end of the catheter onto your chest (or put it in your bra), keeping it away from your abdomen (stoma, fistula or other wound dressing).

* **For a tunneled catheter or a PICC:**
If you have a double lumen catheter and a lumen is not in use, the unused lumen needs to be flushed once a week..

Carrying out your infusion

An infusion is any slow "drip" of fluids and/or medications into your blood. This is usually done over a set period of time, using an IV pump. When you run your PN through your tubing and catheter into your blood, you are infusing your PN.

On the day of your infusion:

1.

Take your PN bag out of the refrigerator in the morning. This will allow the solution to warm up to room temperature.

Check it (your name, expiration date, leakage, color, crystal formation). If all right, replace it back into its black bag.

2.

Right before you start your infusion, take the bag out from its dark plastic envelope and check it. If the bag and solution are intact (no leaks, visible damage), you can place the bag on your cleaned PN work area besides your tray.

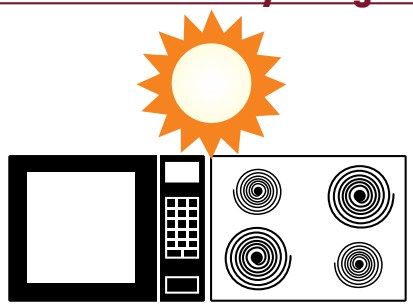
Did you know?

If a clean item touches a sterile item, the sterile item is no longer sterile. It is only clean.

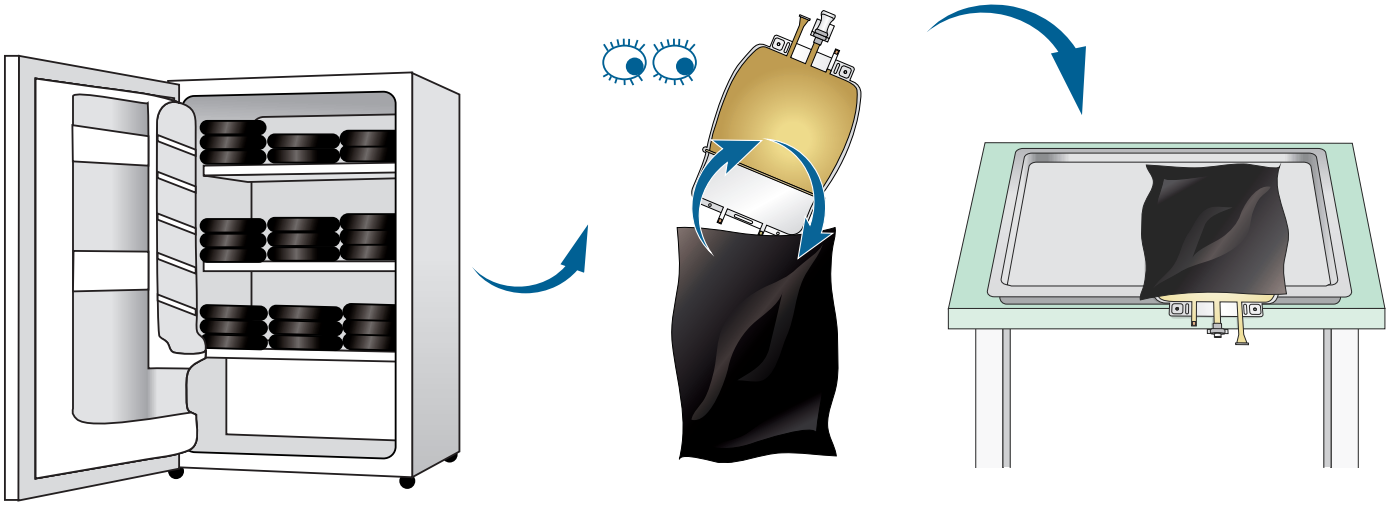
What do you do if you forget to remove the bag from the refrigerator in advance ?

Never warm it up using a hot water bath or other sources of heat such as the oven, the microwave, direct sunlight or a radiator.

This is extremely dangerous.

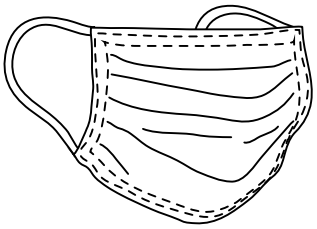


Instead, wait at least 2 to 3 hours for the bag to warm up by itself and only then infuse it.

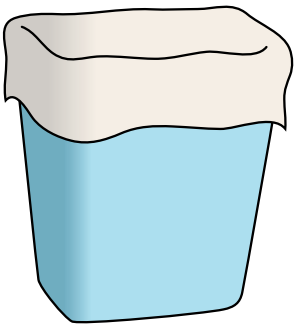


Preparing your infusion

1 Gather these supplies:



Mask



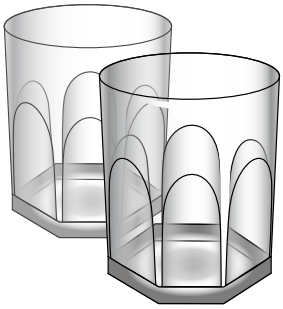
Garbage Can

Sharps Container
(for used needles)

Cleaning
Product

Rubbing
Alcohol (70%)

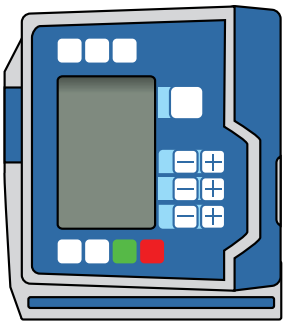
Antimicrobial Soap
(e.g. Dexidin®)



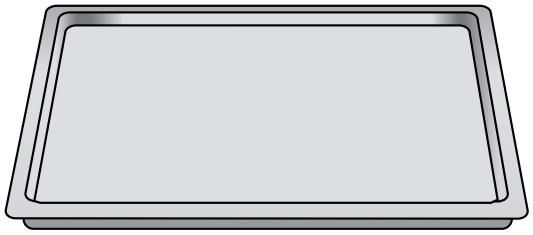
(2) Small
Glasses

Alcohol-based
Hand Cleanser
(e.g. Purell®)

Paper Towel



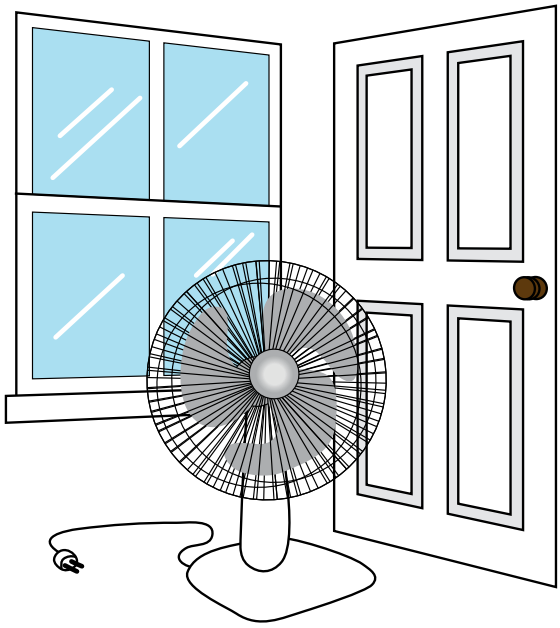
Pump



Tray

2 Put on a mask.

Make sure that anyone else in the room also wears a mask.



3 Close all windows, doors and turn off fans.

4 Place the garbage can and sharps container close to your PN work area.

5 Clean the sink with your usual product and then with alcohol.

Start with faucet, sides of sink and clean your way down toward the drain. Don't come back to an already cleaned area.

6 Take off your watch and rings and do a regular hand wash.

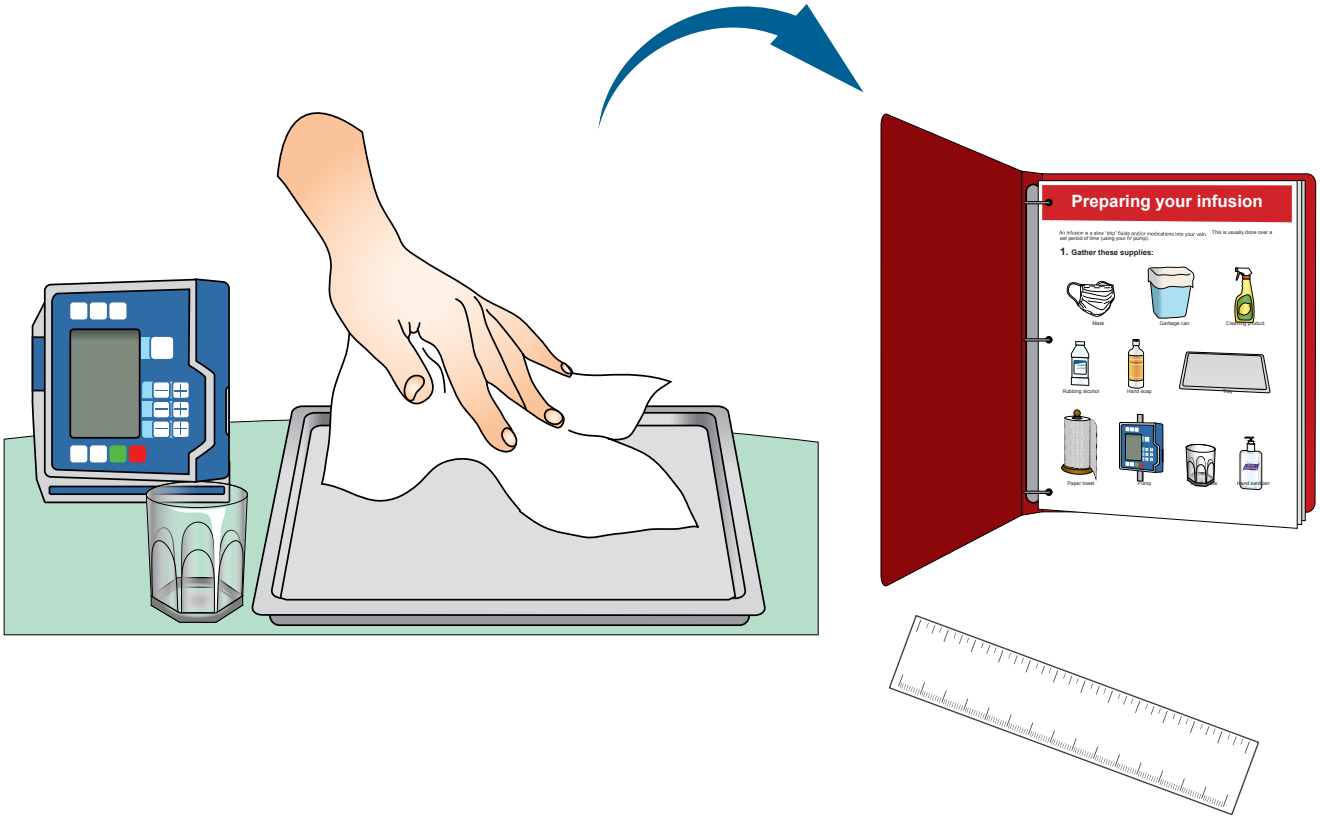
7 Clean with alcohol:

- The alcohol bottle
- The antimicrobial soap bottle (e.g. Dexidin®)
- The alcohol-based hand cleanser bottle (e.g. Purell®)
- The paper towel dispenser

Start at the top of the bottle, then sides and finish with the bottom. Don't forget to place them on a surface that's been cleaned already.

8 Clean the work table and tray with alcohol, along with the pump, the small glass, your PN binder, ruler and the pages in plastic sheets that you will be using.

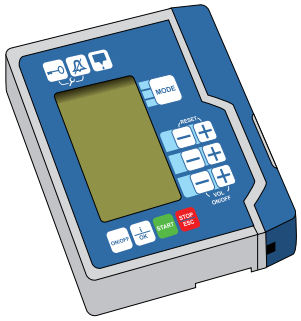
Clean the top of the tray first, then the bottom. make sure it does not touch your clothes.



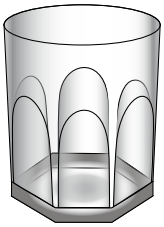
9 Clean your hands with the alcohol-based hand cleanser (e.g. Purell®).

Rub the cleanser all over your hands, until completely dry.

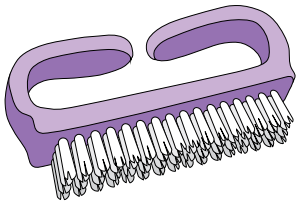
10 Gather your infusion equipment:



Pump

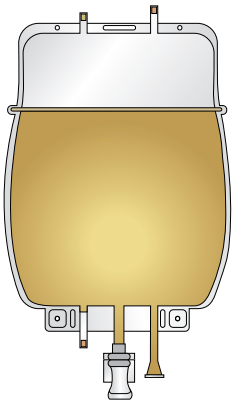


Small Glass
(already cleaned)

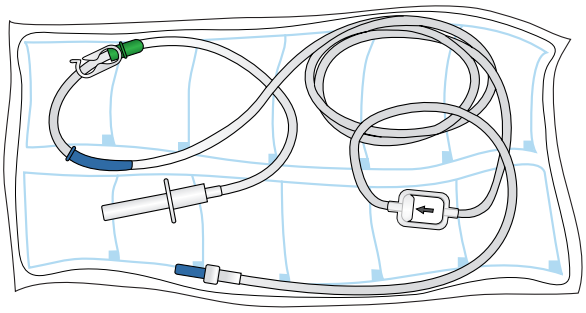


Nail Brush
(put your nail brush close to your sink)

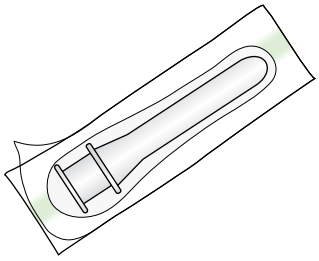
(10) Alcohol Swabs



(1) PN Bag

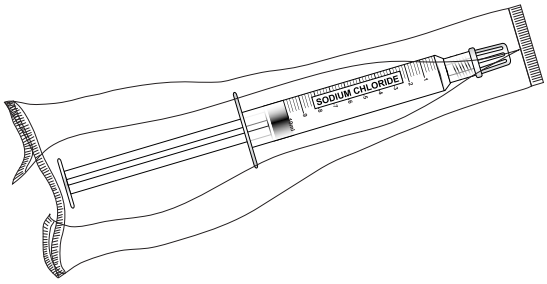


(1) Ambix® Tubing Set
with 1.2 micron filter

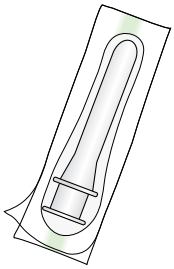


(1) Plastic Cannula

11 To prepare the sodium chloride syringe, you will need:

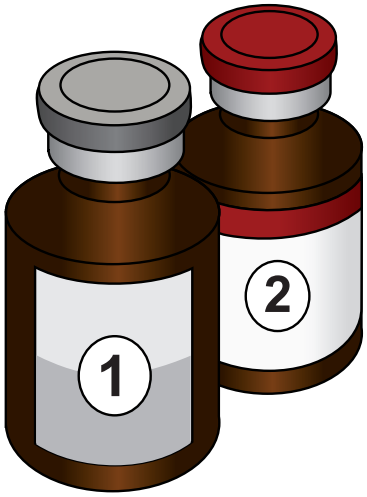


(1) Sodium Chloride (NaCl)
Syringe (10 ml)

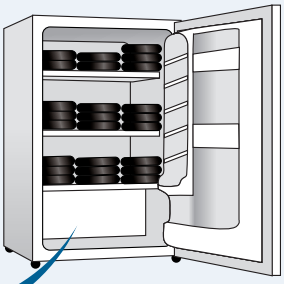


(1) Plastic Cannula

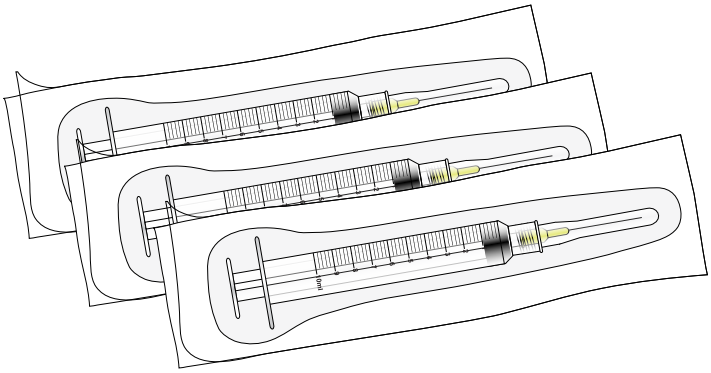
12 To prepare vitamins, you will need:



Keep multivitamin vials in the refrigerator

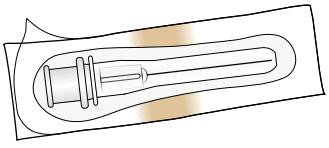


(2) Vials of Multivitamin



(1 or 3) Empty 10 ml Syringes
(3 if vitamin K)

(1) Ampule of Vitamin K
once a week
(do not refrigerate)

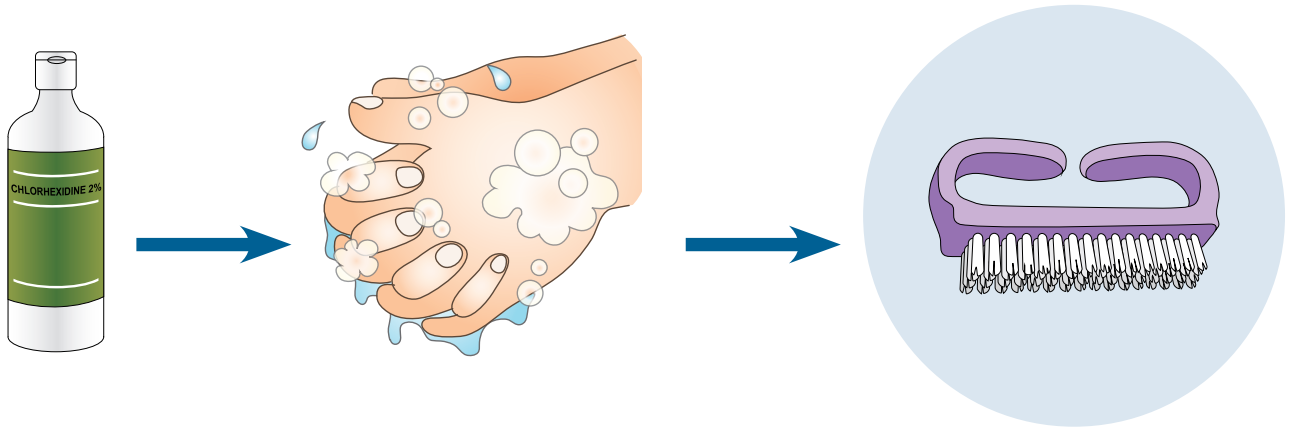


(1) Filter Needle
(if vitamin K)

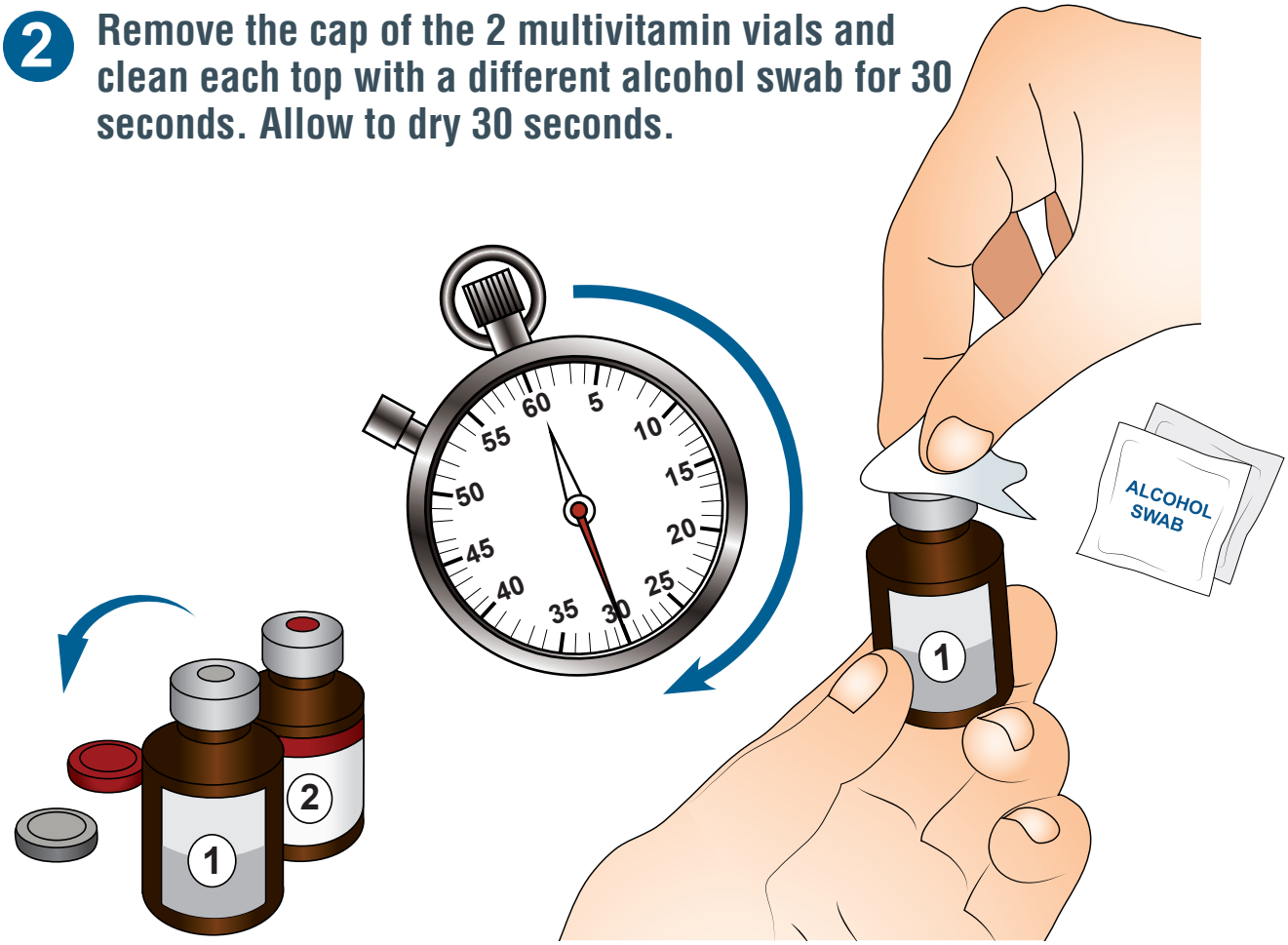
Preparing your multivitamin (MVI)

To prepare your multivitamin for your PN bag, you must combine the liquid of both vials of multivitamin into one 10 ml syringe.

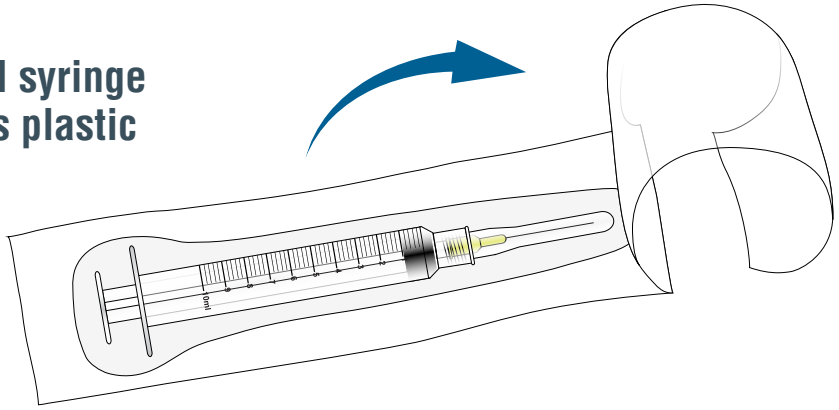
1 Wash your hands (long wash with nail brush).



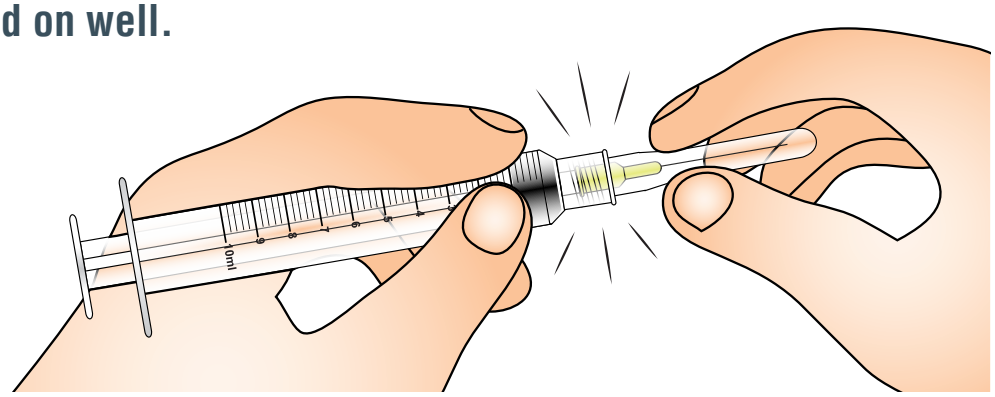
2 Remove the cap of the 2 multivitamin vials and clean each top with a different alcohol swab for 30 seconds. Allow to dry 30 seconds.

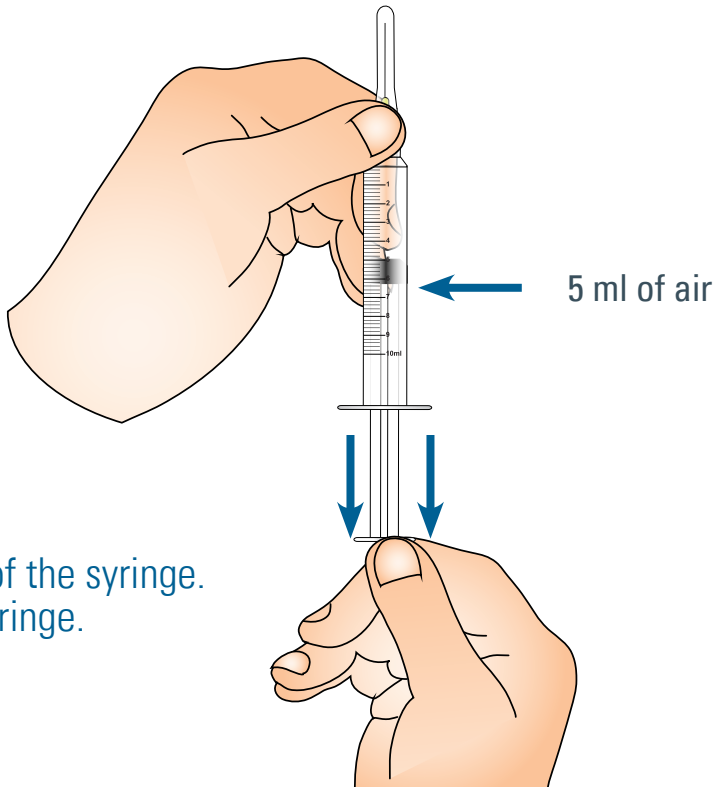


3 Open the empty 10 ml syringe (do not throw away its plastic packaging "boat").



4 Make sure that the needle is screwed on well.

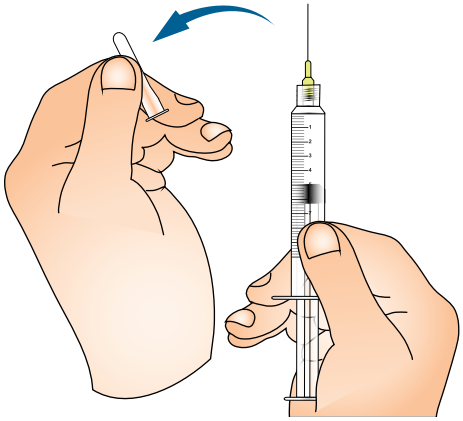


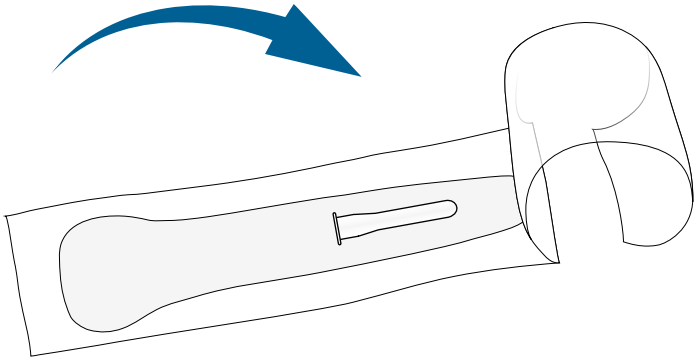


5 Draw up 5 ml of air.

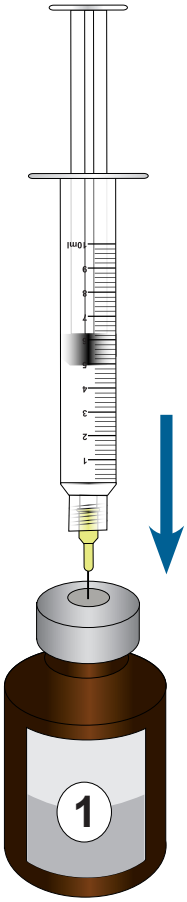
Do not touch the piston of the syringe.
If you do, change your syringe.

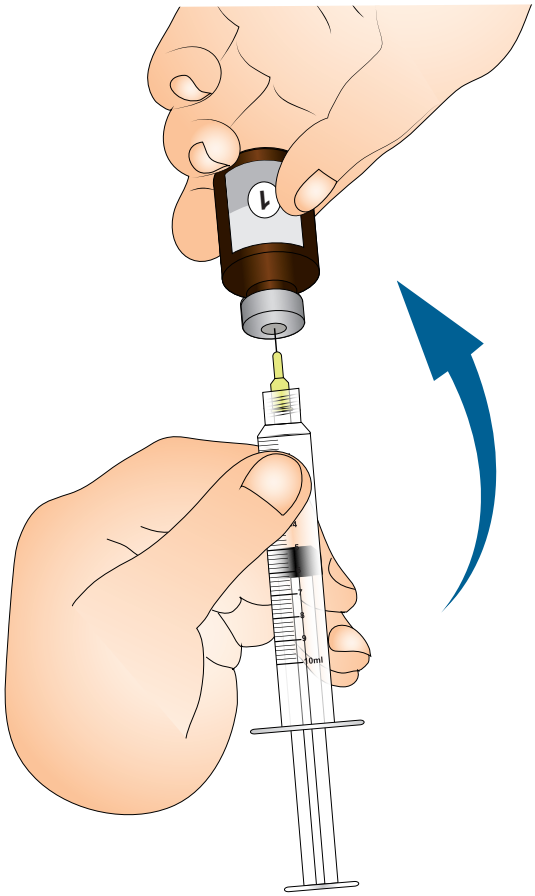
6 Remove the cover from the needle and put the cover in the “boat”.



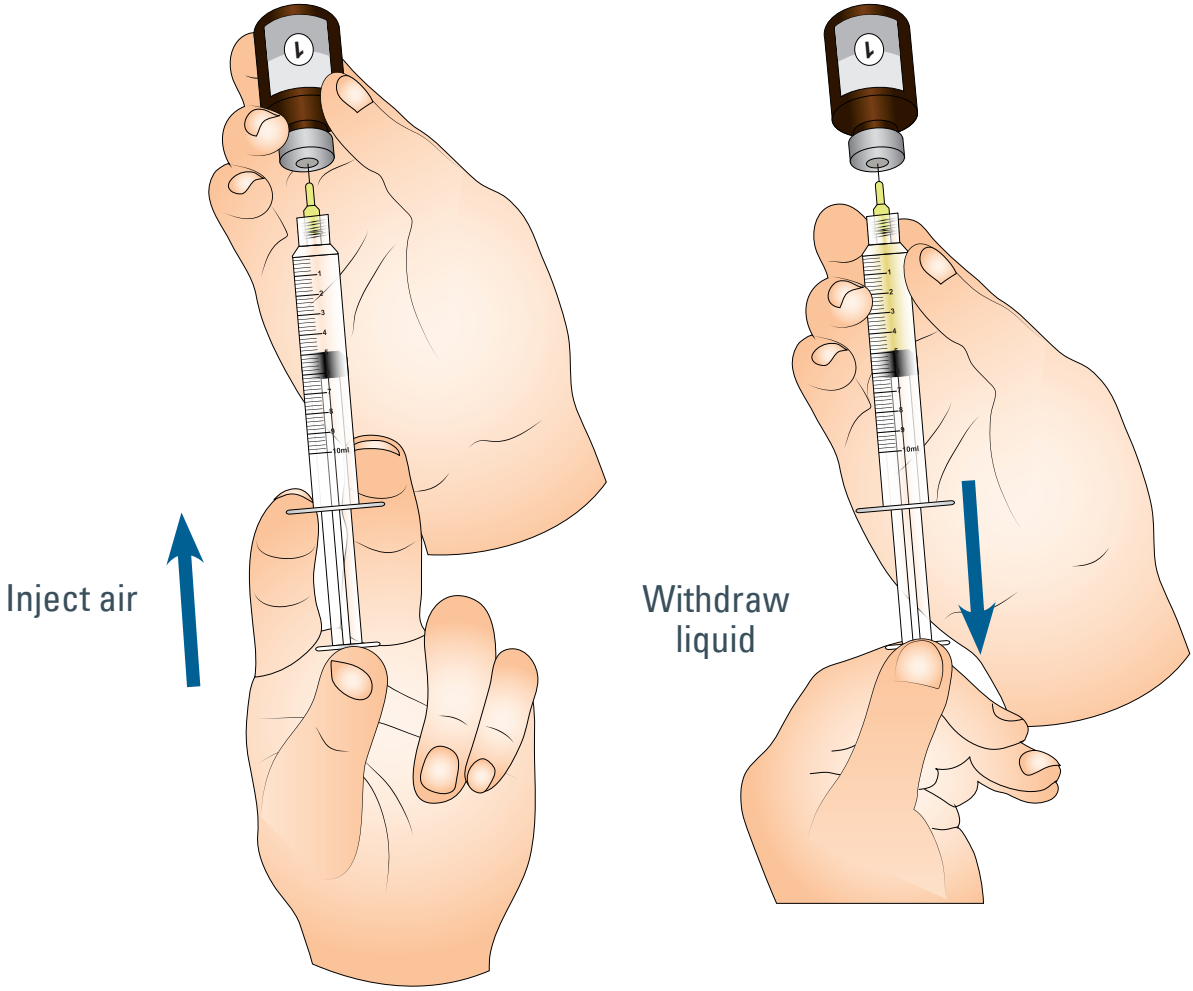


7 Push the needle through the rubber seal of vial #1, then flip over the vial and syringe.

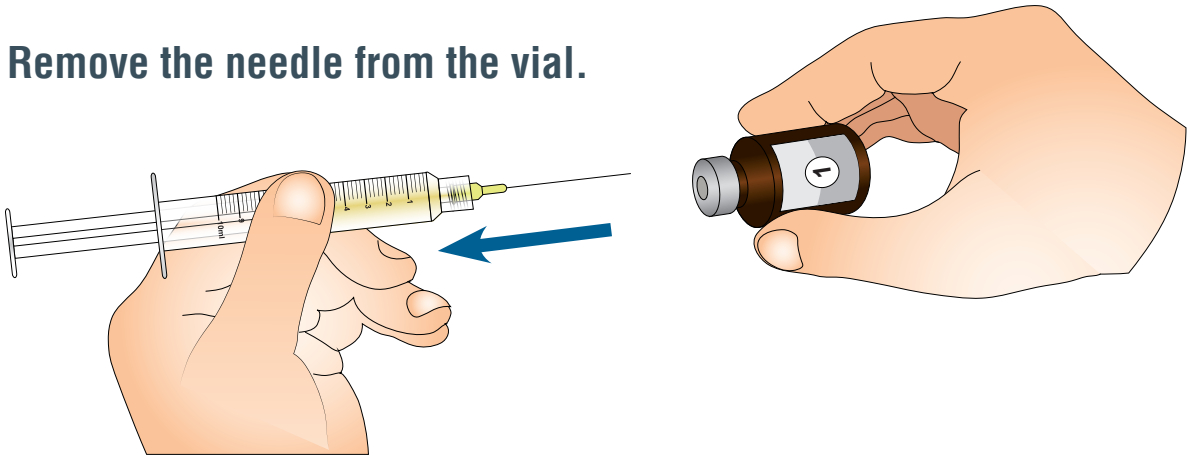




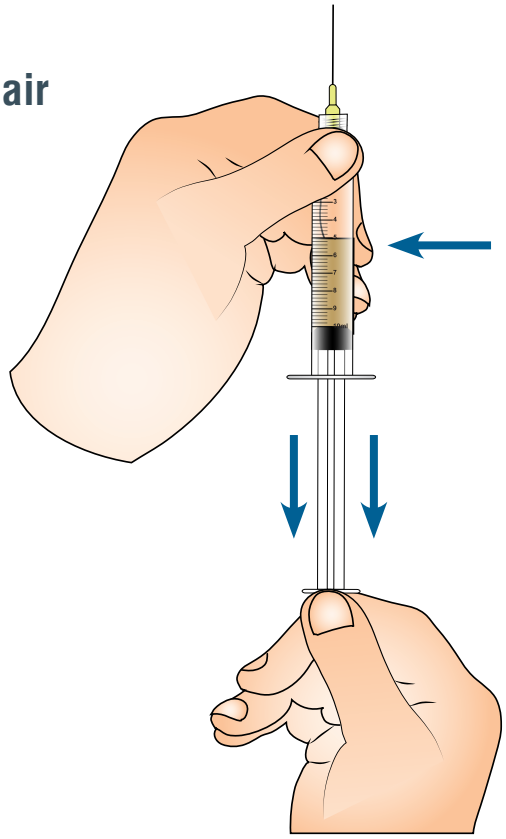
8 **Withdraw the liquid by injecting some air into the vial and then withdrawing the liquid a little at a time. Keep doing this back and forth until there is 5 ml of liquid and NO AIR in the syringe (make sure that the tip of the needle remains in the liquid).**

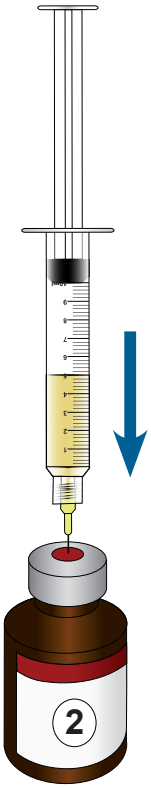


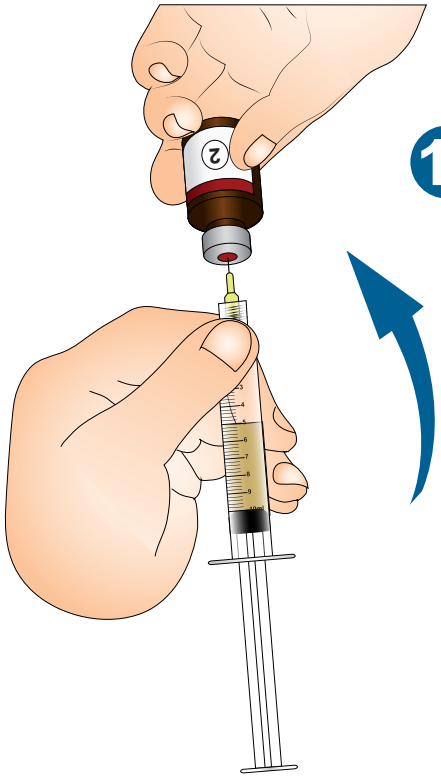
9 **Remove the needle from the vial.**



10 **Draw back another 5 ml of air into the syringe containing the contents of vial #1.**

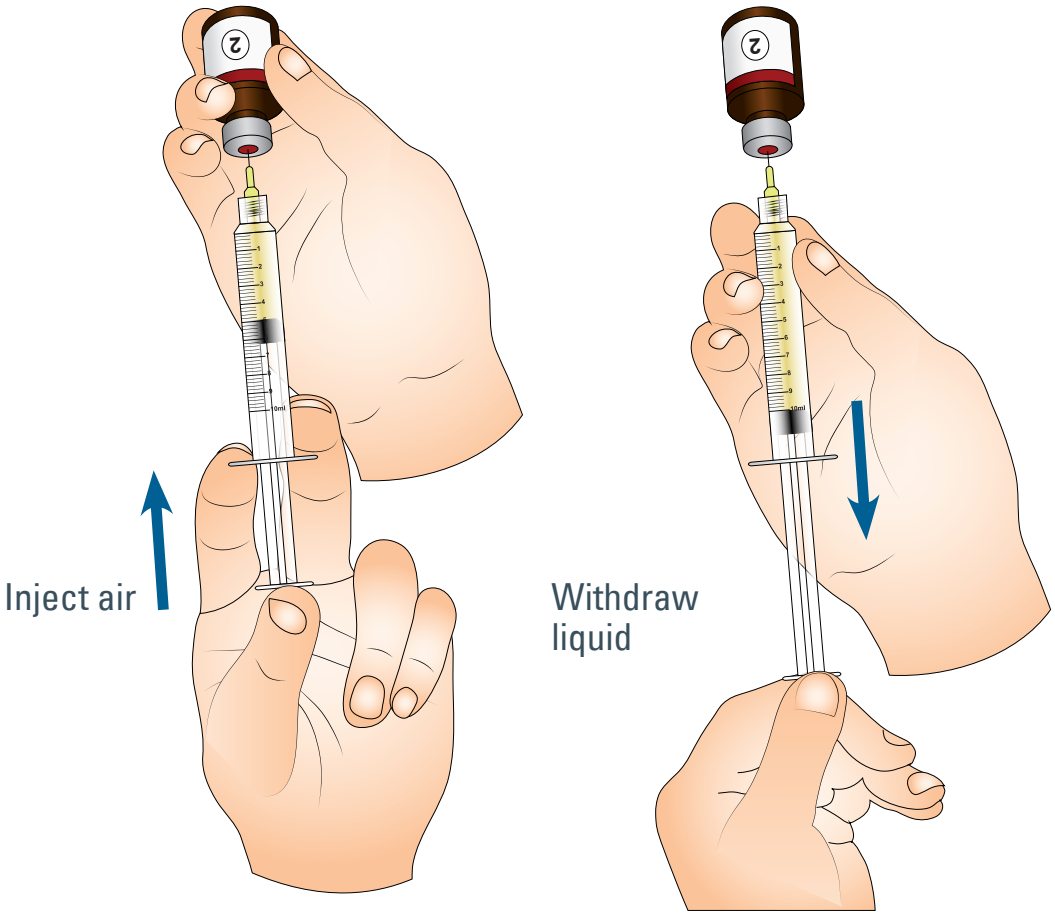




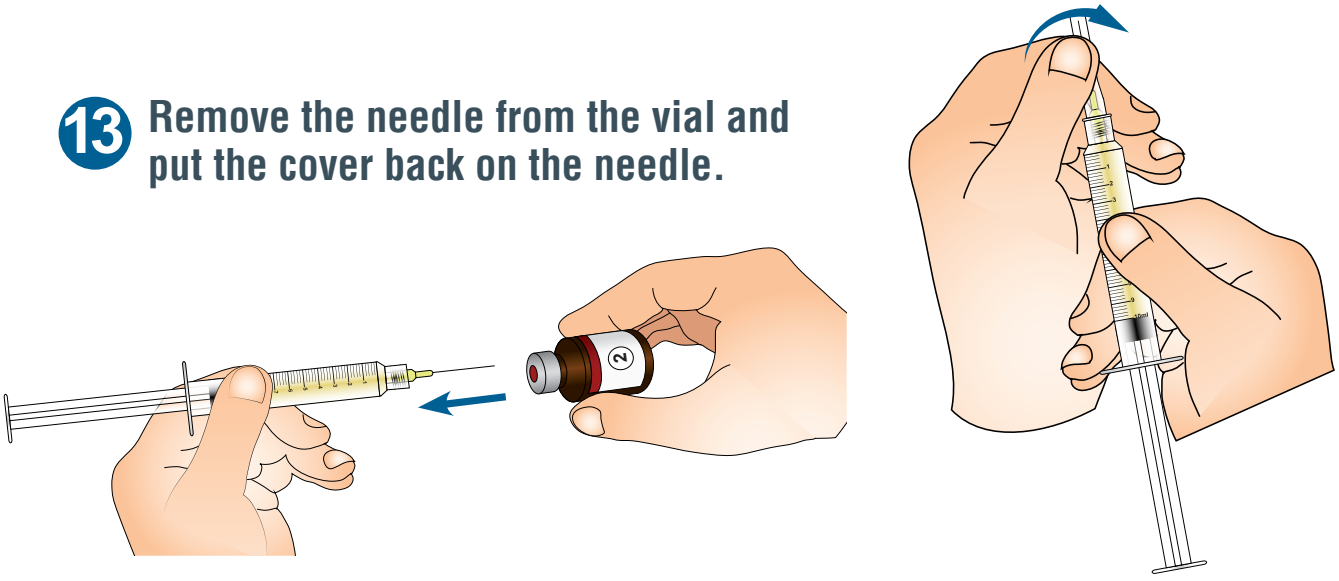


11 **Push the needle through the rubber seal of vial #2, then flip over the vial and syringe.**

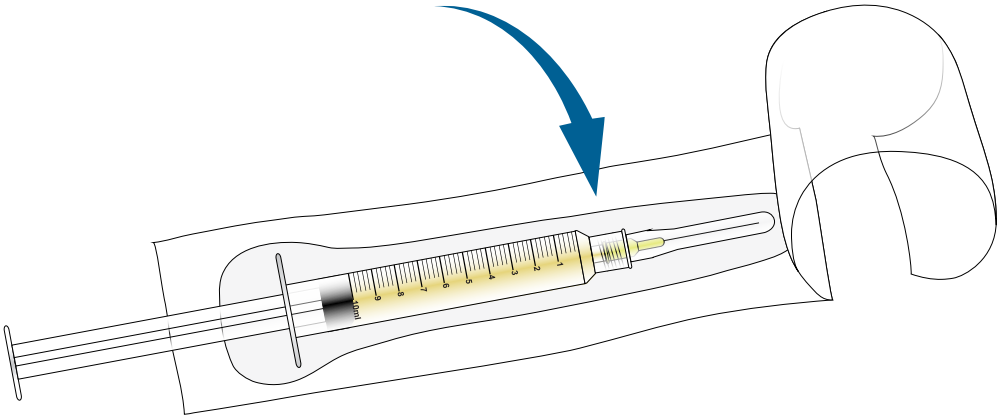
12 **Withdraw the liquid by injecting some air into the vial and then withdrawing the liquid a little at a time. Keep doing this back and forth until there is 10 ml of liquid and NO AIR in the syringe (make sure that the tip of the needle remains in the liquid).**



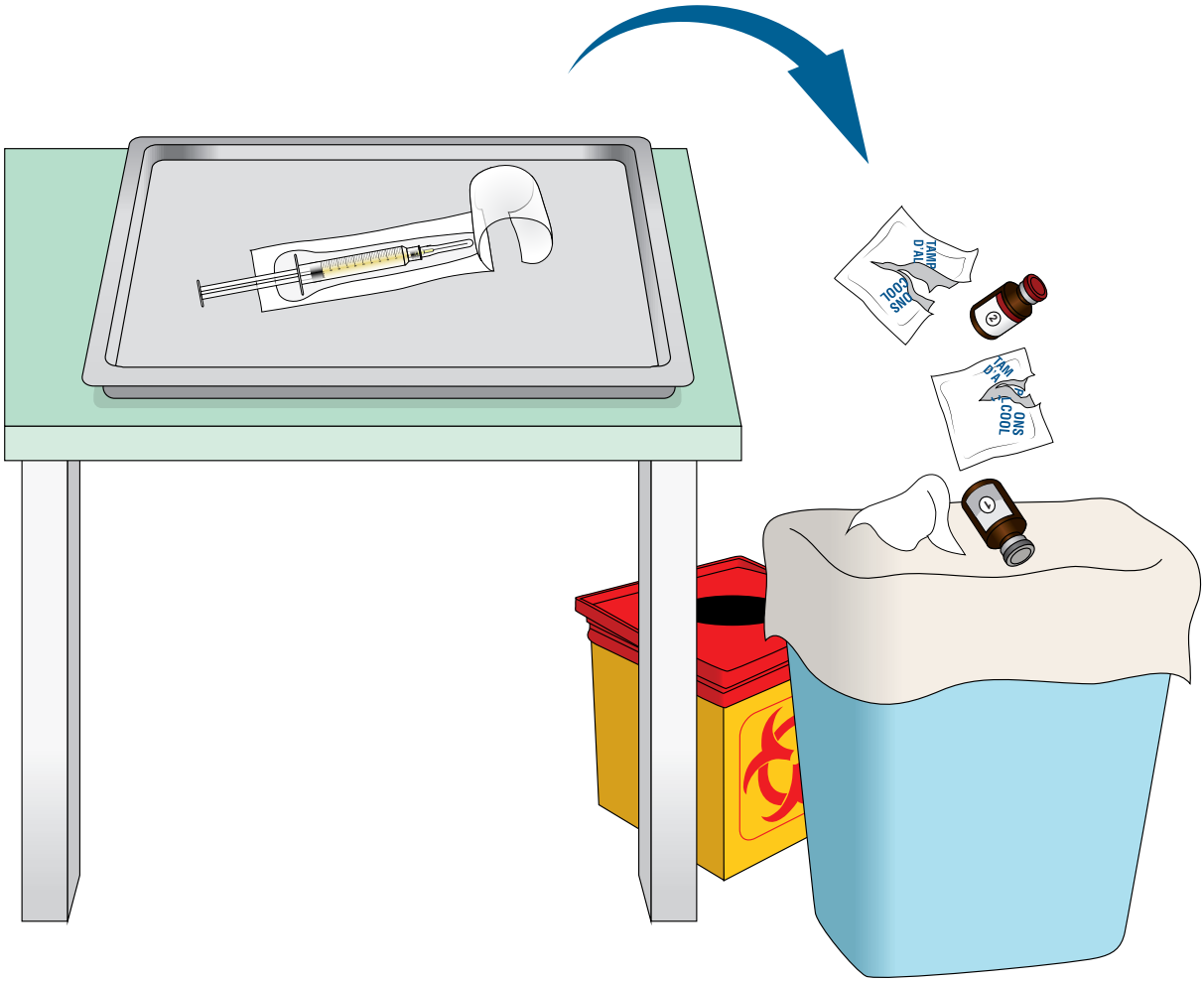
13 **Remove the needle from the vial and put the cover back on the needle.**



14 Place the syringe in its “boat”.

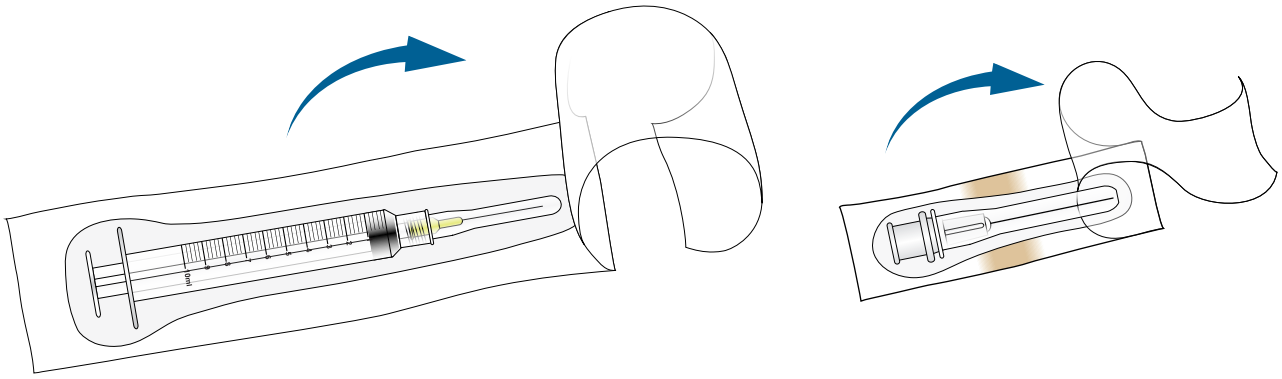


15 Remove the garbage from your tray.

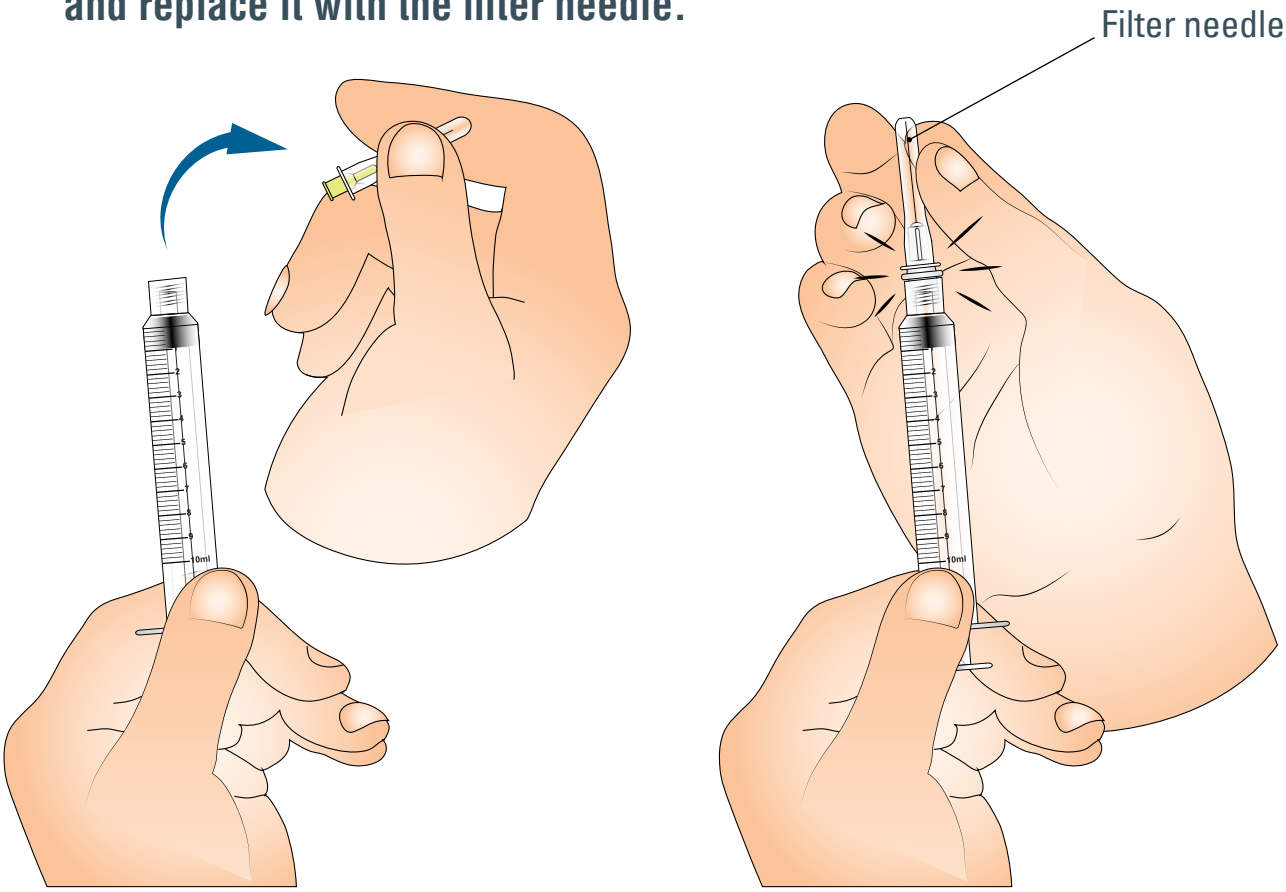


Preparing your vitamin K
(once a week)

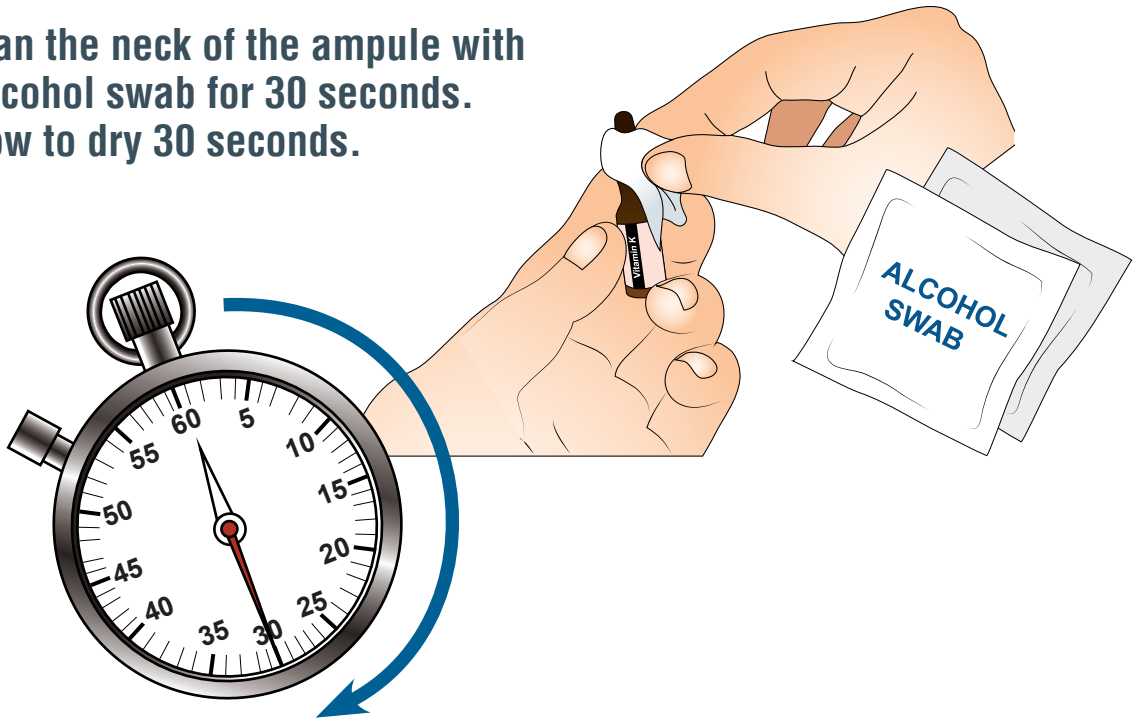
1 **Open a 10 ml syringe and a filter needle and keep them in their packaging “boats”.**



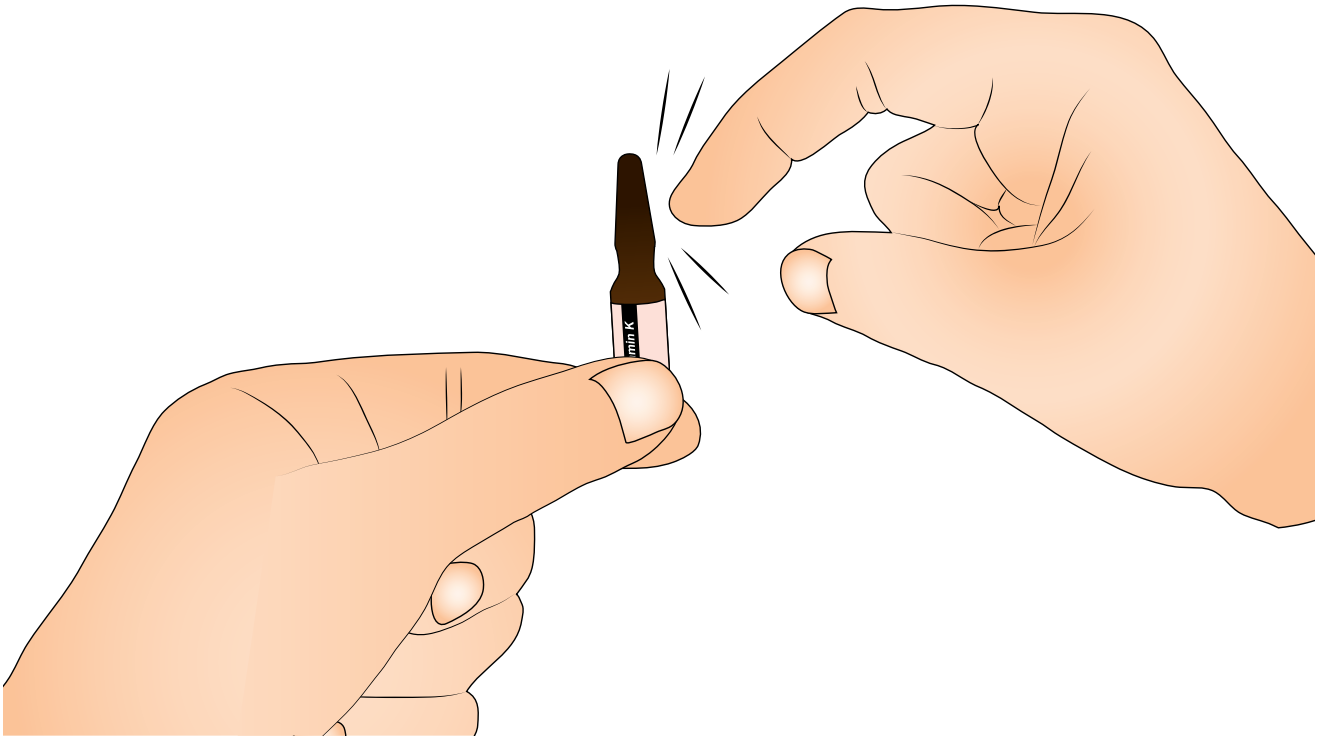
2 **Unscrew the needle from the empty syringe and replace it with the filter needle.**



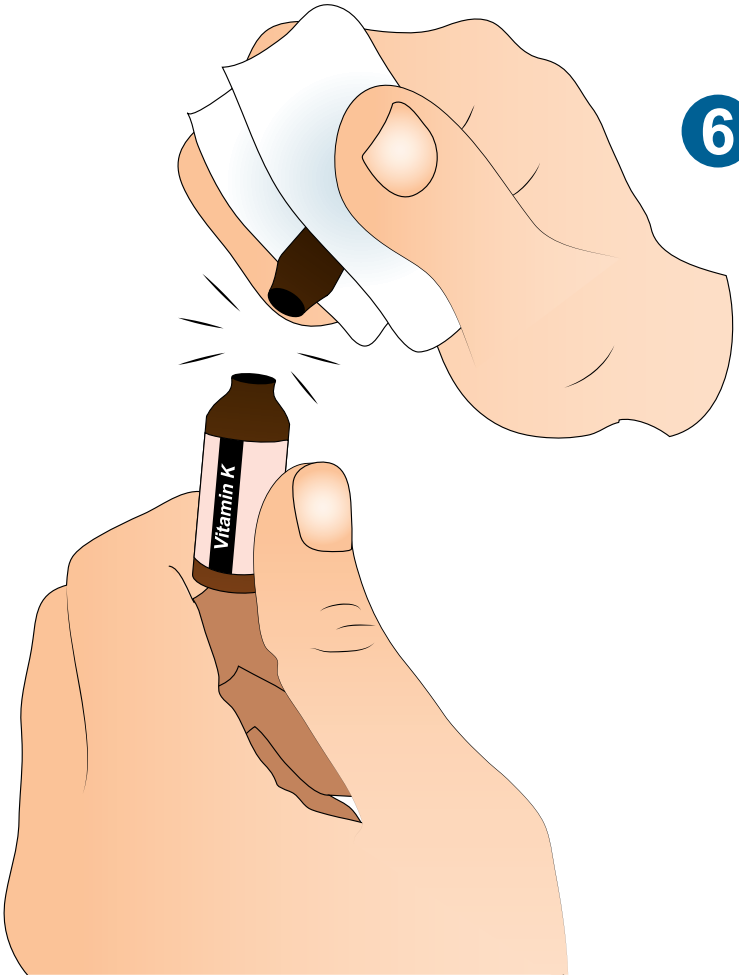
3 Clean the neck of the ampule with 1 alcohol swab for 30 seconds. Allow to dry 30 seconds.



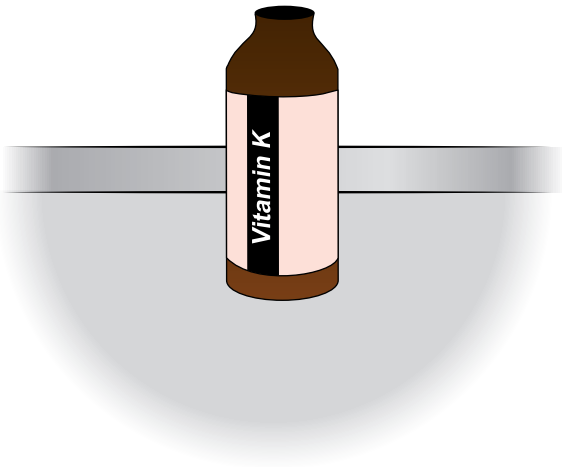
4 Using one of your fingers, tap the top of the ampule to make sure that all of the liquid is in the bottom part of the ampule.



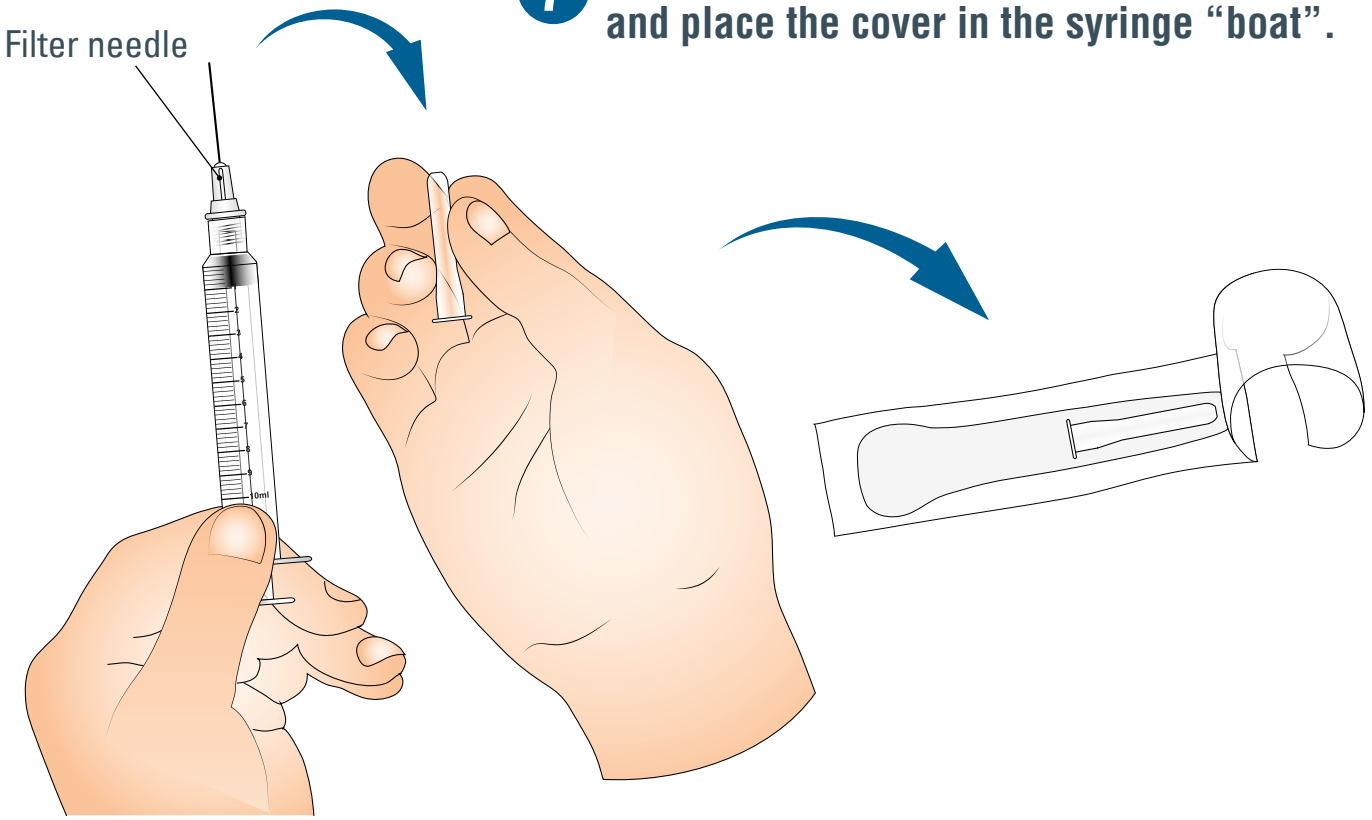
5 Hold the body of the ampule with one hand and the top, wrapped in an alcohol swab, with the other hand.



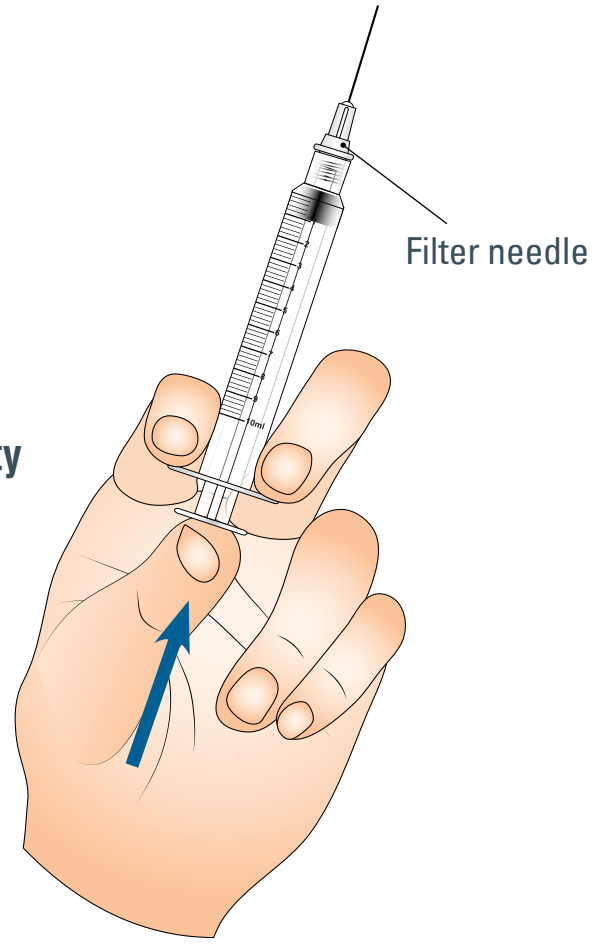
6 Break the ampule in two. Place the ampule on your tray.



7 **Remove the cover from the filter needle and place the cover in the syringe “boat”.**

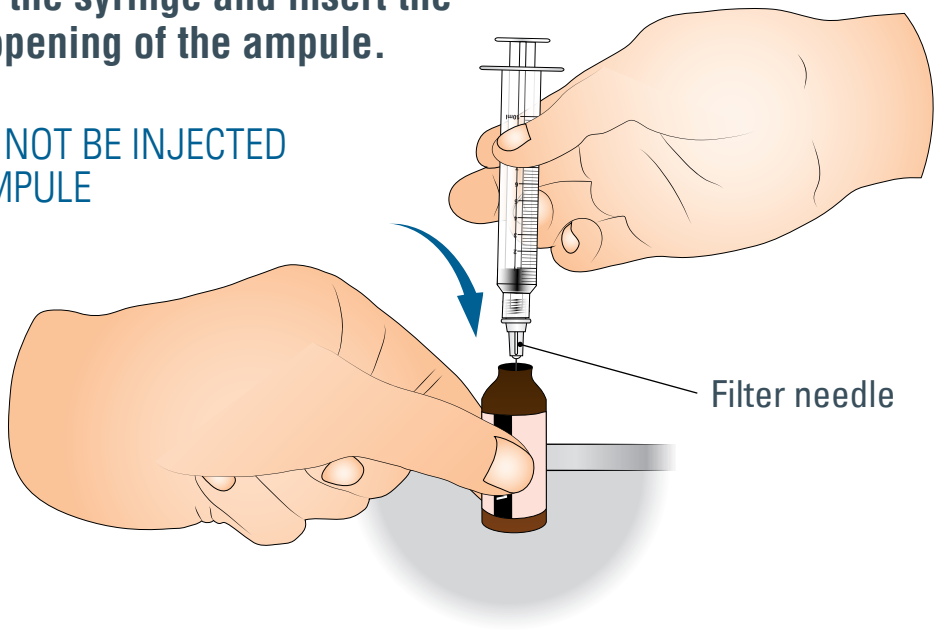


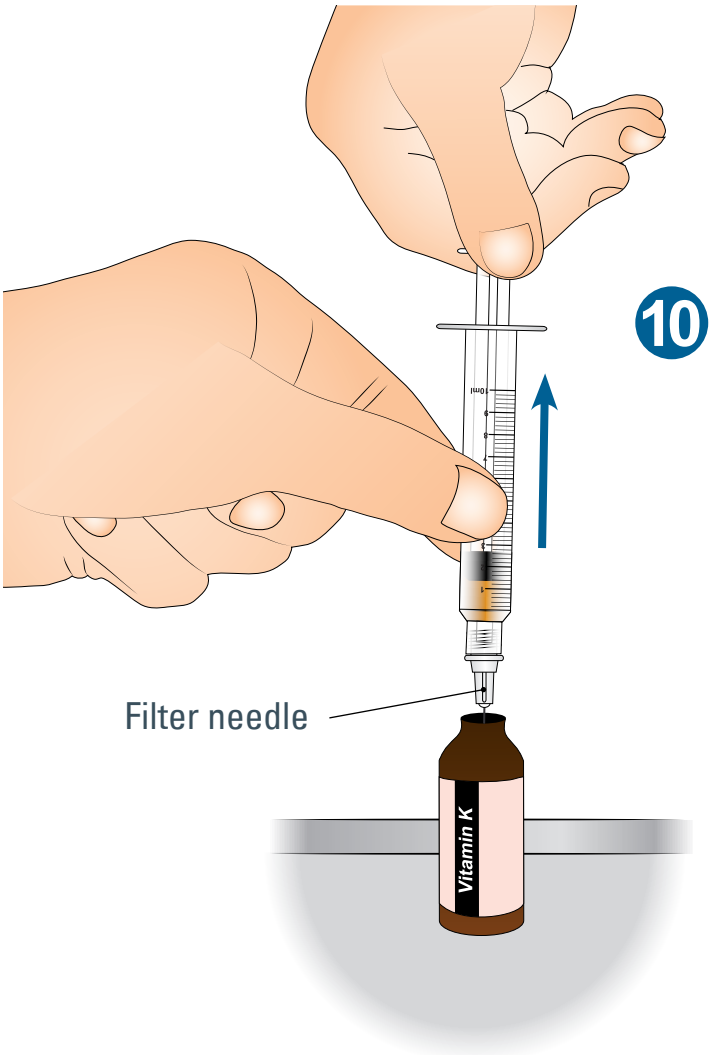
8 **Push the plunger to empty all air from the syringe.**



9 **With one hand, hold the ampule. With the other hand, hold the syringe and insert the needle into the opening of the ampule.**

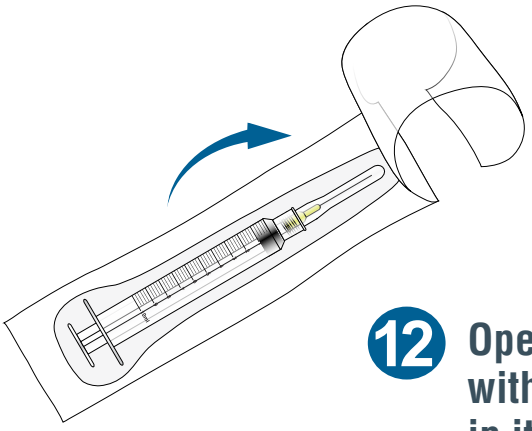
* AIR SHOULD NOT BE INJECTED INTO THE AMPULE

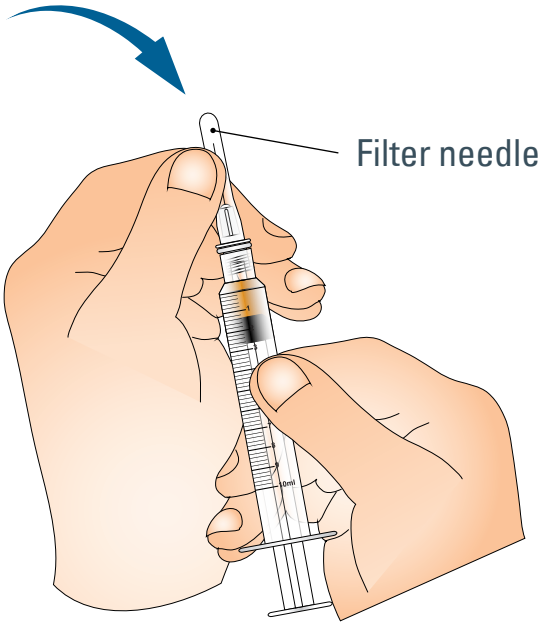




10 **Draw up all the amount of vitamin K (1 ml) while keeping the tip of the needle in the solution to avoid drawing up air.**

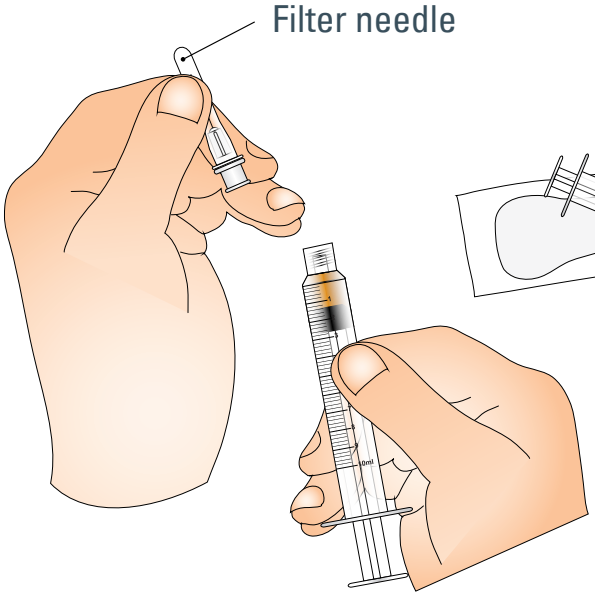
11 **Remove the needle from the ampule and place the cover on the needle. Place your syringe in its “boat”.**

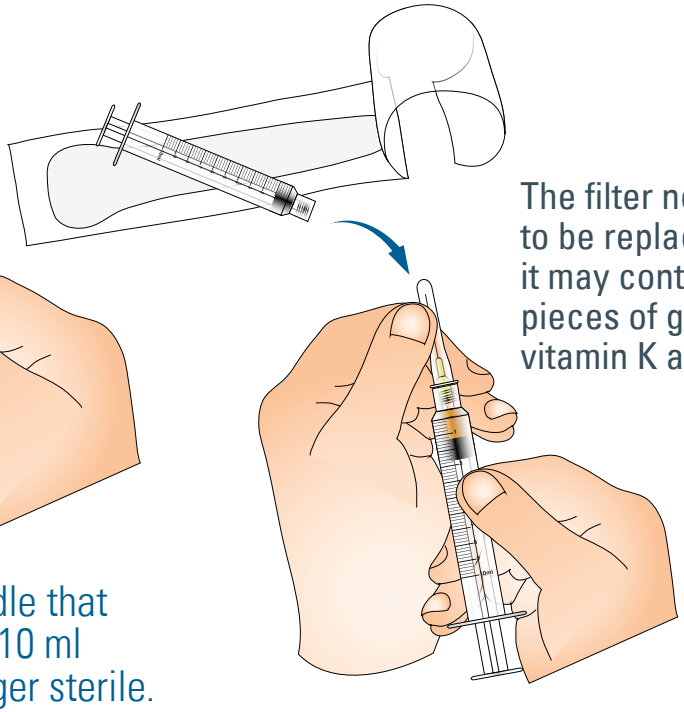




12 **Open a new 10 ml syringe with a needle and place it in its packaging “boat”.**

13 **Remove the filter needle from the syringe filled with vitamin K and replace it with the needle from the new 10 ml syringe.**

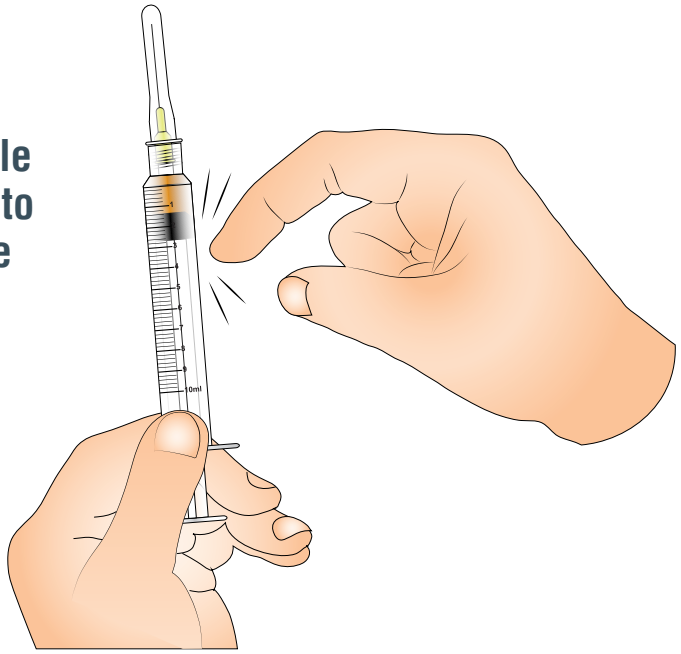


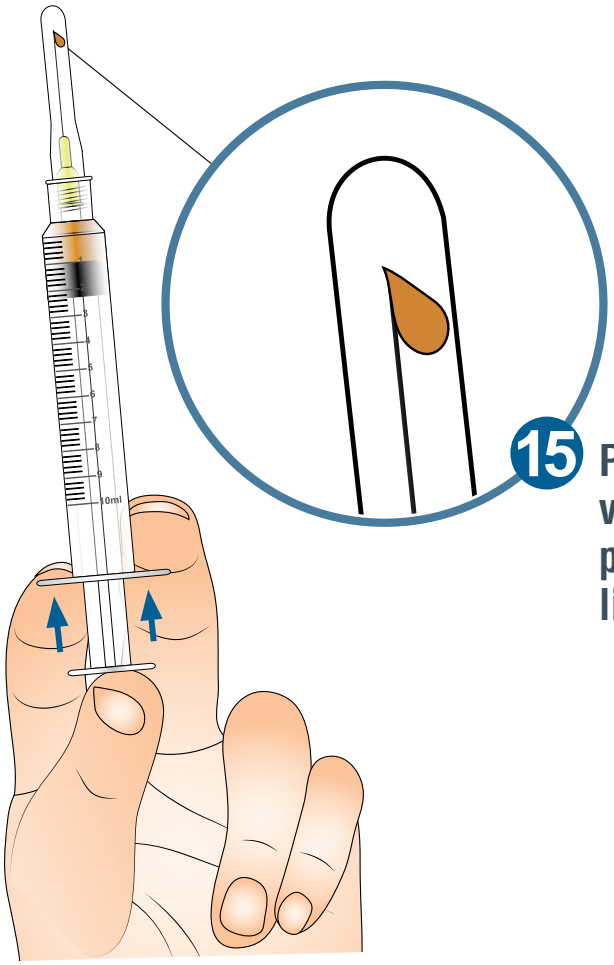


The filter needle needs to be replaced because it may contain tiny pieces of glass from the vitamin K ampule.

* Do not use the needle that came with the first 10 ml syringe. It is no longer sterile.

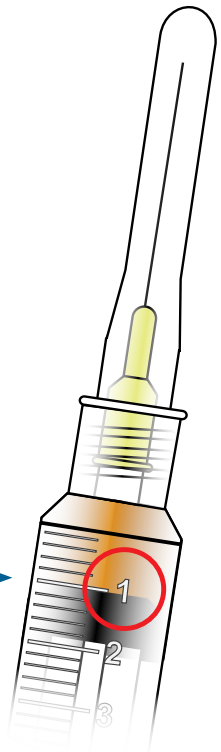
14 Hold the syringe with the needle upright: gently tap the syringe to make all air bubbles rise to the top of the syringe.



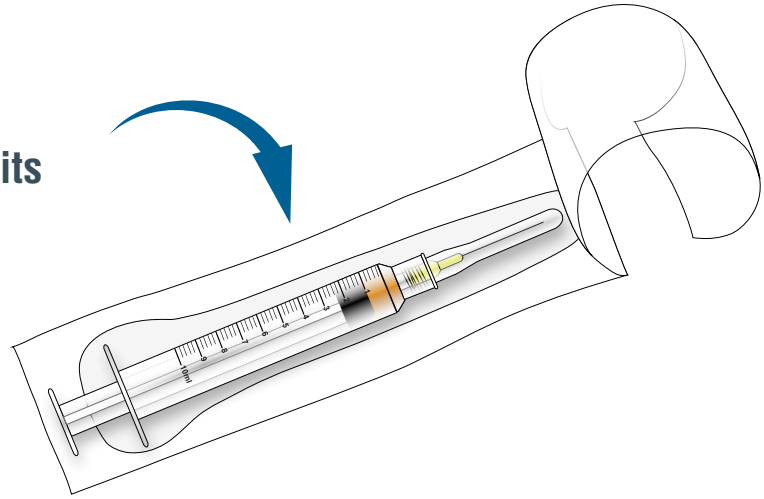


15 Push the plunger of the syringe very slowly to remove the air, pushing until you see a drop of liquid at the end of the needle.

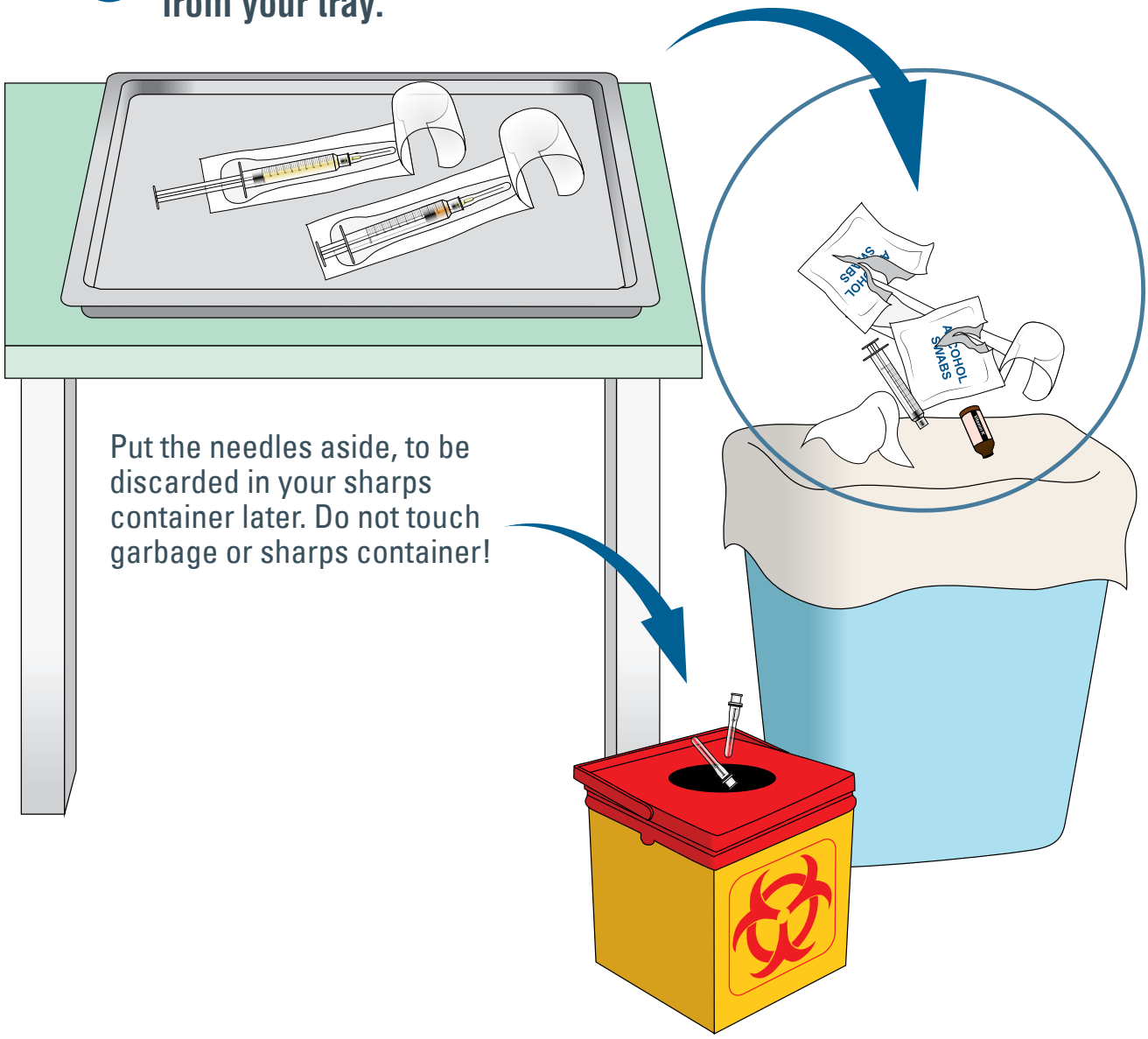
16 Check that the correct amount of solution (1ml) is in the syringe.



17 Place the syringe in its packaging “boat”.



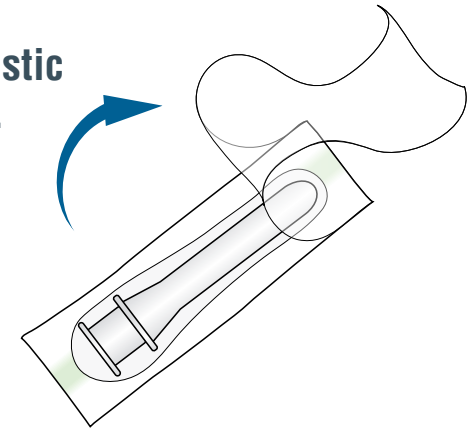
18 Remove the garbage from your tray.

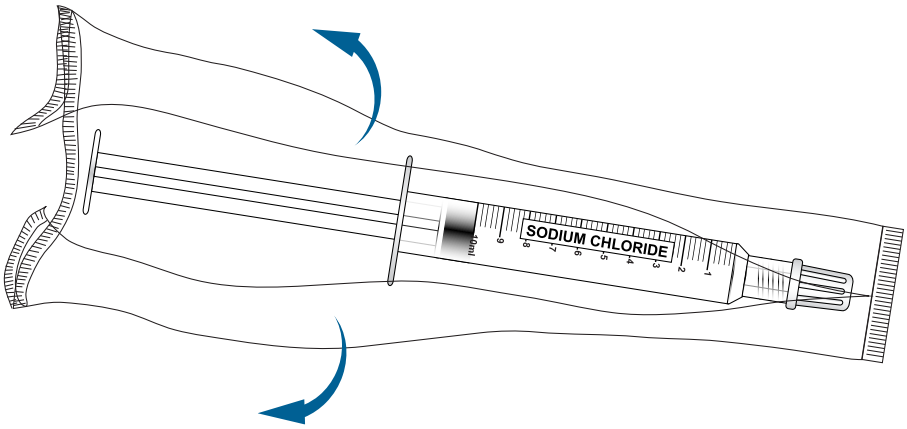


Preparing your sodium chloride syringe

A sodium chloride syringe will be used to flush your catheter.

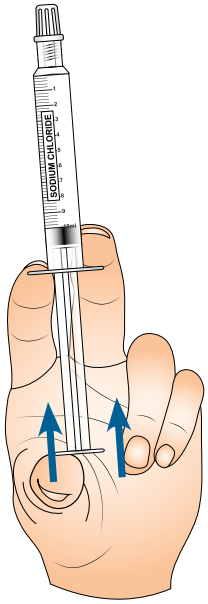
1 **Open your sodium chloride syringe and place your syringe on your tray. Then, open one plastic cannula and leave it in its packaging "boat".**



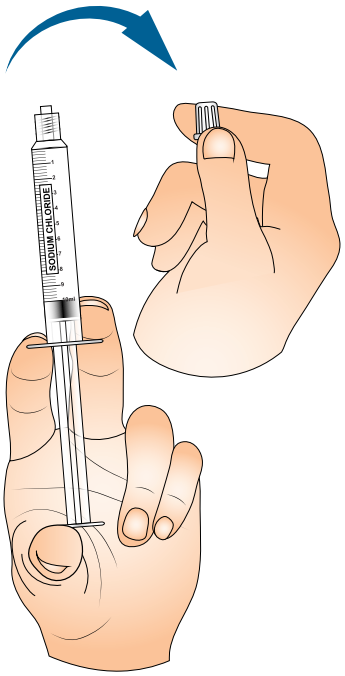


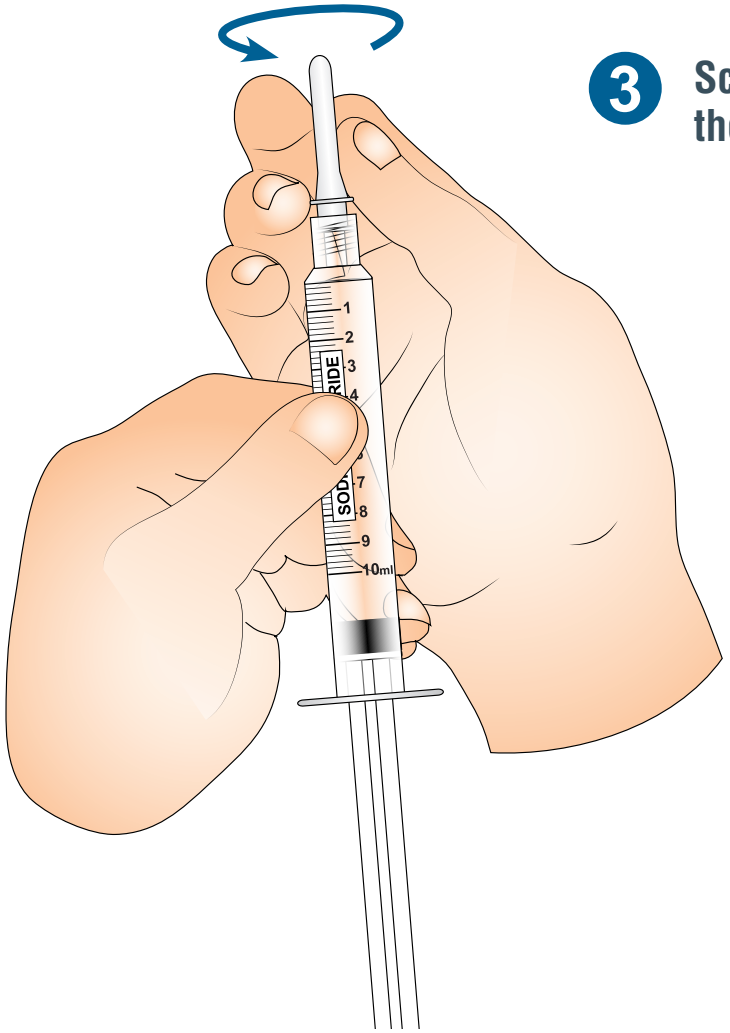
2 **With the white cap still in place, push the plunger of the sodium chloride syringe to release pressure. Then unscrew the white cap.**

a)



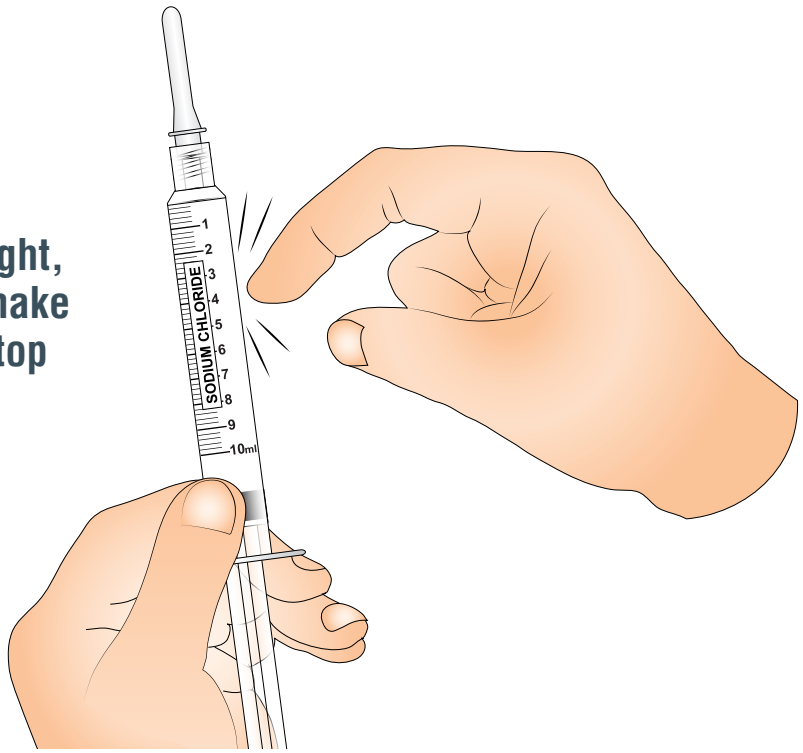
b)

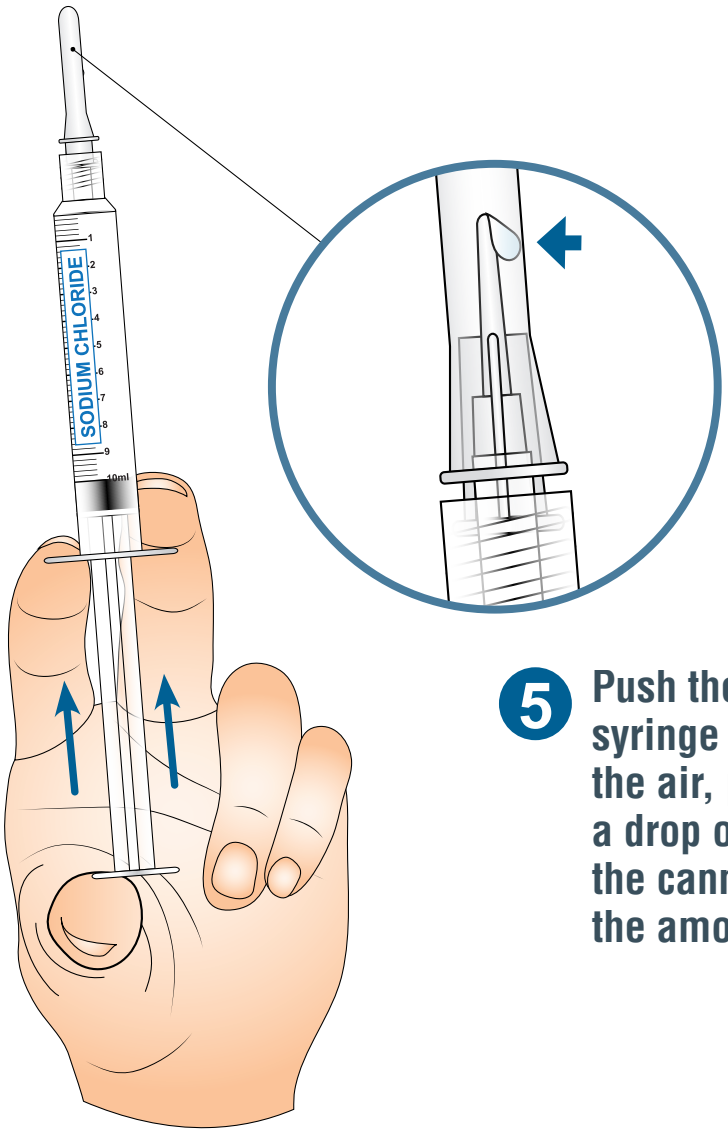




3 Screw the plastic cannula onto the sodium chloride syringe.

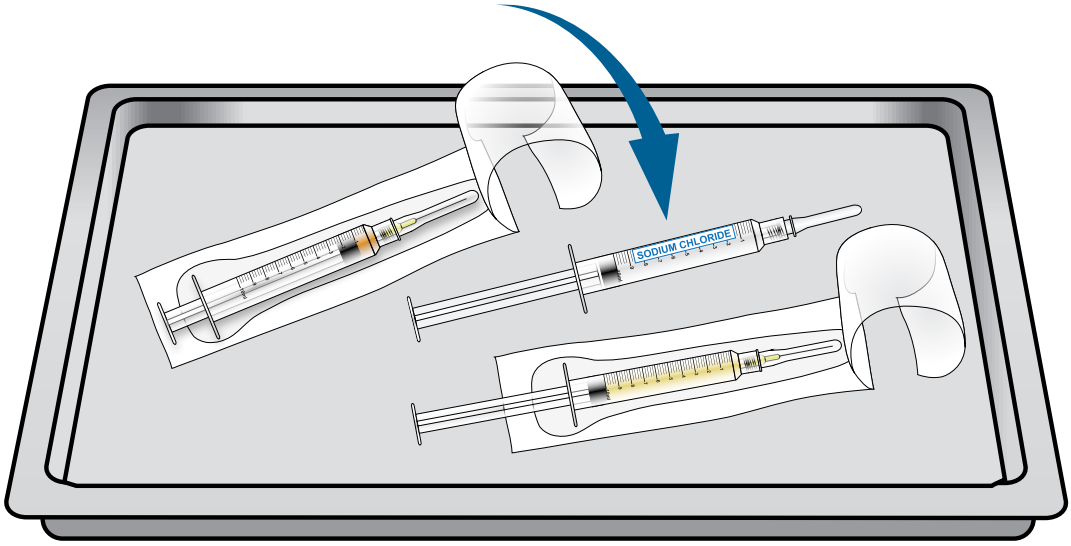
4 With the syringe held upright, gently tap the syringe to make all air bubbles rise to the top of the syringe.





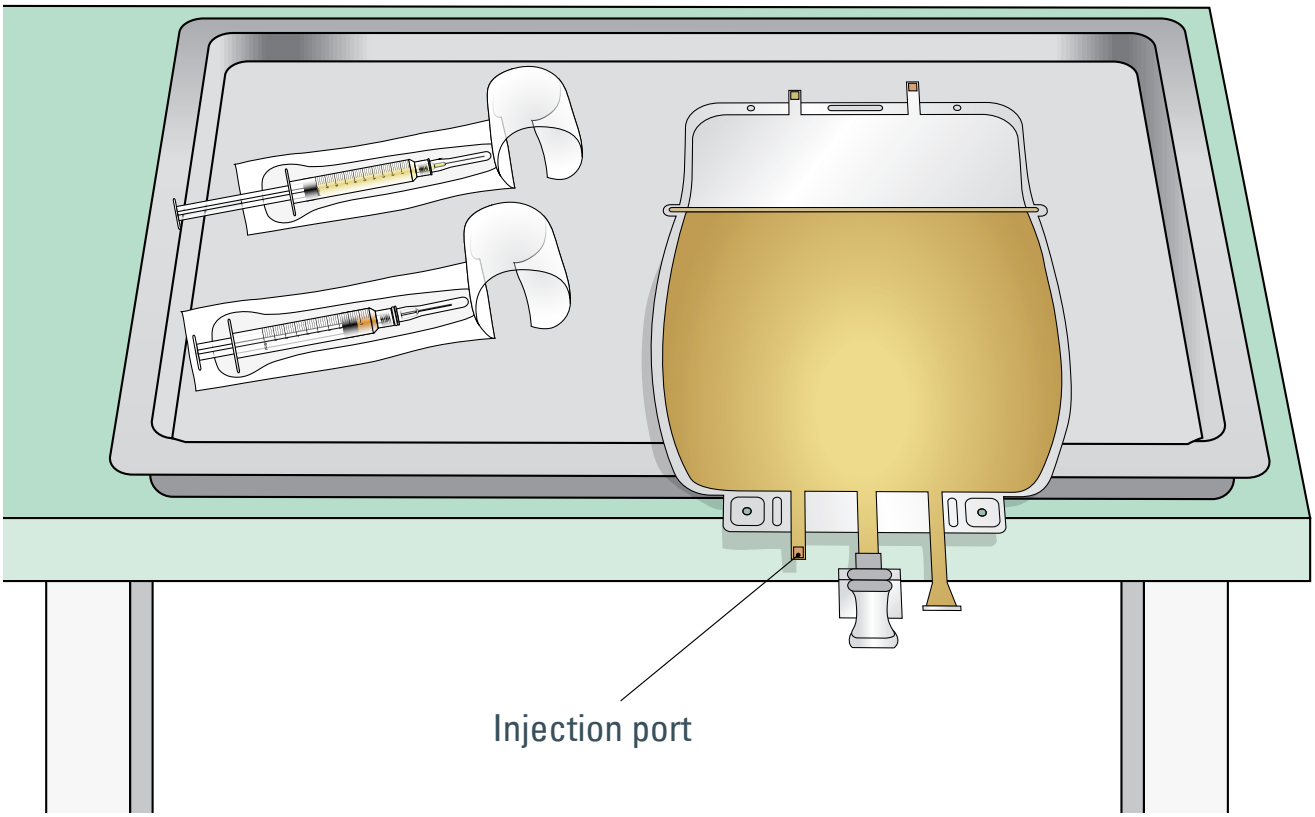
5 Push the plunger of the syringe very slowly to remove the air, pushing until you see a drop of liquid at the end of the cannula. Verify and adjust the amount of liquid to 10 ml.

6 Place the prepared syringe on the tray.



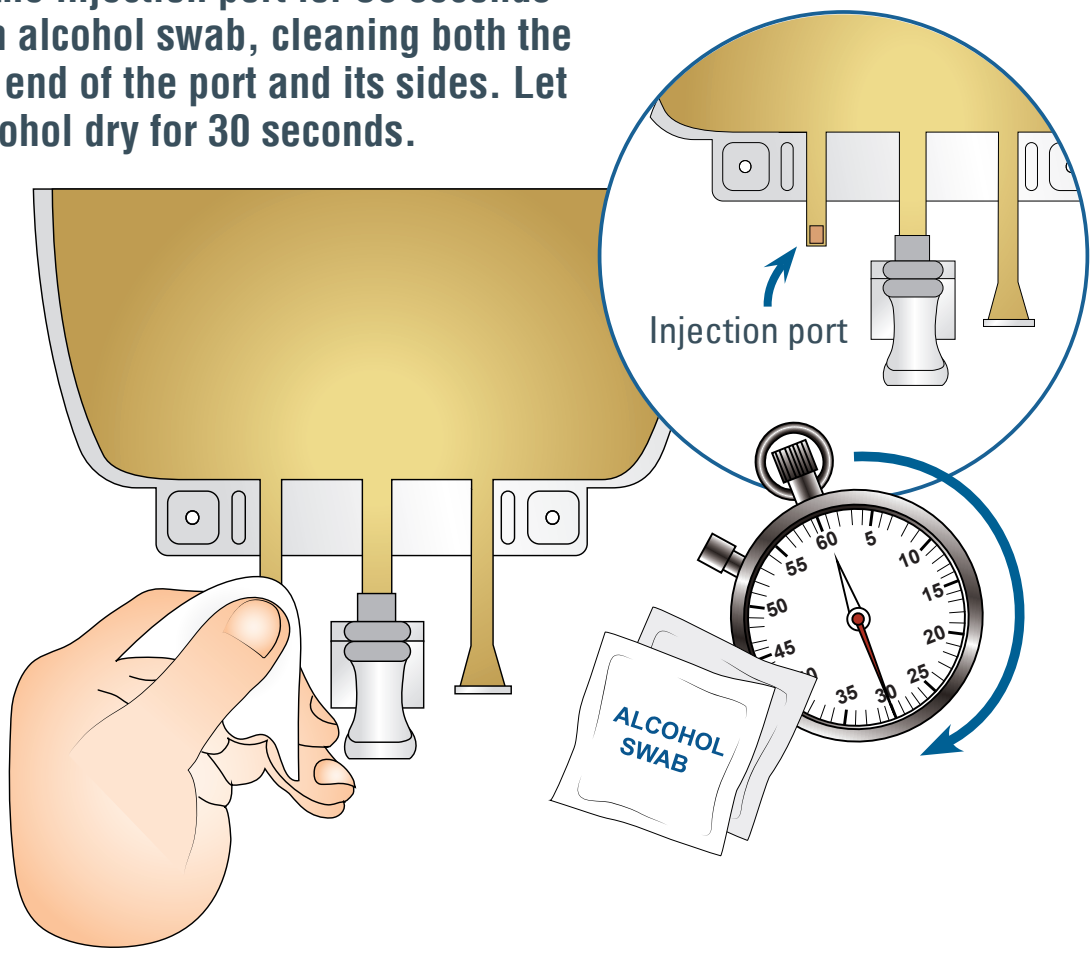
Adding vitamins and/or medications to PN

If you have more than one additive to inject (insulin, vitamin K, multivitamin), **always inject the one with the smallest volume first so that the medication is pushed inside the bag (does not stay in the injection port).**



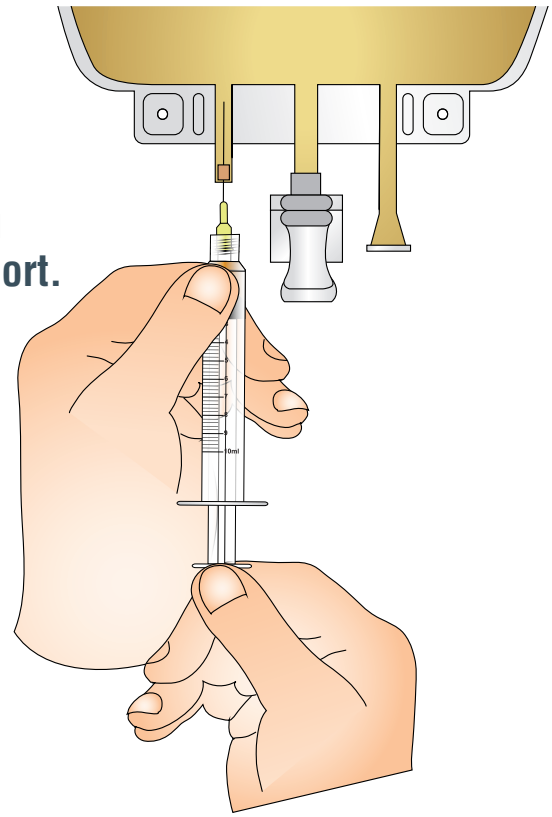
1 **Place the PN bag on the tray with the medication injection port coming over the edge of the tray (the port should not touch the tray or the work table).**

2 Clean the injection port for 30 seconds with an alcohol swab, cleaning both the rubber end of the port and its sides. Let the alcohol dry for 30 seconds.



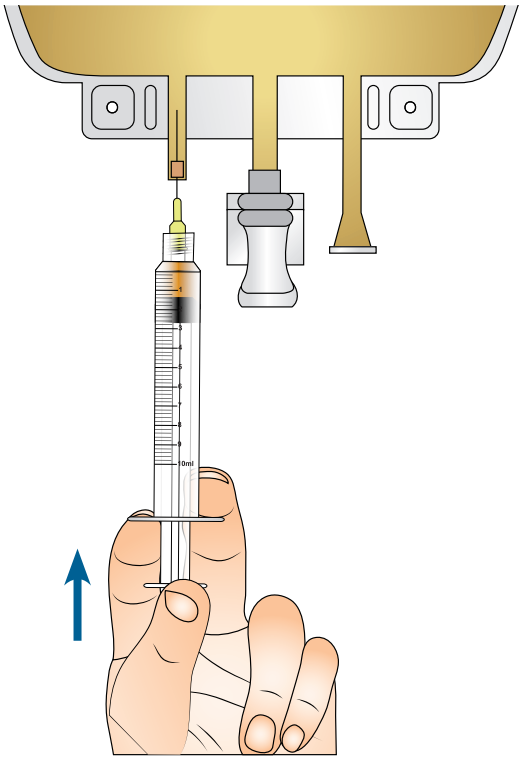
3 Very carefully, insert the needle of the syringe containing the medication being added, into the middle of the injection port.

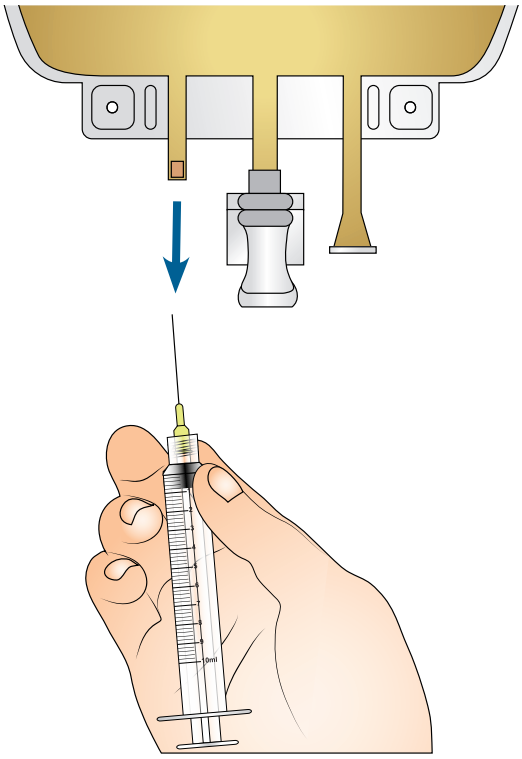
Insert the needle straight down the middle of the port and in line with the PN bag.



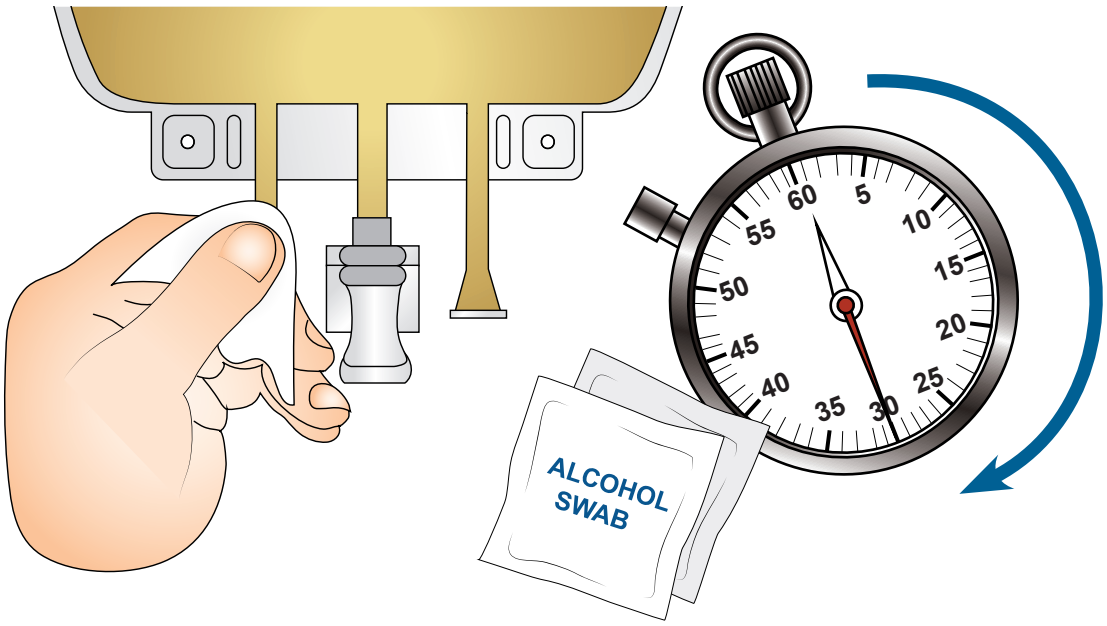
Be careful not to pierce the bag or the sides of the port.

4 **Inject the medication into the bag. Remove the needle from the port, being careful not to pierce the bag on the way out.**

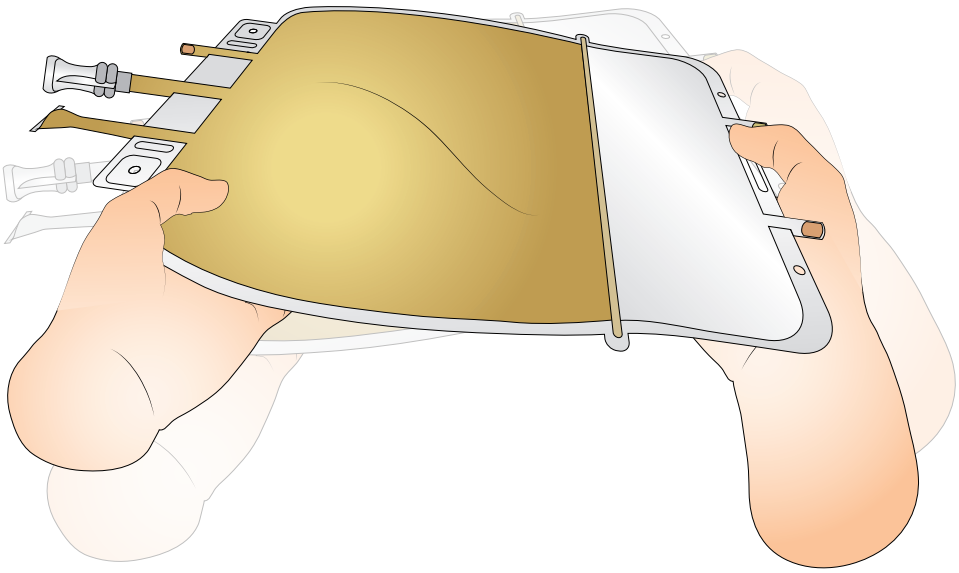




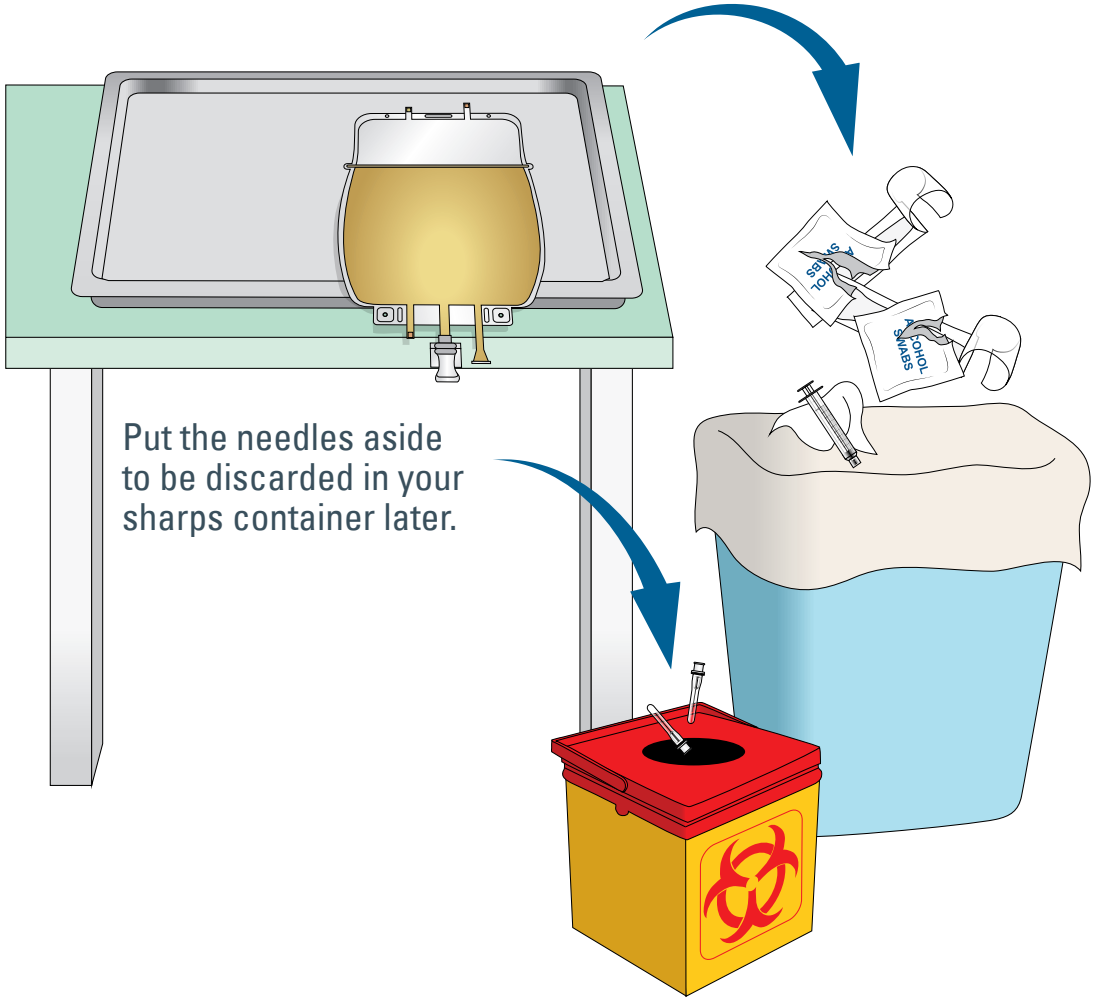
5 **If you have another medication to add, CLEAN THE INJECTION PORT AGAIN for 30 seconds, let the alcohol dry for 30 seconds then repeat steps 3 - 5.**



6 Gently rock the bag to mix the PN solution.

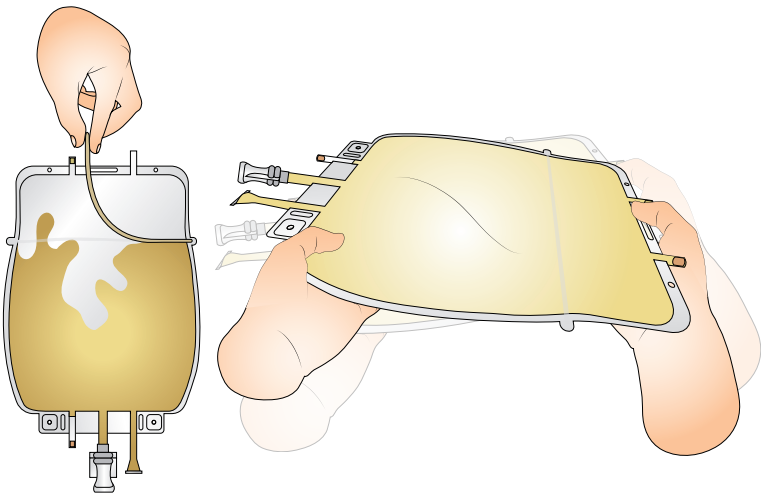


7 Remove the garbage from your tray.



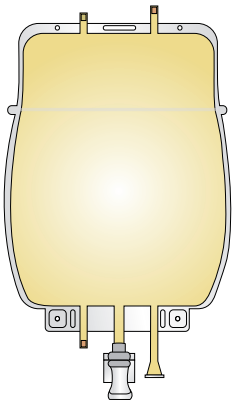
Priming the tubing & connecting the PN solution

1 **If your bag contains lipids, remove the separator and gently rock the bag.**

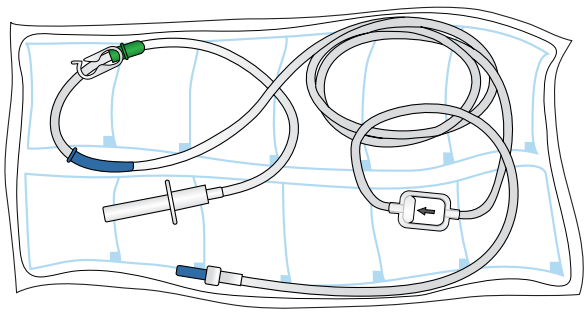


* You have previously injected the vitamins and other medication into the PN bag. You must now remove the separator on the PN bag to mix the lipids before priming the tubing.

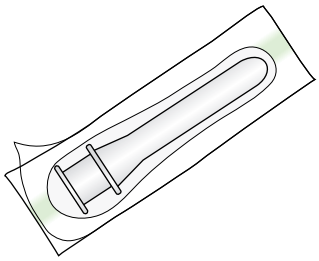
2 **Gather these supplies:**



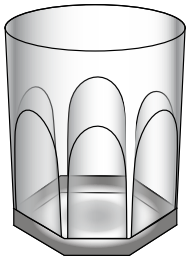
(1) PN Bag



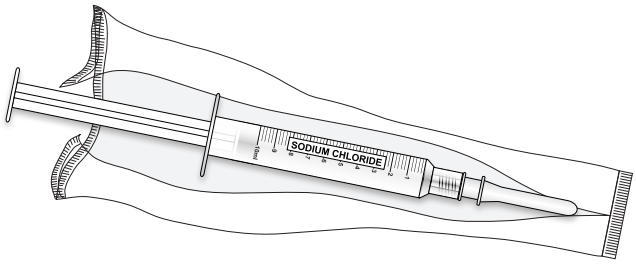
(1) Ambix® Tubing Set with 1.2 micron filter



(1) Plastic Cannula

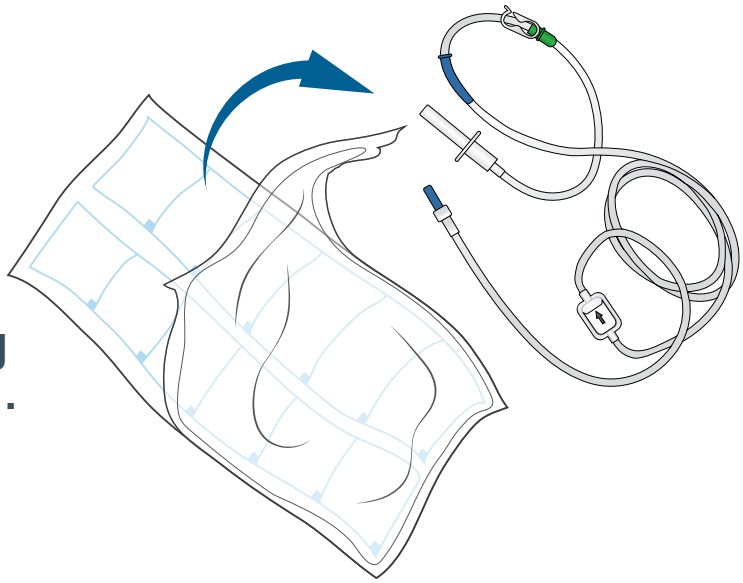


Small Glass (already cleaned)

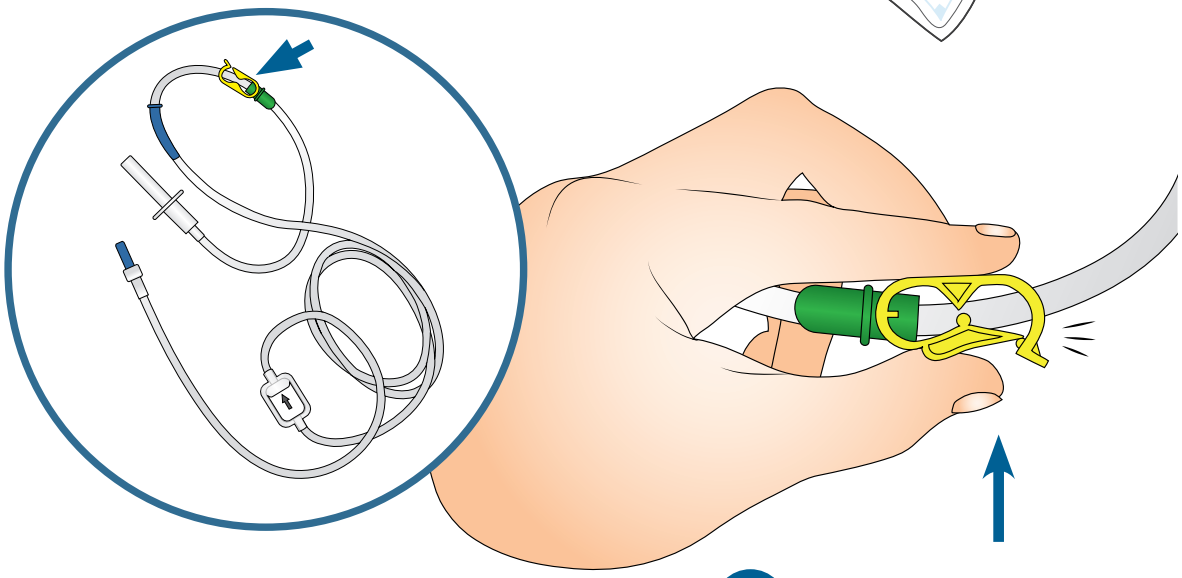


(1) Prepared Sodium Chloride (NaCl) Syringe (10 ml)

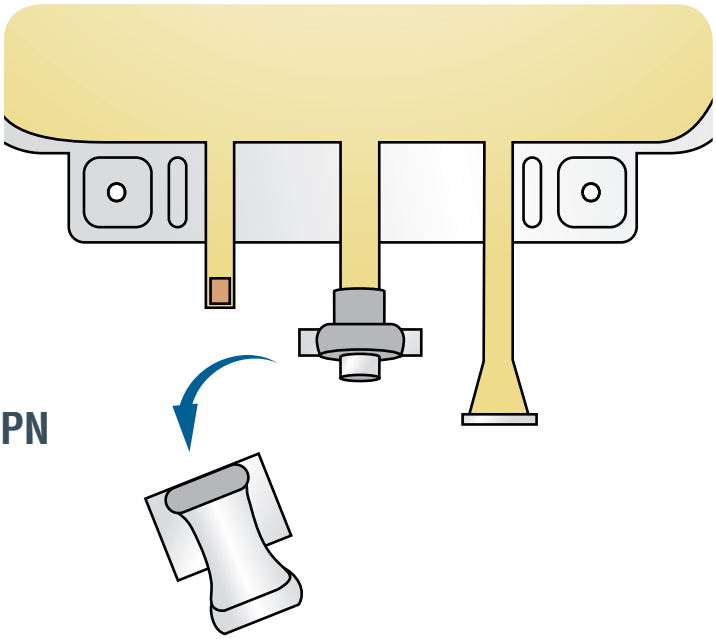
(5) Alcohol Swabs



3 Remove the tubing from its packaging.



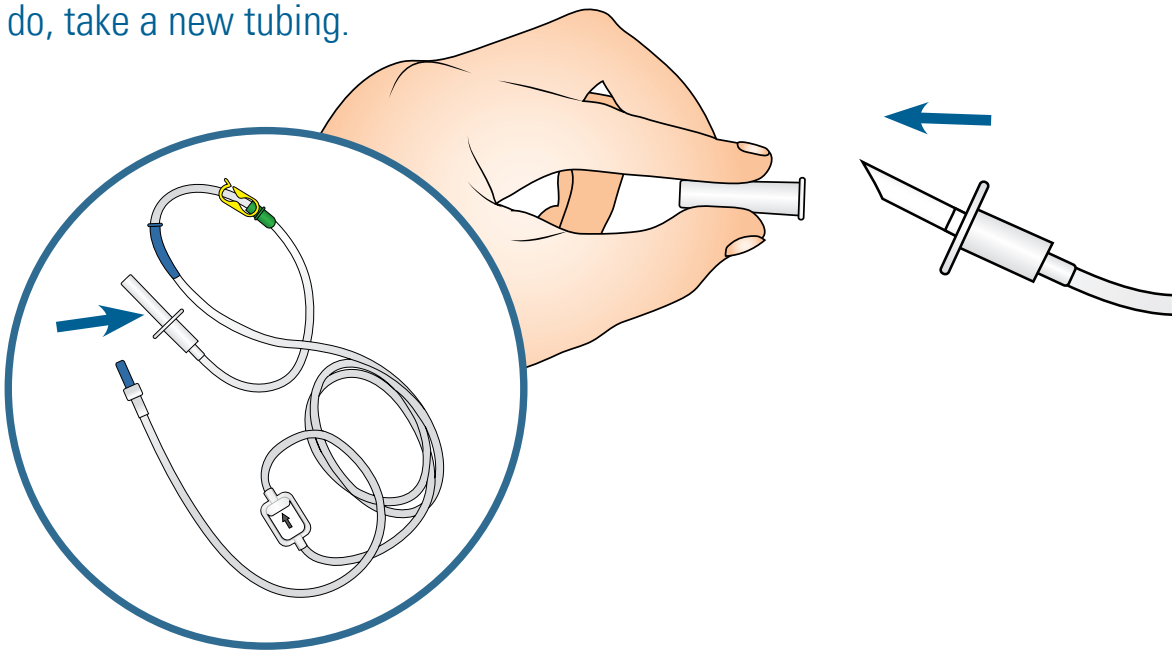
4 Close the clamp on the tubing.



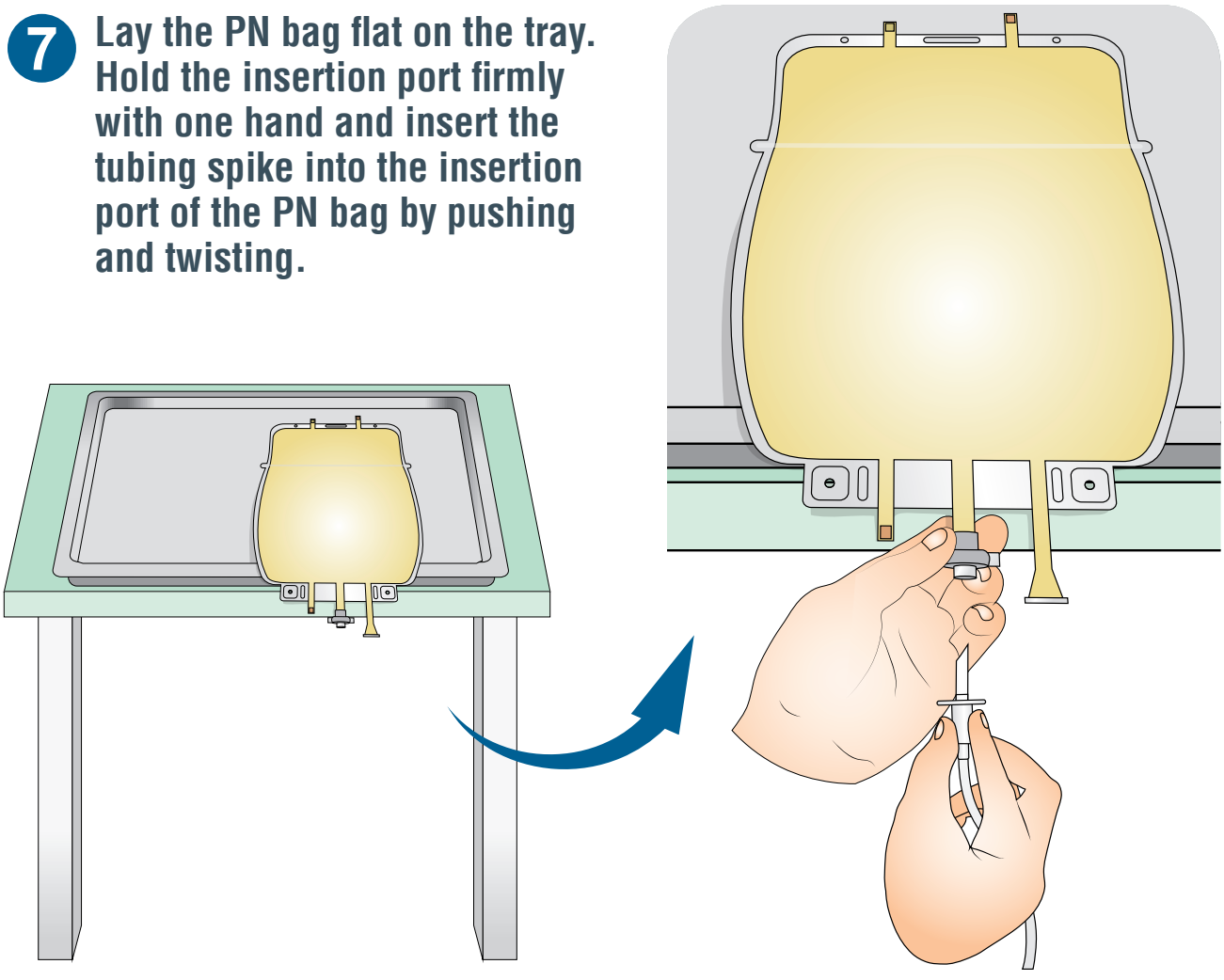
5 Pull the tab off the insertion port of the PN bag by twisting it.

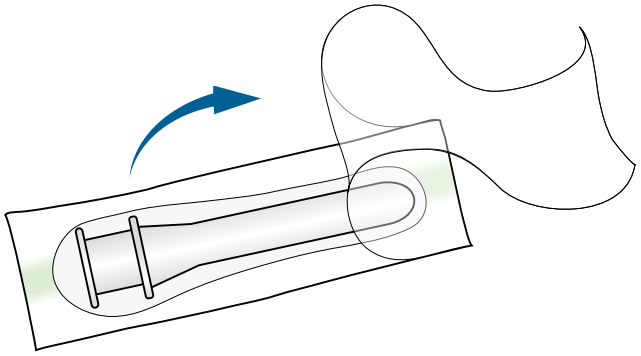
6 Remove the protective cap from the tubing spike.

Do not touch the spike. If you do, take a new tubing.



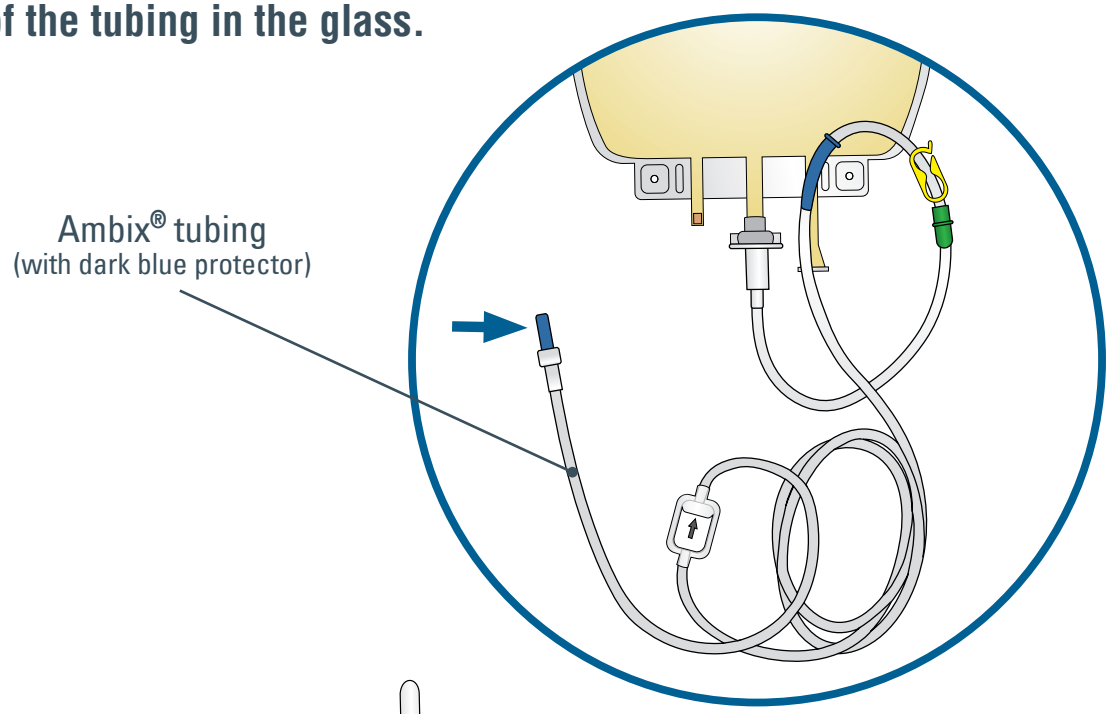
7 Lay the PN bag flat on the tray. Hold the insertion port firmly with one hand and insert the tubing spike into the insertion port of the PN bag by pushing and twisting.

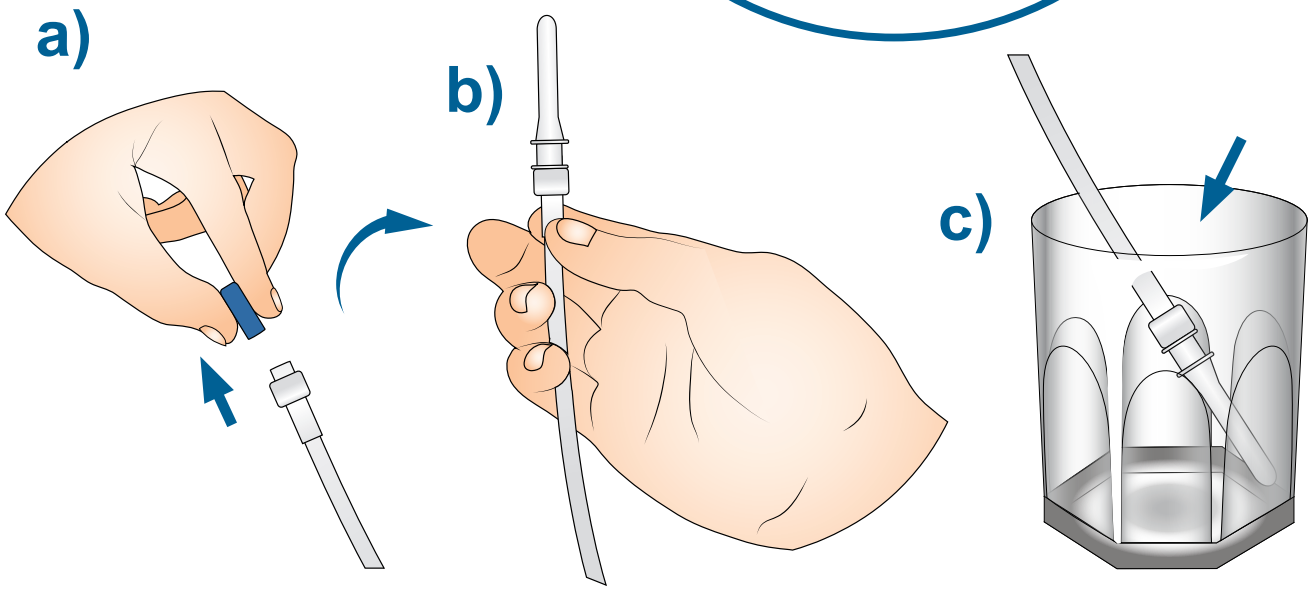




8 **Open the plastic cannula, keeping it in its “boat”.**

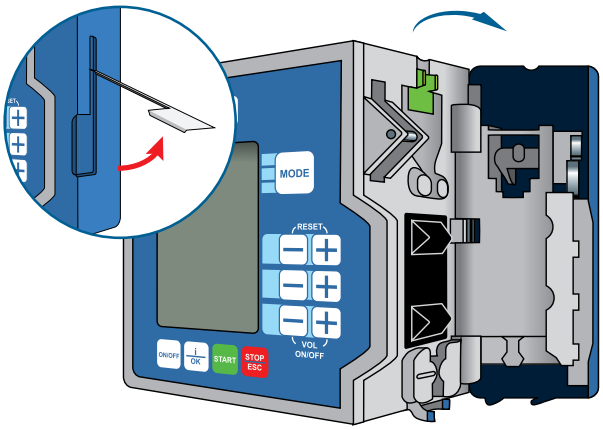
9 **Unscrew the dark blue protector from the end of the Ambix® tubing and replace it with the plastic cannula. Then place the end of the tubing in the glass.**



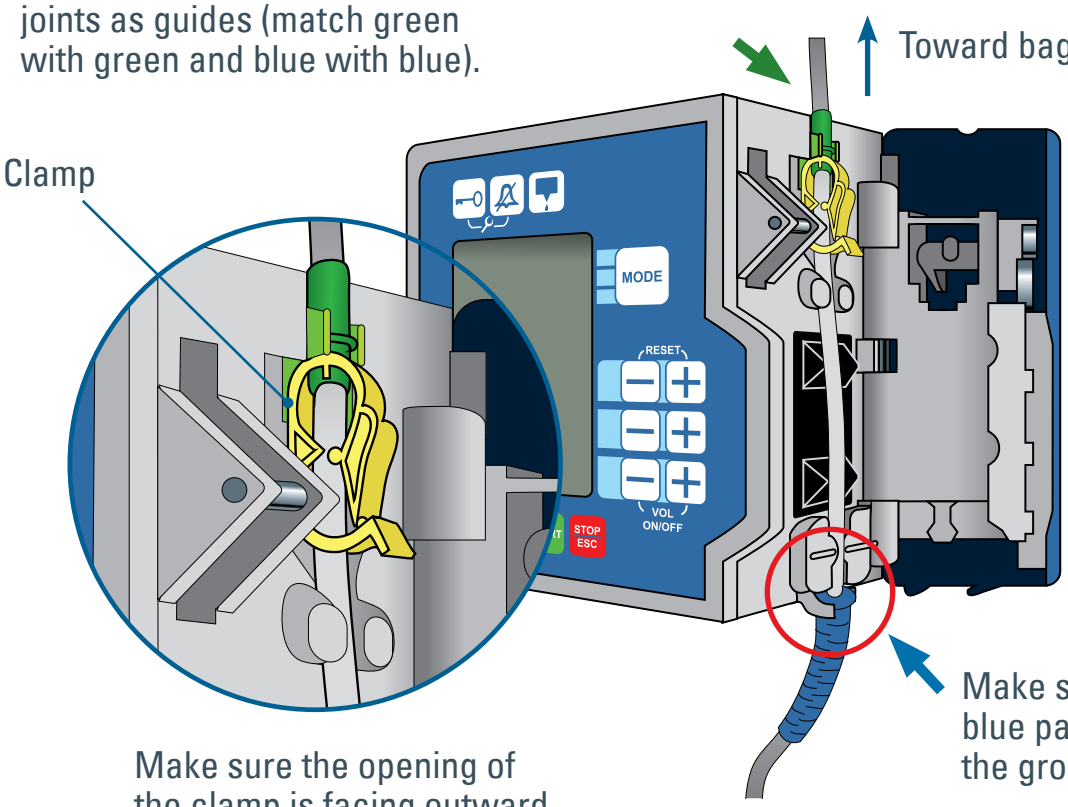


10 Insert the tubing into the pump:

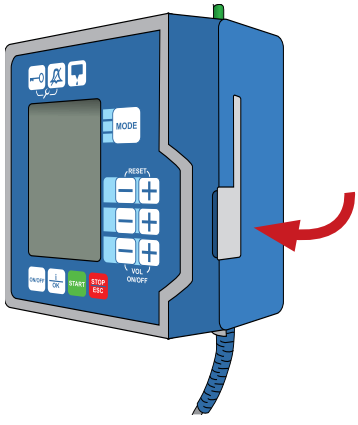
a) Using the lever, open the pump door.



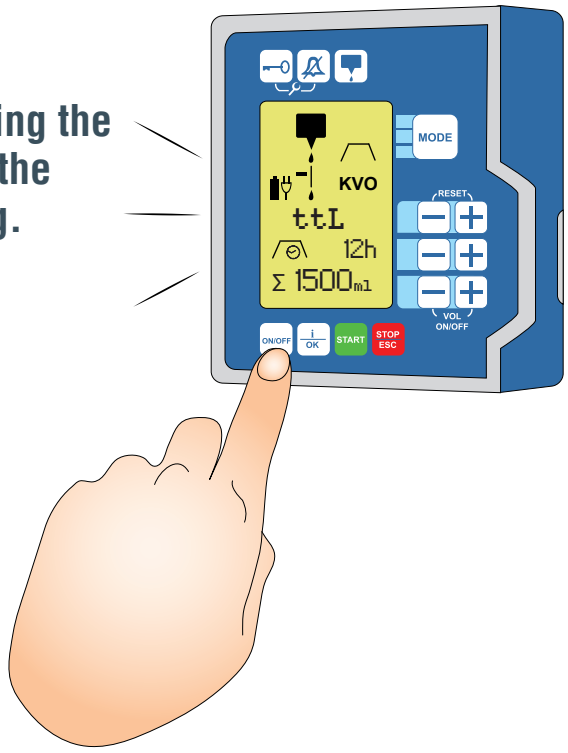
b) Insert the tubing into the pump by using the clamp and blue rubber joints as guides (match green with green and blue with blue).

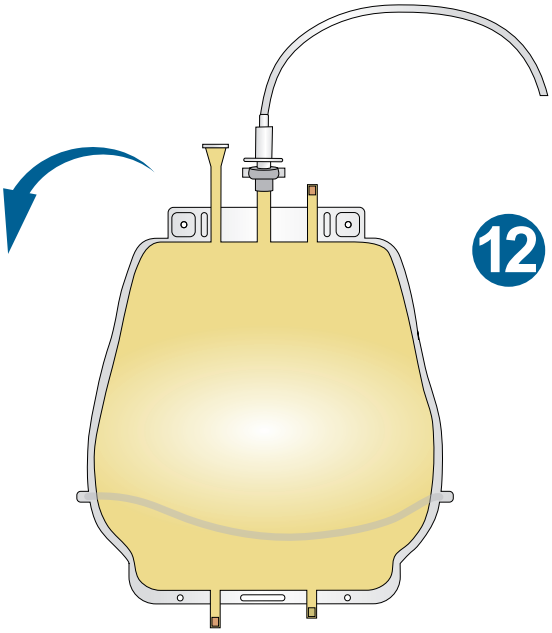


c) Close the pump door and press down the lever.



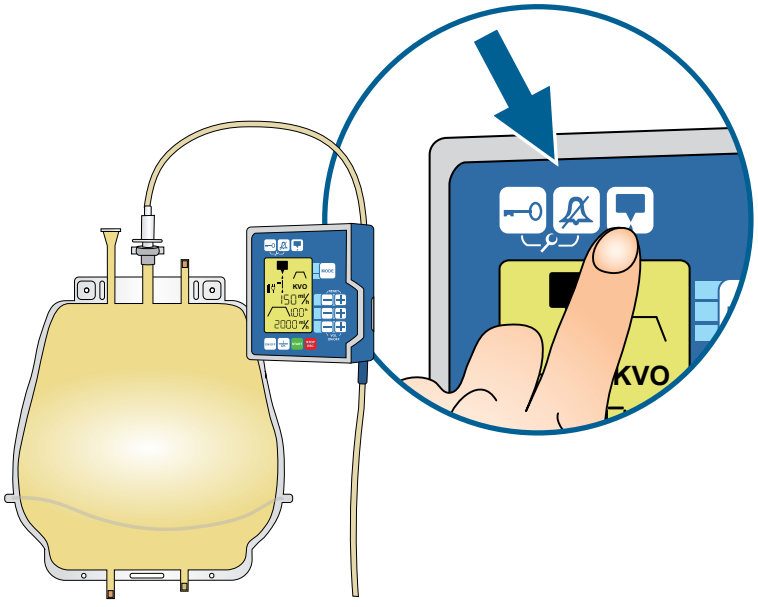
11 Turn “ON” the pump by pressing the “ON” button until you see all the display on the screen showing.



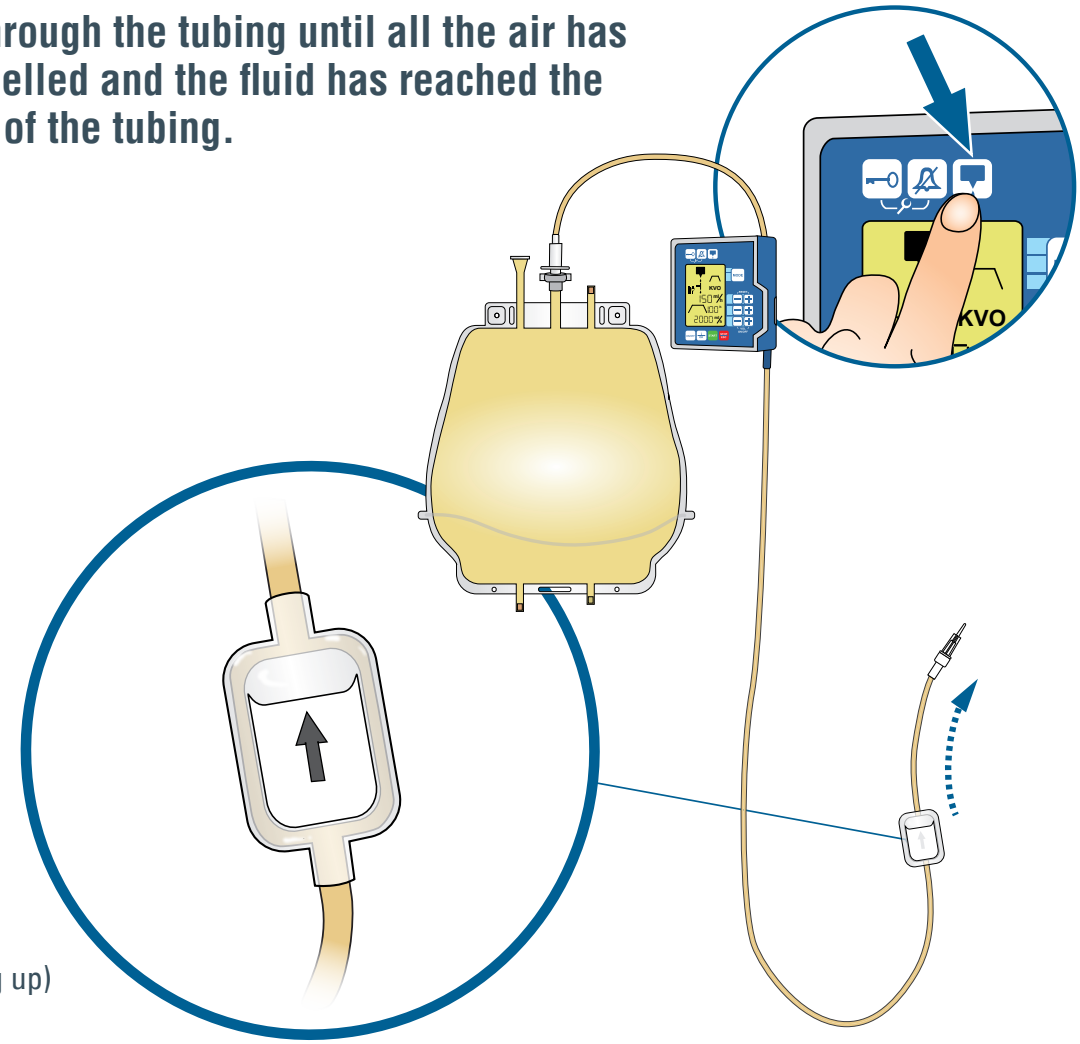


12 Place the PN bag upside down so the tubing is on top (to make all air bubbles rise to the top of the bag).

13 Press and hold the priming button until the filter is filled. Stop and wait 30 seconds.

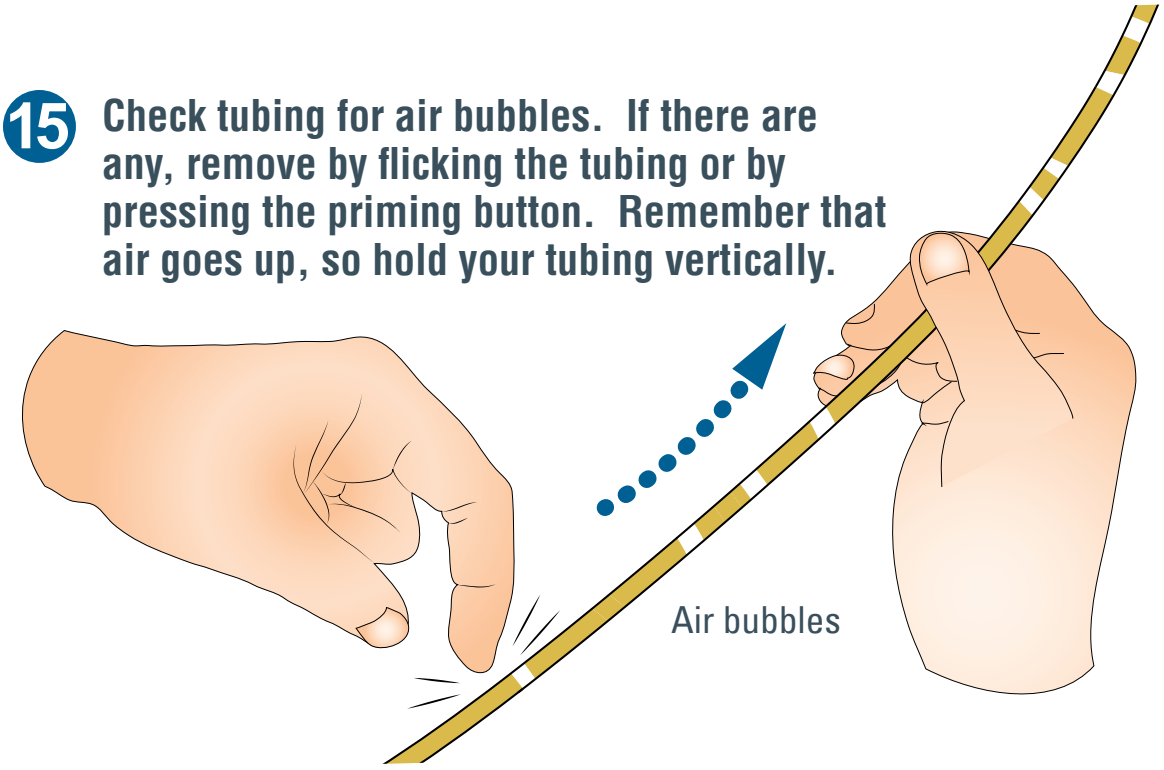


14 **Press and hold the priming button, KEEPING THE ARROW ON THE FILTER UP. Allow the PN to flow through the tubing until all the air has been expelled and the fluid has reached the very end of the tubing.**



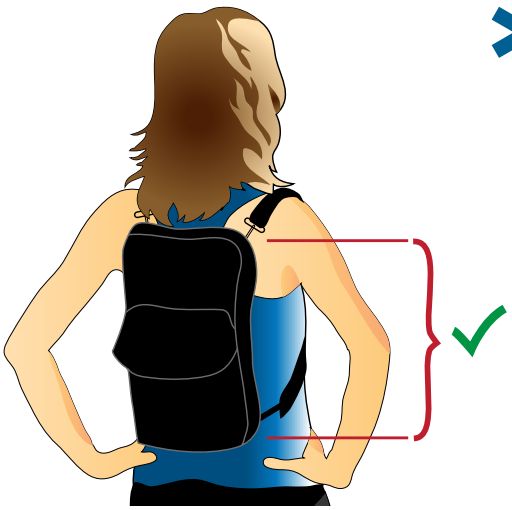
Filter
(arrow pointing up)

15 **Check tubing for air bubbles. If there are any, remove by flicking the tubing or by pressing the priming button. Remember that air goes up, so hold your tubing vertically.**



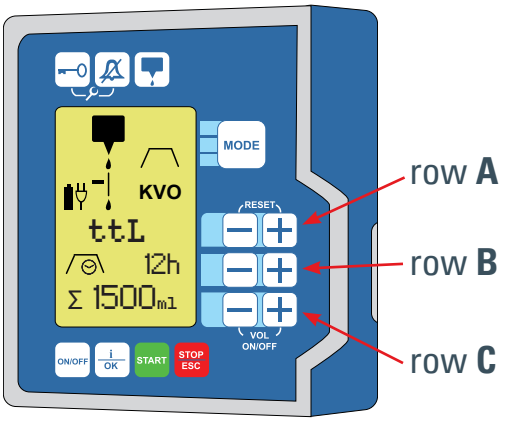
Air bubbles

⑯ Programming and starting the pump



✱ The pump in the backpack should be at the level of your chest or 30-45 cm (12-18 inches) above or below your chest (maximum). So do not put the backpack on the floor or on a high piece of furniture!

To program the pump:



1 Set the number of **hours** (h) of infusion
- Press on the ⊖ or ⊕ keys of row **B**

2 Set the **volume** (or total amount) you want to infuse (in ml)
- Press on the ⊖ or ⊕ keys of row **C**

3 Set the **end** (or taper down) of your infusion
- Press on the ⊖ key of row **A**, **(“do”)** will appear
- Select the number of hours of taper down with the ⊖ or ⊕ keys of row **B**

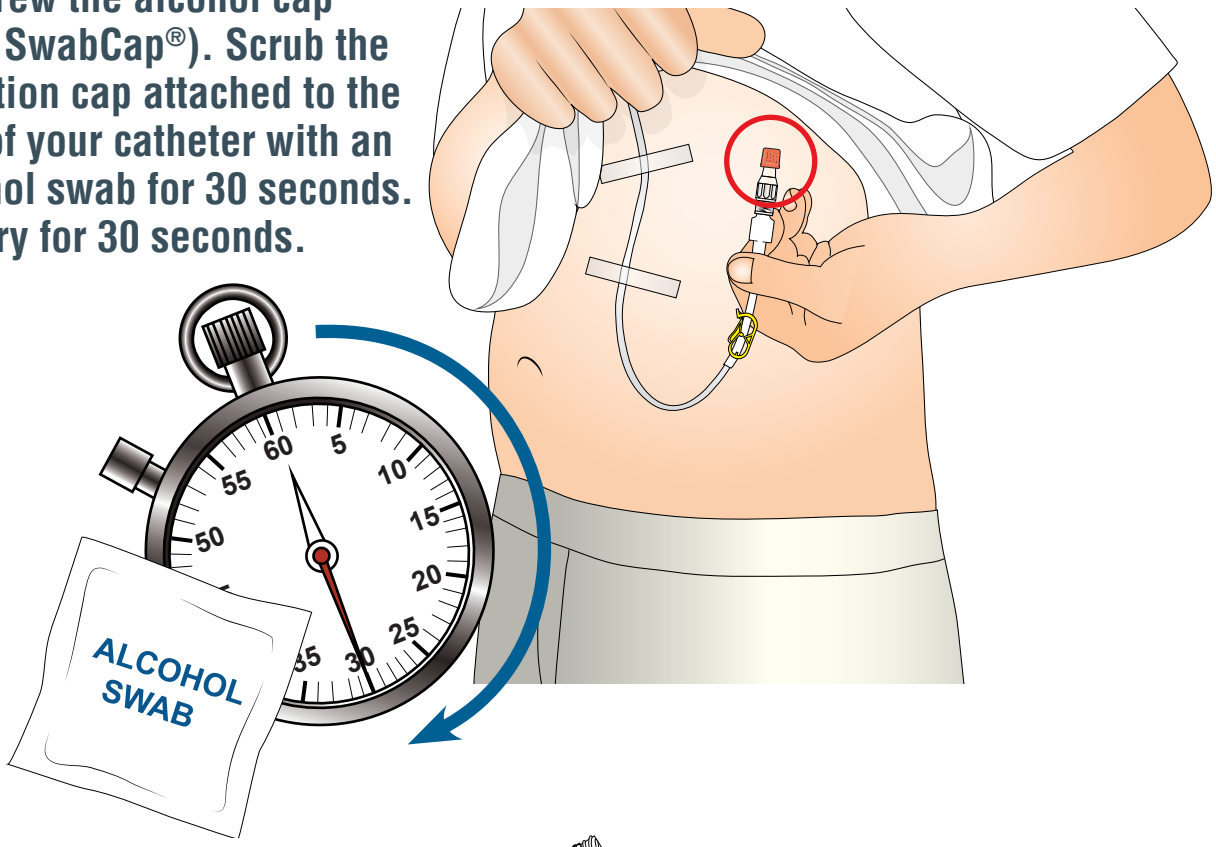
4 Set the **beginning** (or taper up) of your infusion
- Press on the ⊖ key of row **A** , **(“UP”)** will appear
- Select number of hours of taper up with the ⊖ or ⊕ keys of row **B**

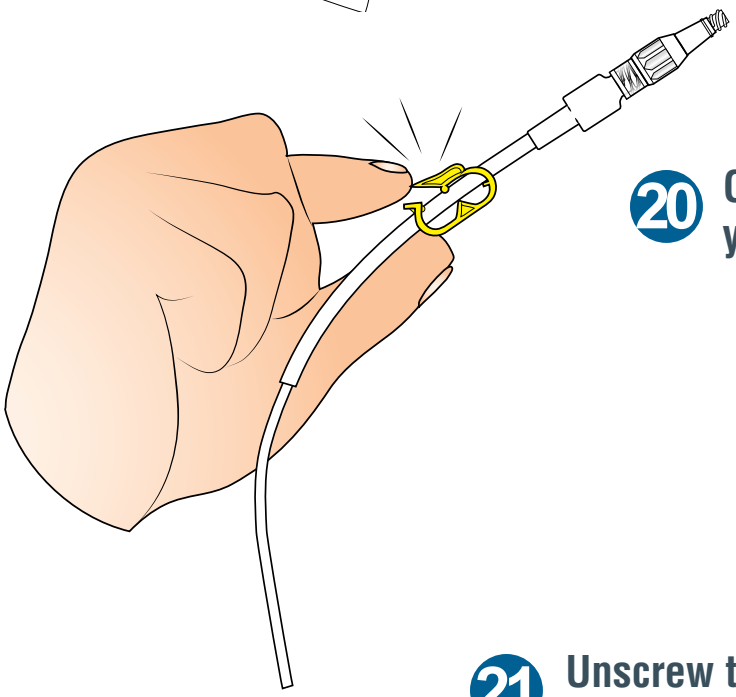
5
- Press on the ⊖ key of row **A**, your screen will return to main window

17 Recheck the values entered.

18 Clean your hands with an alcohol-based hand cleanser (e.g. Purell®). Rub the cleanser all over your hands until completely dry.

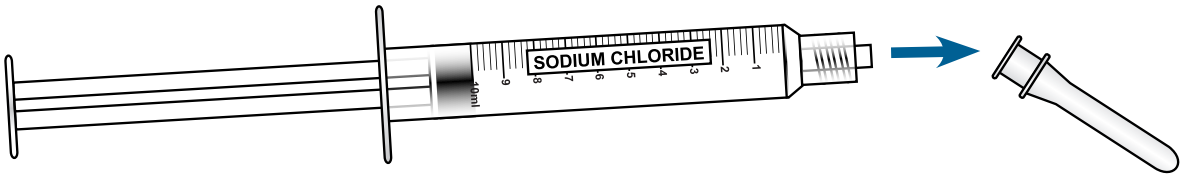
19 Unscrew the alcohol cap (e.g. SwabCap®). Scrub the injection cap attached to the end of your catheter with an alcohol swab for 30 seconds. Let dry for 30 seconds.



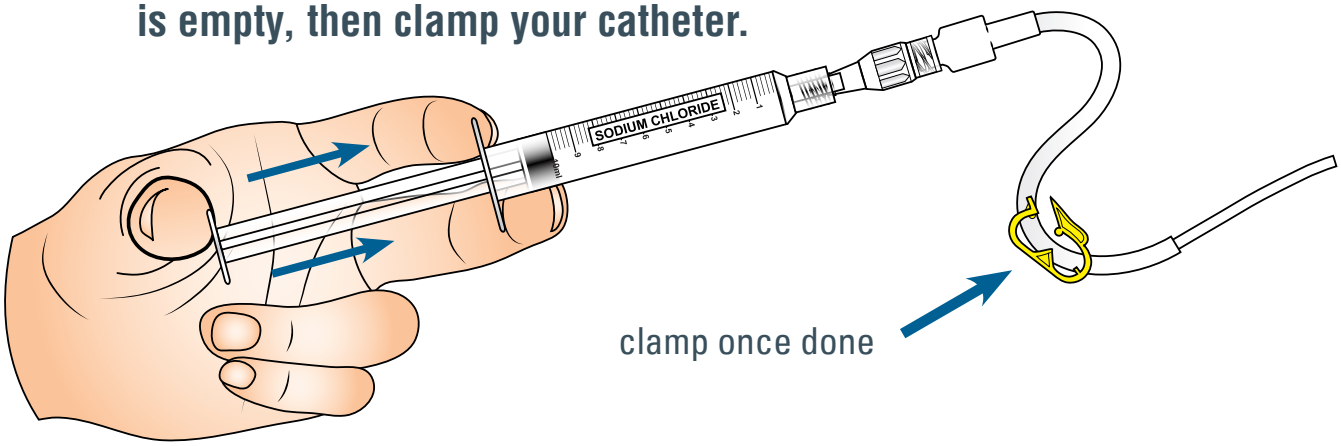


20 Open the clamp on your catheter.

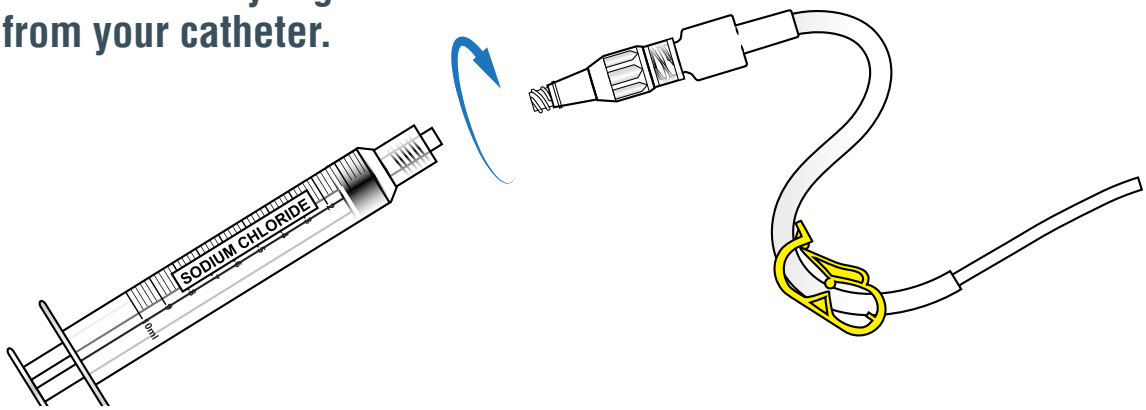
21 Unscrew the plastic cannula from the sodium chloride syringe.



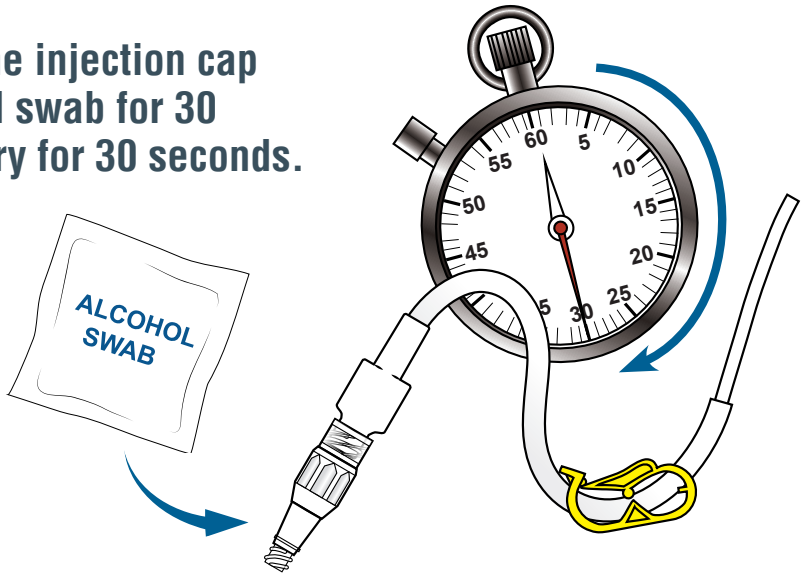
22 Screw the syringe to your catheter and flush it with 10 ml of sodium chloride – 5 ml without stopping, then 1ml at a time, until the syringe is empty, then clamp your catheter.

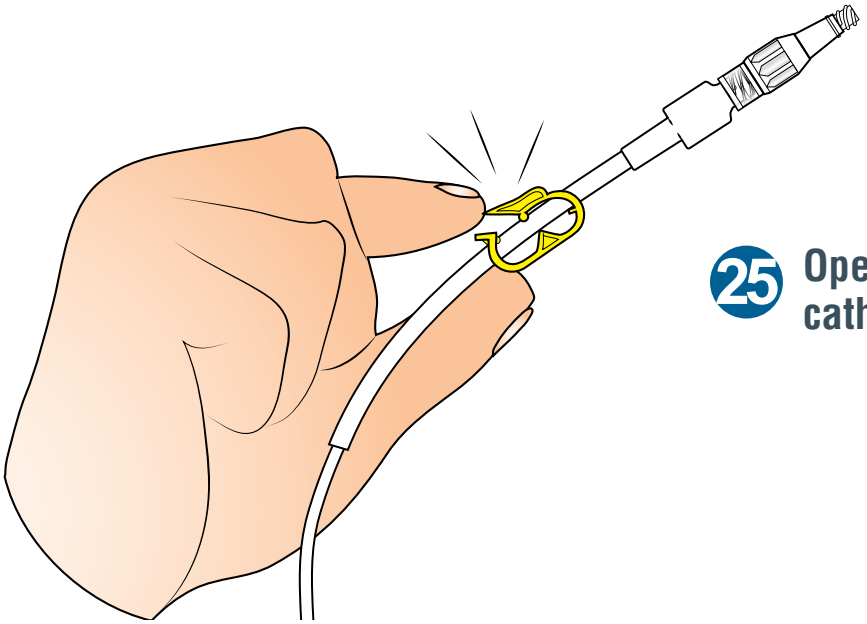


23 Unscrew the syringe from your catheter.

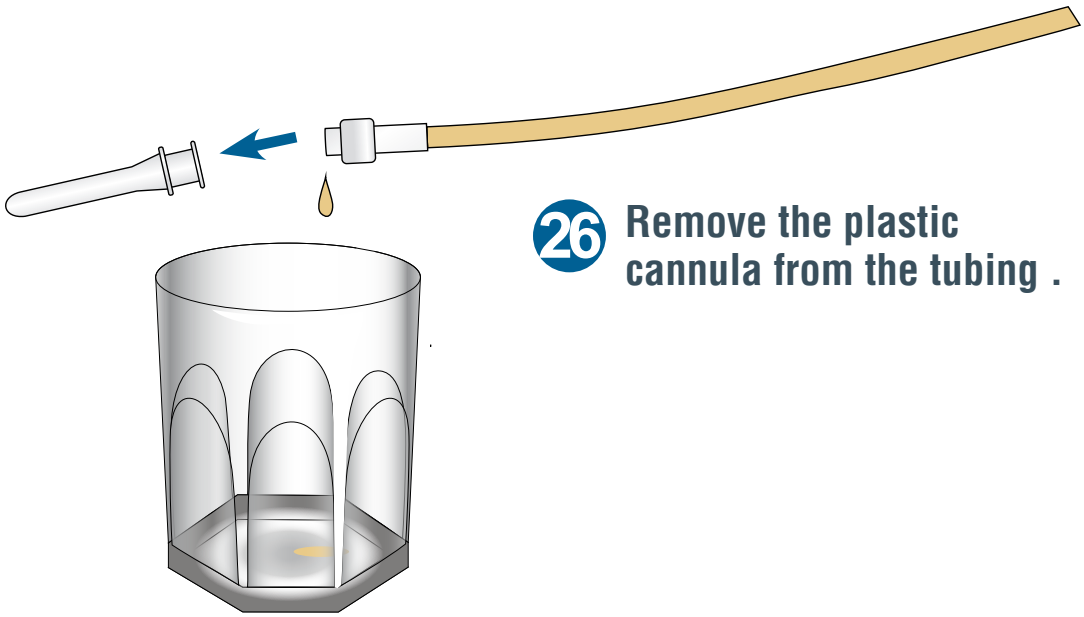


24 Again, scrub the injection cap with an alcohol swab for 30 seconds. Let dry for 30 seconds.

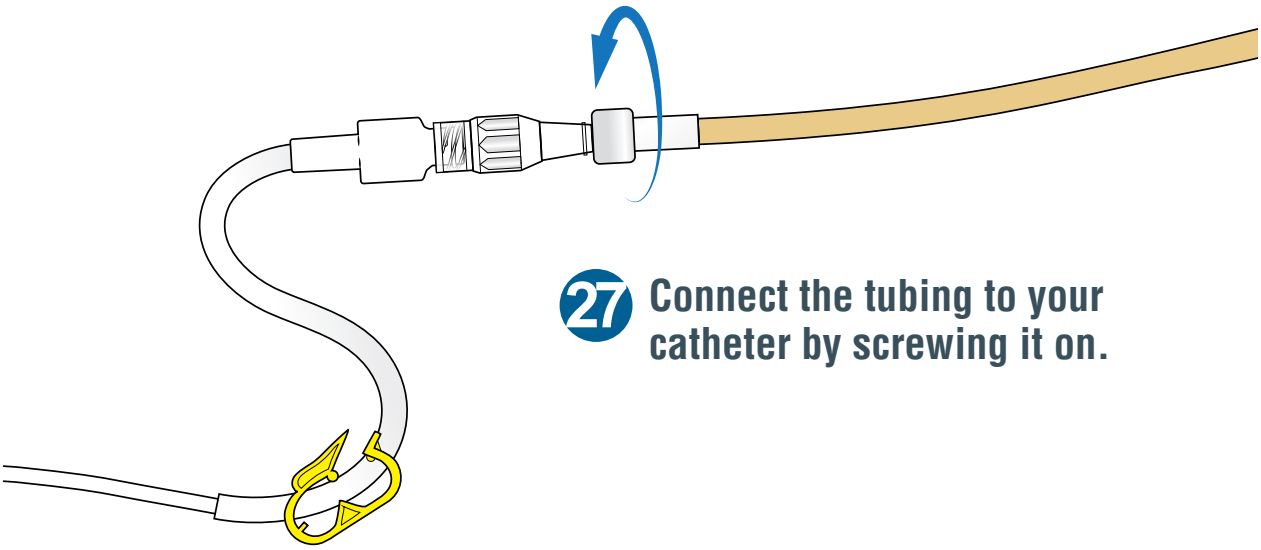




25 Open the clamp on your catheter again.

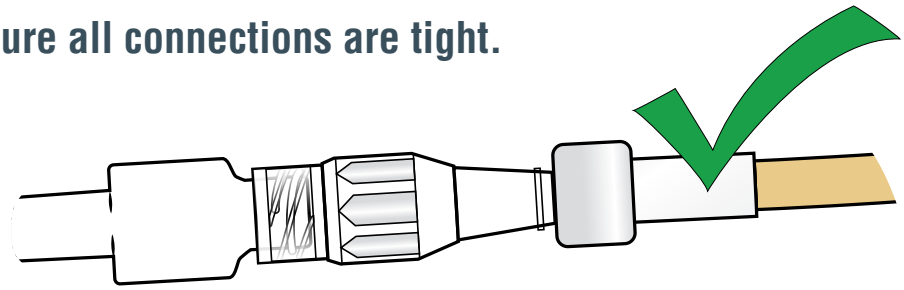


26 Remove the plastic cannula from the tubing .

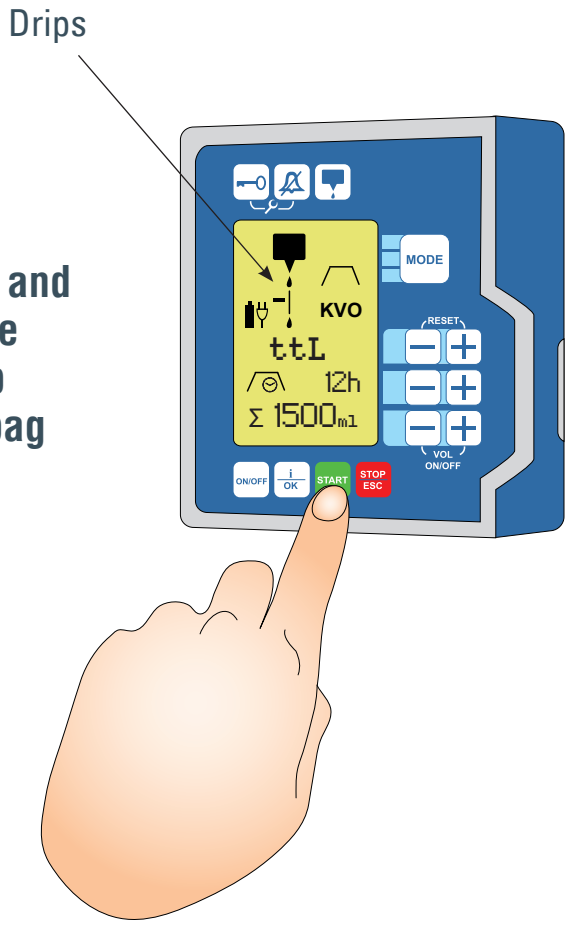


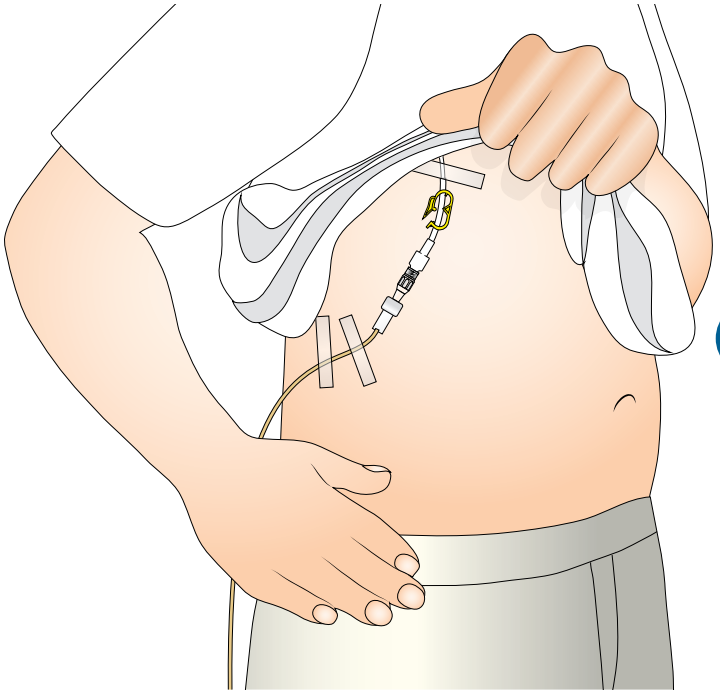
27 Connect the tubing to your catheter by screwing it on.

28 Make sure all connections are tight.



29 Press START – you will see drips and bars begin to move down from the image of the PN bag on the pump screen and the image of the PN bag will stop flashing.



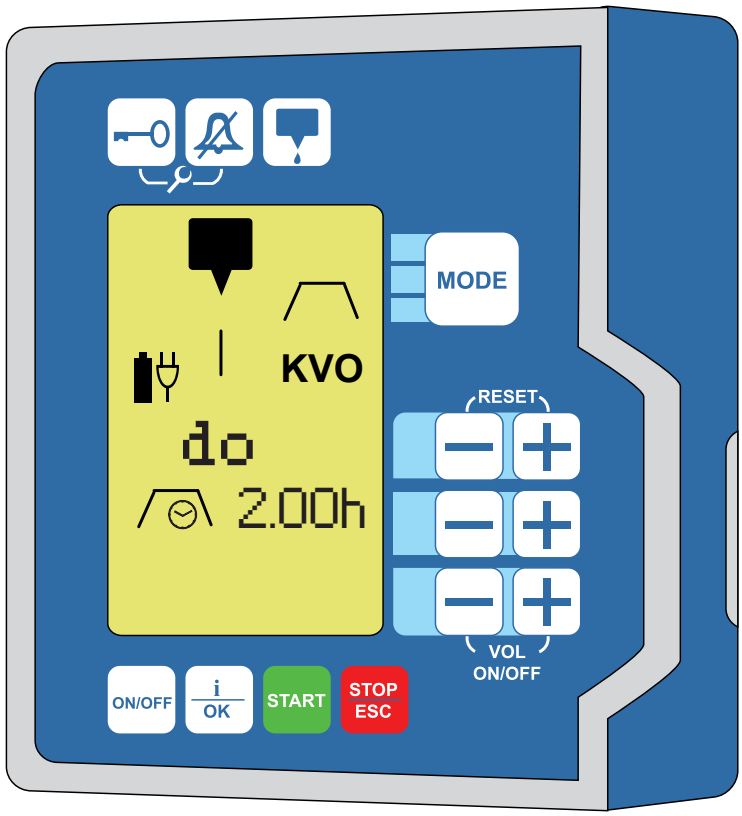


30 Tape the catheter, at least twice to prevent it from being pulled accidentally.

Check it regularly to make sure that it remains well taped. Tape the end of the catheter onto your chest, keeping it away from your abdomen (stoma, fistula or other wound dressing).

Finishing your infusion

If your PN solution contains a large amount of sugar (dextrose), **before** starting your infusion, you will program a taper down of usually 2 hours. This will give your body a chance to adjust to the high-sugar PN coming to an end.

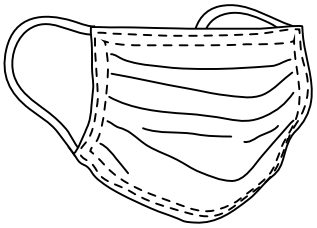


For example:

Total amount of PN: 1000 ml
Total infusion period: 10 hours
Taper down period: 2 hours

This will deliver your infusion at a rate of 112 ml per hour over 8 hours (calculated by the pump). After this, your infusion rate will slow down gradually over the last 2 hours, until it finally reaches 10 ml per hour. Then your pump can be stopped.

1 Gather these supplies:



Mask

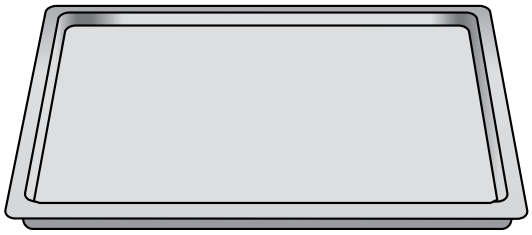
Antimicrobial Soap
(e.g. Dexidin®)

Alcohol-based
Hand Cleanser
(e.g. Purell®)

Rubbing Alcohol (70%)

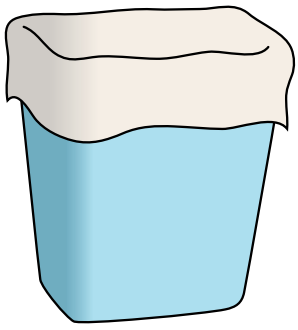
Paper Towel

Cleaning
Product



Tray

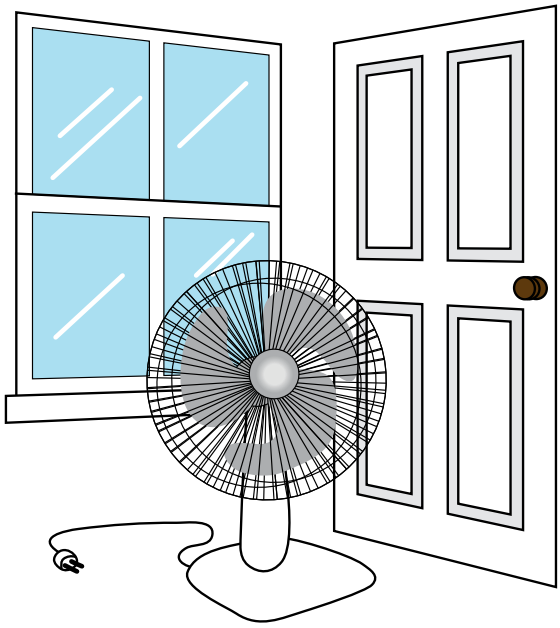
Sharps Container
(for used needles)



Garbage Can

2 Put on a mask.

Make sure that anyone else in the room also wears a mask.



3 Close all windows, doors and turn off fans.

4 Place the garbage can and sharps container close to your PN work area.

5 Clean the sink with your usual product and then with alcohol.

Start with faucet, sides of sink and clean your way down toward the drain. Don't come back to an already cleaned area.

6 Take off your watch and rings and do a regular hand wash.

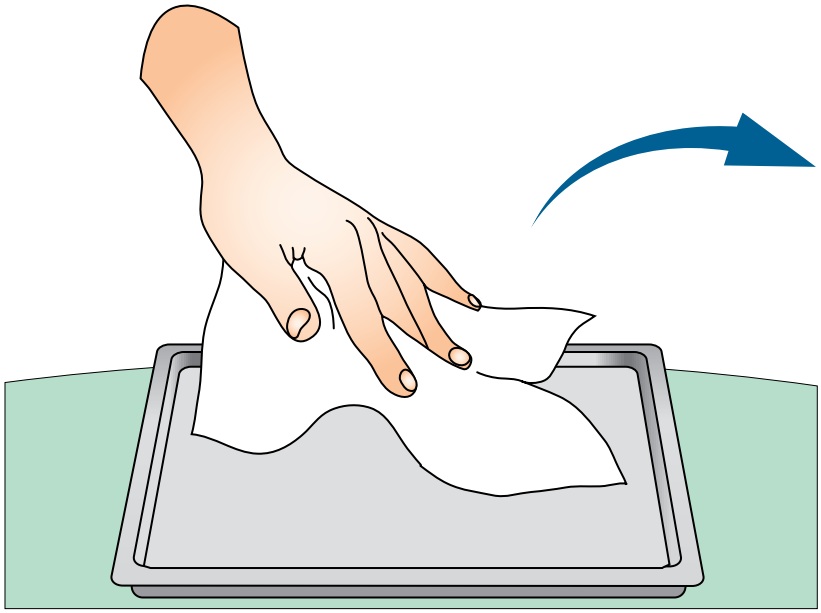
7 Clean with alcohol:

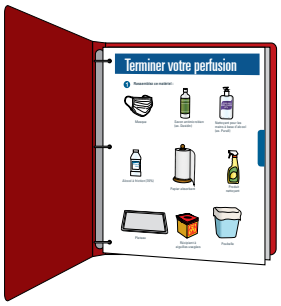
- The alcohol bottle
- The antimicrobial soap bottle (e.g. Dexidin®)
- The alcohol-based hand cleanser bottle (e.g. Purell®)
- The paper towel dispenser

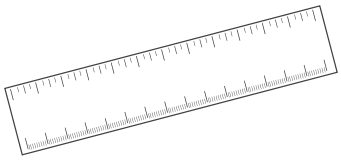
Start at the top of the bottle, then sides and finish with the bottom. Don't forget to place them on a surface that's been cleaned already.

8 Clean the work table and tray with alcohol, along with your PN binder, the pages in plastic sheets and the ruler that you will be using.

Clean the top of the tray first, then the bottom, make sure it does not touch your clothes.

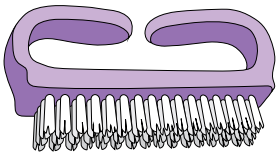






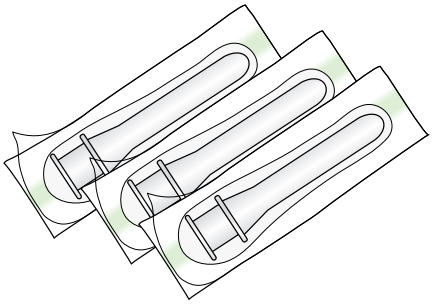
9 Clean your hands with the alcohol-based hand cleanser (e.g.Purell®). Rub the cleanser all over your hands until completely dry.

10 Gather your infusion equipment:

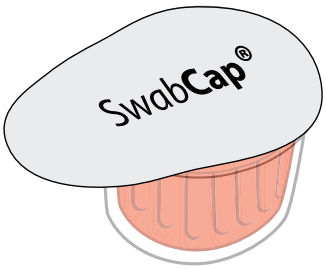


Nail Brush

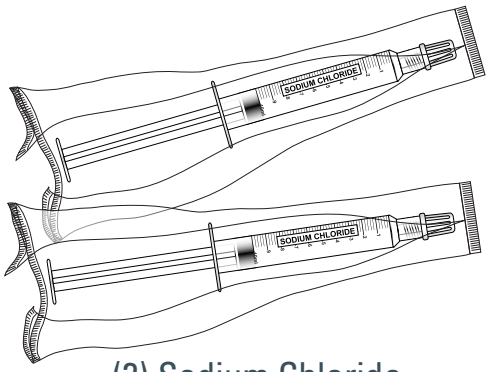
(2) Alcohol Swabs



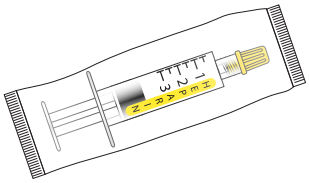
(3) Plastic Cannulas



(1) Alcohol Cap
(e.g. SwabCap®)



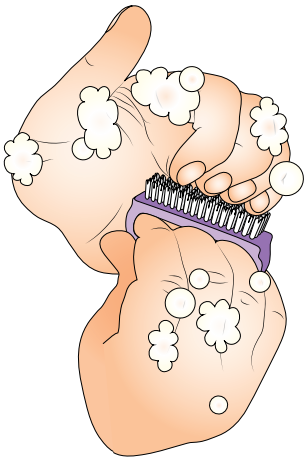
(2) Sodium Chloride
(NaCl) Syringes (10 ml)



(1) Locking Solution
Syringe (3 ml)
(Heparin or Sodium Citrate)

✱ Check the content and expiry date of each item!!

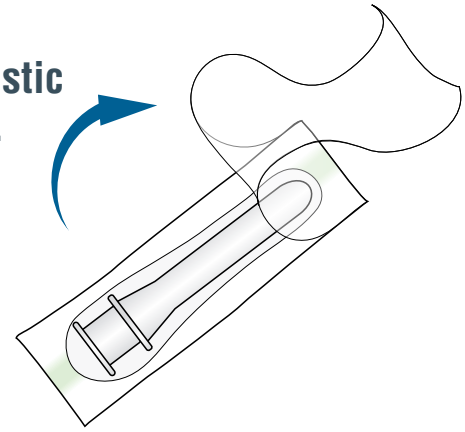
11 Wash your hands for 2 minutes using the correct hand washing technique, antimicrobial soap (e.g. Dexidin®) and nail brush.

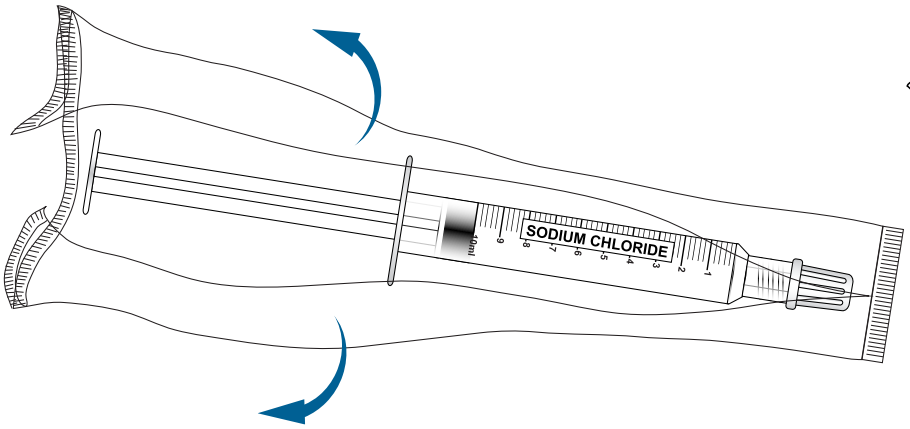


Preparing your sodium chloride syringes

2 sodium chloride syringes will be used to flush your catheter.

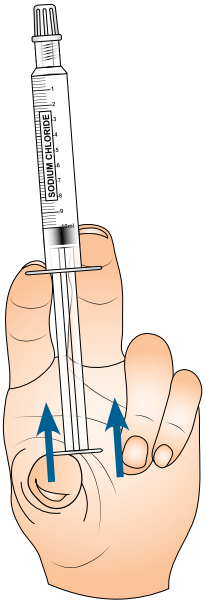
1 **Open one sodium chloride syringe and place your syringe on your tray. Then, open one plastic cannula and leave it in its packaging "boat".**



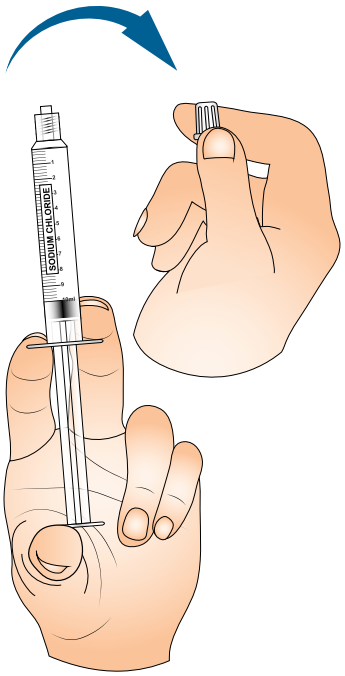


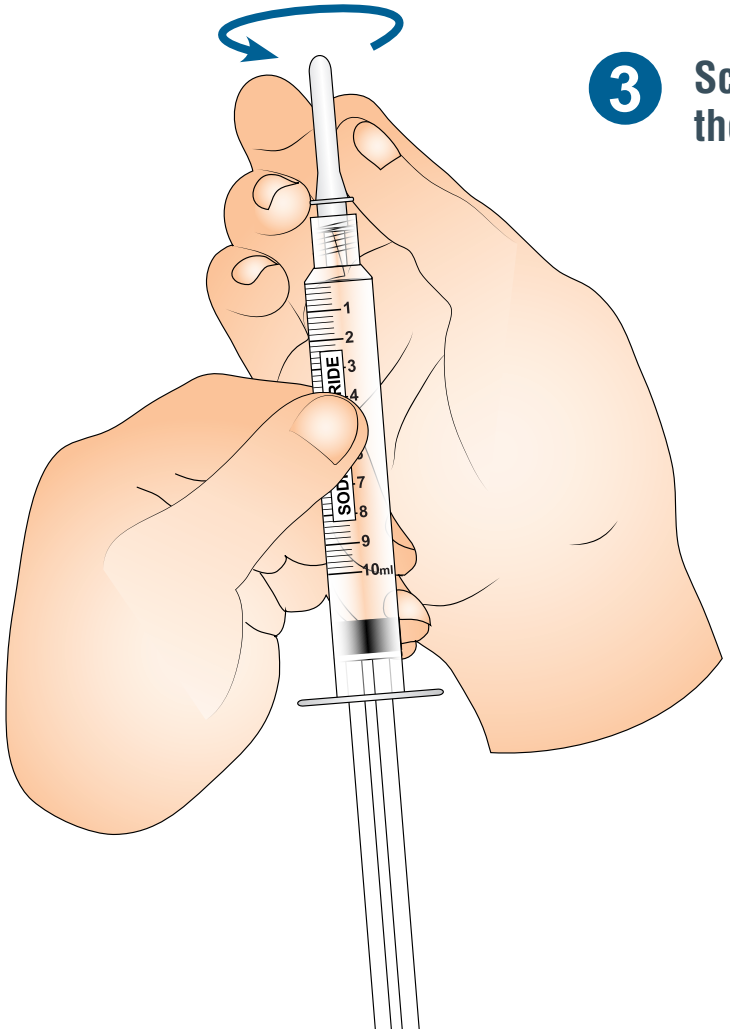
2 **With the white cap still in place, push the plunger of the sodium chloride syringe to release pressure. Then unscrew the white cap.**

a)



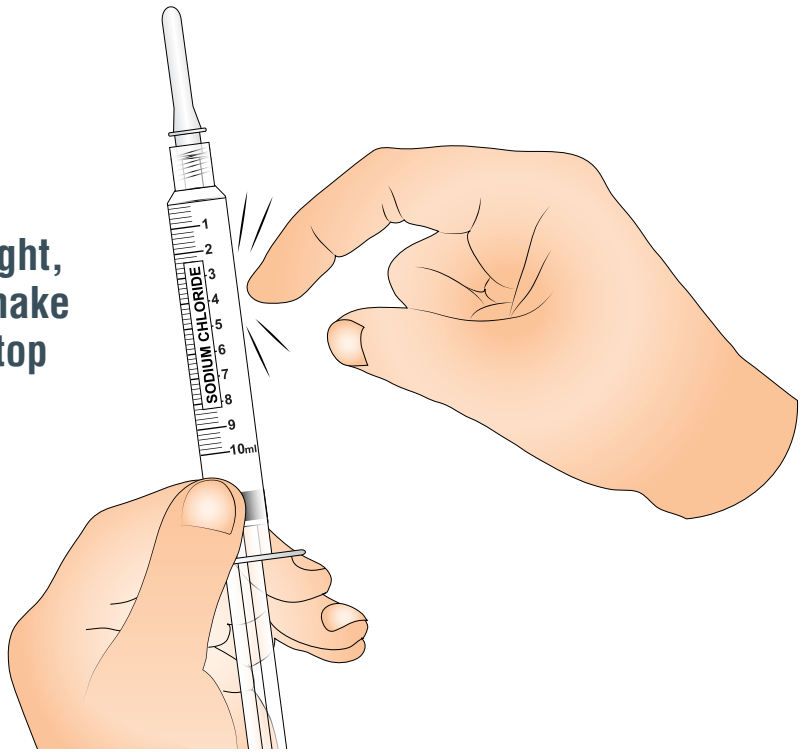
b)

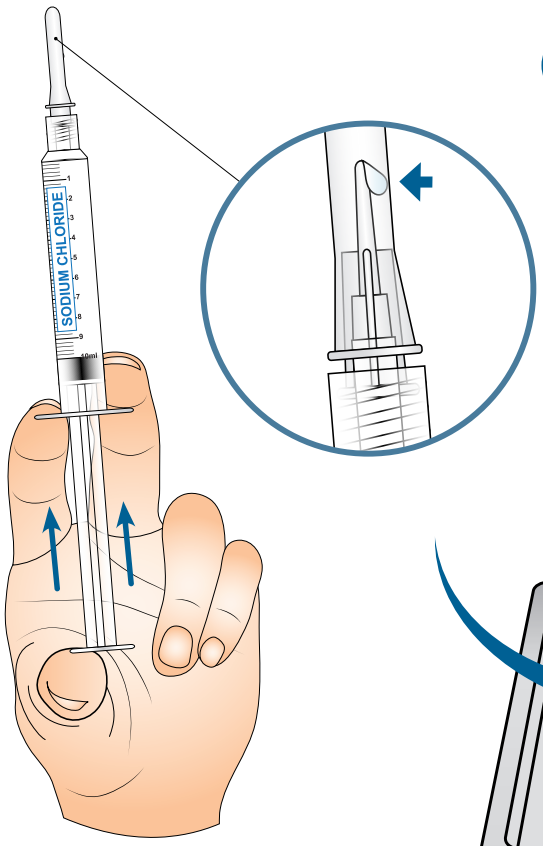




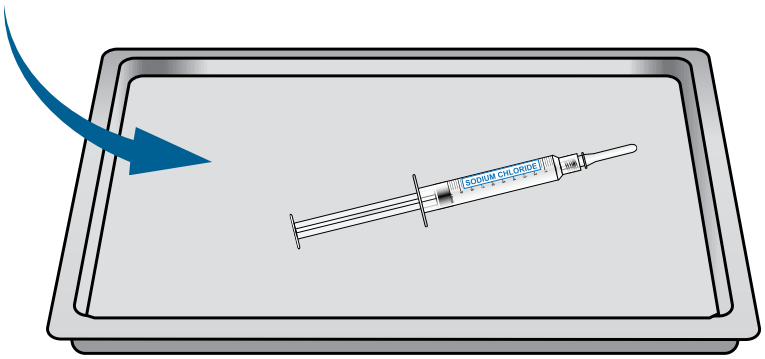
3 Screw the plastic cannula onto the sodium chloride syringe.

4 With the syringe held upright, gently tap the syringe to make all air bubbles rise to the top of the syringe.



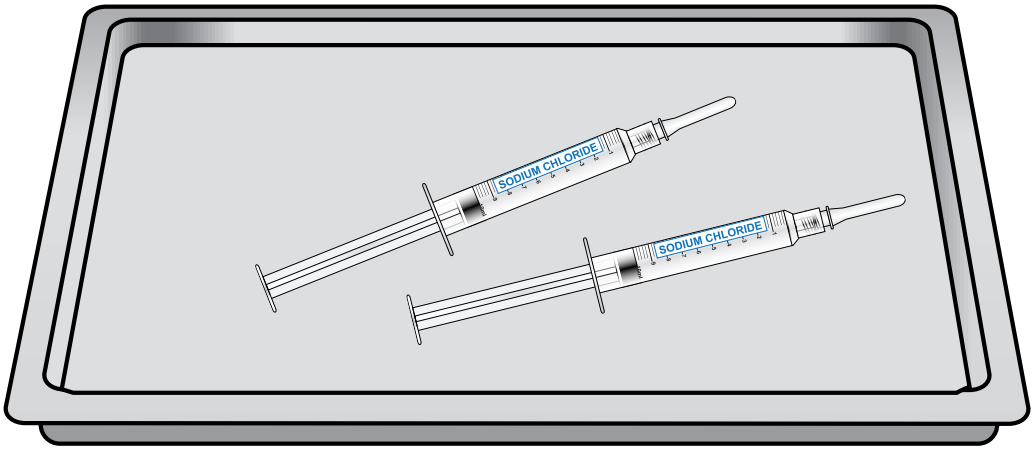


5 Push the plunger of the syringe very slowly to remove the air, pushing until you see a drop of liquid at the end of the cannula. Verify and adjust the amount of liquid to 10 ml.



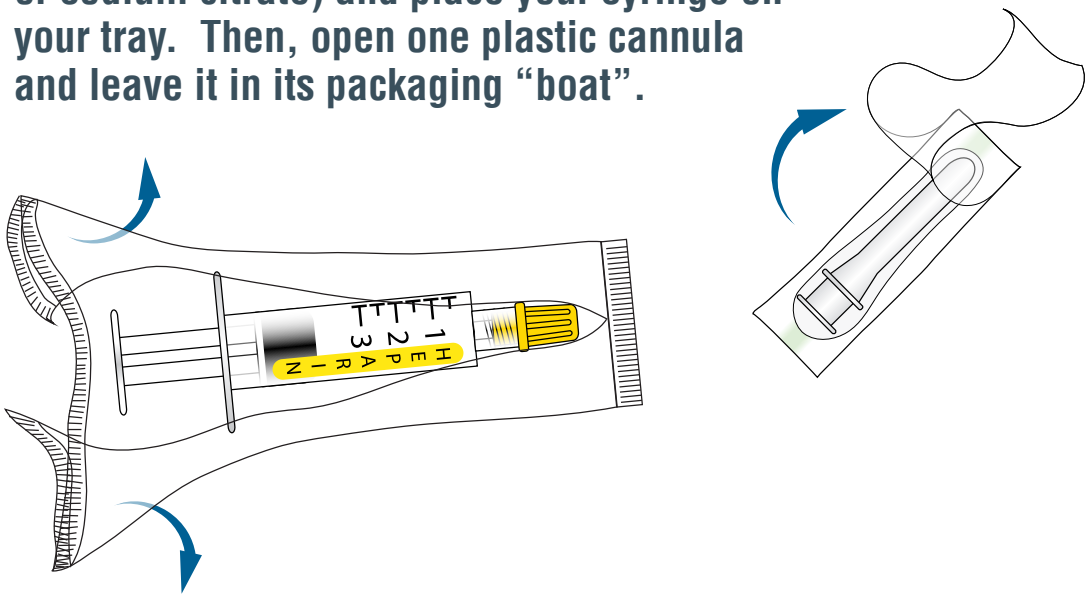
6 Place the prepared syringe on the tray.

7 **REPEAT** steps 1-6 with the second syringe.

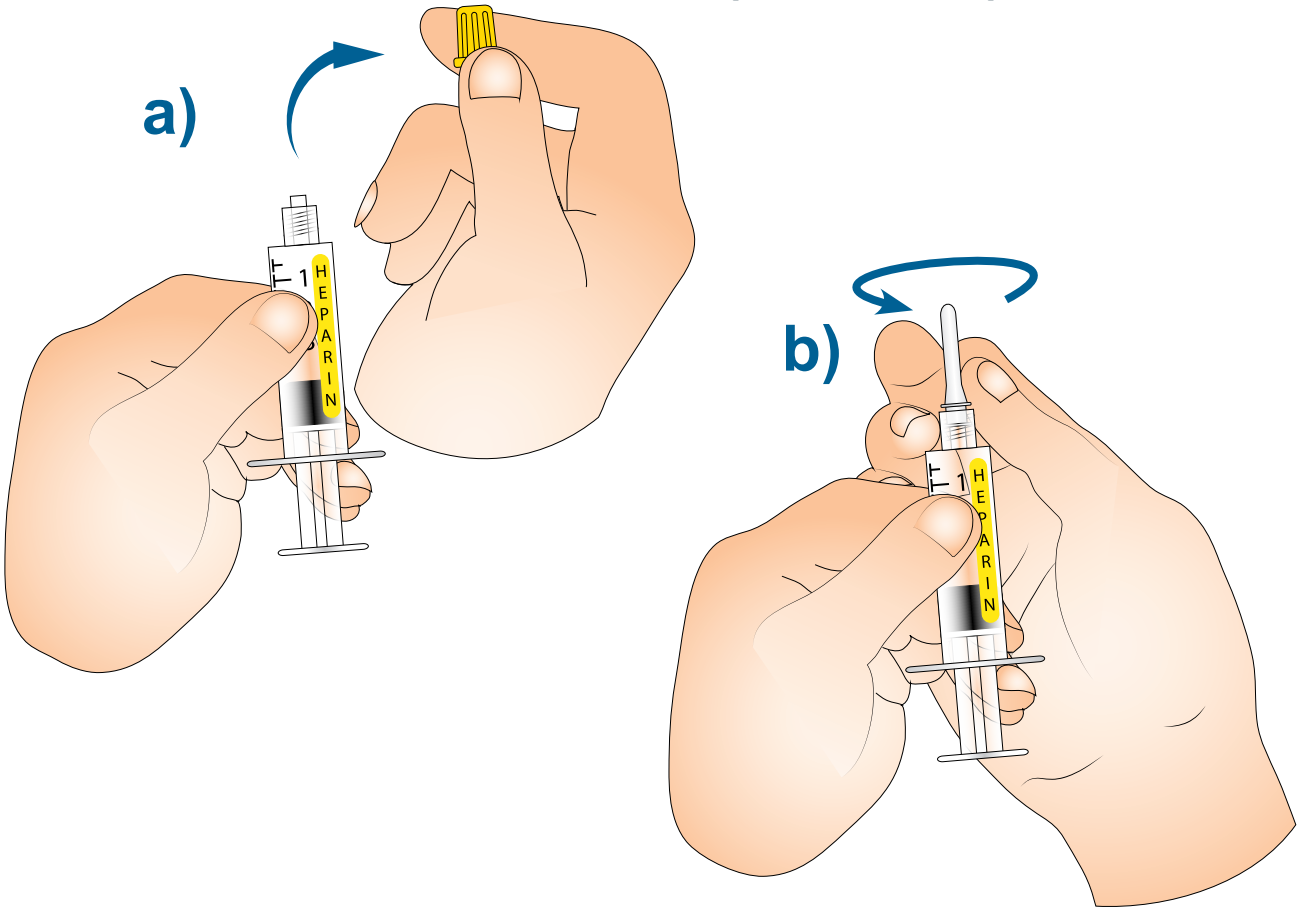


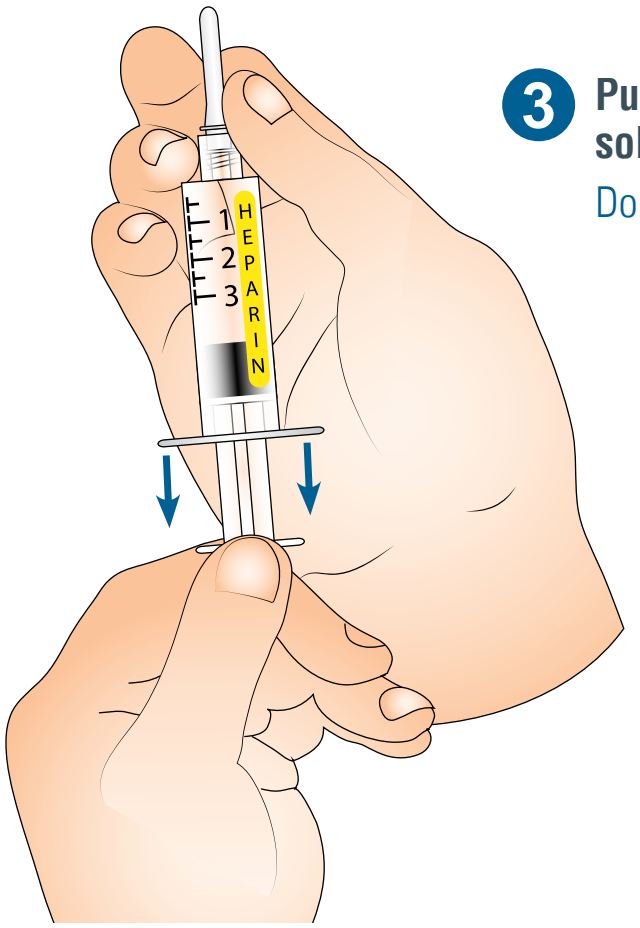
Preparing your locking solution syringe

1 **Open the locking solution syringe (heparin or sodium citrate) and place your syringe on your tray. Then, open one plastic cannula and leave it in its packaging "boat".**



2 **Unscrew the cap from the locking solution syringe and replace with the plastic cannula.**

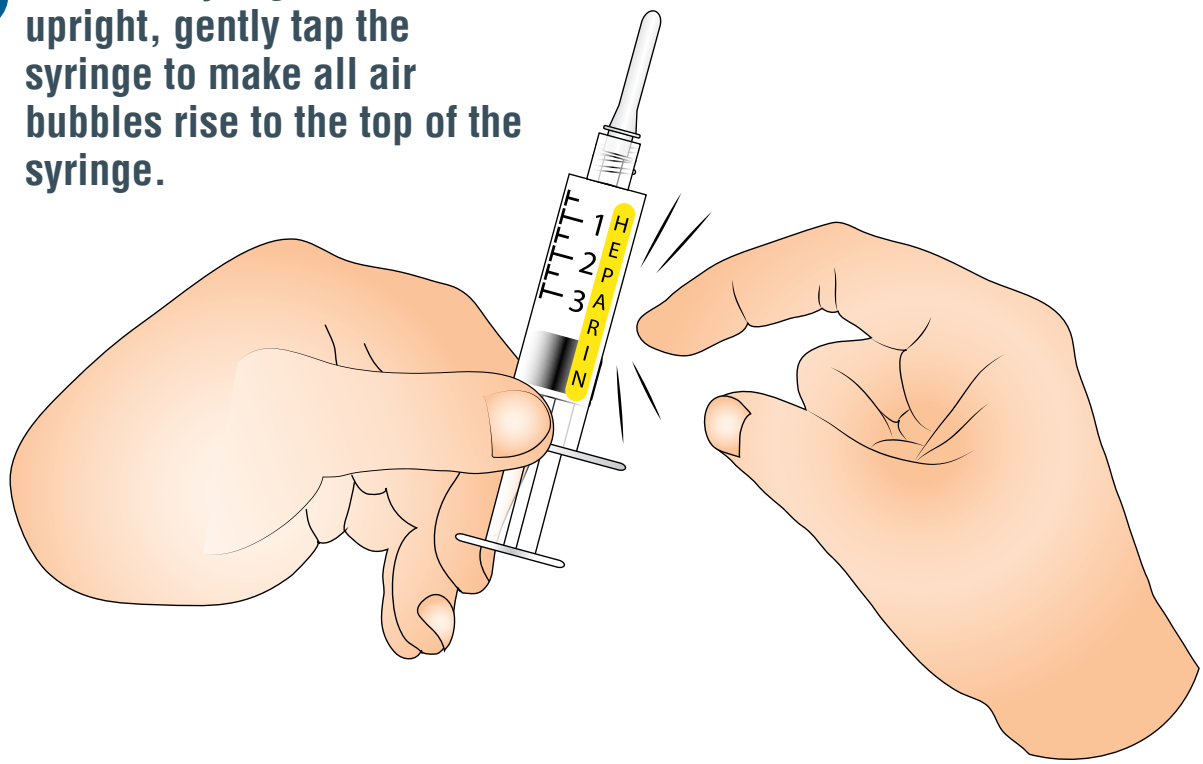


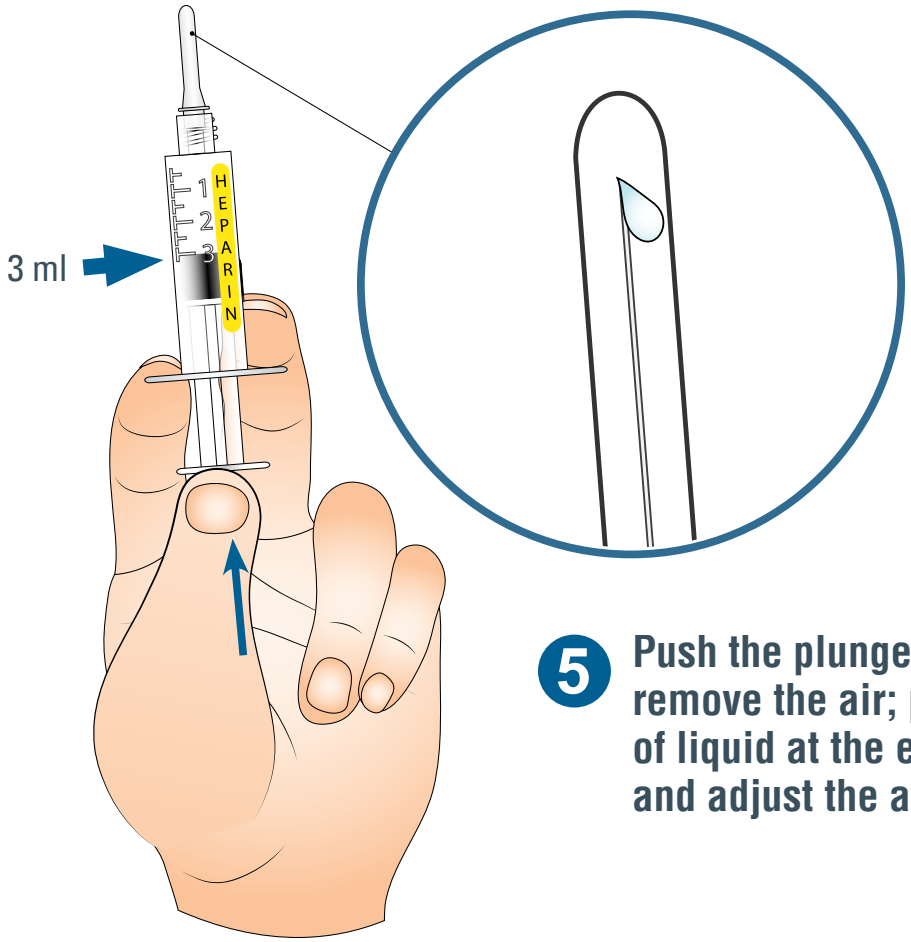


3 **Pull the plunger of the locking solution syringe to release pressure.**

Do not touch the piston of the syringe.

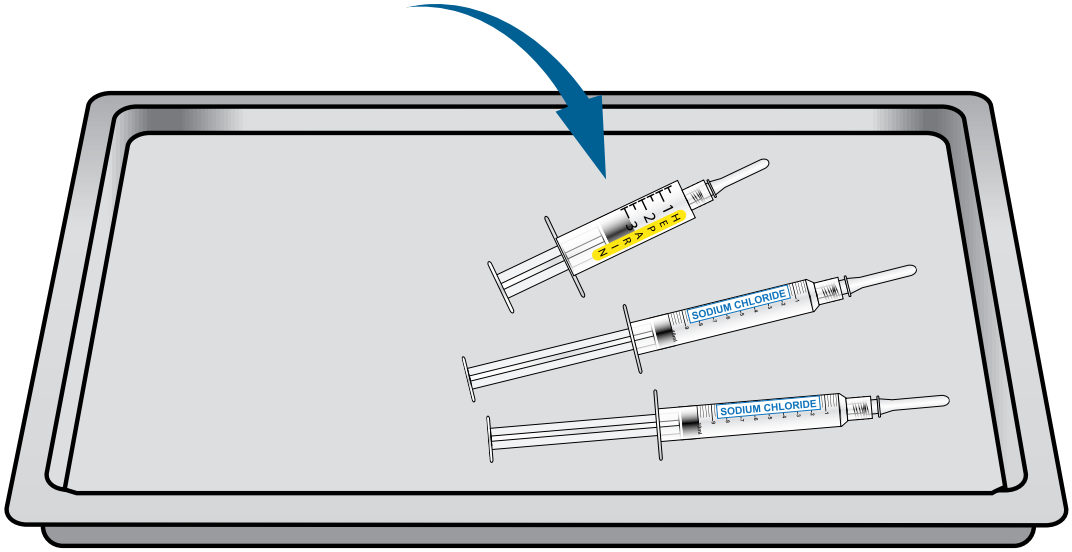
4 **With the syringe held upright, gently tap the syringe to make all air bubbles rise to the top of the syringe.**



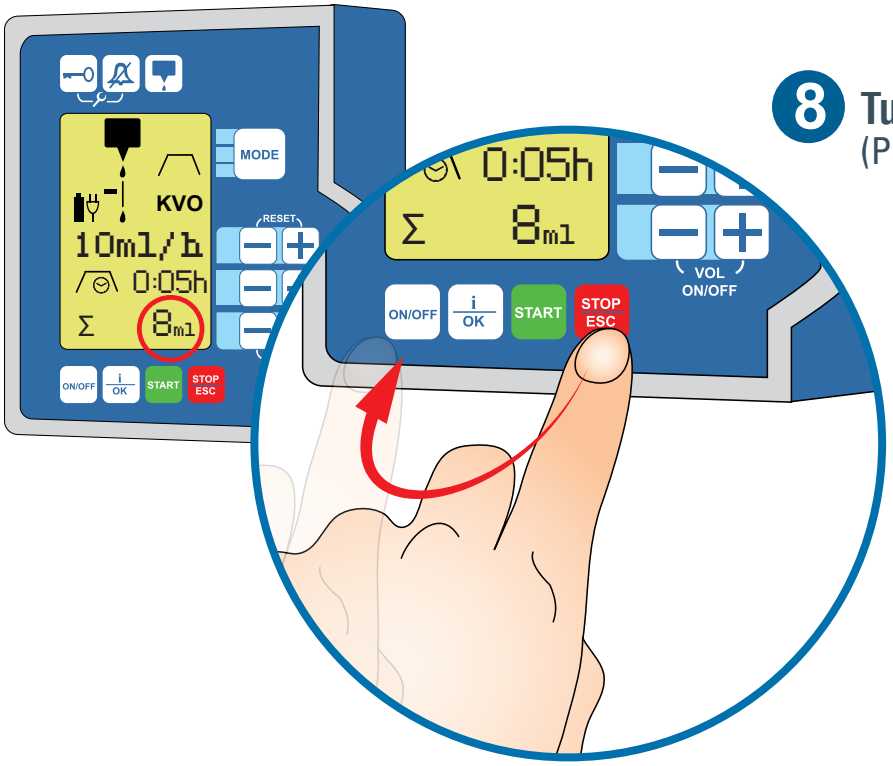


5 Push the plunger of the syringe slowly to remove the air; push until you see a drop of liquid at the end of the cannula. Verify and adjust the amount of liquid to 3 ml.

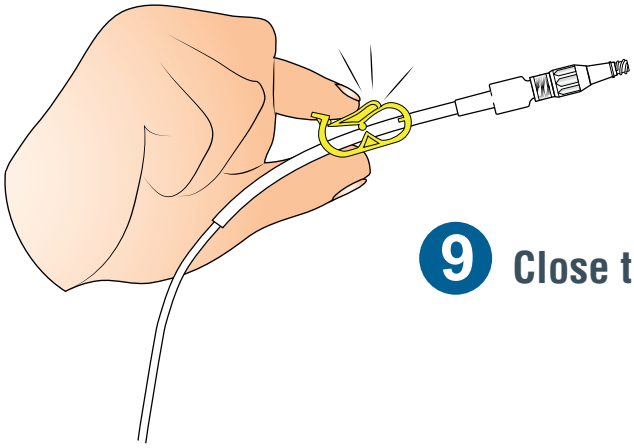
6 Place the prepared locking solution syringe back on the tray.



7 **Verify that the infusion is finished.**
(volume less than 10 ml left)



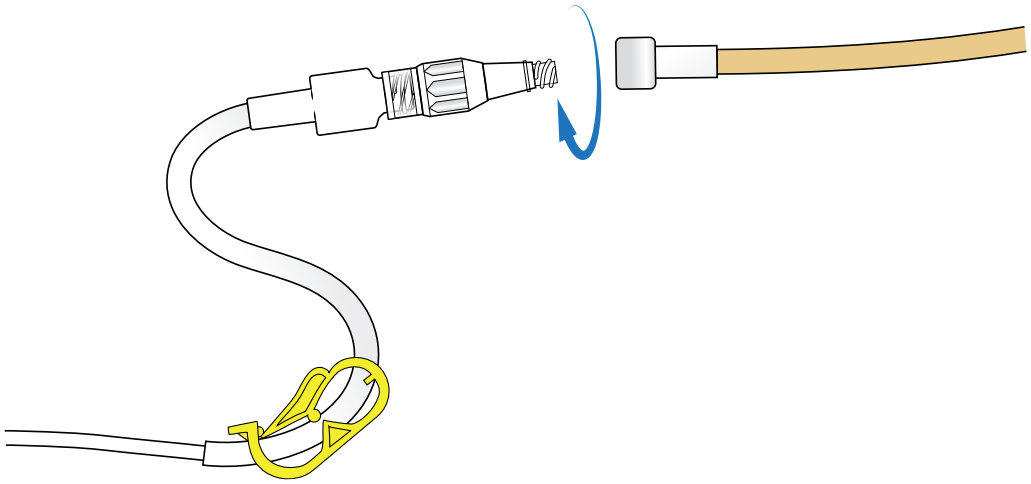
8 **Turn off the pump.**
(Press STOP then OFF)

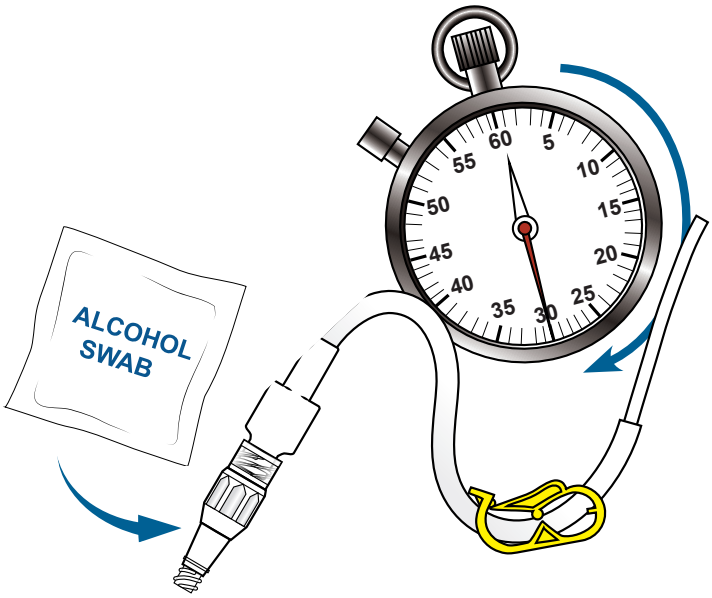


9 **Close the clamp on your catheter.**

10 **Clean your hands with an alcohol-based hand cleanser (e.g. Purell®). Rub the cleanser all over your hands until completely dry.**

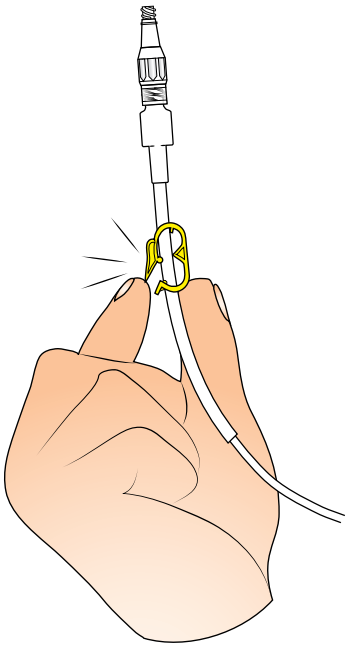
11 Disconnect the tubing from your catheter by unscrewing it.



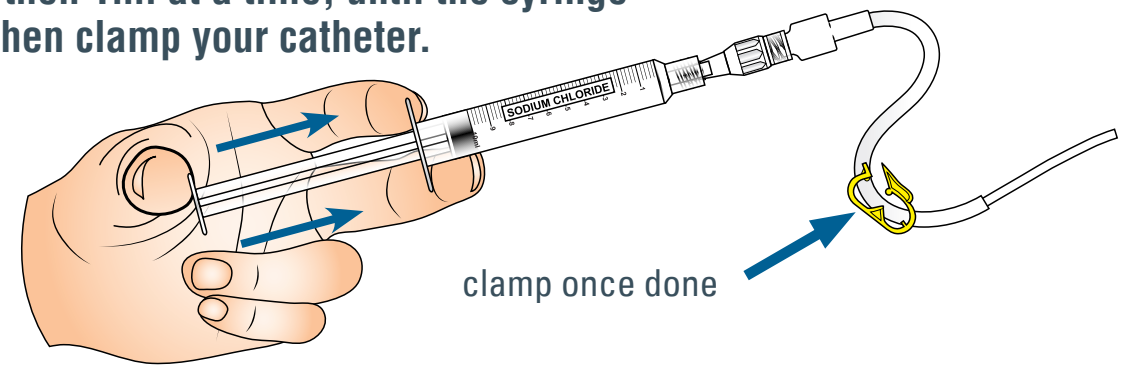


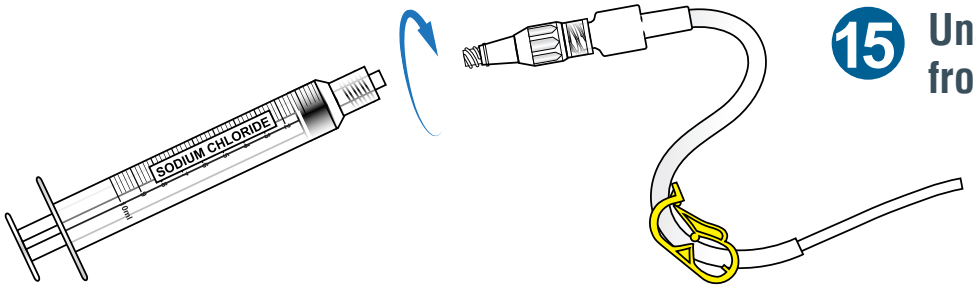
12 Scrub the injection cap of your catheter with an alcohol swab for 30 seconds; let it air dry for 30 seconds.

13 Open the clamp of your catheter.



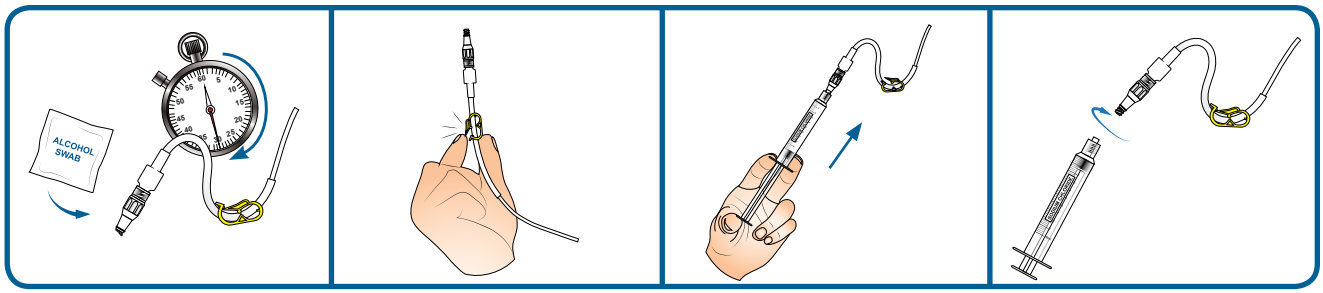
14 Screw the syringe to your catheter and flush it with 10 ml of sodium chloride – 5 ml without stopping, then 1ml at a time, until the syringe is empty then clamp your catheter.



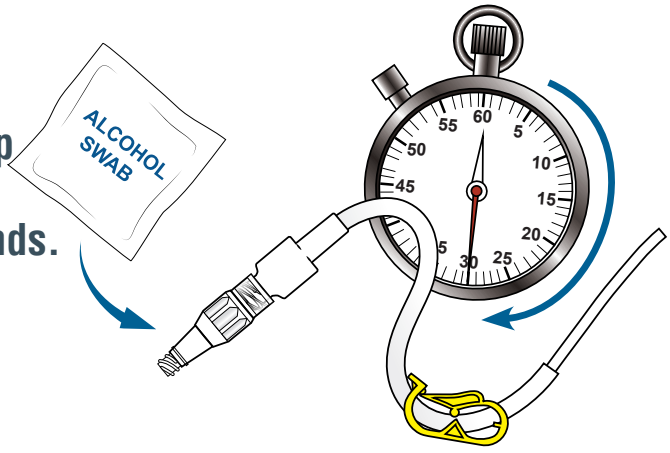


15 Unscrew the syringe from your catheter.

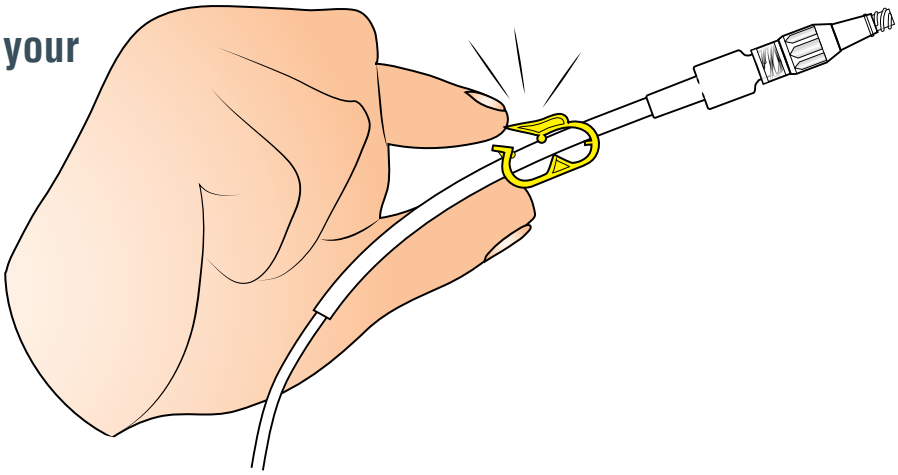
15a REPEAT the steps 12-15 with the second syringe of sodium chloride.

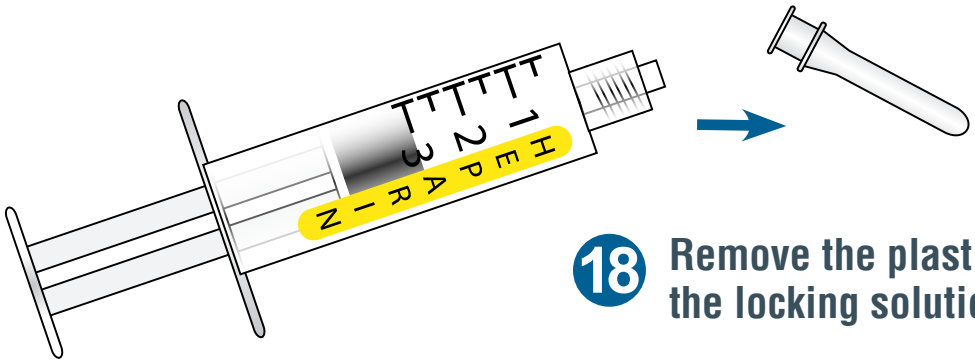


16 Again, scrub the injection cap with an alcohol swab for 30 seconds. Let dry for 30 seconds.



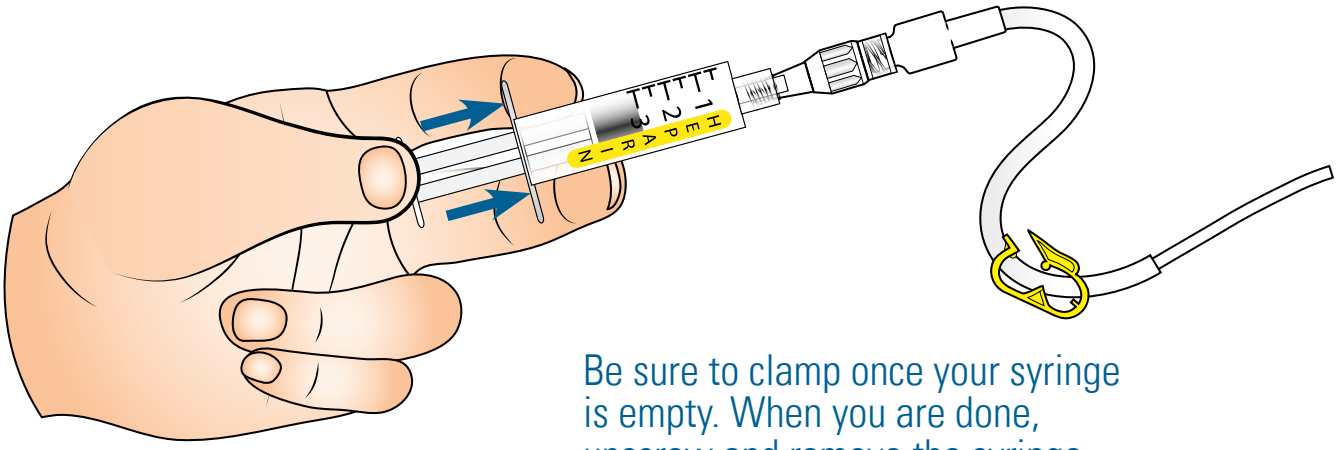
17 **Open the clamp on your catheter again.**





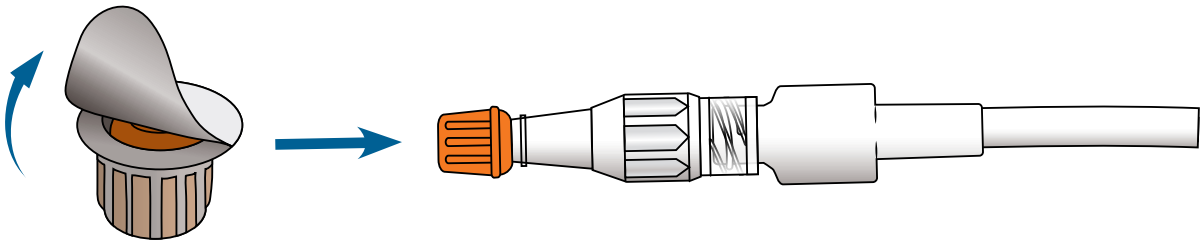
18 **Remove the plastic cannula from the locking solution syringe.**

19 **Screw the syringe to your catheter and flush your catheter with 3 ml of locking solution.**

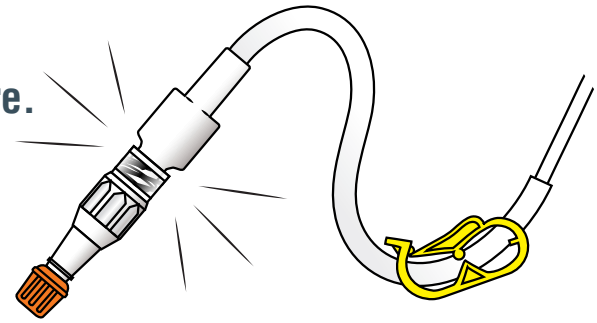


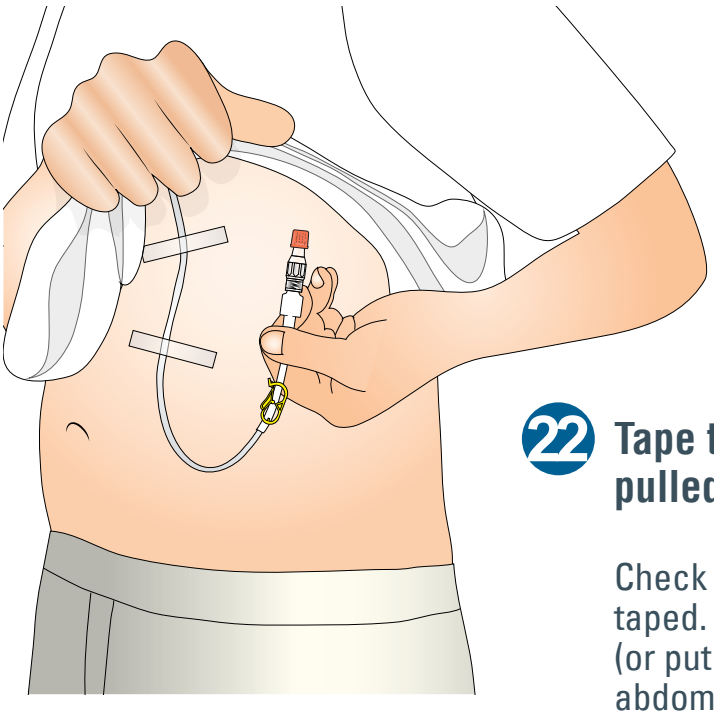
Be sure to clamp once your syringe is empty. When you are done, unscrew and remove the syringe.

20 Screw an alcohol cap (e.g. SwabCap®) on the injection cap of your catheter.



21 Check that the injection cap is secure.

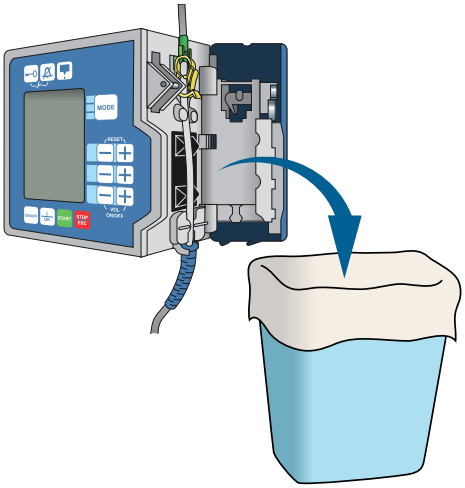




22 Tape the catheter to prevent it from being pulled accidentally at the exit site.

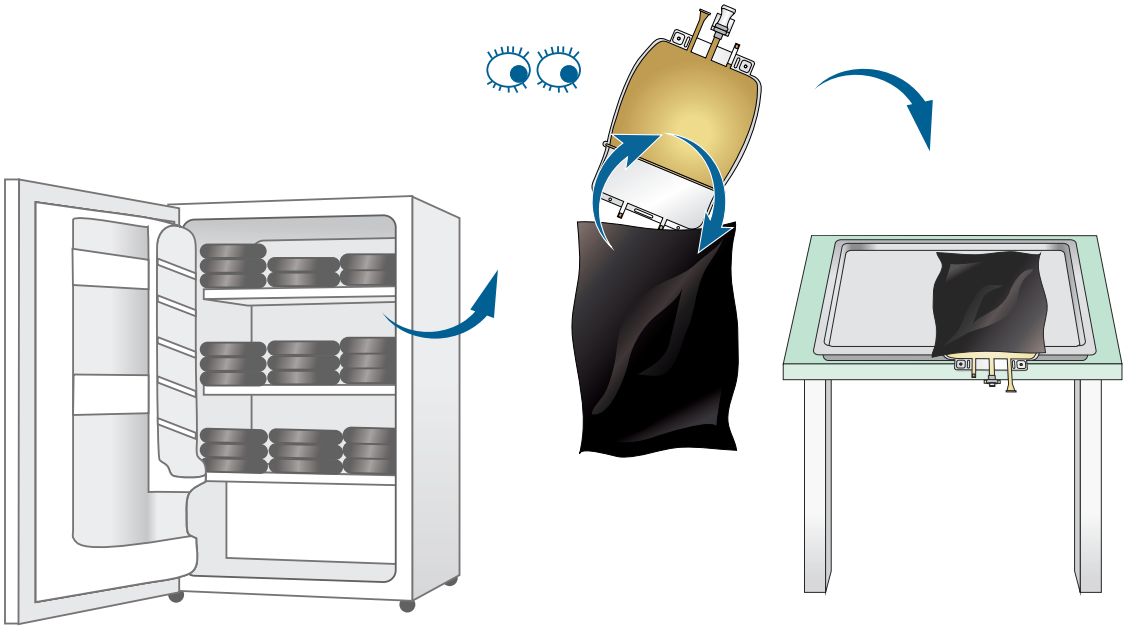
Check it regularly to make sure that it remains well taped. Tape the end of the catheter onto your chest (or put it in your bra), keeping it away from your abdomen (stoma, fistula or other wound dressing).

* **For a tunneled catheter or a PICC:**
If you have a double lumen catheter and a lumen is not in use, **the unused lumen needs to be flushed once a week.**

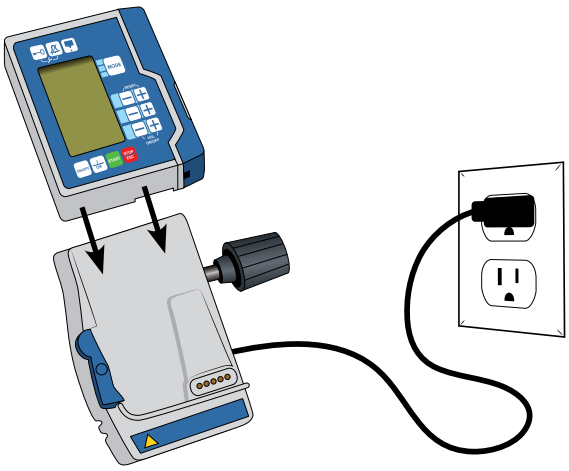


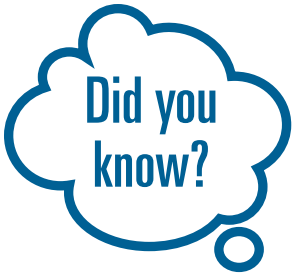
23 Remove the tubing from the pump and throw it away.

24 If you are infusing daily take out a new PN bag from the fridge, check its contents, then place it back in the black bag. Put it on your tray/counter so it can warm up gradually throughout the day.



25 Make sure to put your pump on the charger.



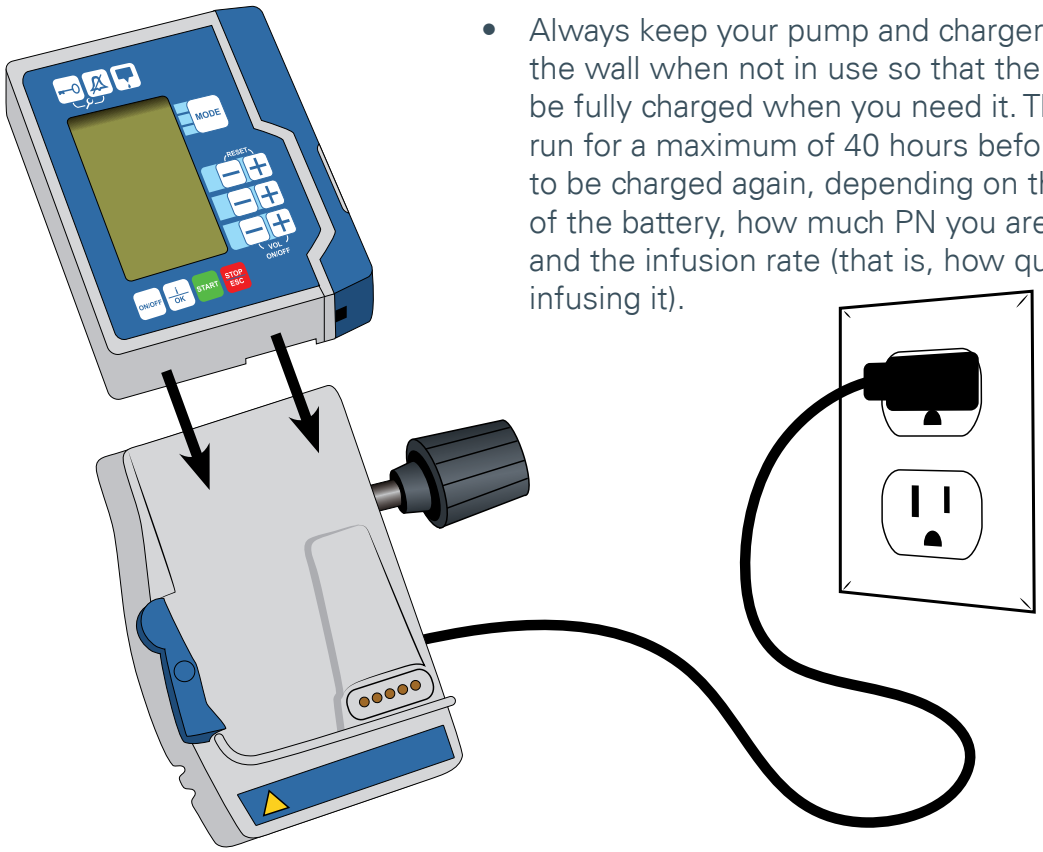


Your PN pump is precise (give or take 6%). After the infusion is finished, if you notice there is leftover PN, measure it and write the amount down. If it is more than 100 ml, call us.

To measure, remove the tubing and empty what is left in the PN bag into a measuring cup. You will need to call the supplier to have the pump changed if it has happened more than once.

How to take care of your pump battery

- Always keep your pump and charger plugged into the wall when not in use so that the battery will be fully charged when you need it. The pump can run for a maximum of 40 hours before it needs to be charged again, depending on the memory of the battery, how much PN you are infusing and the infusion rate (that is, how quickly you are infusing it).



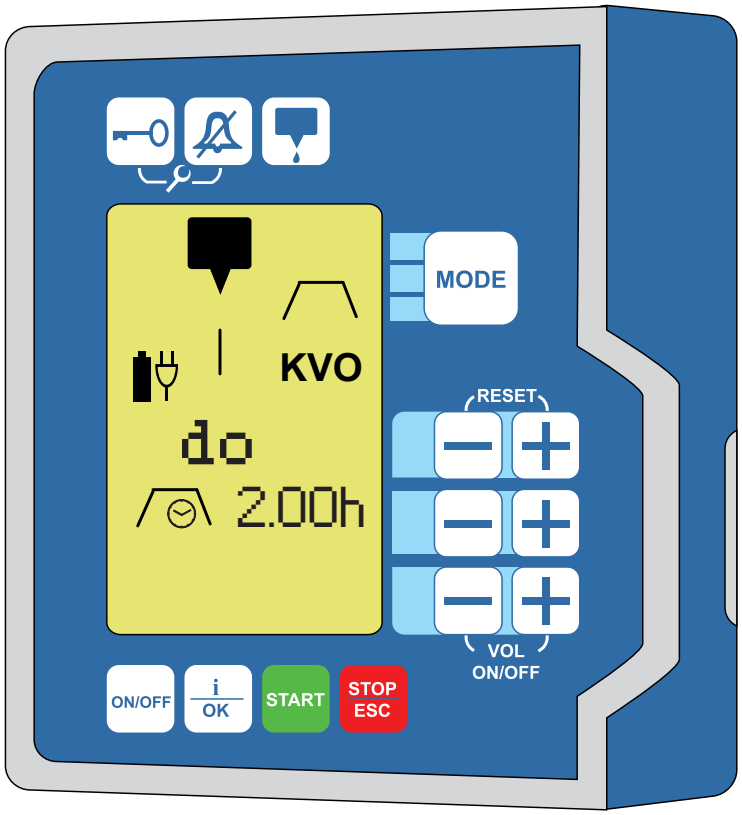
- For any infusion that lasts more than 16 hours, you may have to put the pump into its charger and plug it into a wall outlet during the night.
- Open the small pocket in the front of the backpack during the night so you can hear the pump's alarm.
- Do not store the pump at low or 0% battery. This may permanently damage the battery.
- Use your pump regularly to keep your pump battery working.
- If you have 2 pumps, use them on alternate days.

Part 3: Special situations

Finishing your infusion

& preparing the next bag (for the evening) by adding vitamins *in the morning*

If your PN solution contains a large amount of sugar (dextrose), **before** starting your infusion, you will program a taper down of usually 2 hours. This will give your body a chance to adjust to the high-sugar PN coming to an end.

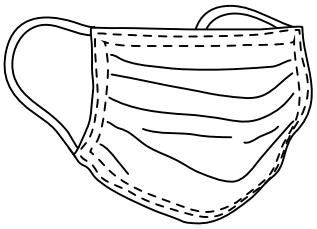


For example:

Total amount of PN: 1000 ml
Total infusion period: 10 hours
Taper down period: 2 hours

This will deliver your infusion at a rate of 112 ml per hour over 8 hours (calculated by the pump). After this, your infusion rate will slow down gradually over the last 2 hours, until it finally reaches 10 ml per hour. Then your pump can be stopped.

1 Gather these supplies:



Mask

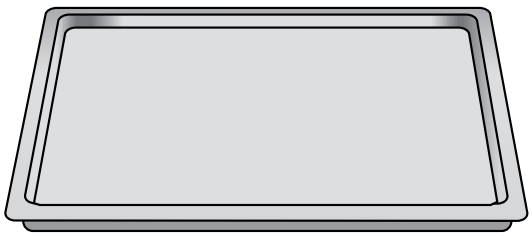
Antimicrobial Soap
(e.g. Dexidin®)

Alcohol-based
Hand Cleanser
(e.g. Purell®)

Rubbing
Alcohol (70%)

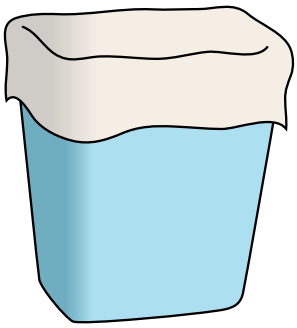
Paper Towel

Cleaning
Product



Tray

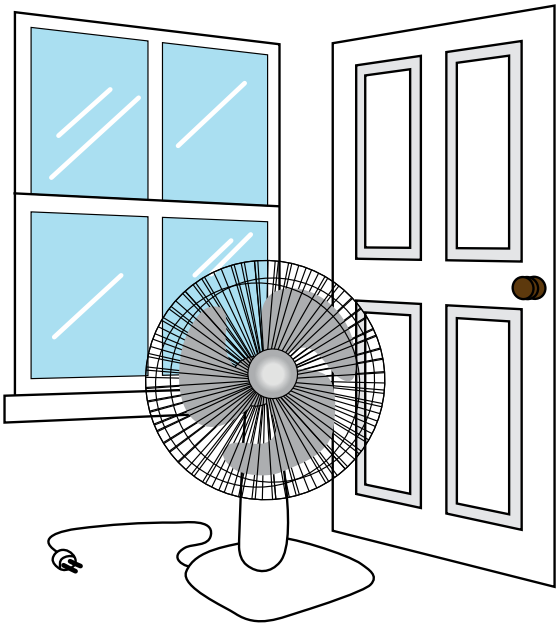
Sharps Container
(for used needles)



Garbage Can

2 Put on a mask.

Make sure that anyone else in the room also wears a mask.



3 Close all windows, doors and turn off fans.

4 Place the garbage can and sharps container close to your PN work area.

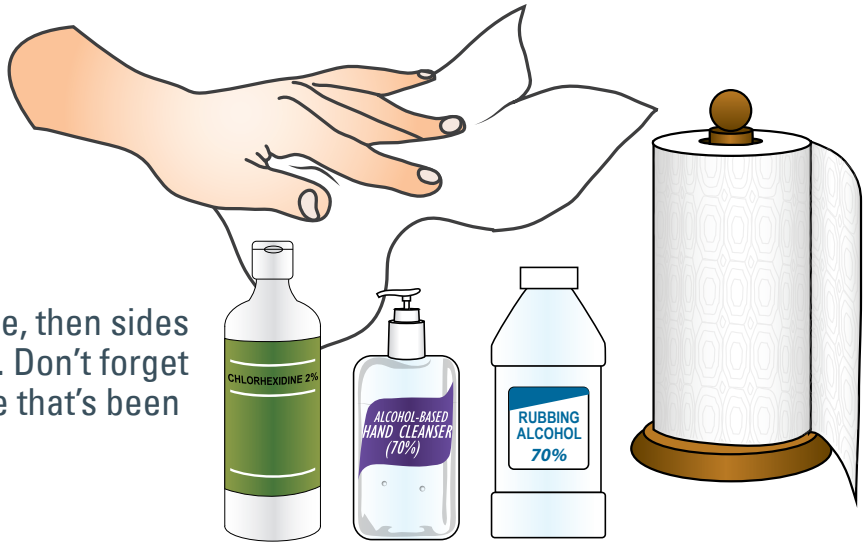
5 Clean the sink with your usual product and then with alcohol.

Start with faucet, sides of sink and clean your way down toward the drain. Don't come back to an already cleaned area.

6 Take off your watch and rings and do a regular hand wash.

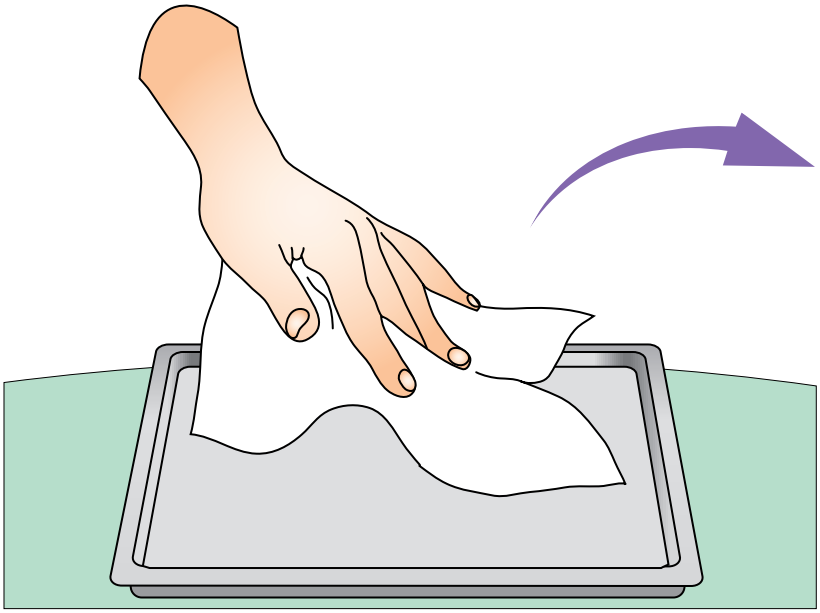
7 Clean with alcohol:

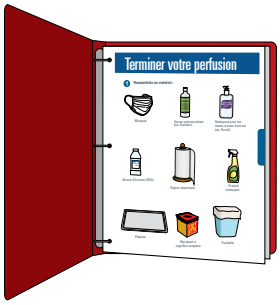
- The alcohol bottle
- The antimicrobial soap bottle (e.g. Dexidin®)
- The alcohol-based hand cleanser bottle (e.g. Purell®)
- The paper towel dispenser

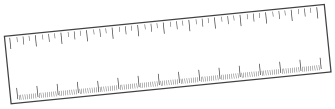


Start at the top of the bottle, then sides and finish with the bottom. Don't forget to place them on a surface that's been cleaned already.

8 Clean the work table and tray with alcohol, along with your PN binder, the pages in plastic sheets and the ruler that you will be using.

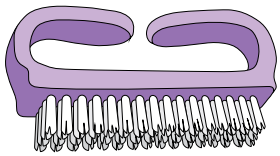






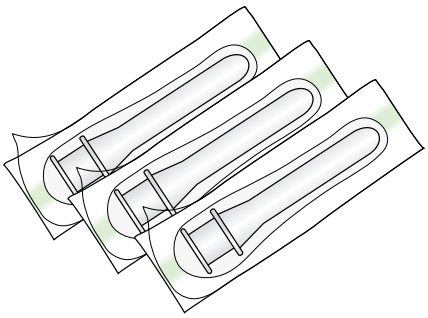
9 Clean your hands with the alcohol-based hand cleanser (e.g. Purell®). Rub the cleanser all over your hands until completely dry.

10 Gather your equipment:



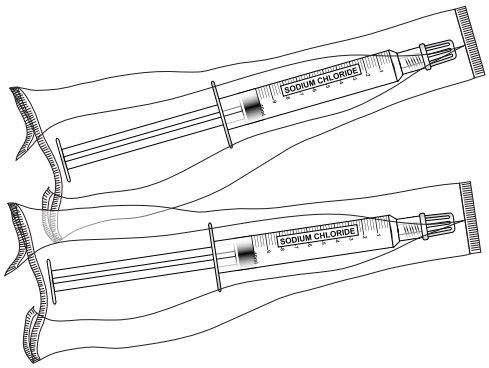
Nail Brush

(10) Alcohol Swabs

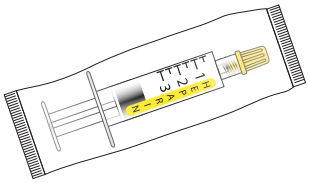


(3) Plastic Cannulas

(1) Alcohol Cap
(e.g. SwabCap®)



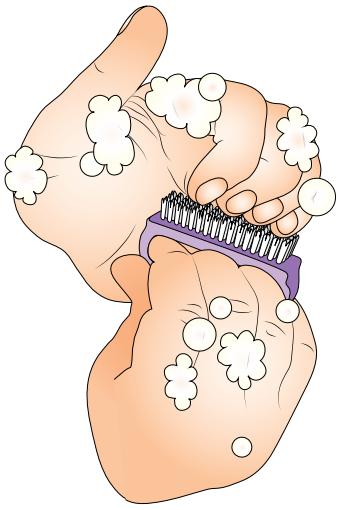
(2) Sodium chloride
(NaCl) syringes (10 ml)



(1) Locking Solution
Syringe (3 ml)
(Heparin or Sodium Citrate)

* Check the content and expiry date of each item!!

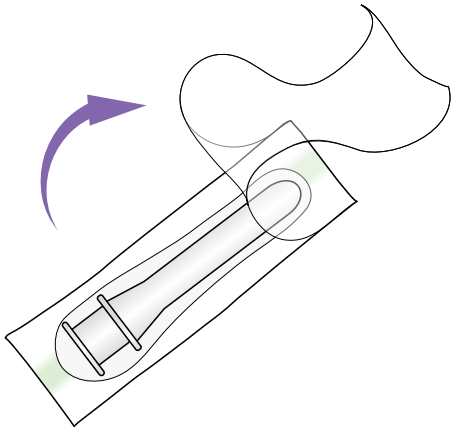
11 Wash your hands for 2 minutes using the correct hand washing technique, antimicrobial soap (e.g. Dexidin®) and nail brush.

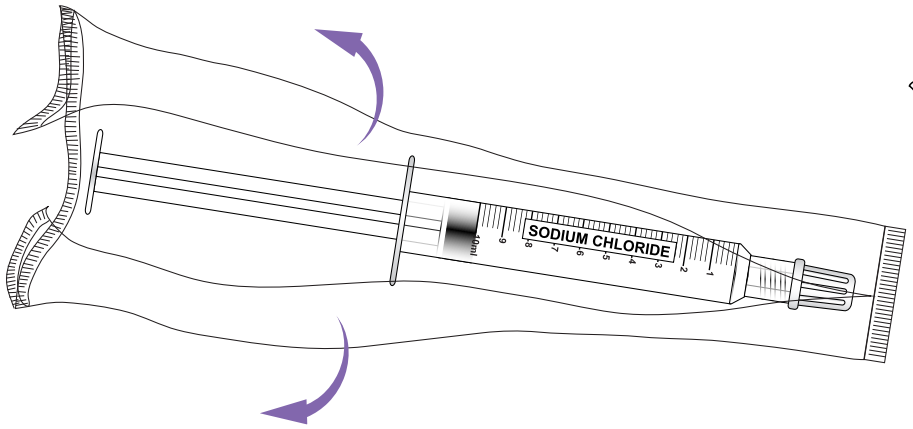


Preparing your sodium chloride syringes

2 sodium chloride syringes will be used to flush your catheter.

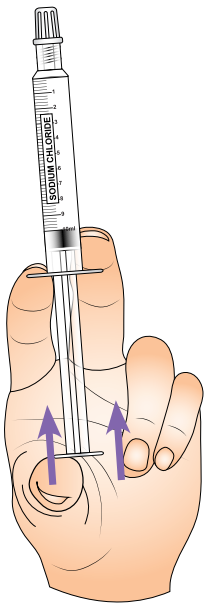
1 **Open one sodium chloride syringe and place your syringe on your tray. Then, open one plastic cannula and leave it in its packaging "boat".**



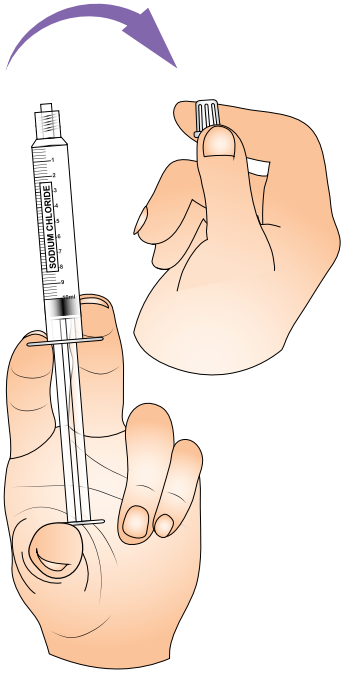


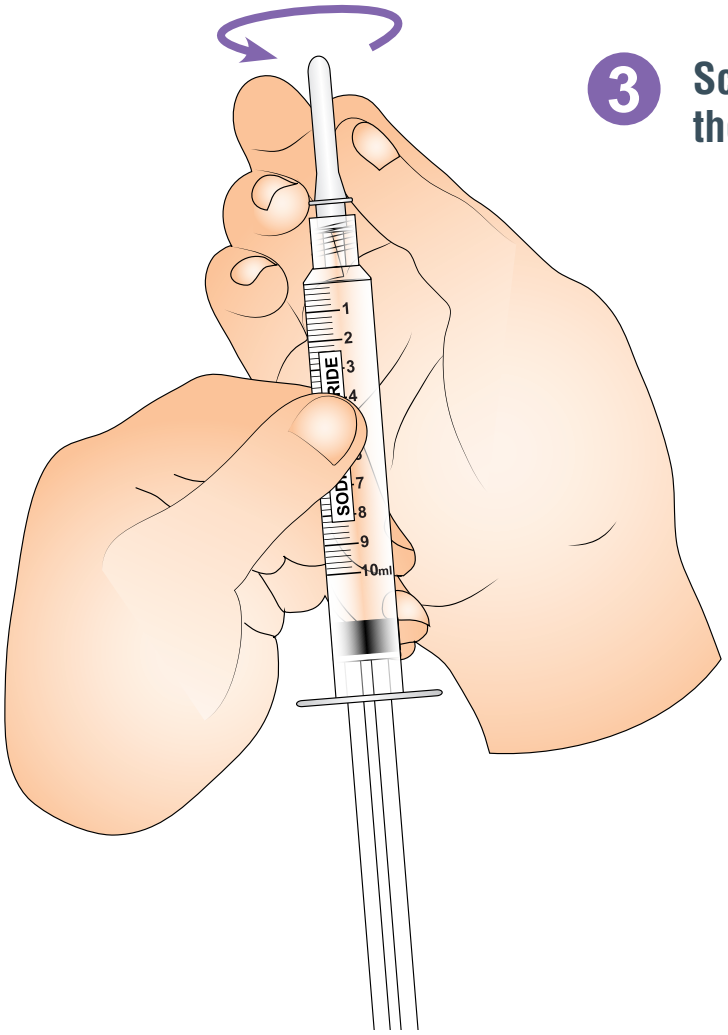
2 **With the white cap still in place, push the plunger of the sodium chloride syringe to release pressure. Then unscrew the white cap.**

a)



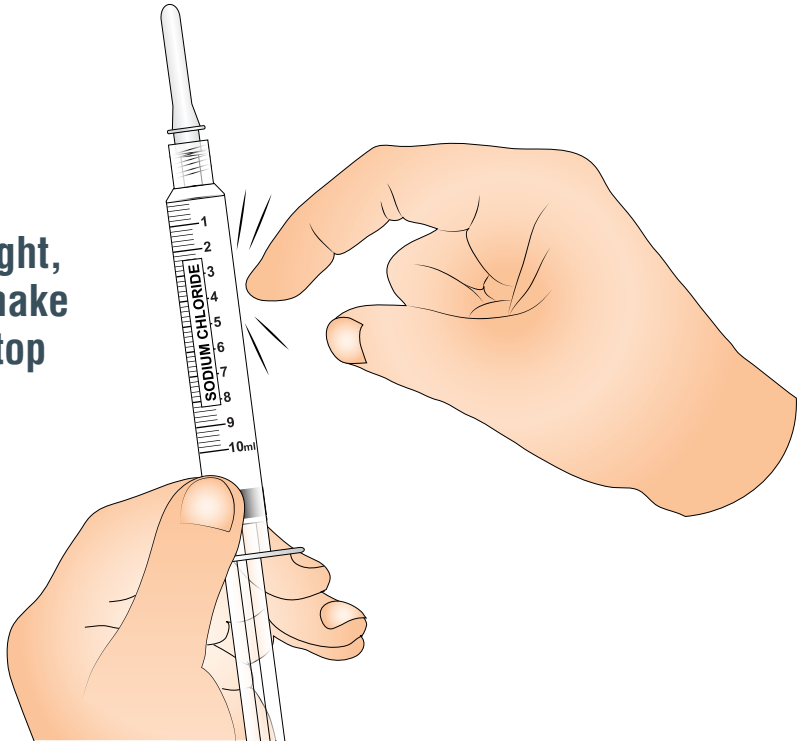
b)

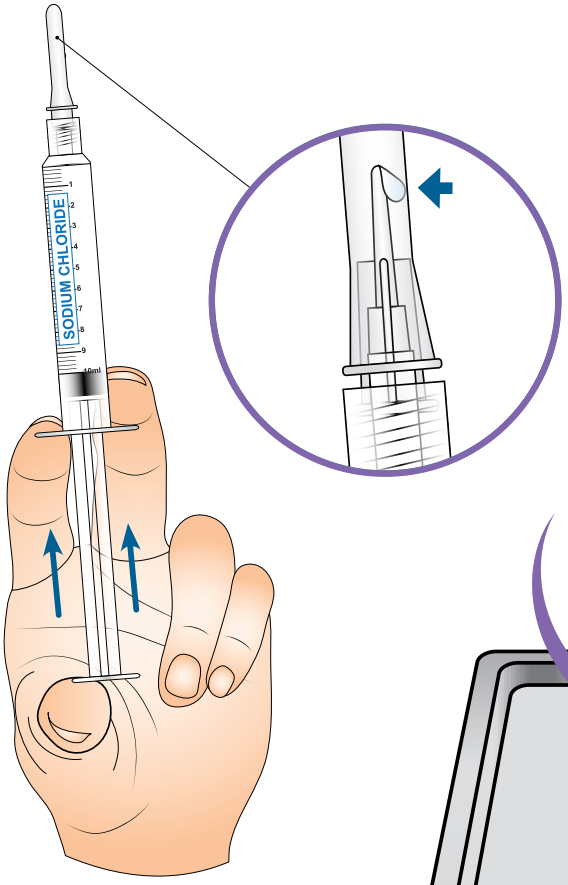




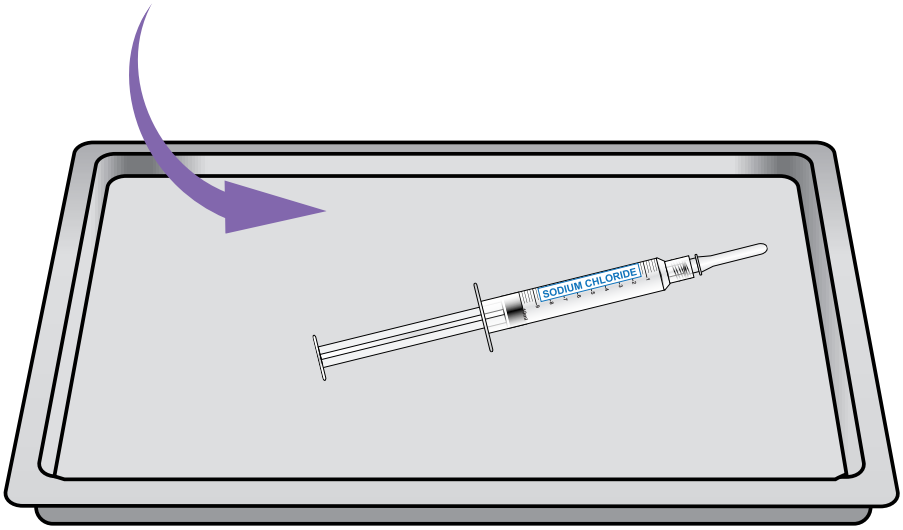
3 Screw the plastic cannula onto the sodium chloride syringe.

4 With the syringe held upright, gently tap the syringe to make all air bubbles rise to the top of the syringe.



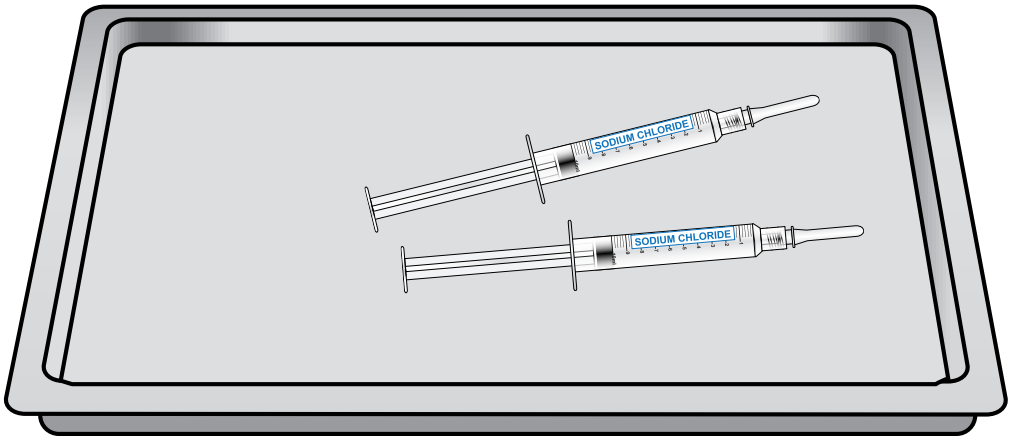


5 Push the plunger of the syringe very slowly to remove the air, pushing until you see a drop of liquid at the end of the cannula. Verify and adjust the amount of liquid to 10 ml.



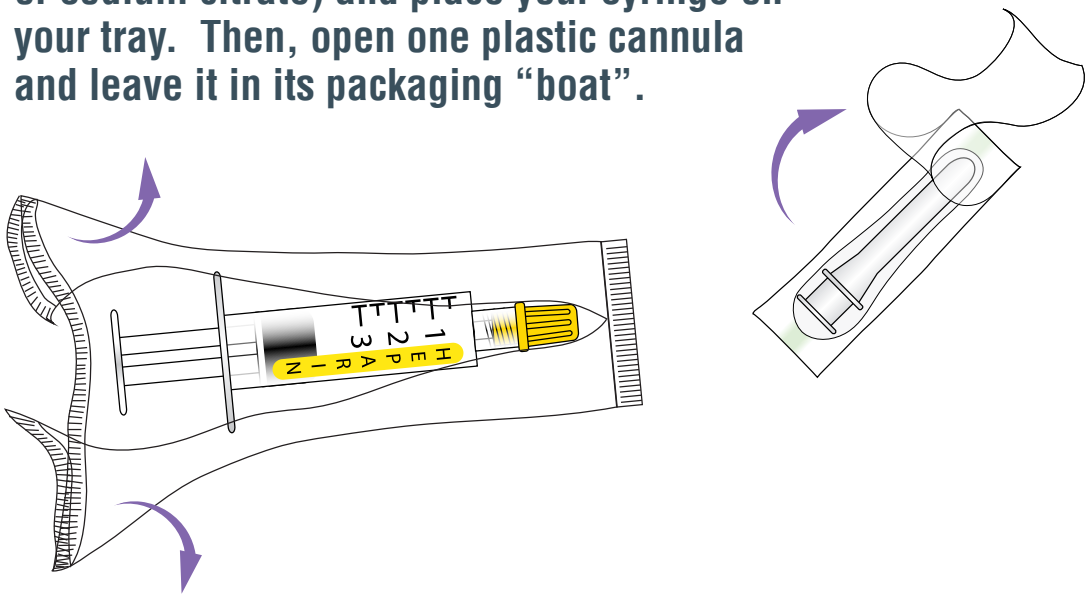
6 Place the prepared syringe on the tray.

7 REPEAT the steps 1-6 with the second syringe of sodium chloride.

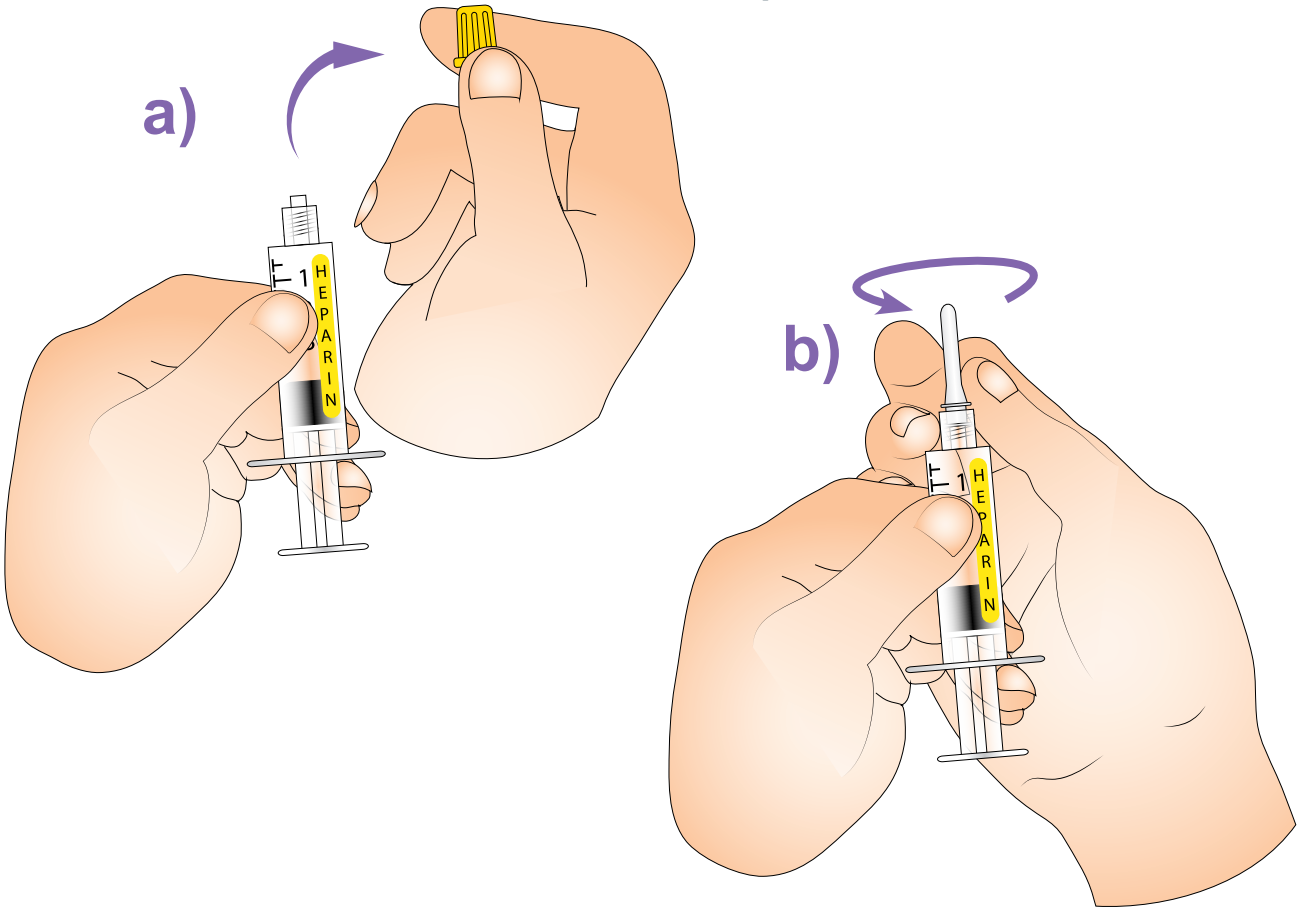


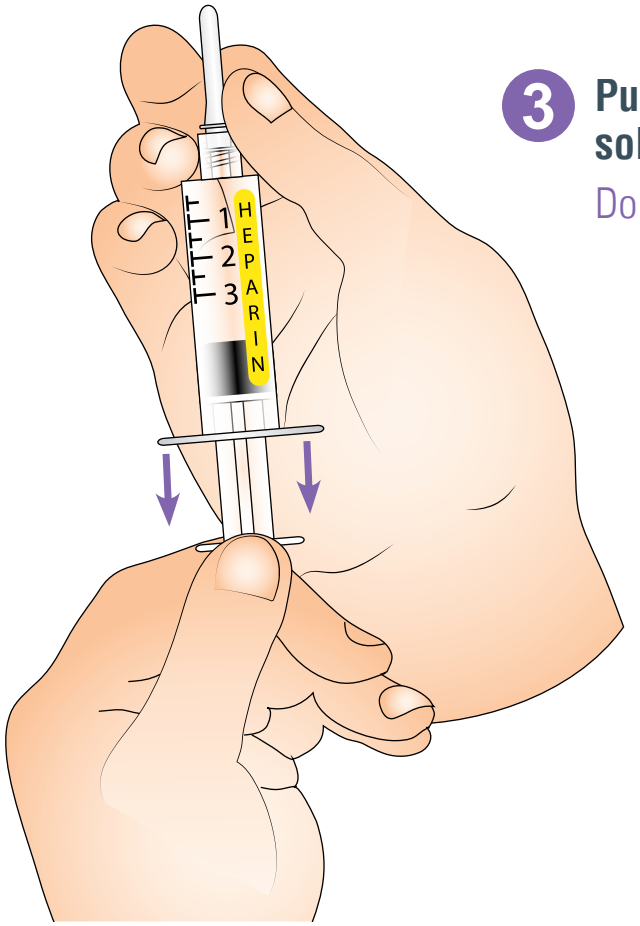
Preparing your locking solution syringe

1 **Open the locking solution syringe (heparin or sodium citrate) and place your syringe on your tray. Then, open one plastic cannula and leave it in its packaging "boat".**



2 **Unscrew the cap from the locking solution syringe and replace with the plastic cannula.**

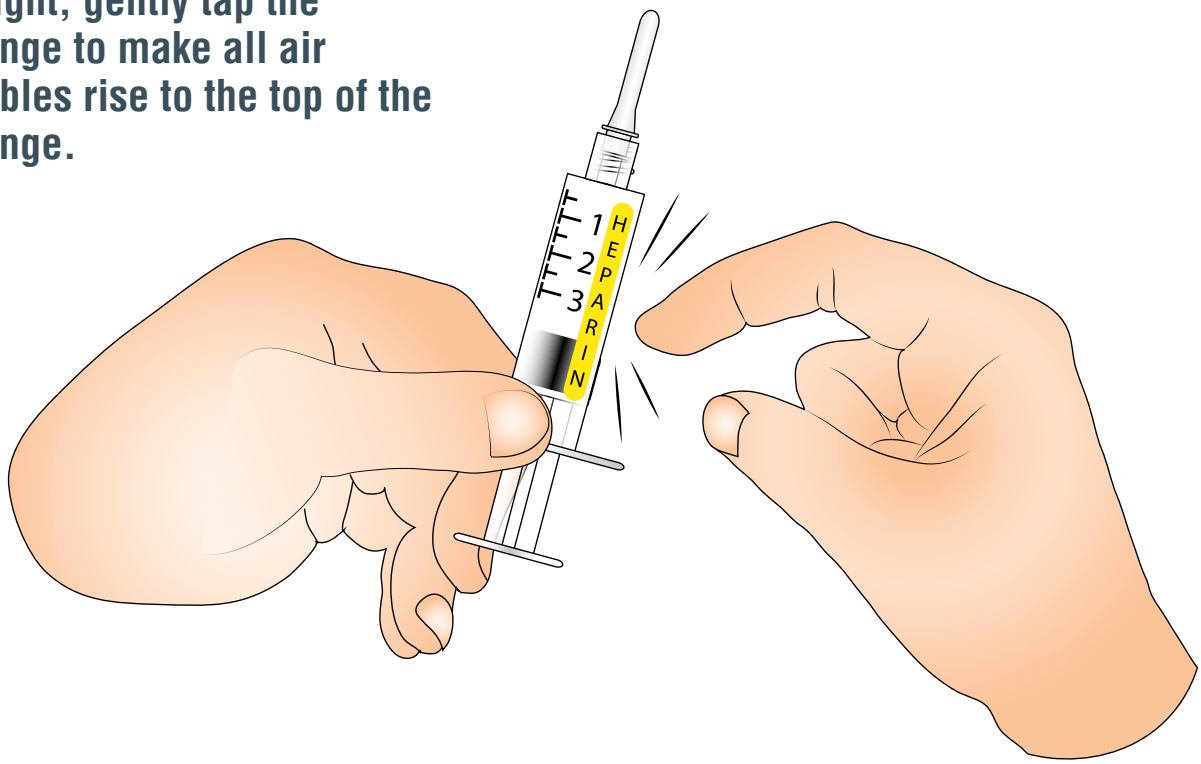


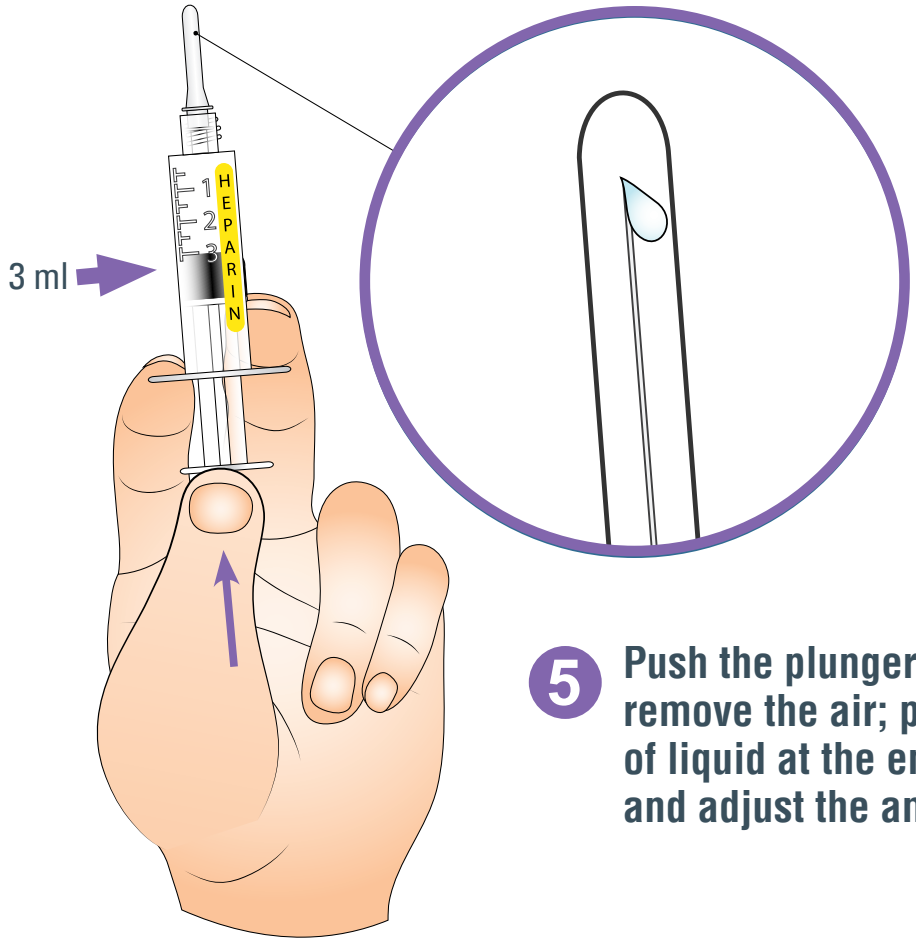


3 **Pull the plunger of the locking solution syringe to release pressure.**

Do not touch the piston of the syringe.

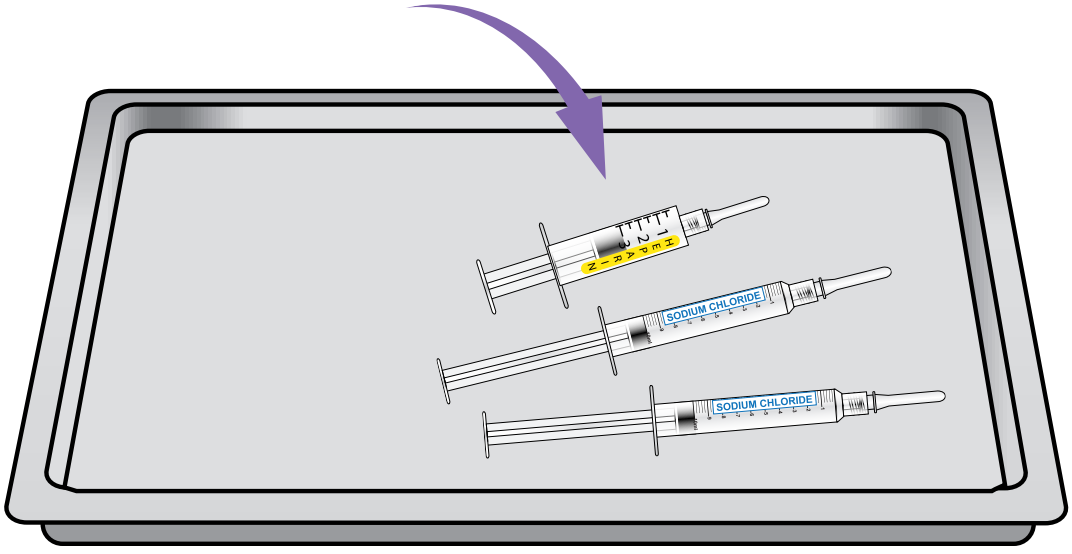
4 **With the syringe held upright, gently tap the syringe to make all air bubbles rise to the top of the syringe.**



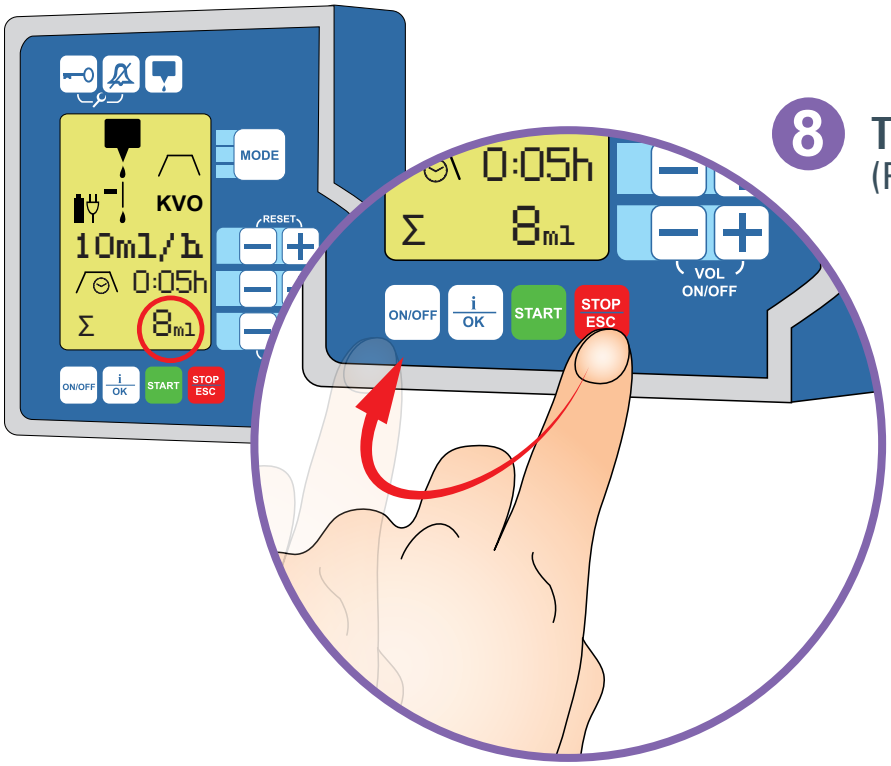


5 **Push the plunger of the syringe slowly to remove the air; push until you see a drop of liquid at the end of the cannula. Verify and adjust the amount of liquid to 3 ml.**

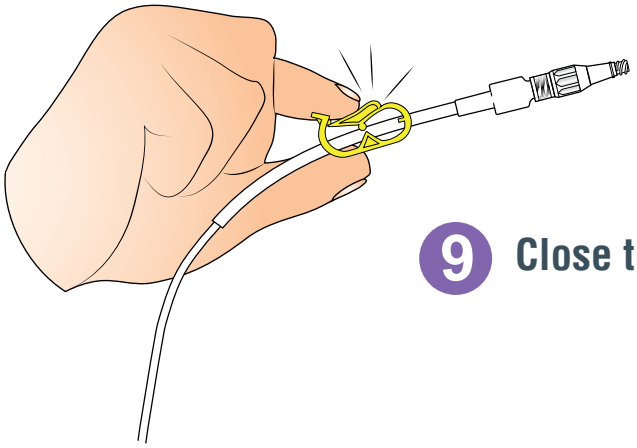
6 **Place the prepared locking solution syringe back on the tray.**



7 Verify that the infusion is finished.
(Volume less than 10 ml left)



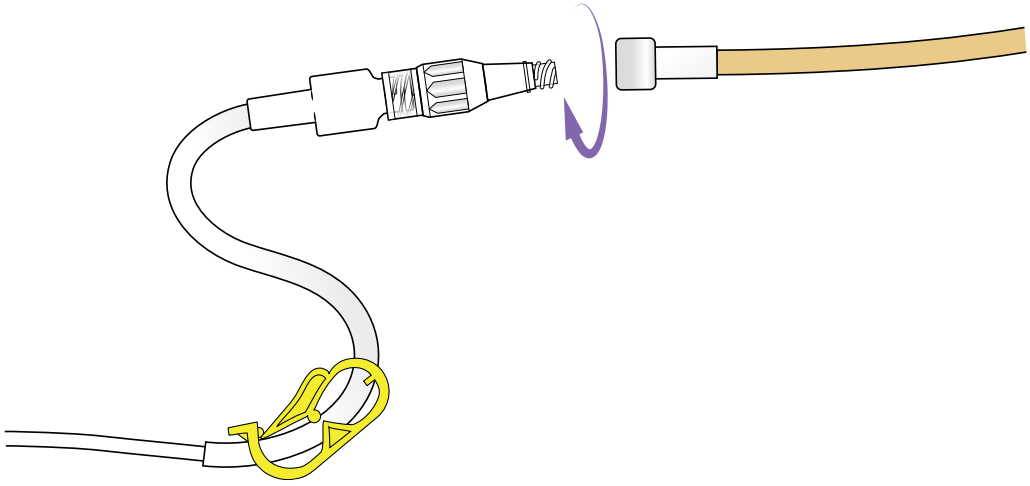
8 Turn off the pump.
(Press STOP then OFF)

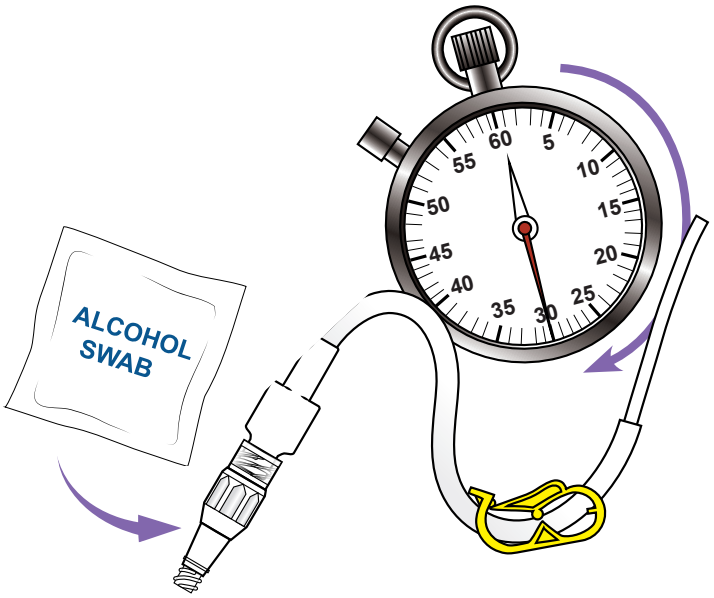


9 Close the clamp on your catheter.

10 Clean your hands with an alcohol-based hand cleanser (e.g. Purell®). Rub the cleanser all over your hands until completely dry.

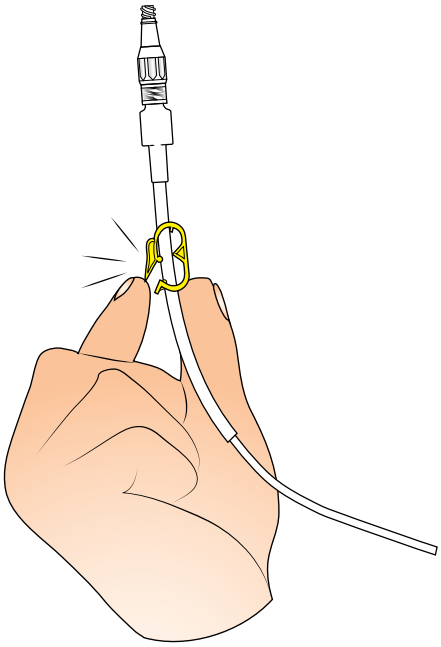
11 Disconnect the tubing by unscrewing it from your catheter.



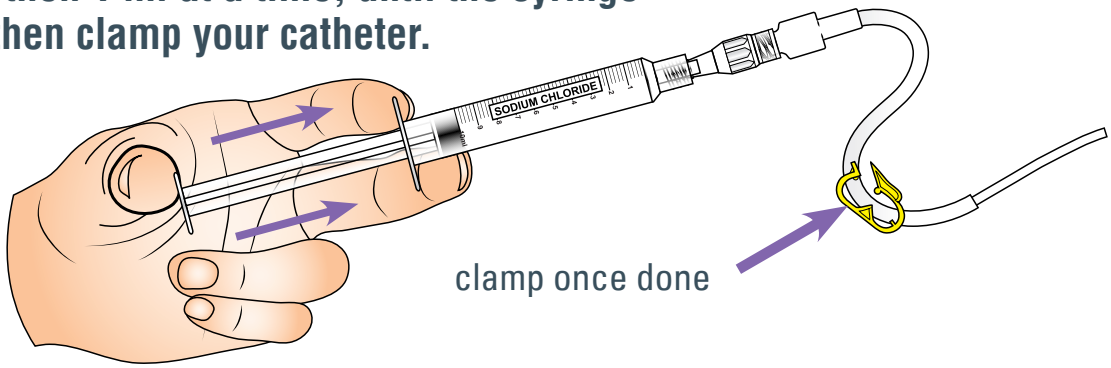


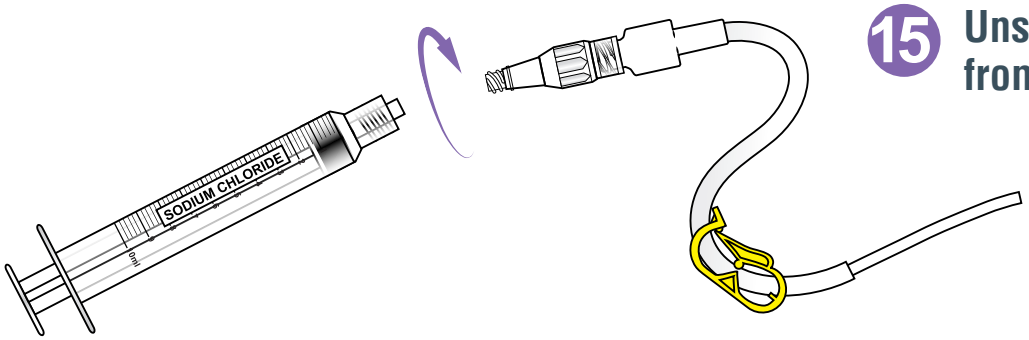
12 Scrub the injection cap of your catheter with an alcohol swab for 30 seconds; let it air dry for 30 seconds.

13 Open the clamp of your catheter.



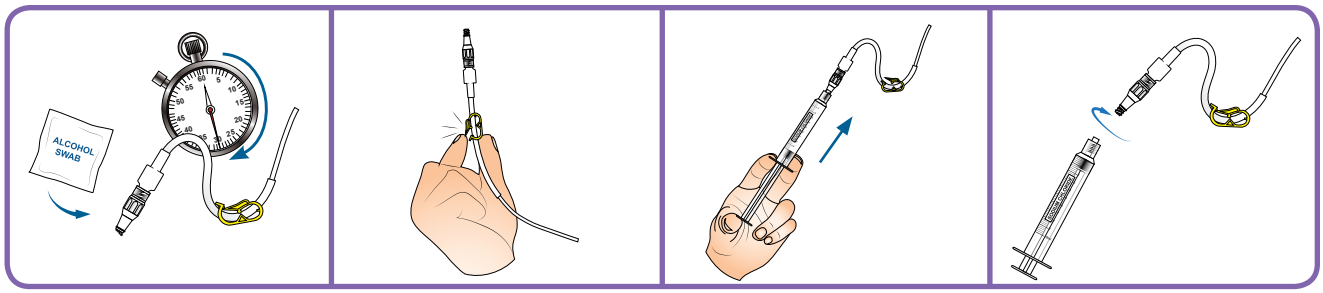
14 **Screw the syringe to your catheter and flush it with 10 ml of sodium chloride – 5 ml without stopping, then 1 ml at a time, until the syringe is empty then clamp your catheter.**



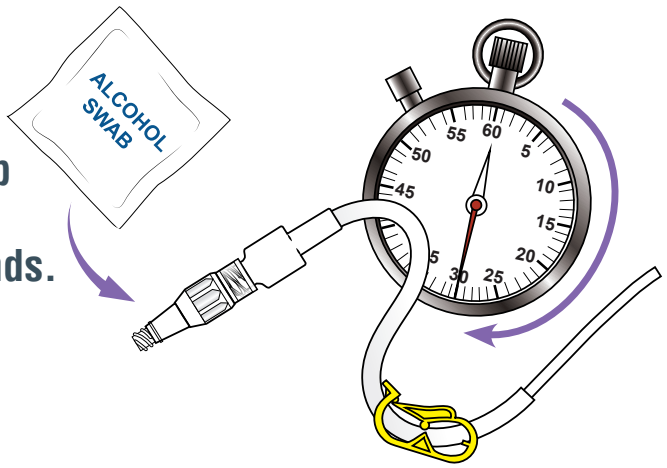


15 **Unscrew the syringe from your catheter.**

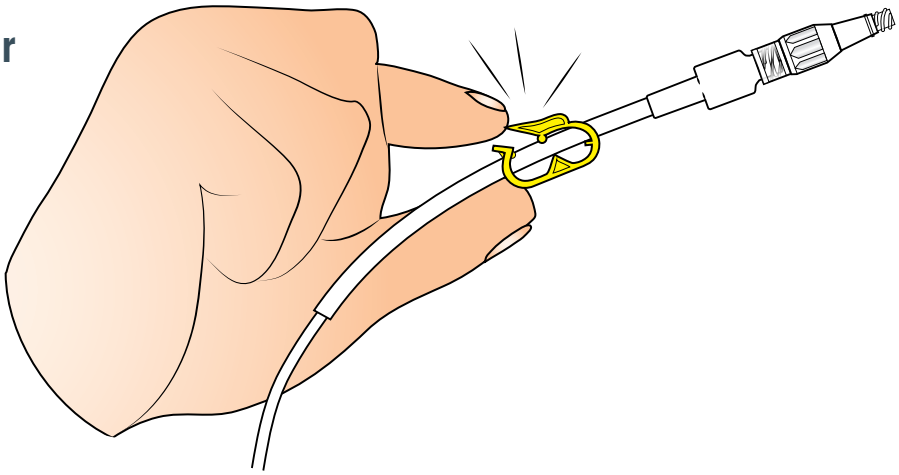
15a **REPEAT the steps 12-15 with the second syringe of sodium chloride.**

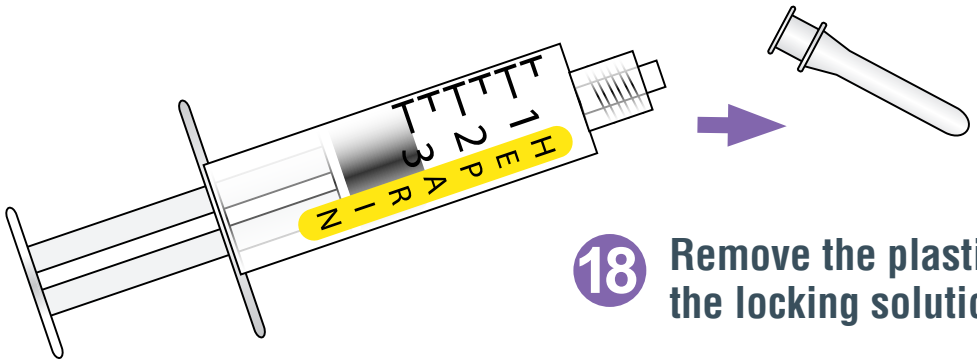


16 **Again, scrub the injection cap with an alcohol swab for 30 seconds. Let dry for 30 seconds.**



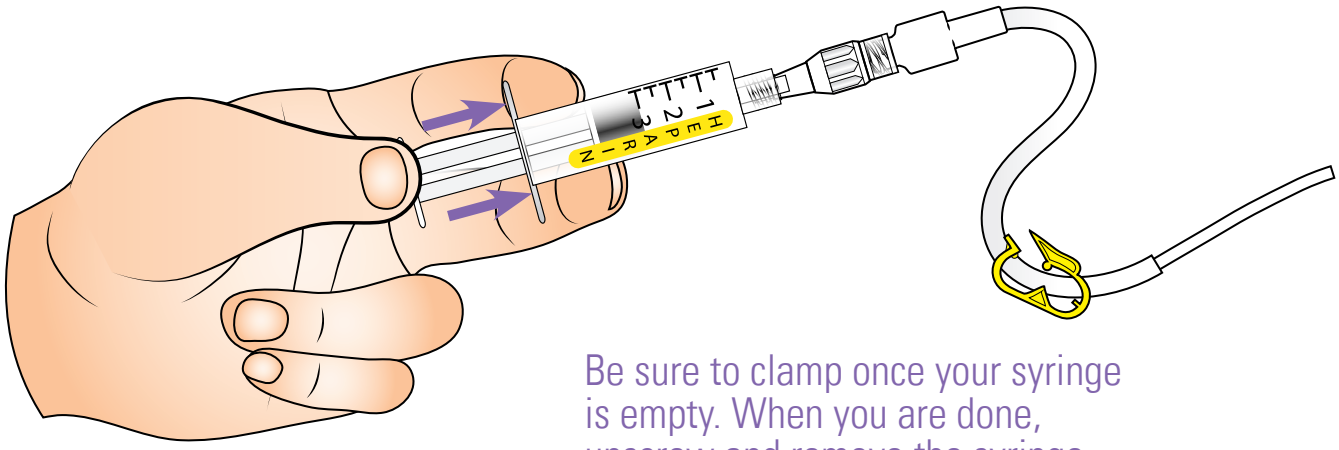
17 **Open the clamp on your catheter again.**





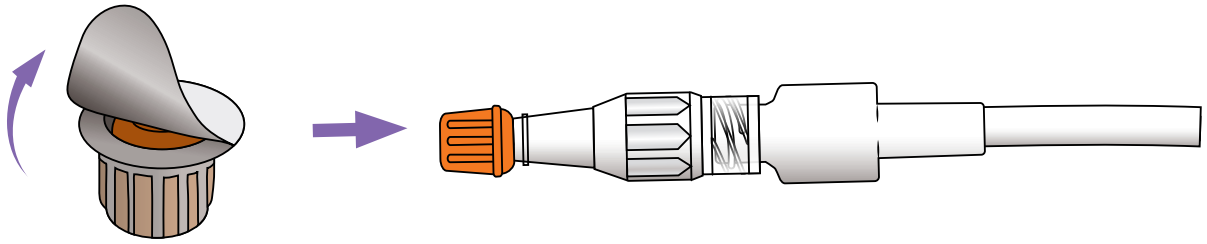
18 **Remove the plastic cannula from the locking solution syringe.**

19 **Screw the syringe to your catheter and flush your catheter with 3 ml of locking solution.**

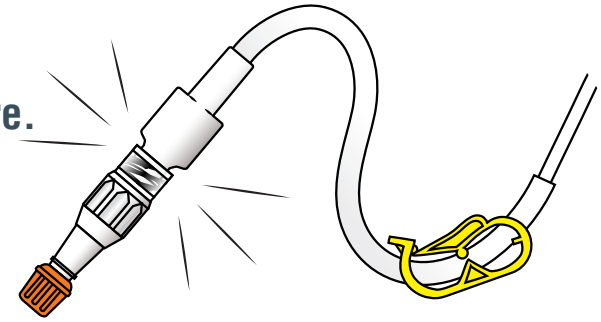


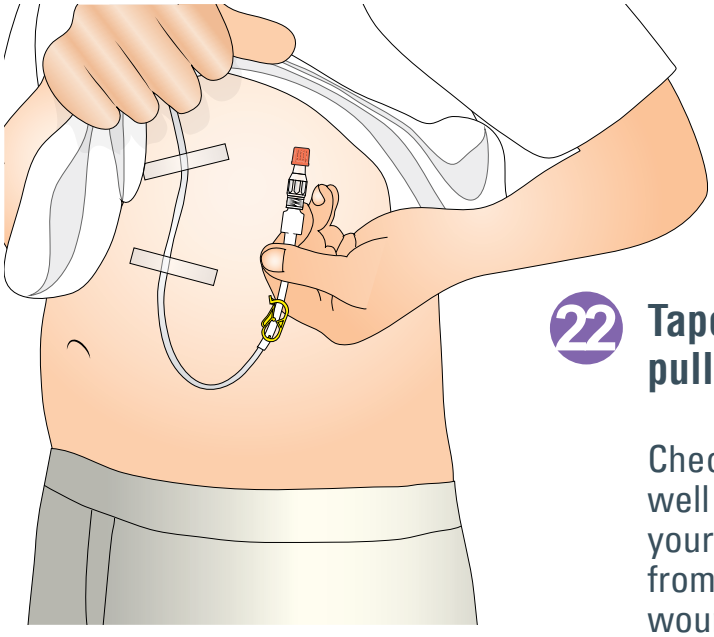
Be sure to clamp once your syringe is empty. When you are done, unscrew and remove the syringe.

20 Screw an alcohol cap (e.g. SwabCap®) on the injection cap of your catheter.



21 Check that the injection cap is secure.

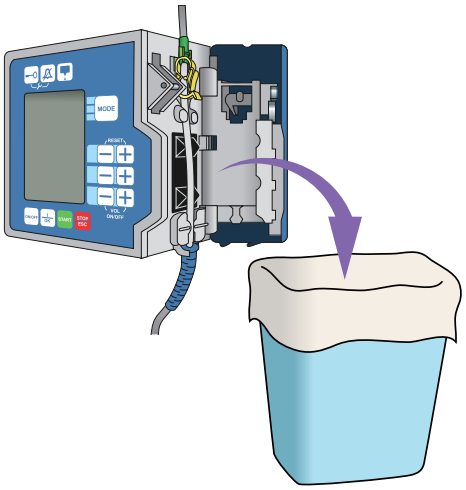




22 Tape the catheter to prevent it from being pulled accidentally at the exit site.

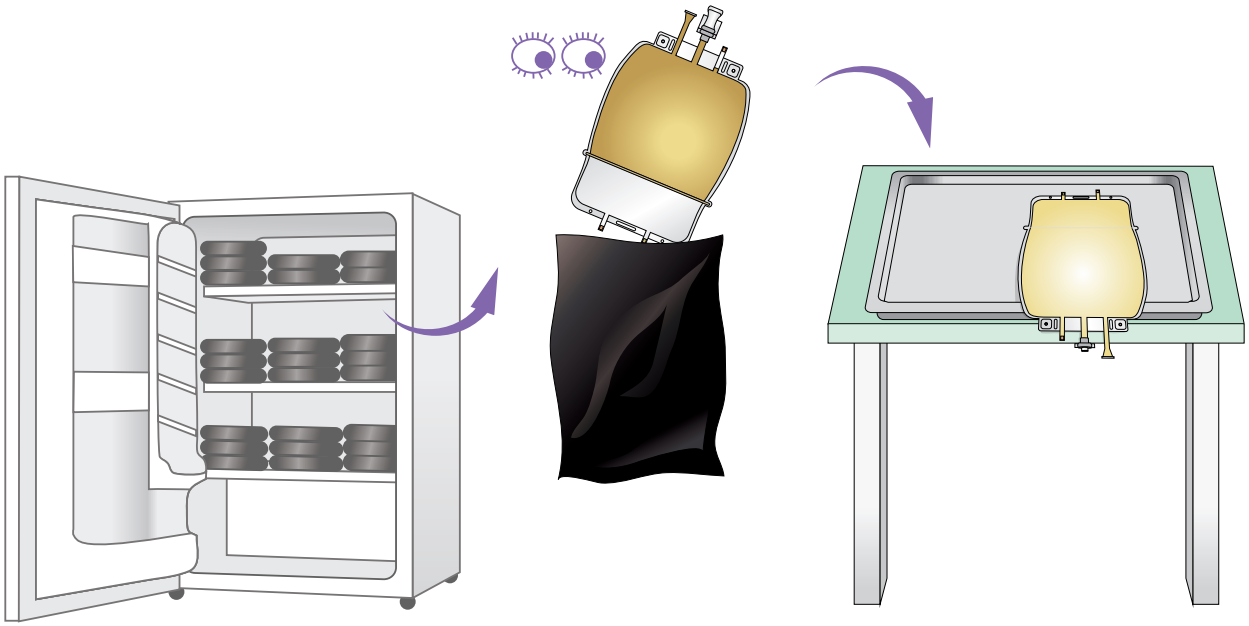
Check it regularly to make sure that it remains well taped. Tape the end of the catheter onto your chest (or put it in your bra), keeping it away from your abdomen (stoma, fistula or other wound dressing).

* **For a tunneled catheter or a PICC:**
If you have a double lumen catheter and a lumen is not in use, **the unused lumen needs to be flushed once a week.**

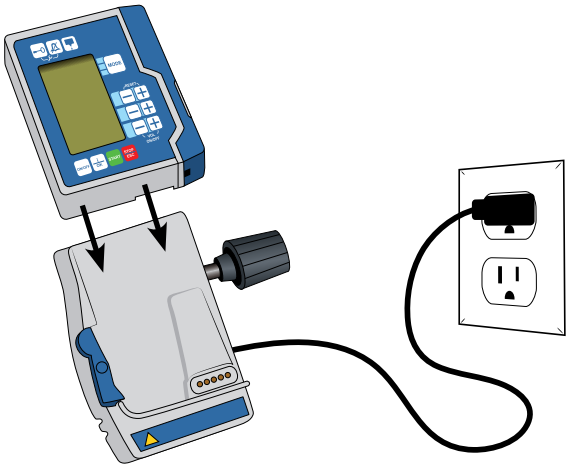


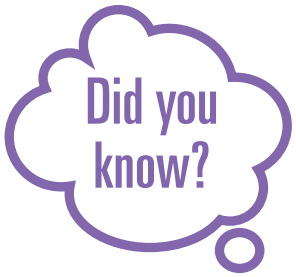
23 Remove the tubing from the pump and throw it away.

24 If you are infusing daily take out a new PN bag from the fridge, check its contents, then place it on your cleaned PN work area besides your tray.



25 Make sure to put your pump on the charger.

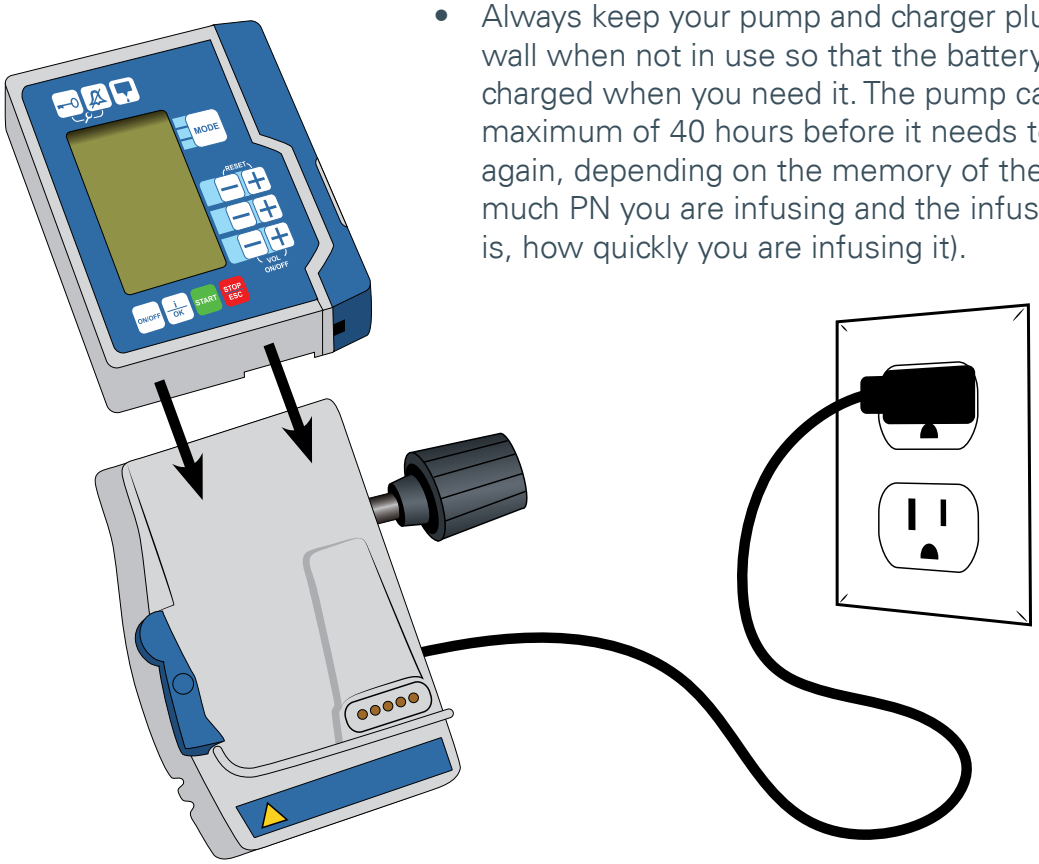




Your PN pump is precise (give or take 6%). After the infusion is finished, if you notice there is leftover PN, measure it and write the amount down. If it is more than 100 ml, call us.

To measure, remove the tubing and empty what is left in the PN bag into a measuring cup. You will need to call the supplier to have the pump changed, if it has happened more than once.

How to take care of your pump battery



- Always keep your pump and charger plugged into the wall when not in use so that the battery will be fully charged when you need it. The pump can run for a maximum of 40 hours before it needs to be charged again, depending on the memory of the battery, how much PN you are infusing and the infusion rate (that is, how quickly you are infusing it).
- For any infusion that lasts more than 16 hours, you may have to put the pump into its charger and plug it into a wall outlet during the night.
- Open the small pocket in the front of the backpack during the night so you can hear the pump's alarm.
- Do not store the pump at low or 0% battery. This may permanently damage the battery.
- Use your pump regularly to keep your pump battery working.
- If you have 2 pumps, use them on alternate days.

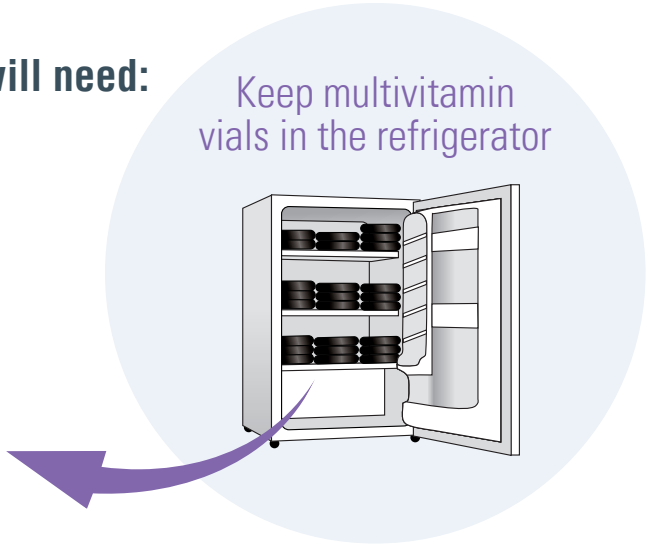
Preparing your multivitamin

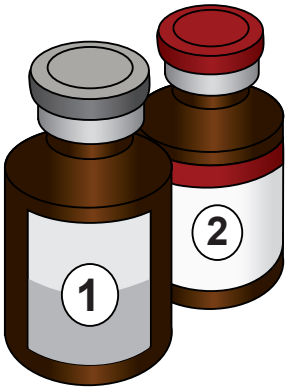
To prepare your multivitamin for your PN bag, you must combine the liquid of both vials of multivitamin into one 10 ml syringe.

1 **Clean your hands using an alcohol-based hand cleanser (e.g. Purell®). Rub the cleanser all over your hands until completely dry.**

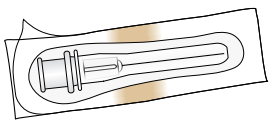
2 **To prepare multivitamin, you will need:**

Keep multivitamin vials in the refrigerator



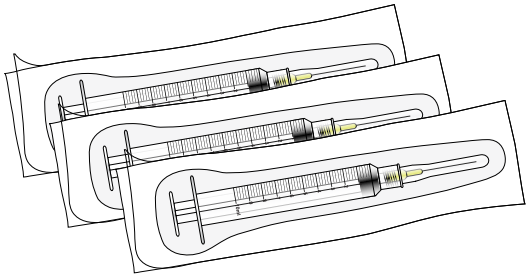


(2) Vials of Multivitamin



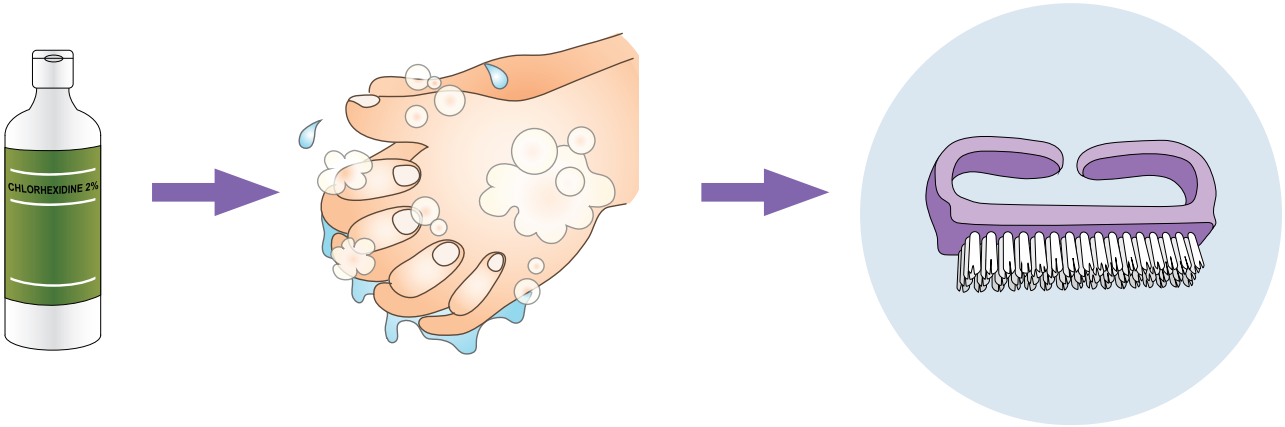
(1) Filter Needle
(if vitamin K)

(1) Ampule of Vitamin K
once a week
(do not refrigerate)



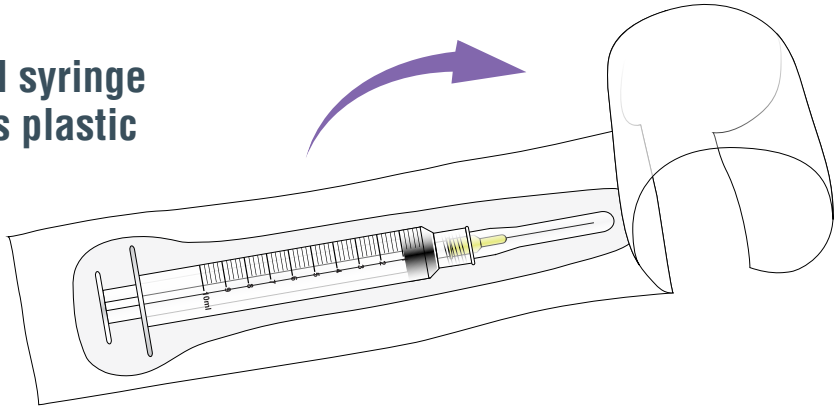
(1 or 3) Empty 10 ml Syringes
(3 if vitamin K)

3 Wash your hands (long wash with nail brush).

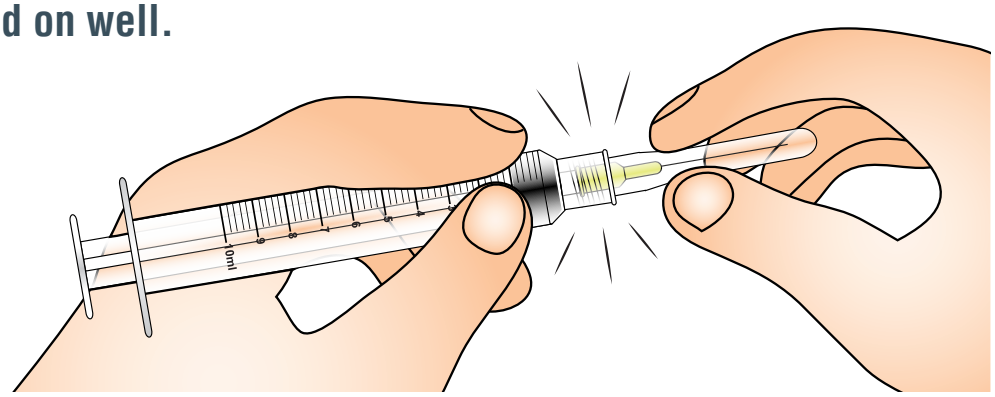


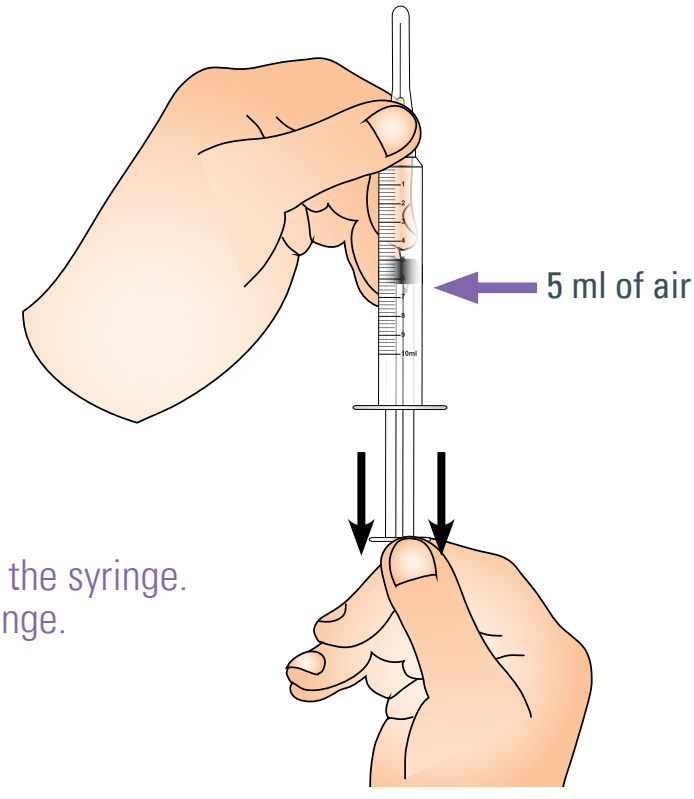
4 Remove the cap of the 2 multivitamin vials and clean each top with a different alcohol swab for 30 seconds. Allow to dry 30 seconds.

5 **Open the empty 10 ml syringe (do not throw away its plastic packaging "boat").**



6 **Make sure that the needle is screwed on well.**

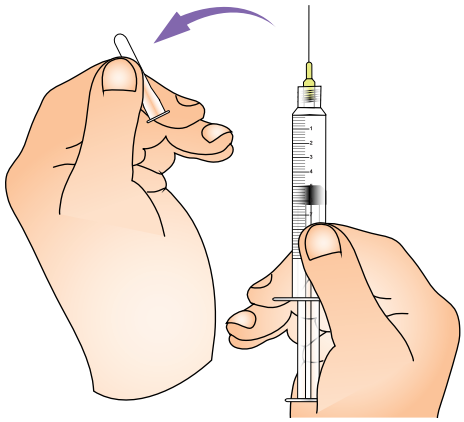


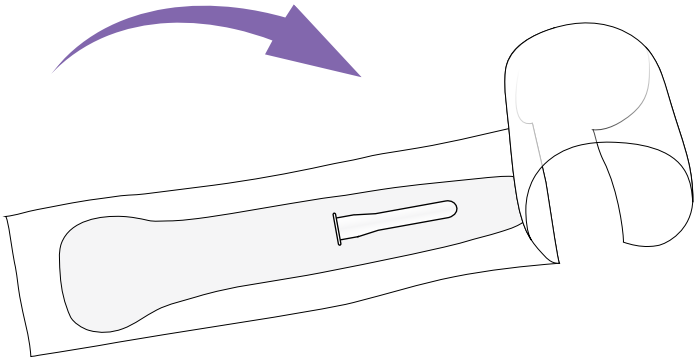


7 **Draw up 5 ml of air.**

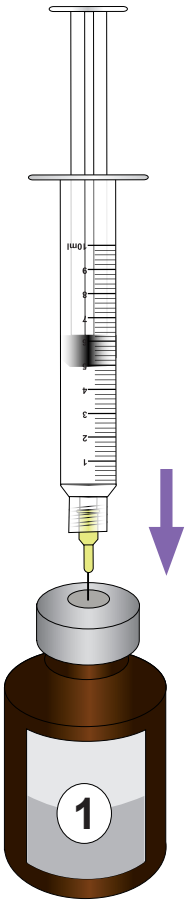
Do not touch the piston of the syringe.
If you do, change your syringe.

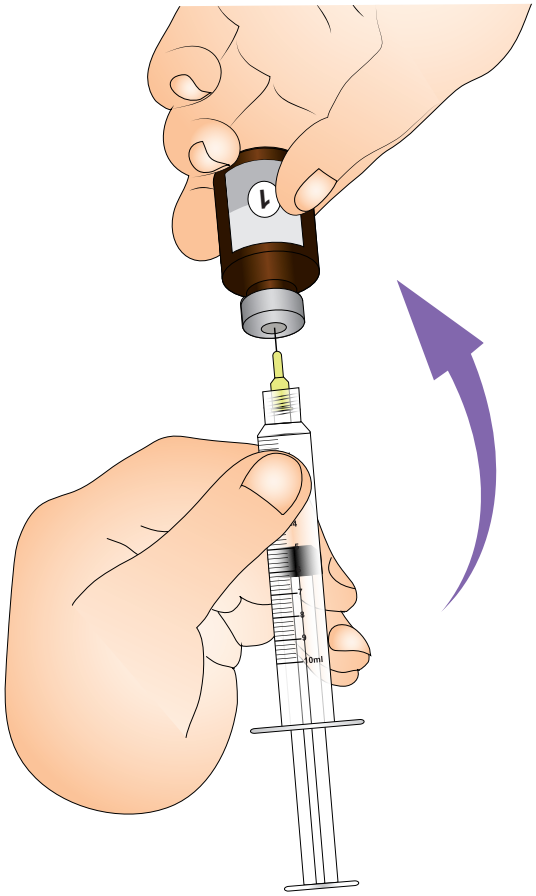
8 Remove the cover from the needle and put the cover in the “boat”.



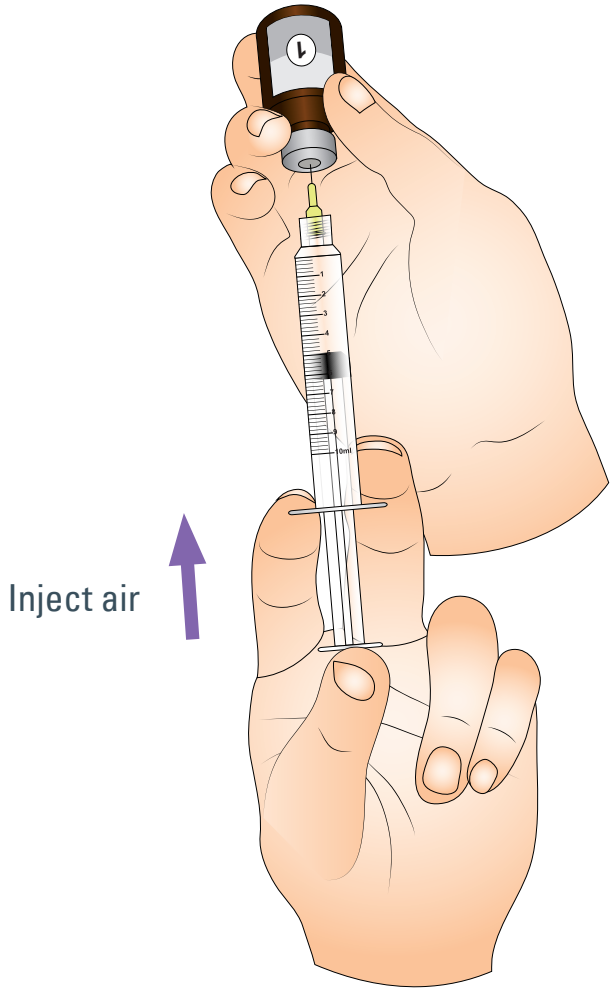


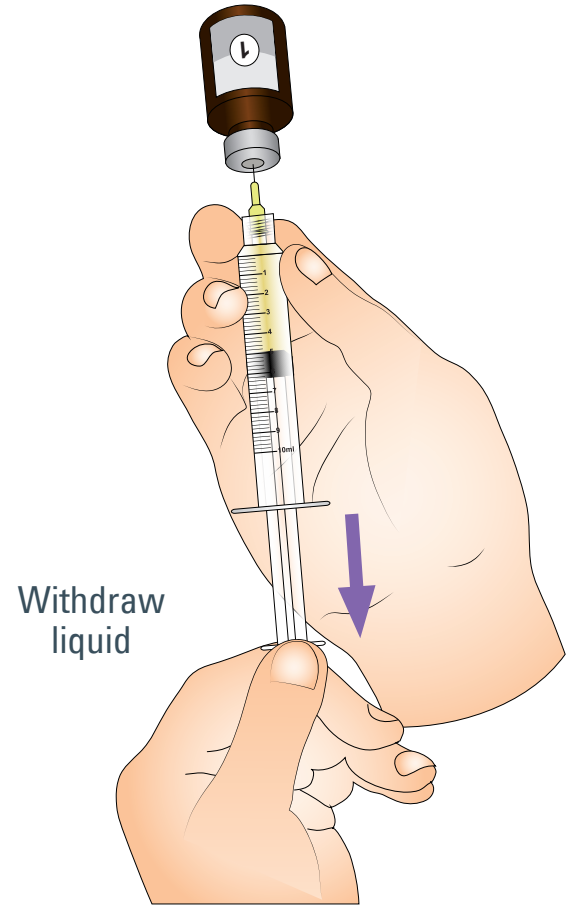
9 Push the needle through the rubber seal of vial #1, then flip over the vial and syringe.



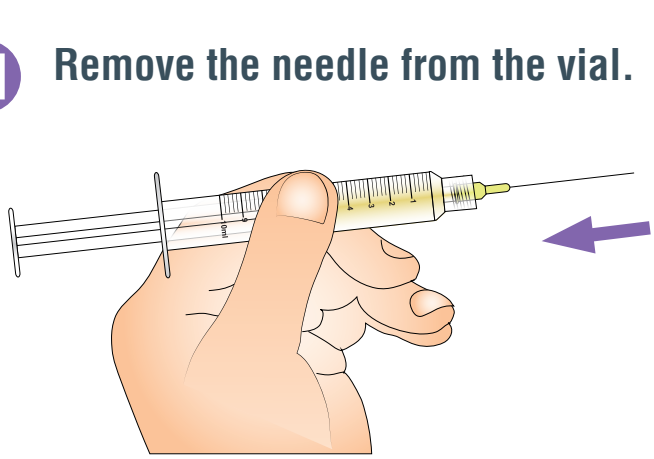


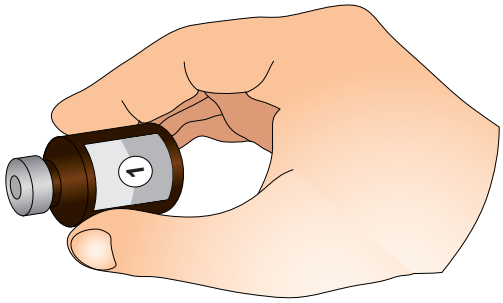
10 **Withdraw the liquid by injecting some air into the vial and then withdrawing the liquid a little at a time. Keep doing this back and forth until there is 5 ml of liquid and NO AIR in the syringe (make sure that the tip of the needle remains in the liquid).**



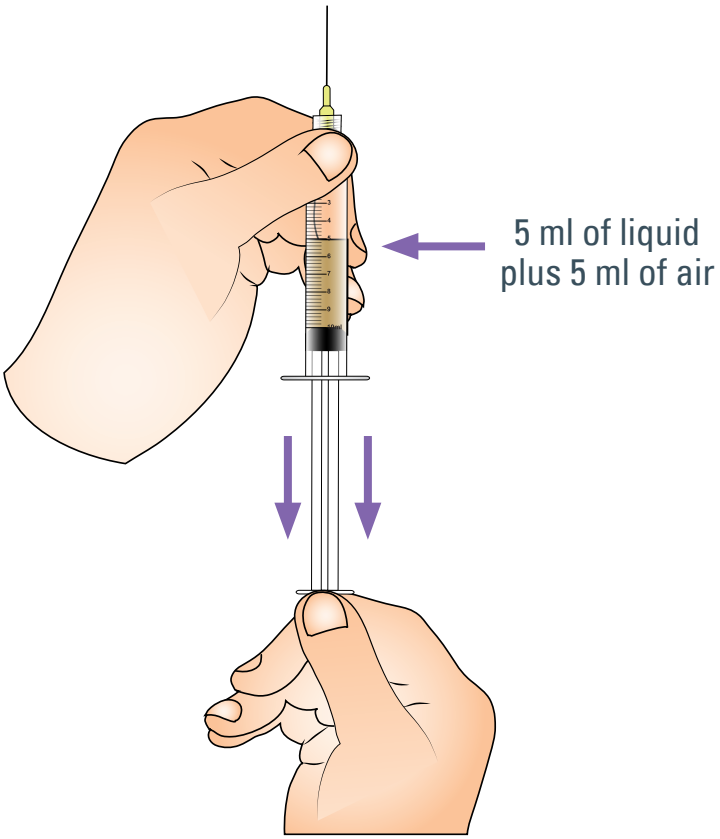


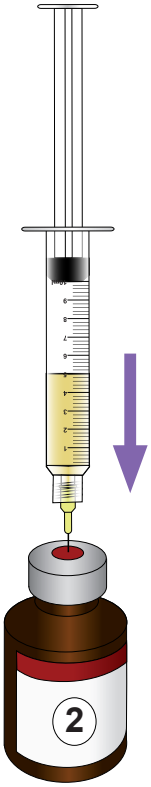
11 **Remove the needle from the vial.**

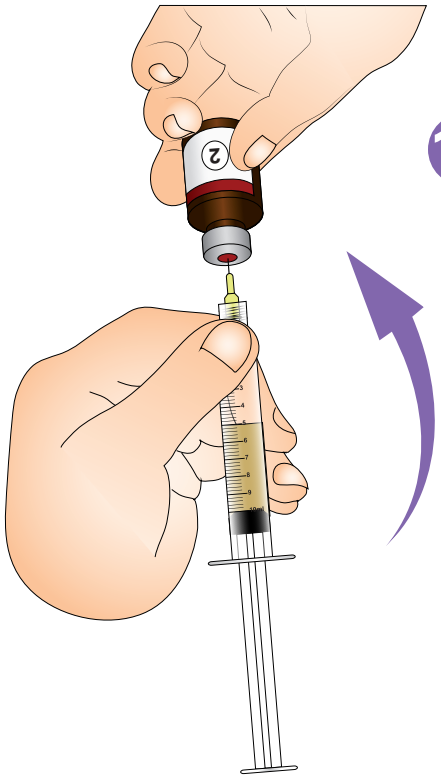




12 **Draw back another 5 ml of air into the syringe containing the contents of vial #1.**

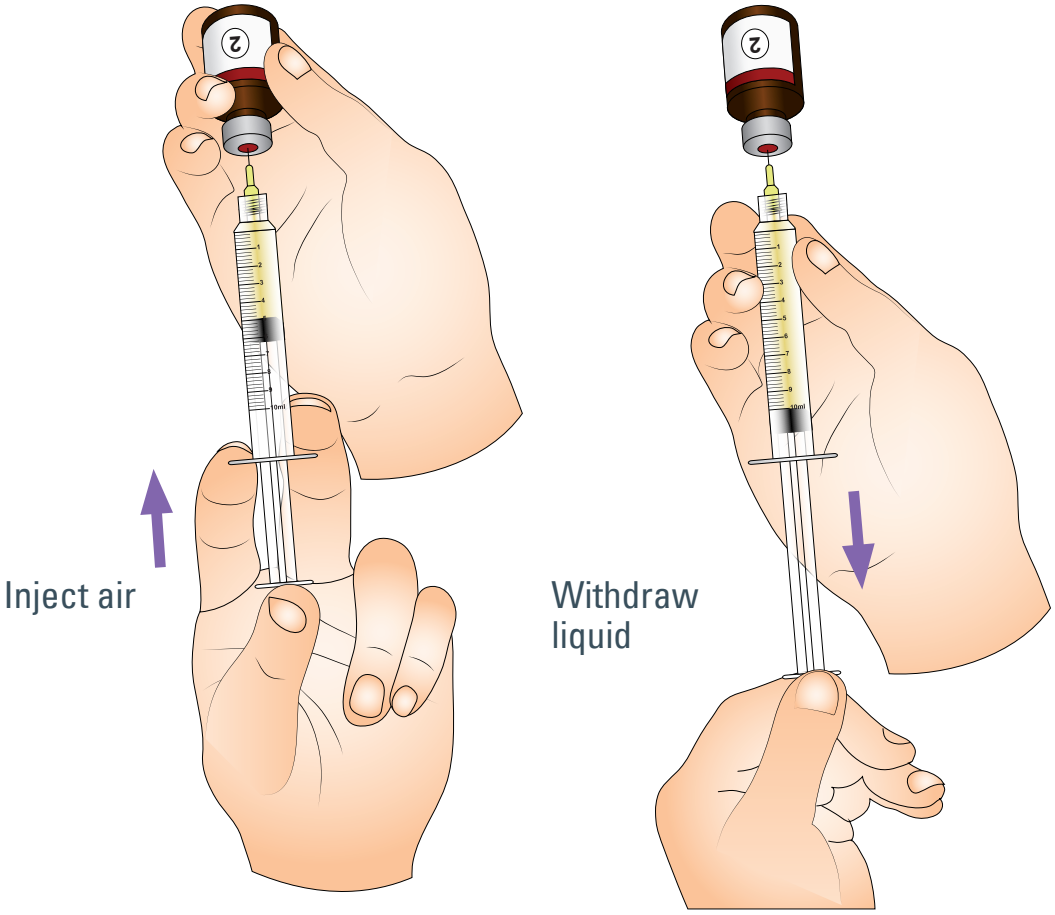




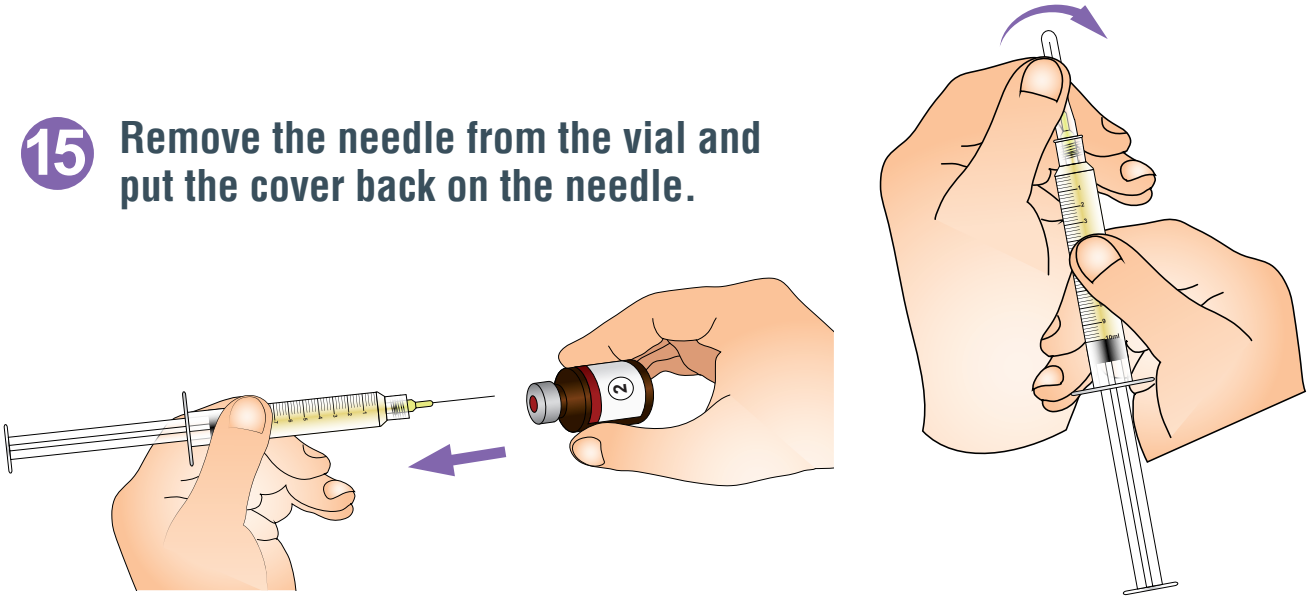


13 **Push the needle through the rubber seal of vial #2, then flip over the vial and syringe.**

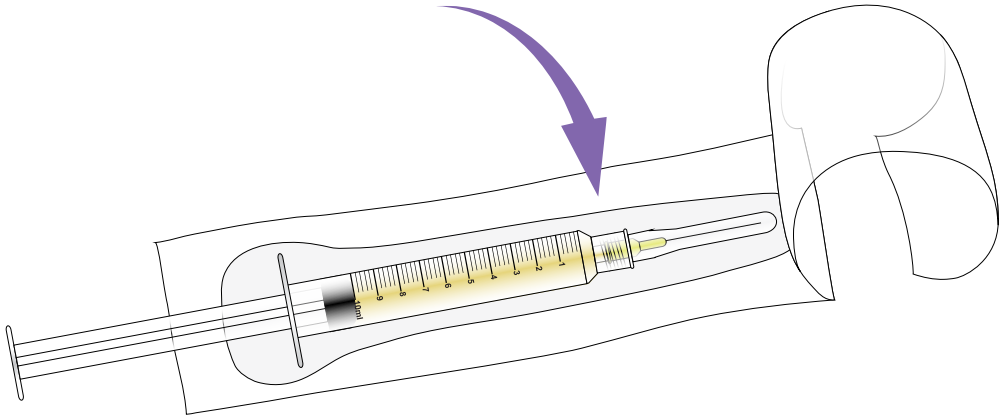
14 **Withdraw the liquid by injecting some air into the vial and then withdrawing the liquid a little at a time. Keep doing this back and forth until there is 10 ml of liquid and NO AIR in the syringe (make sure that the tip of the needle remains in the liquid).**



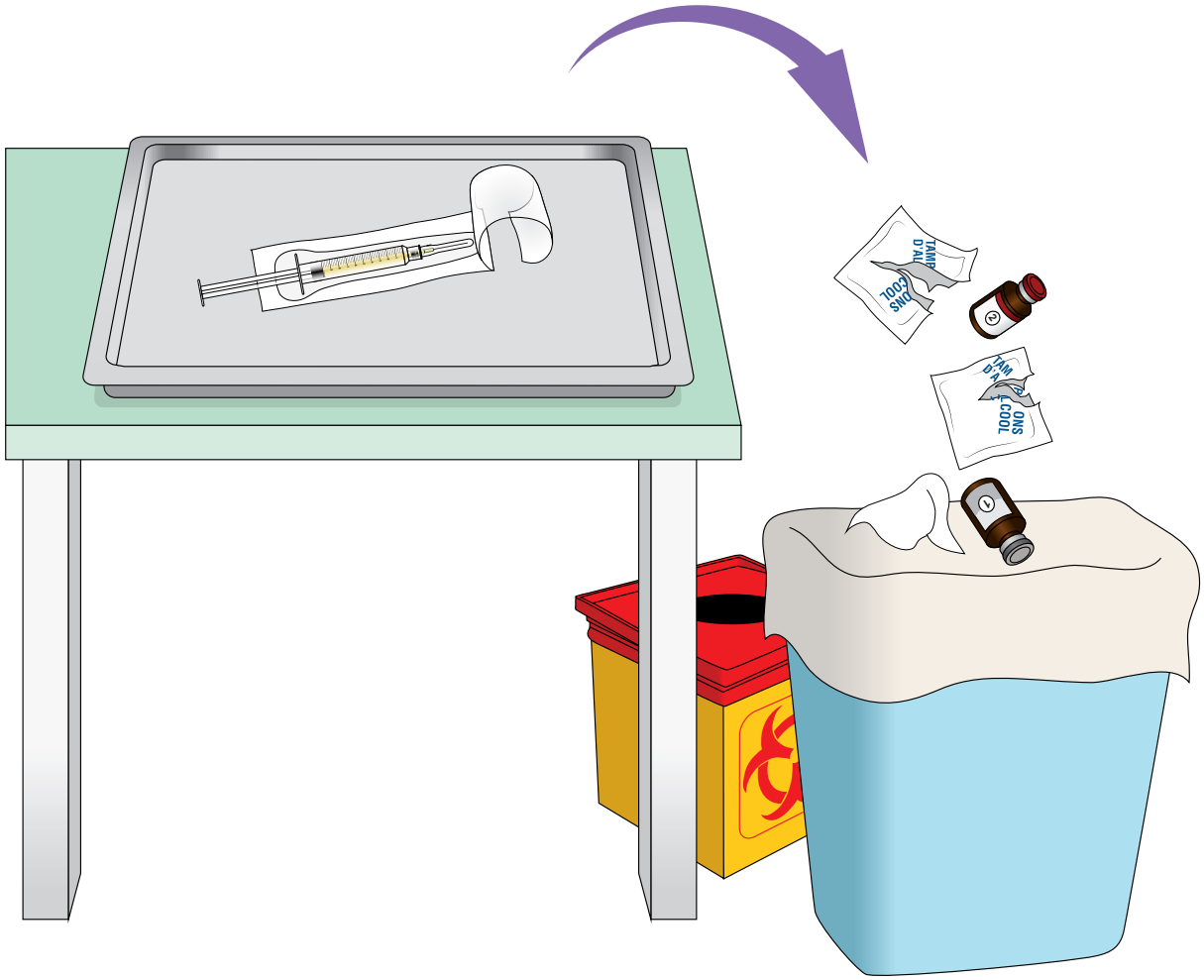
15 **Remove the needle from the vial and put the cover back on the needle.**



16 Place the syringe in its “boat”.

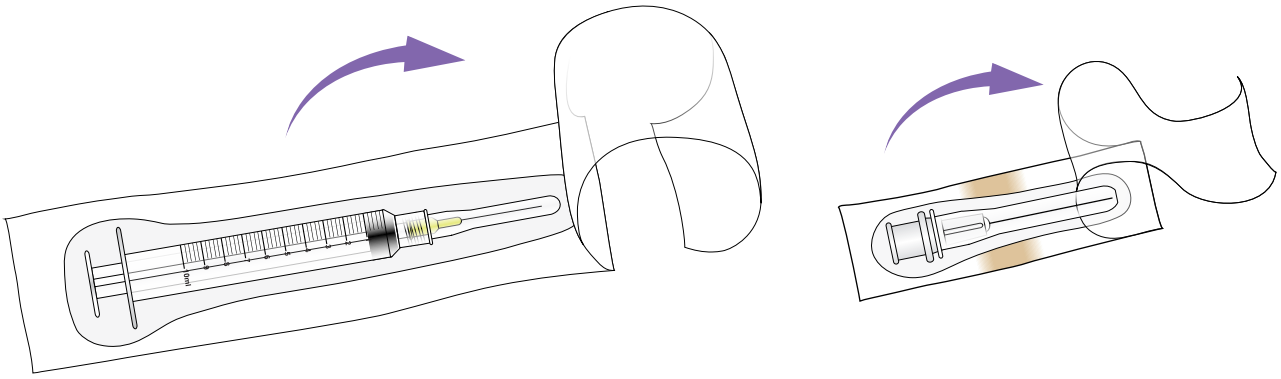


17 Remove the garbage from your tray.

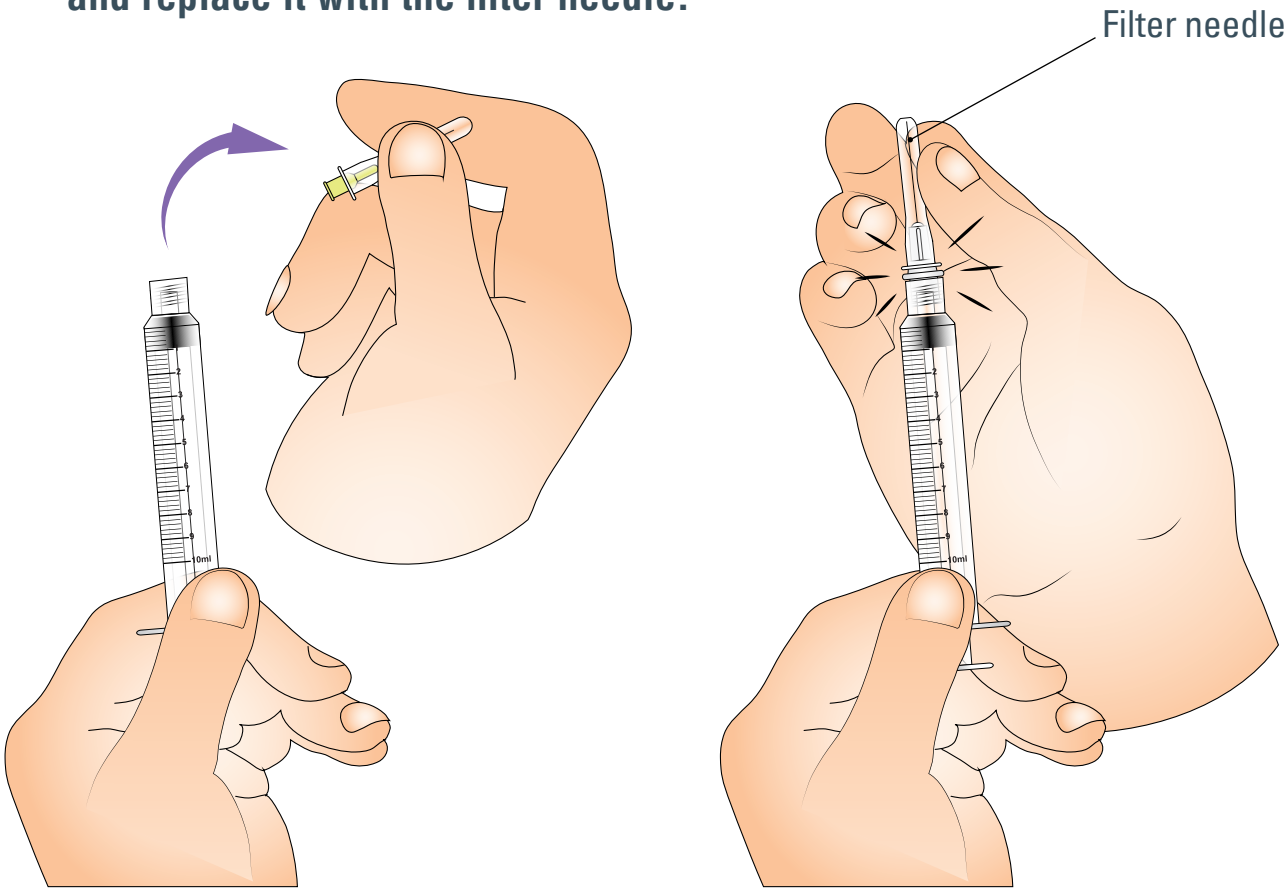


Preparing your vitamin K
(once a week)

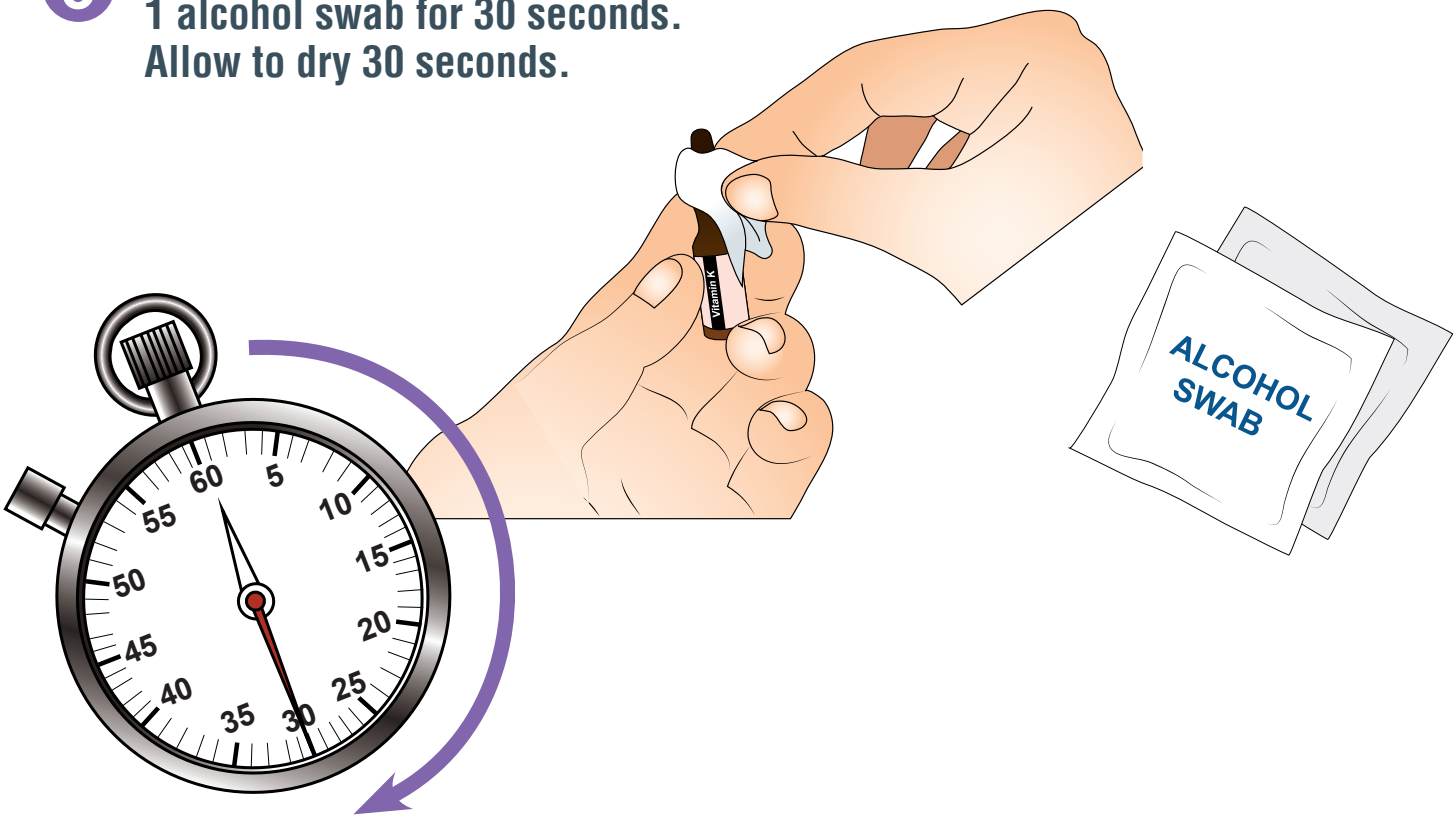
1 **Open a 10 ml syringe and a filter needle and keep them in their packaging "boats".**



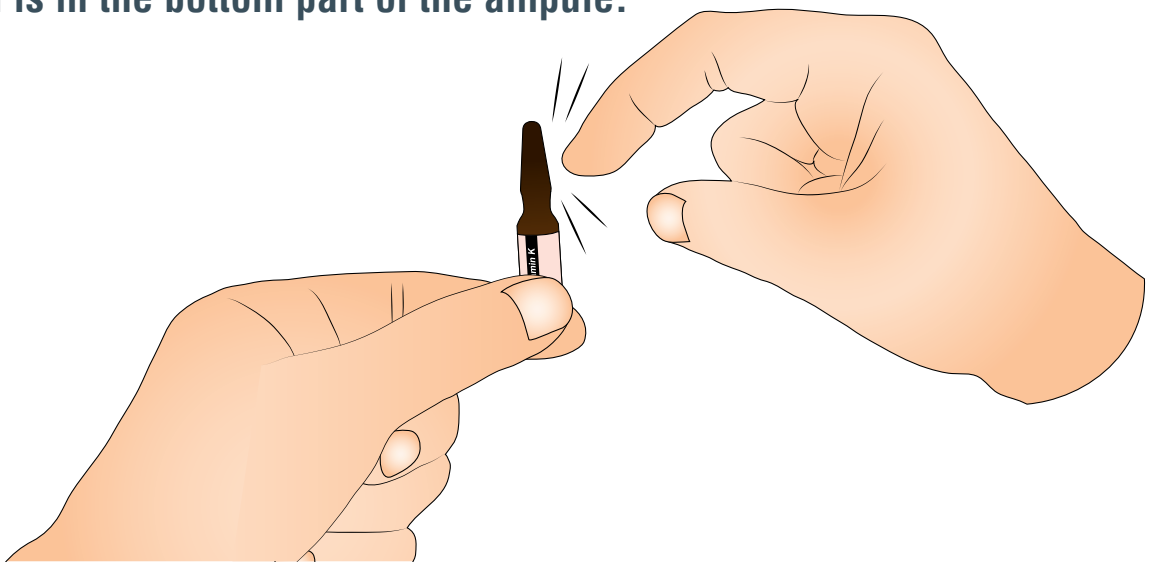
2 **Unscrew the needle from the empty syringe and replace it with the filter needle.**



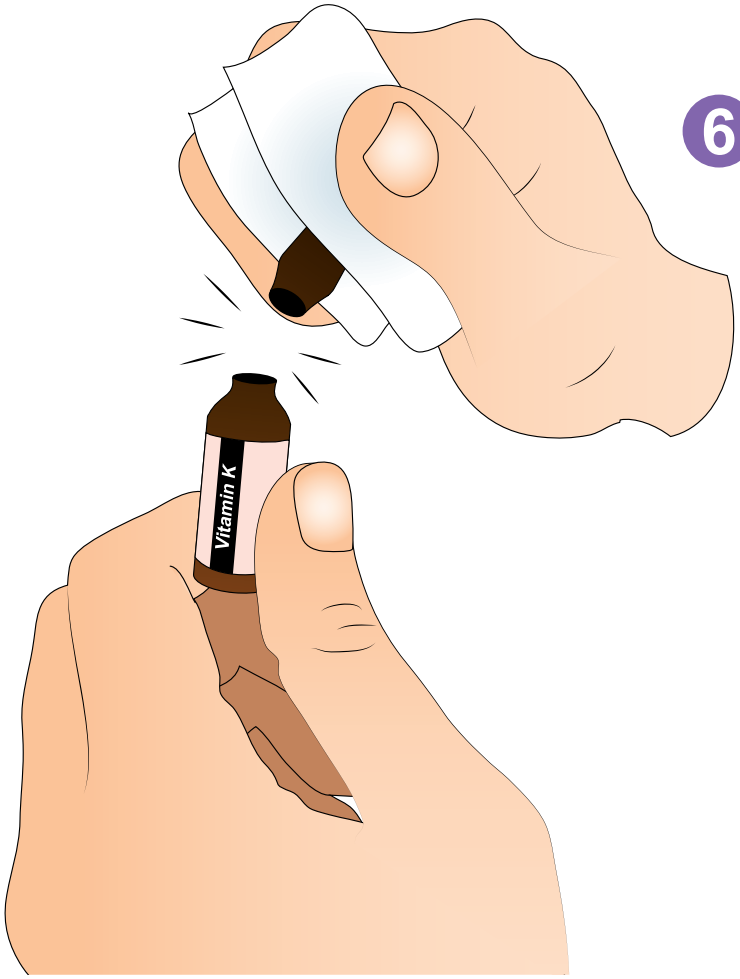
3 Clean the neck of the ampule with 1 alcohol swab for 30 seconds. Allow to dry 30 seconds.



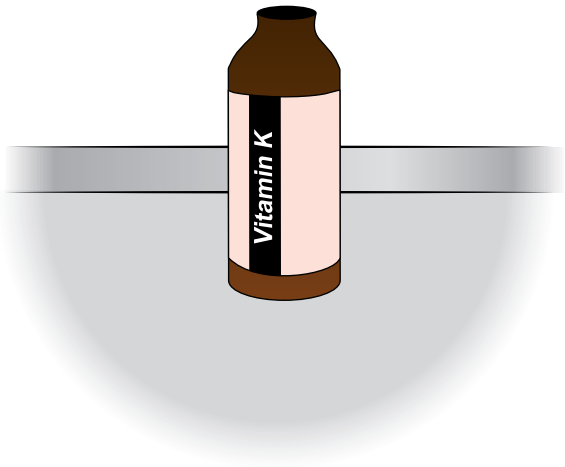
4 Using one of your fingers, tap the top of the ampule to make sure that all of the liquid is in the bottom part of the ampule.



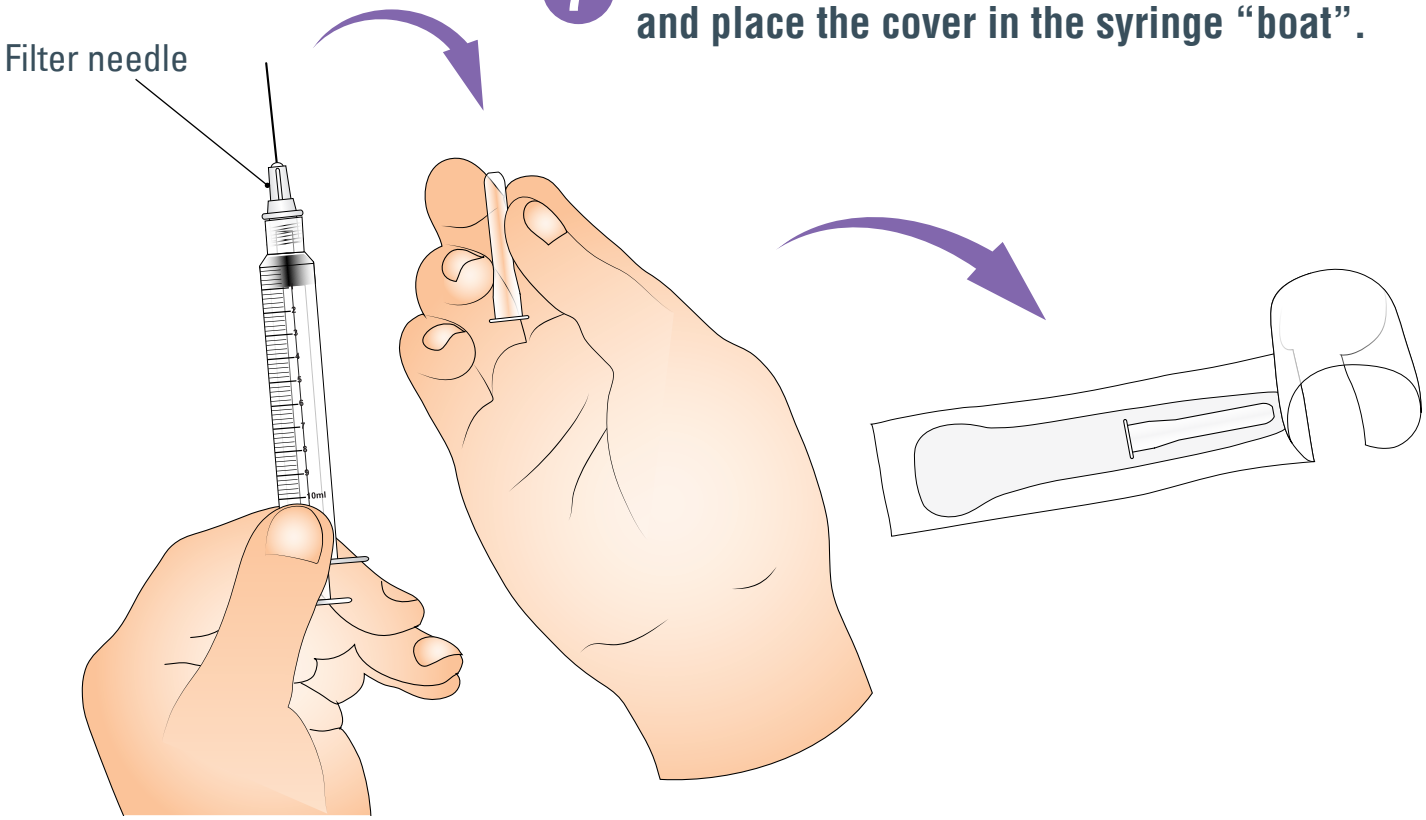
5 Hold the body of the ampule with one hand and the top, wrapped in an alcohol swab, with the other hand.



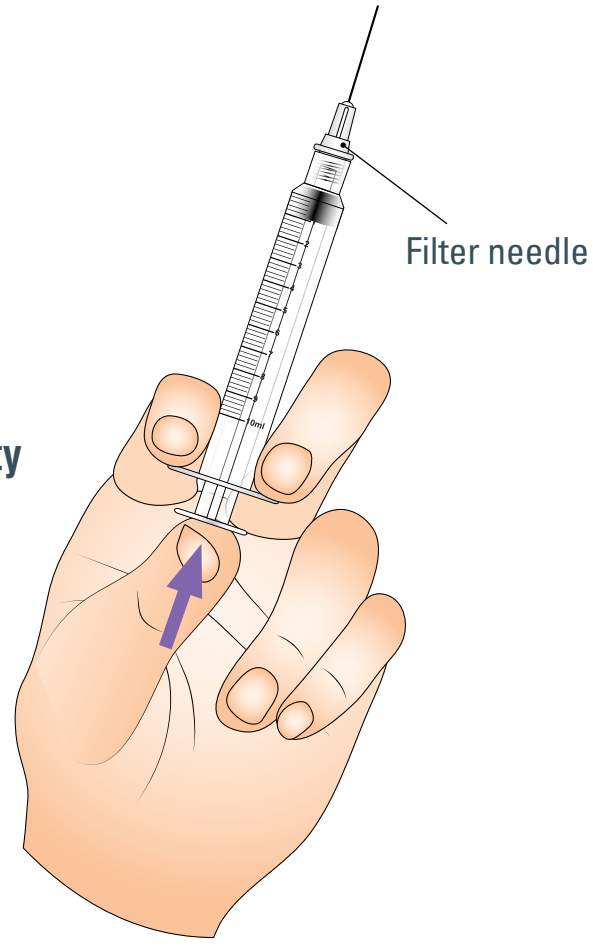
6 Break the ampule in two.
Place the ampule on your tray.



7 Remove the cover from the filter needle and place the cover in the syringe “boat”.

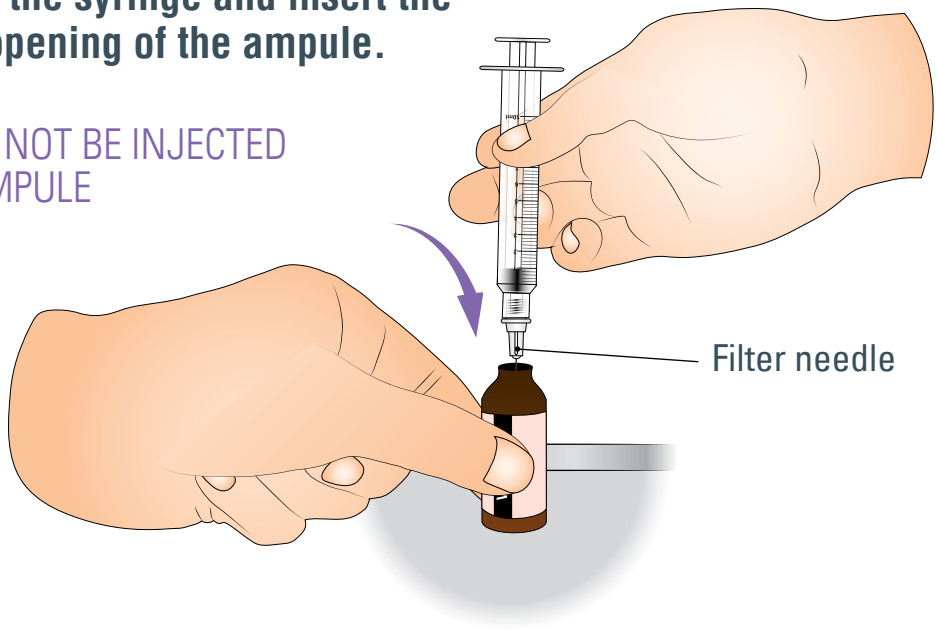


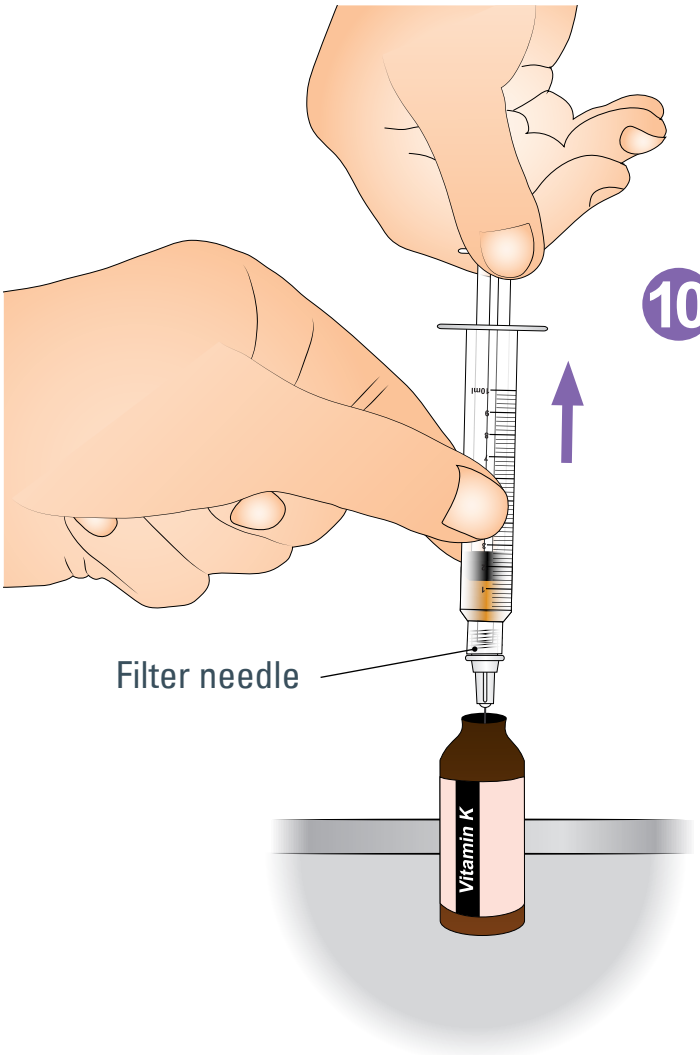
8 Push the plunger to empty all air from the syringe.



9 **With one hand, hold the ampule. With the other hand, hold the syringe and insert the needle into the opening of the ampule.**

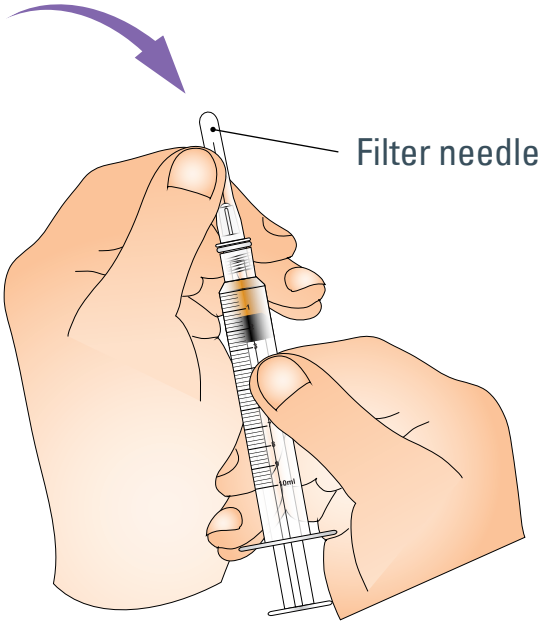
✱ AIR SHOULD NOT BE INJECTED INTO THE AMPULE

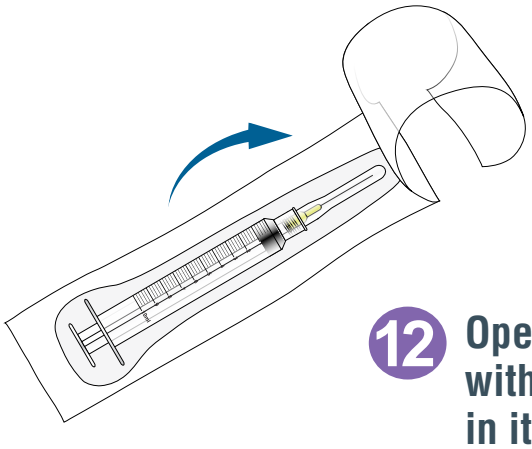




10 **Draw up all the amount of vitamin K (1 ml) while keeping the tip of the needle in the solution to avoid drawing up air.**

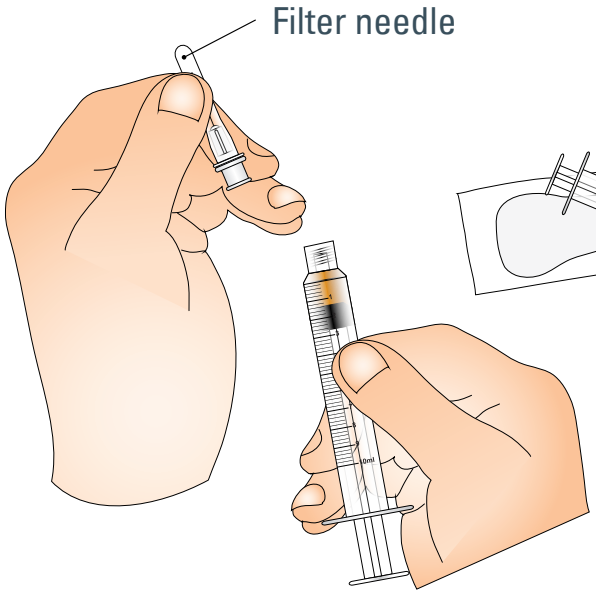
11 **Remove the needle from the ampule and place the cover on the needle. Place your syringe in its "boat".**

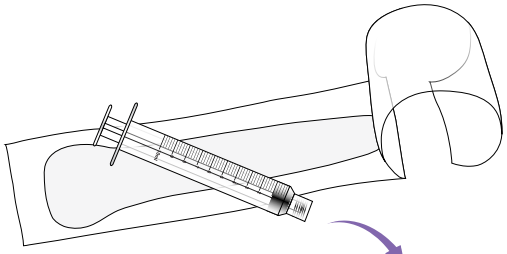


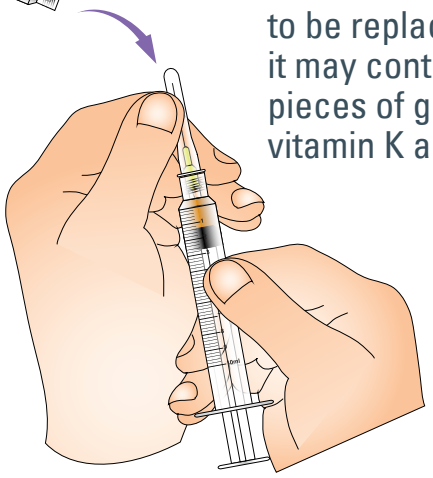


12 **Open a new 10 ml syringe with a needle and place it in its packaging "boat".**

13 **Remove the filter needle from the syringe filled with vitamin K and replace it with the needle from the new 10 ml syringe.**



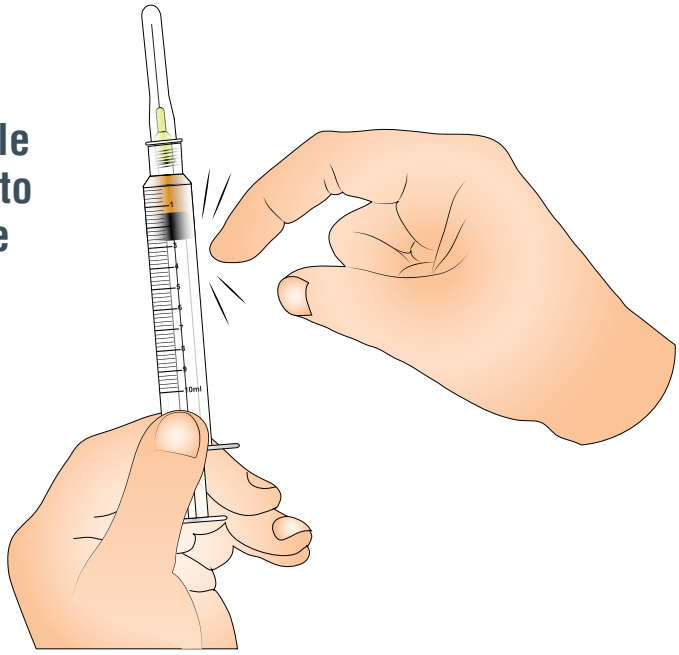


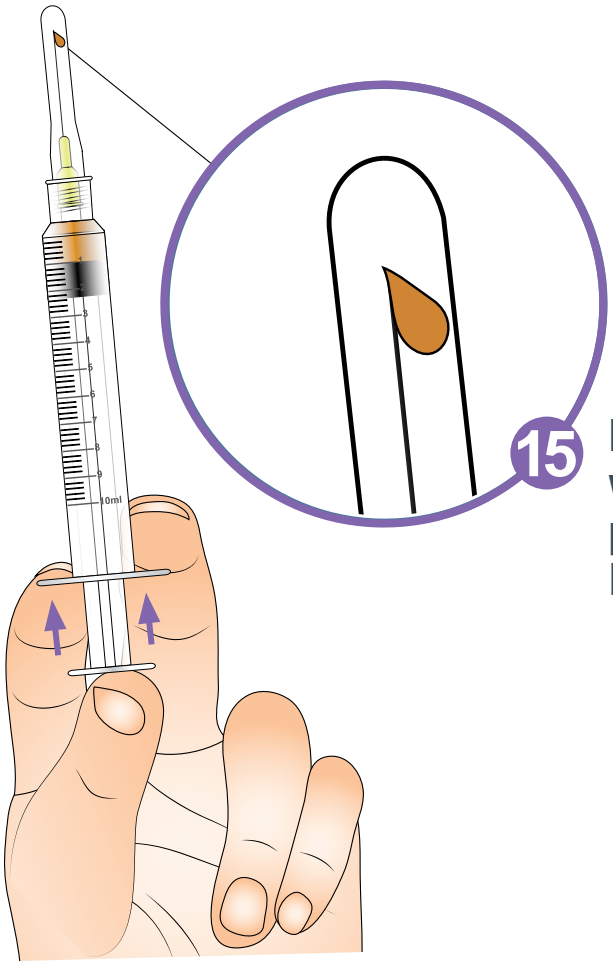


The filter needle needs to be replaced because it may contain tiny pieces of glass from the vitamin K ampule.

* Do not use the needle that came with the first 10 ml syringe. It is no longer sterile.

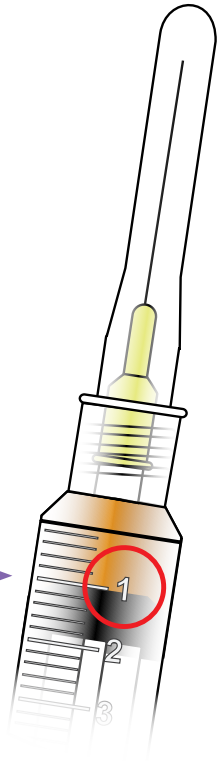
14 Hold the syringe with the needle upright: gently tap the syringe to make all air bubbles rise to the top of the syringe.



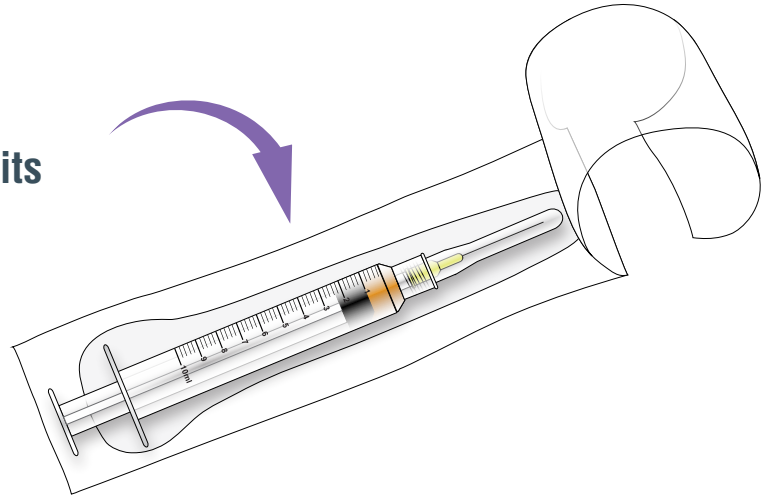


15 Push the plunger of the syringe very slowly to remove the air, pushing until you see a drop of liquid at the end of the needle.

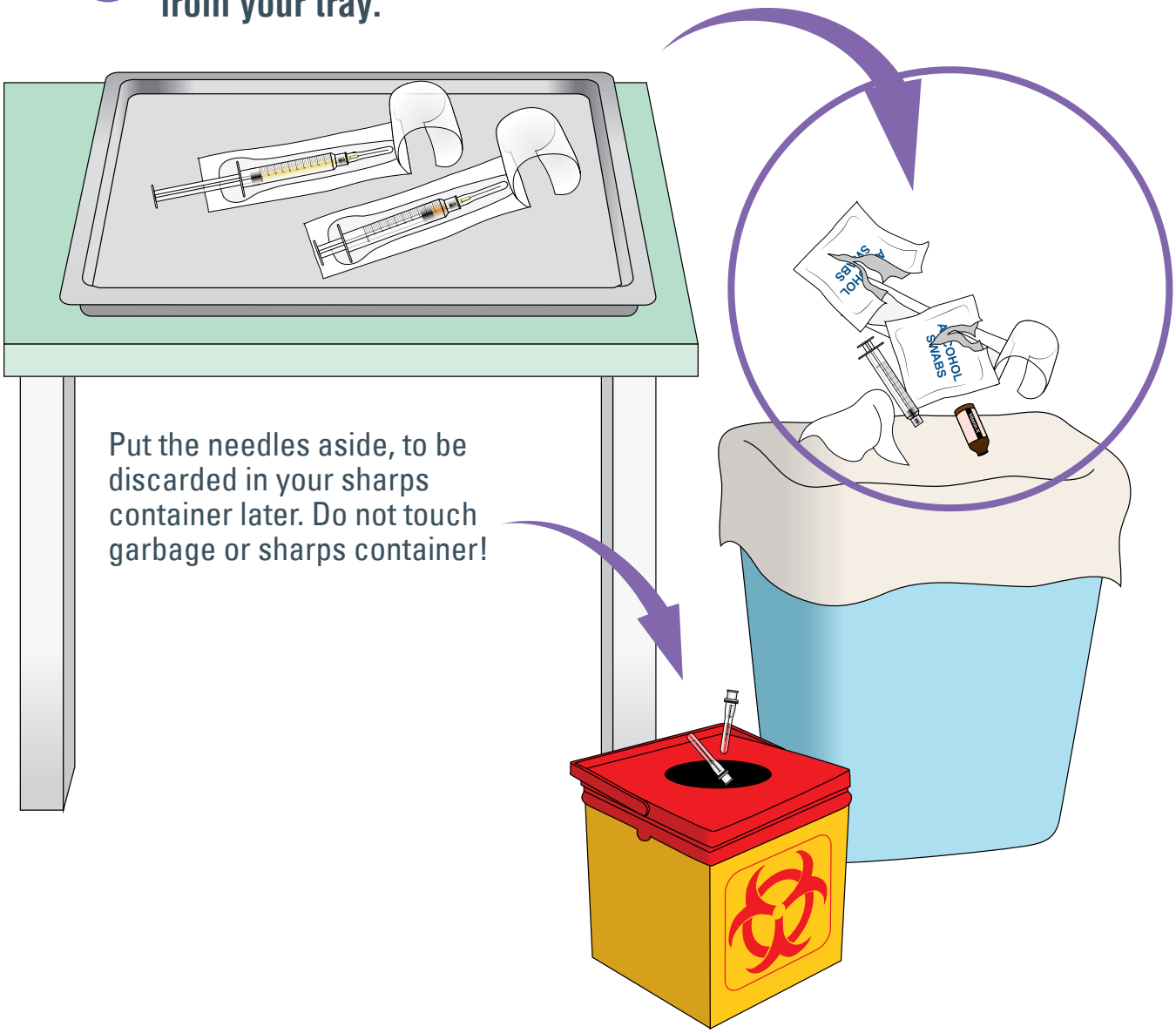
16 Check that the correct amount of solution (1ml) is in the syringe.



17 Place the syringe in its packaging “boat”.

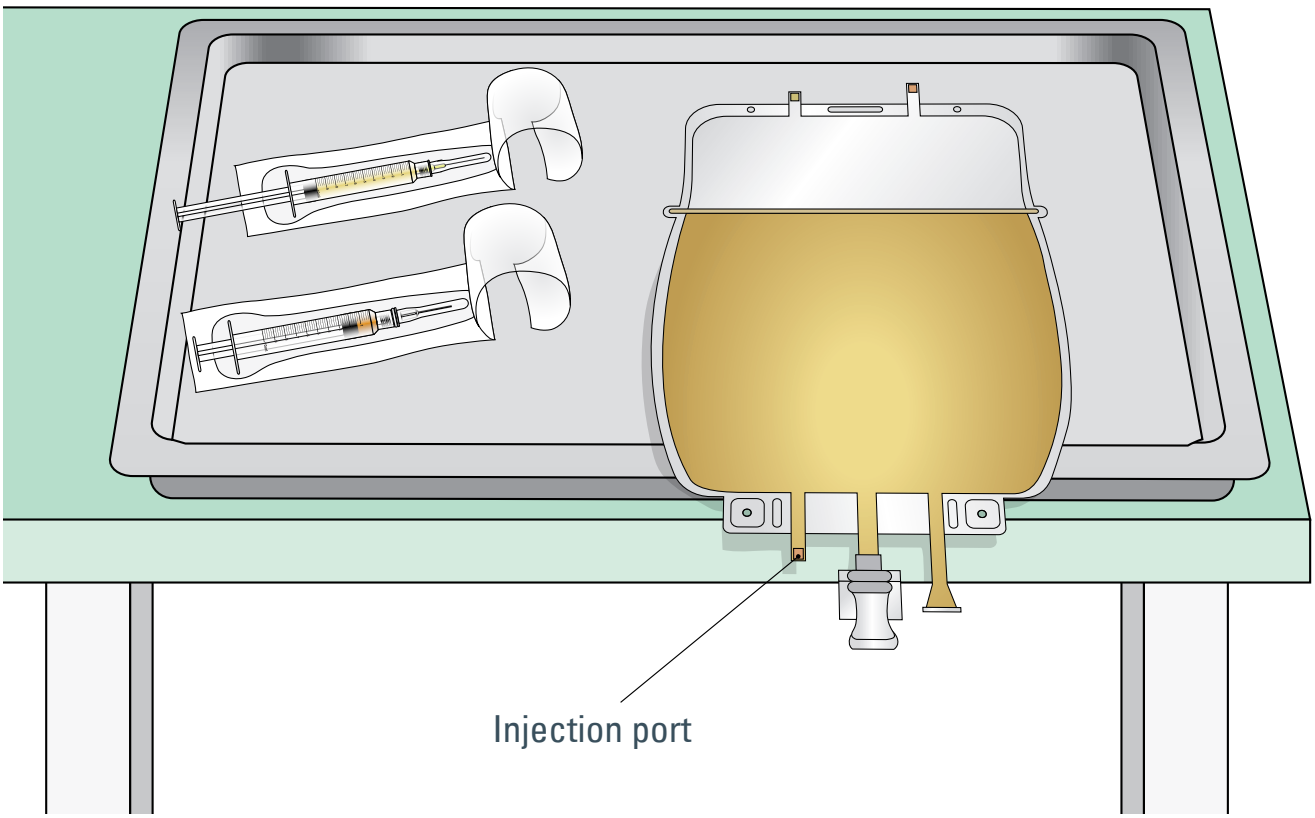


18 Remove the garbage from your tray.



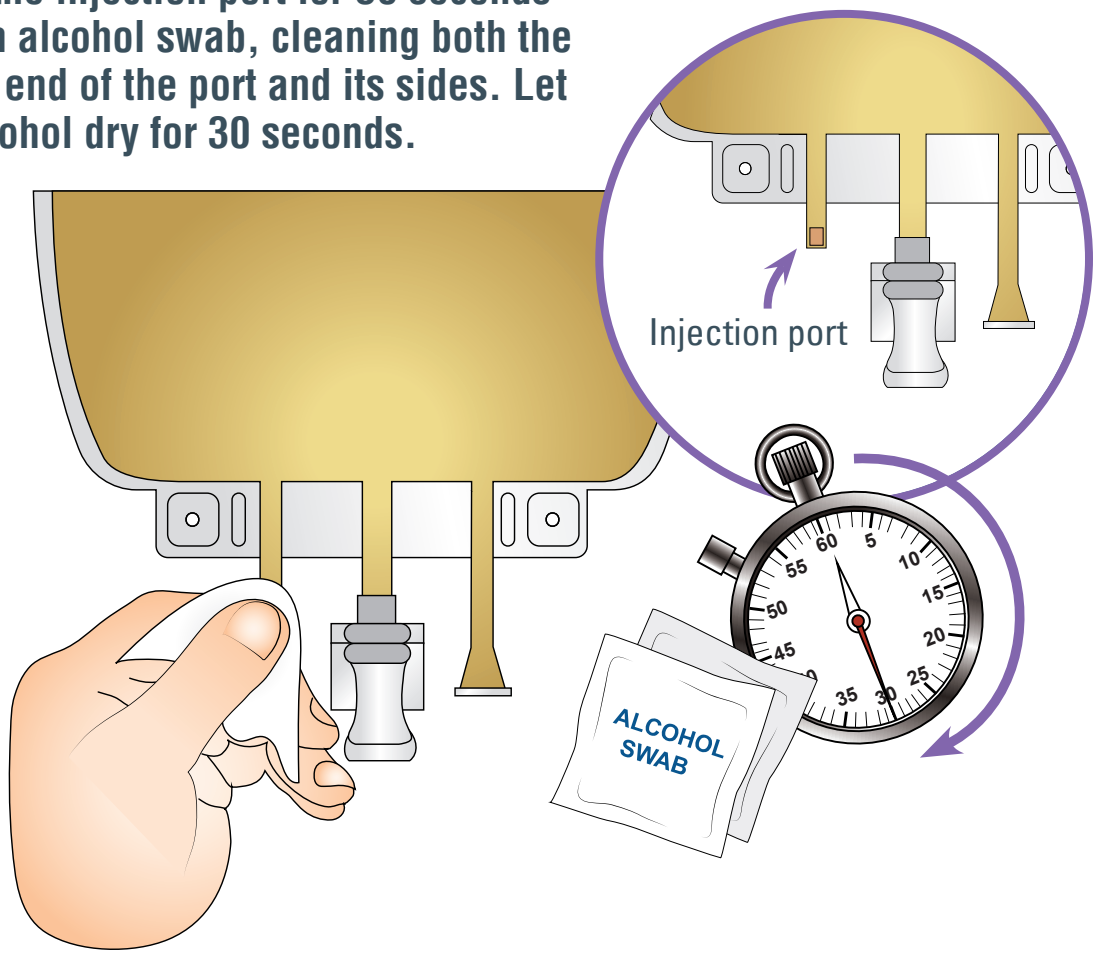
Adding vitamins and/or medications to PN

* If you have more than one additive to inject (insulin, vitamin K, multivitamin), **always inject the one with the smallest volume first so that the medication is pushed inside the bag (does not stay in the injection port).**



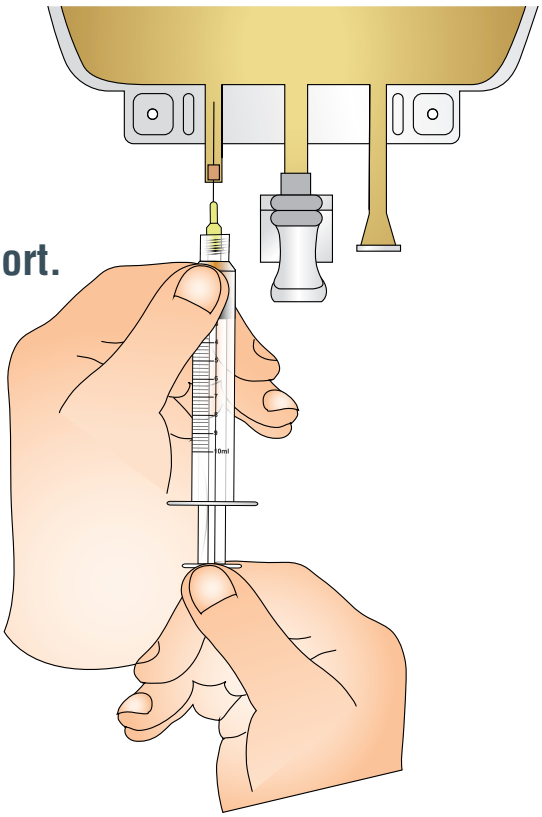
1. **Place the PN bag on the tray with the medication injection port coming over the edge of the tray (the port should not touch the tray or the work table).**

2 Clean the injection port for 30 seconds with an alcohol swab, cleaning both the rubber end of the port and its sides. Let the alcohol dry for 30 seconds.



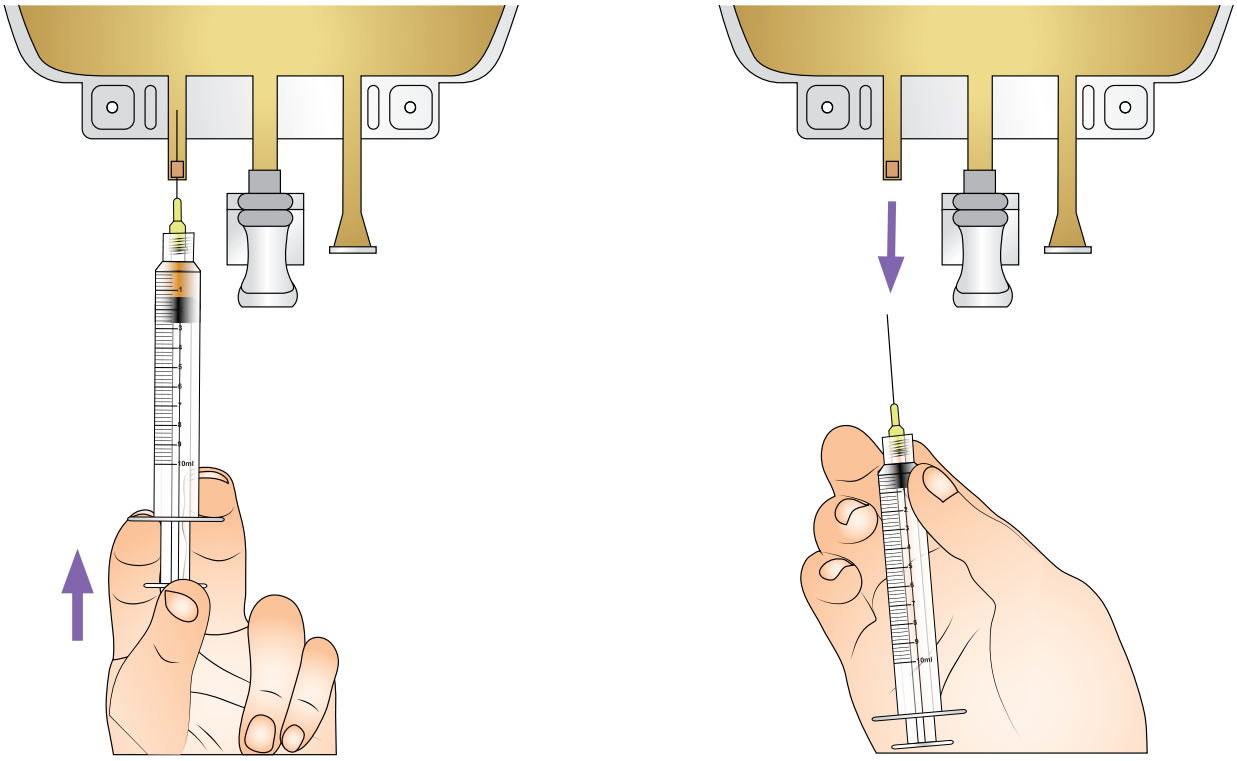
3 Very carefully, insert the needle of the syringe containing the medication being added, into the middle of the injection port.

Insert the needle straight down the middle of the port and in line with the PN bag.

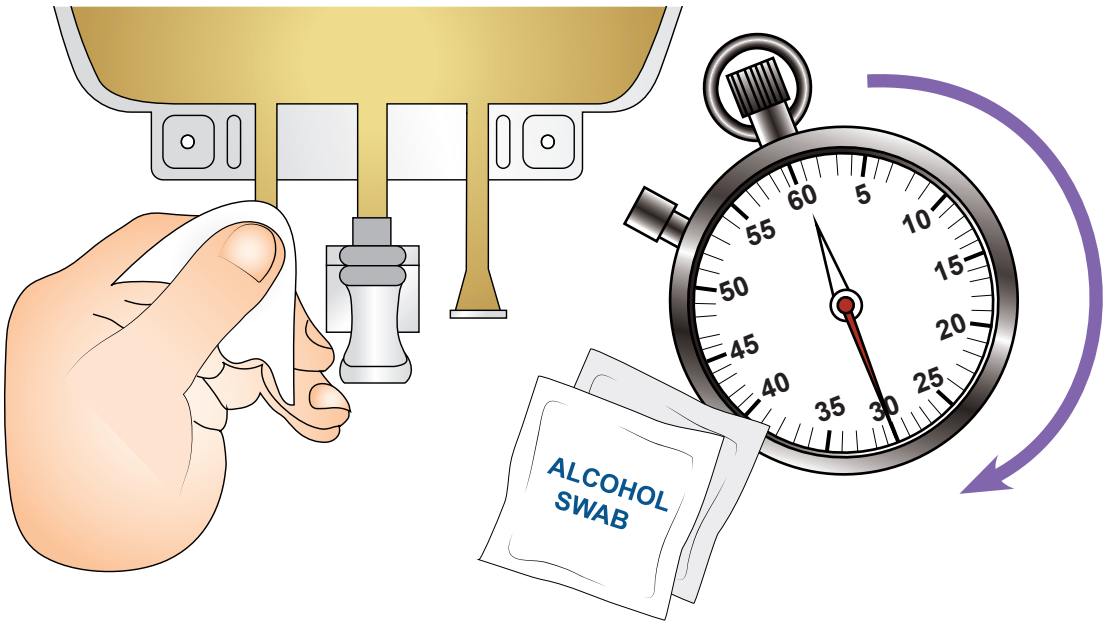


✱ **Be careful** not to pierce the bag or the sides of the port.

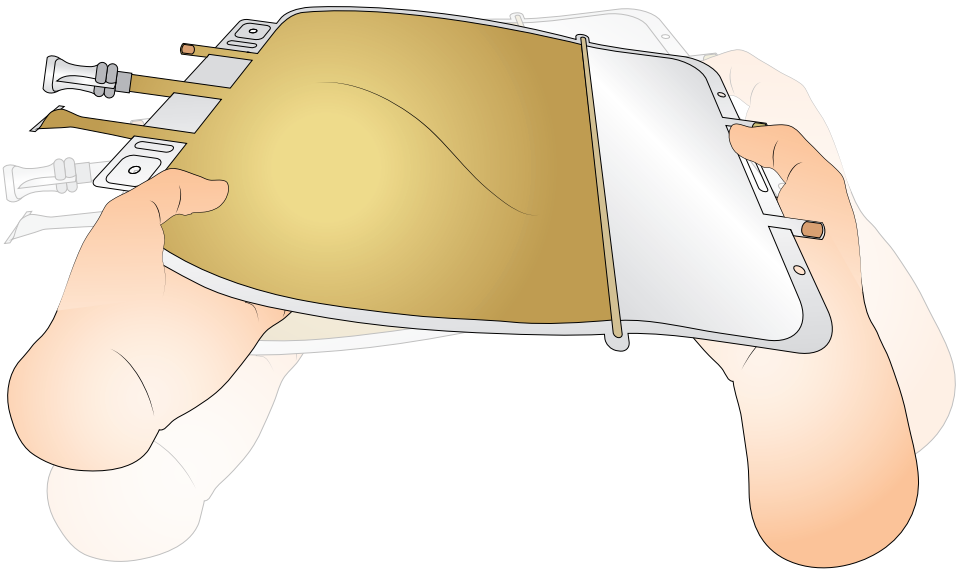
4 **Inject the medication into the bag. Remove the needle from the port, being careful not to pierce the bag on the way out.**



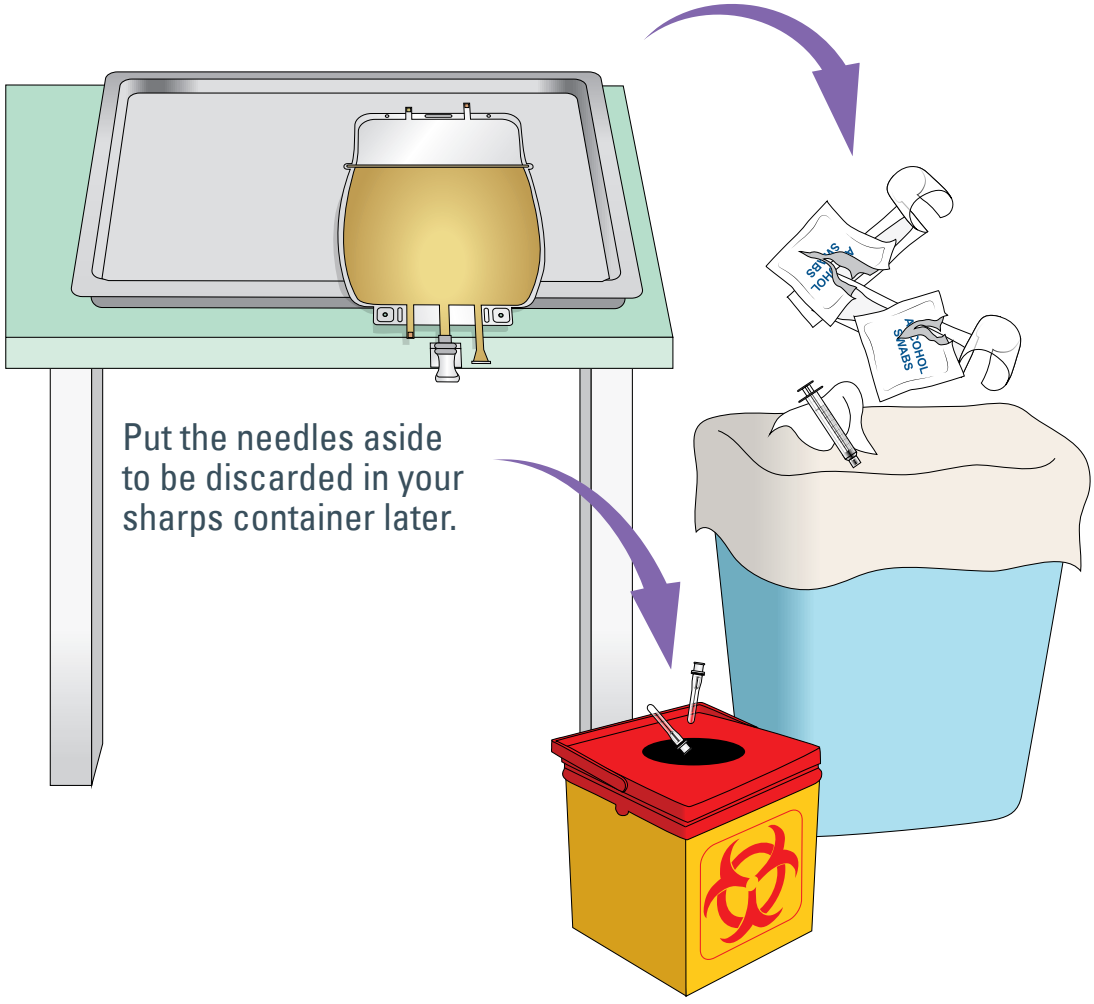
5 **If you have another medication to add, CLEAN THE INJECTION PORT AGAIN for 30 seconds, let the alcohol dry for 30 seconds then repeat steps 3 - 5.**



6 Gently rock the bag to mix the medication.

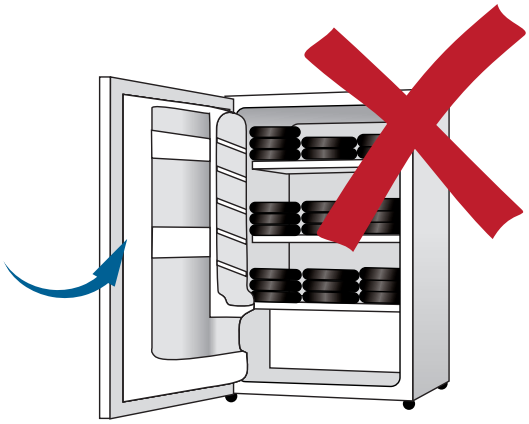


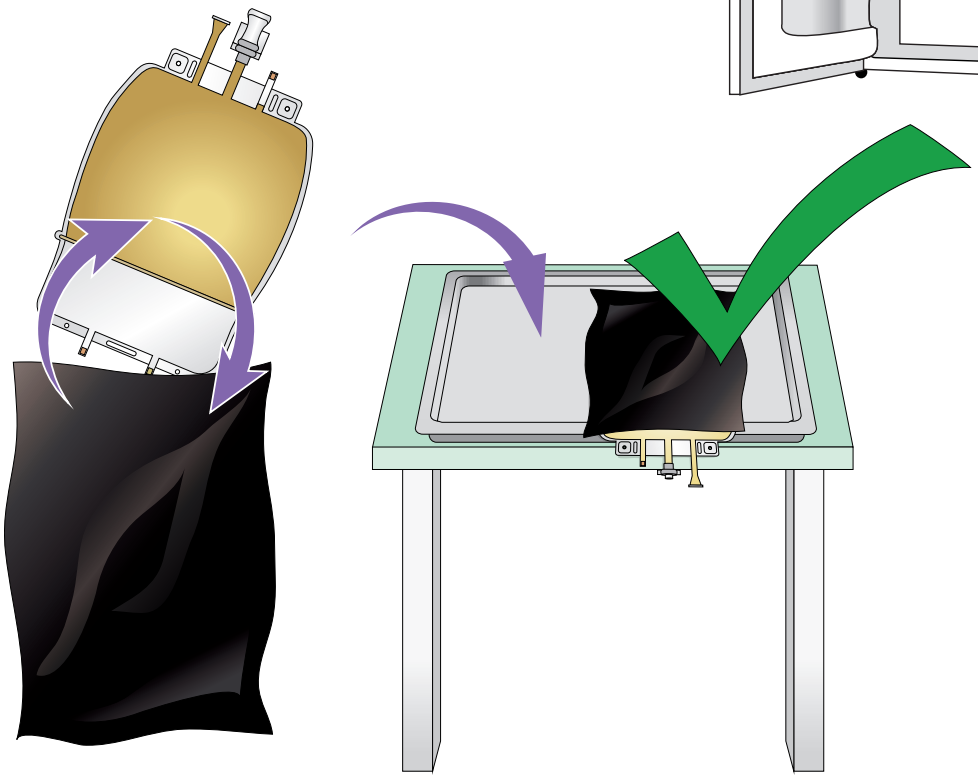
7 Remove the garbage from your tray.



8 Place your PN bag back in the black bag once prepared.

* **DO NOT** put it in the fridge.





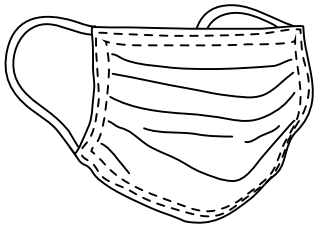
* **DO NOT** PREPARE YOUR SODIUM CHLORIDE SYRINGE IN THE MORNING FOR THE EVENING.

DO NOT PRIME YOUR TUBING IN THE MORNING TO SAVE TIME IN THE EVENING.

Priming the tubing

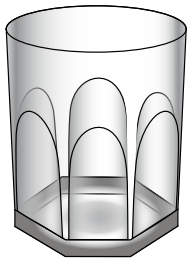
& connecting the PN solution *in the evening*

1 Gather these supplies:



Mask

Garbage Can



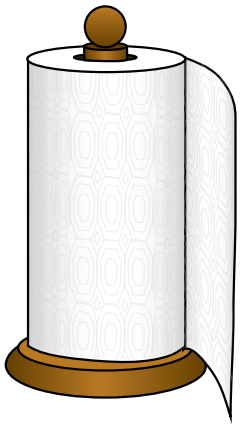
Small Glass

Cleaning Product

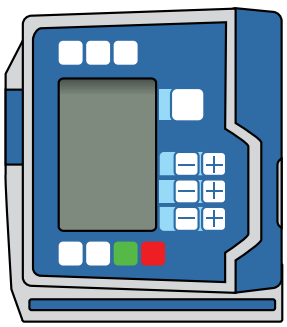
Rubbing Alcohol (70%)

Antimicrobial Soap (e.g. Dexidin®)

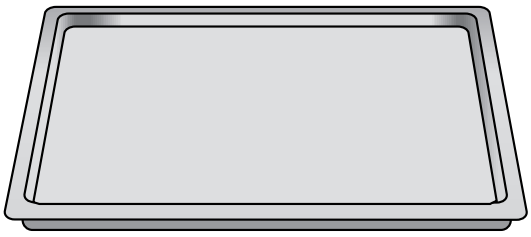
Alcohol-based Hand Cleanser (e.g. Purell®)



Paper Towel



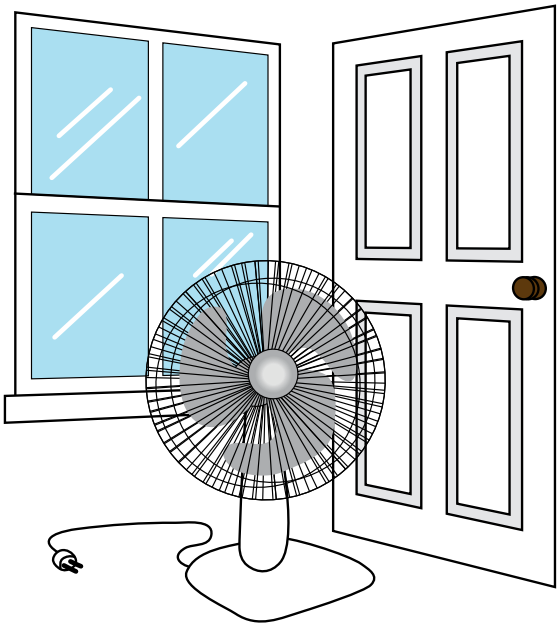
Pump



Tray

2 Put on a mask.

Make sure that anyone else in the room also wears a mask.

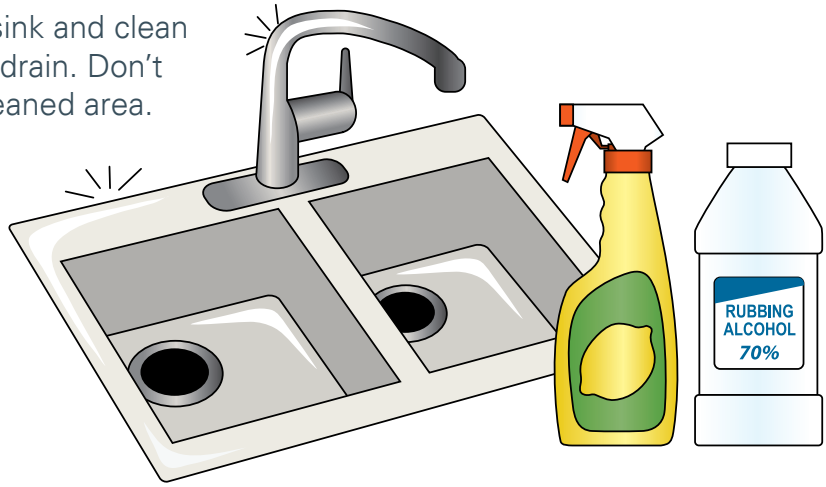


3 Close all windows, doors and turn off fans.

4 Place the garbage can and sharps container close to your PN work area.

5 Clean the sink with your usual product and then with alcohol.

Start with faucet, sides of sink and clean your way down toward the drain. Don't come back to an already cleaned area.



6 Take off your watch and rings and do a regular hand wash.

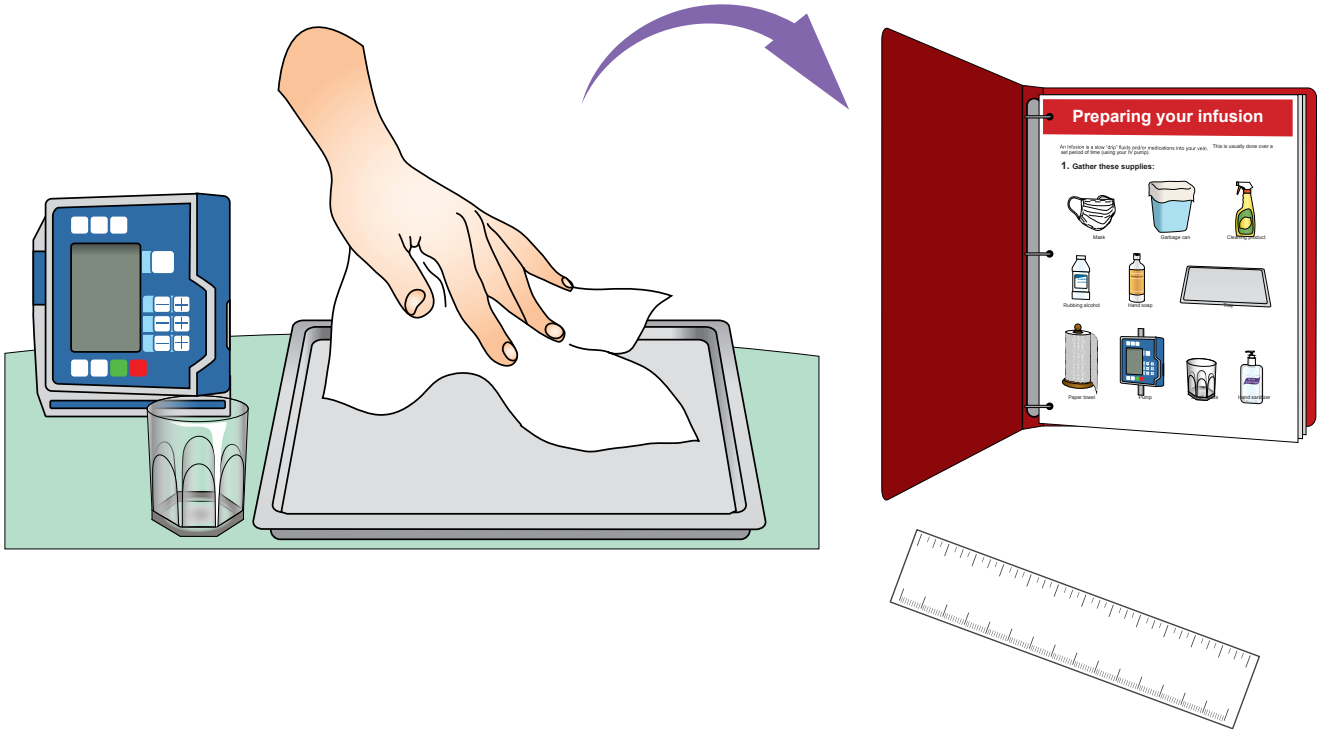
7 Clean with alcohol:

- **The alcohol bottle**
- **The antimicrobial soap bottle (e.g. Dexidin®)**
- **The alcohol-based hand cleanser bottle (e.g. Purell®)**
- **The paper towel dispenser**

Start at the top of the bottle, then sides and finish with the bottom. Don't forget to place them on a surface that's been cleaned already.

8 Clean the work table and tray with alcohol, along with the pump, the small glass, your PN binder, ruler and the pages in plastic sheets that you will be using.

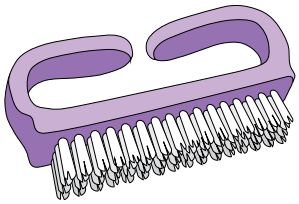
Clean the top of the tray, first, then the bottom, making sure it does not touch your clothes.



9 Clean your hands with the alcohol-based hand cleanser (e.g. Purell®).

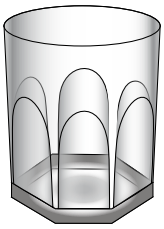
Rub the cleanser all over your hands, until completely dry.

10 Gather your infusion equipment:

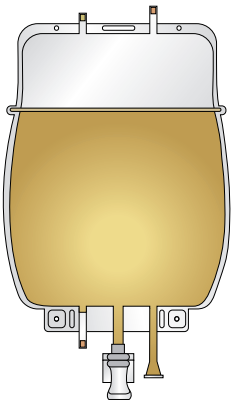


Nail Brush
(put your nail brush close to your sink)

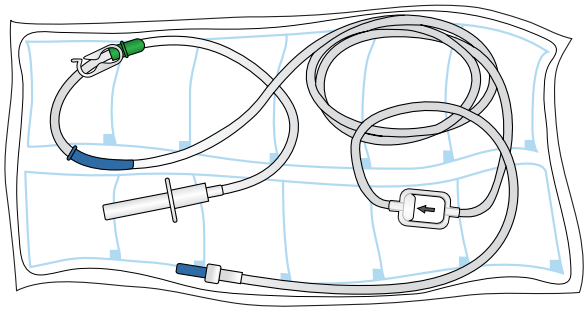
(10) Alcohol Swabs



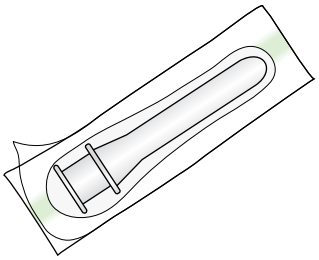
Small Glass
(already cleaned)



(1) PN Bag

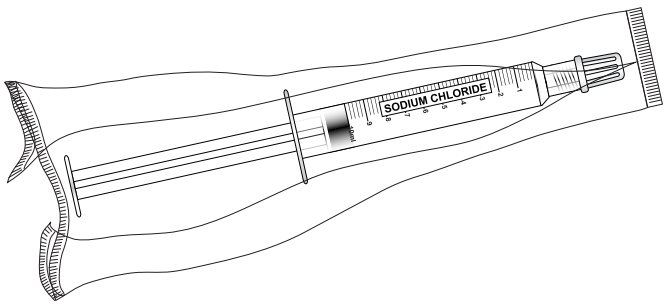


(1) Ambix® Tubing Set
with 1.2 micron filter

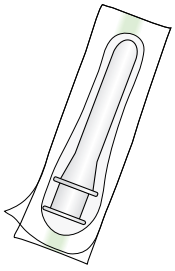


(1) Plastic Cannula

To prepare the sodium chloride syringe, you will need:



(1) Sodium Chloride (NaCl)
Syringe (10 ml)

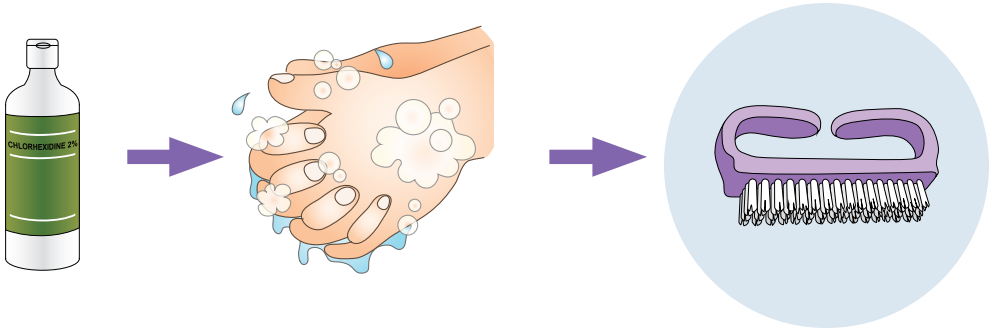


(1) Plastic Cannula

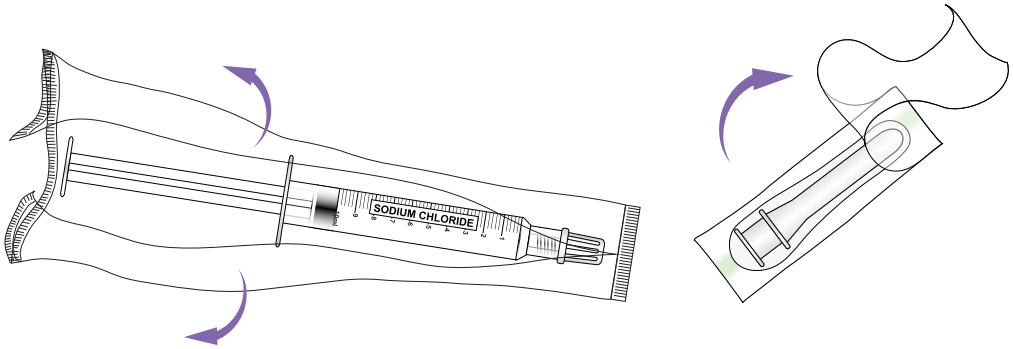
Preparing your sodium chloride syringe

A sodium chloride syringe will be used to flush your catheter.

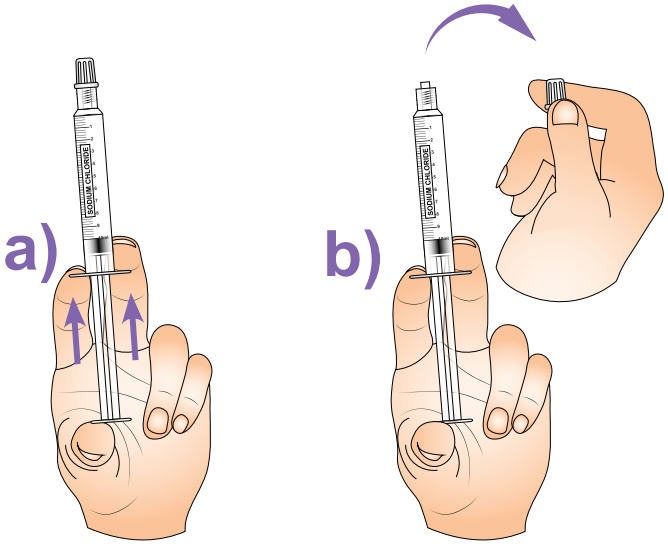
1 **Wash your hands (long wash with nail brush).**

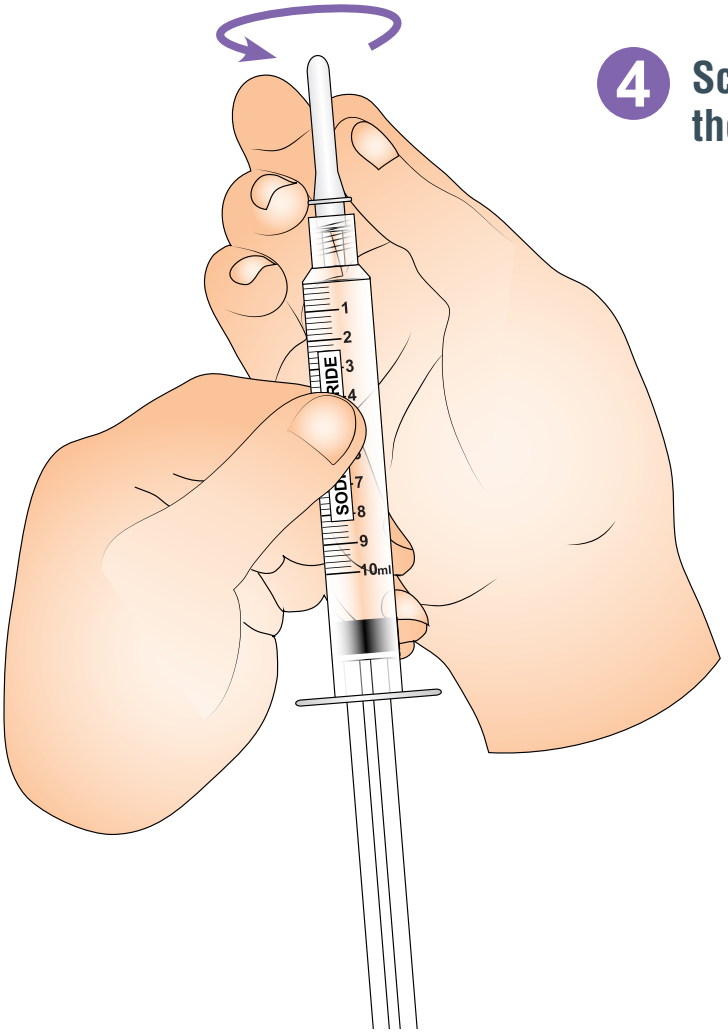


2 **Open the sodium chloride syringe and place your syringe on your tray. Then, open one plastic cannula and leave it in its packaging "boat".**

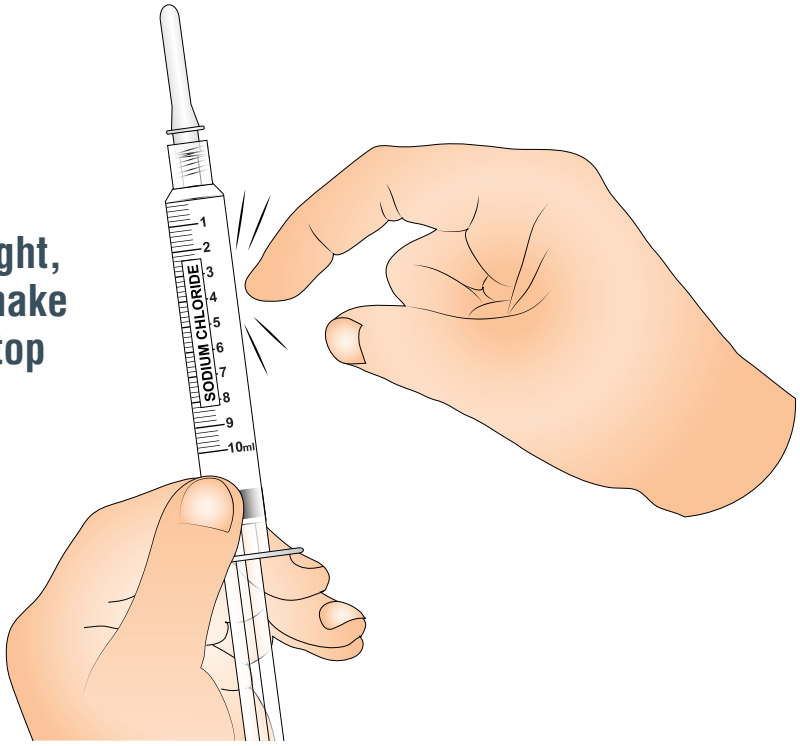


3 **With the white cap still in place, push the plunger of the sodium chloride syringe to release pressure. Then unscrew the white cap.**

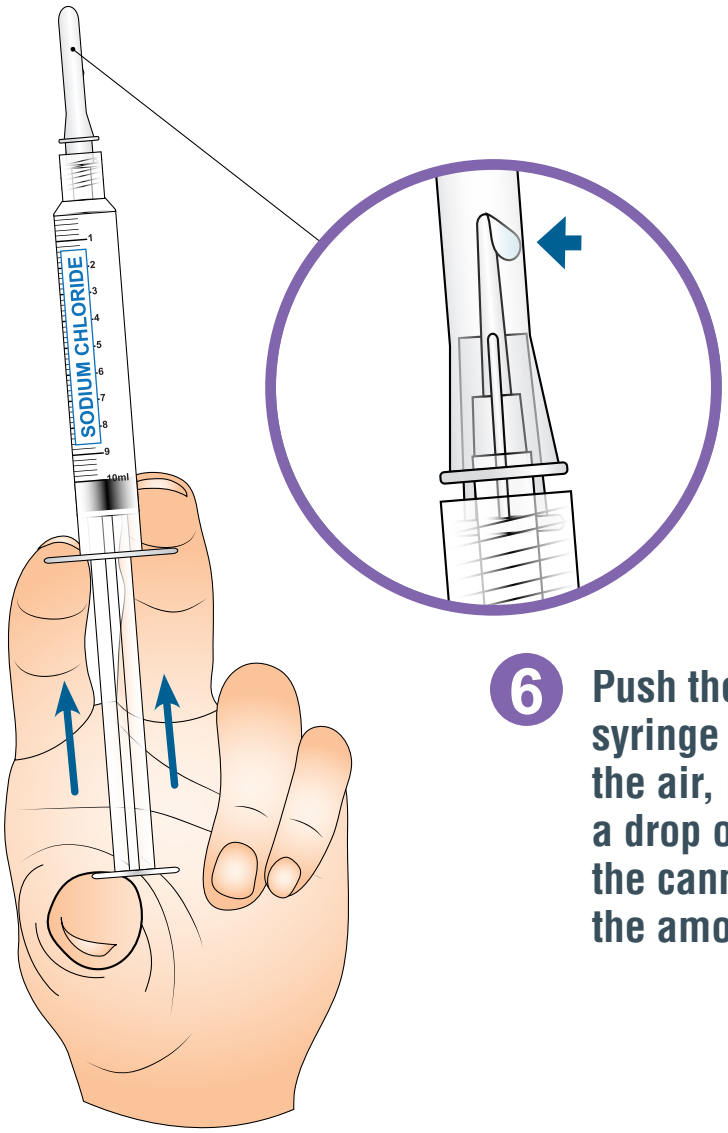




4 Screw the plastic cannula onto the sodium chloride syringe.

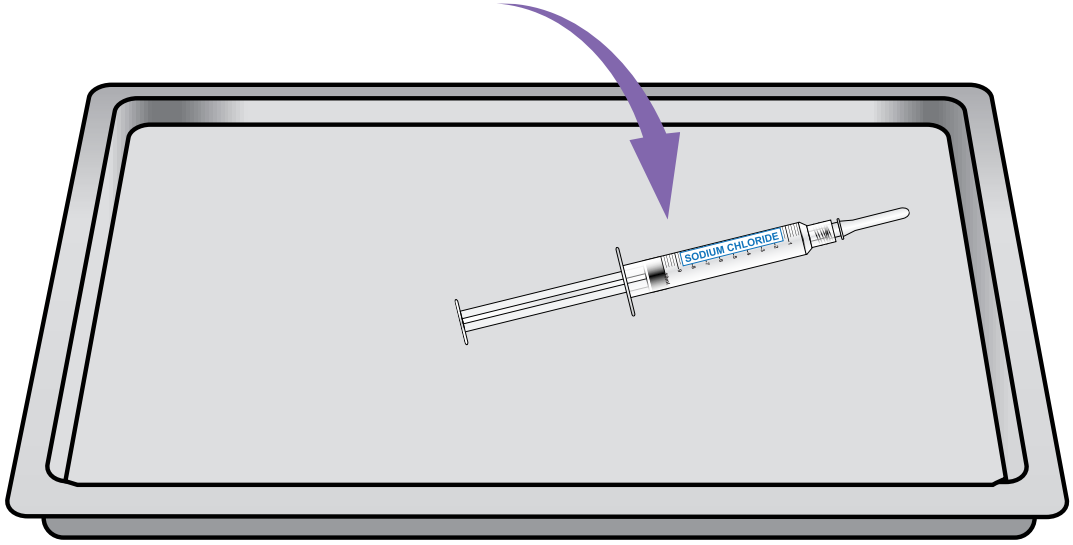


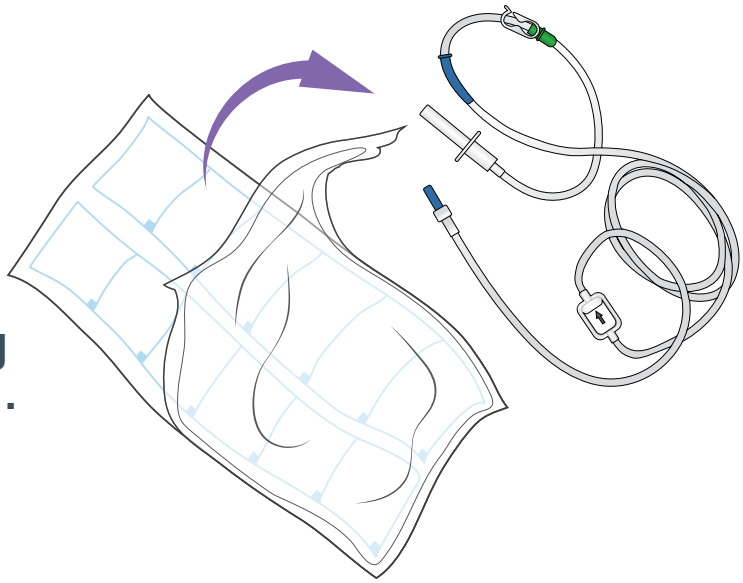
5 With the syringe held upright, gently tap the syringe to make all air bubbles rise to the top of the syringe.



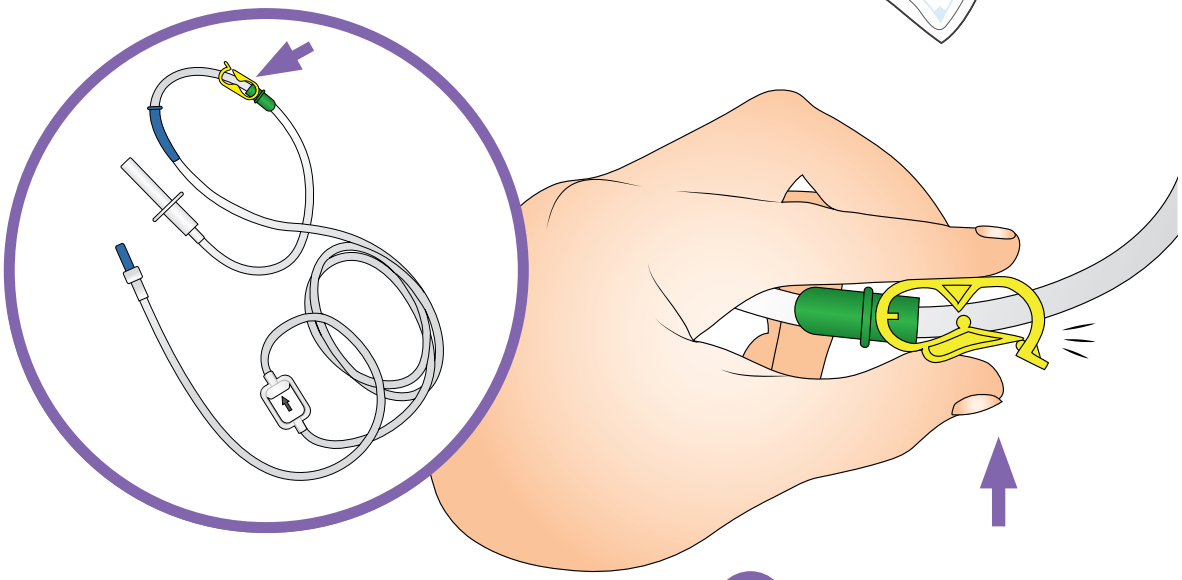
6 Push the plunger of the syringe very slowly to remove the air, pushing until you see a drop of liquid at the end of the cannula. Verify and adjust the amount of liquid to 10 ml.

7 Place the prepared syringe on the tray.

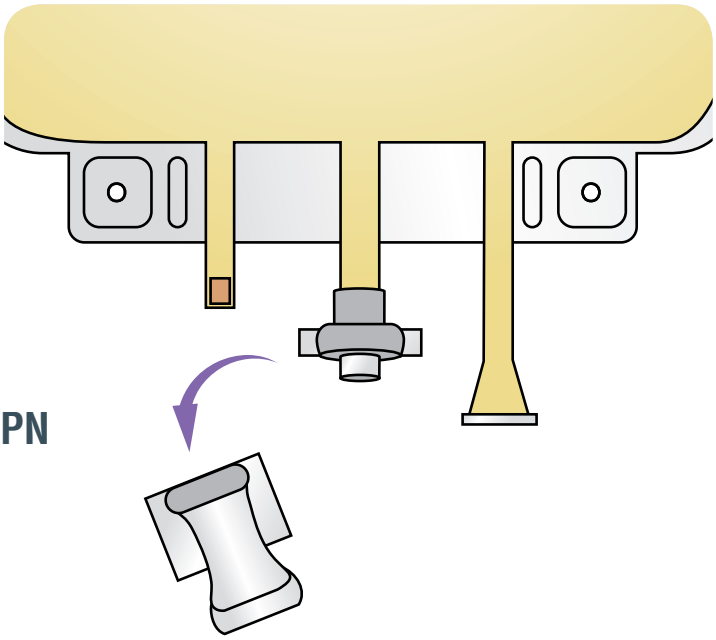




8 Remove the tubing from its packaging.



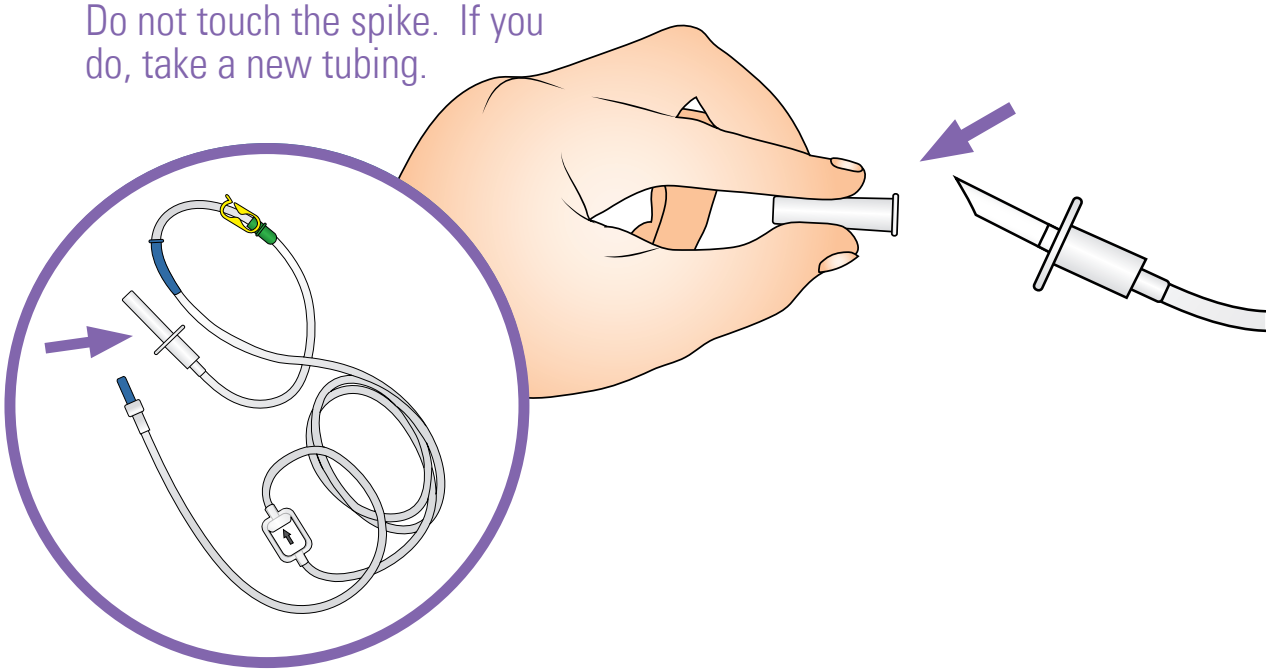
9 Close the clamp on the tubing.



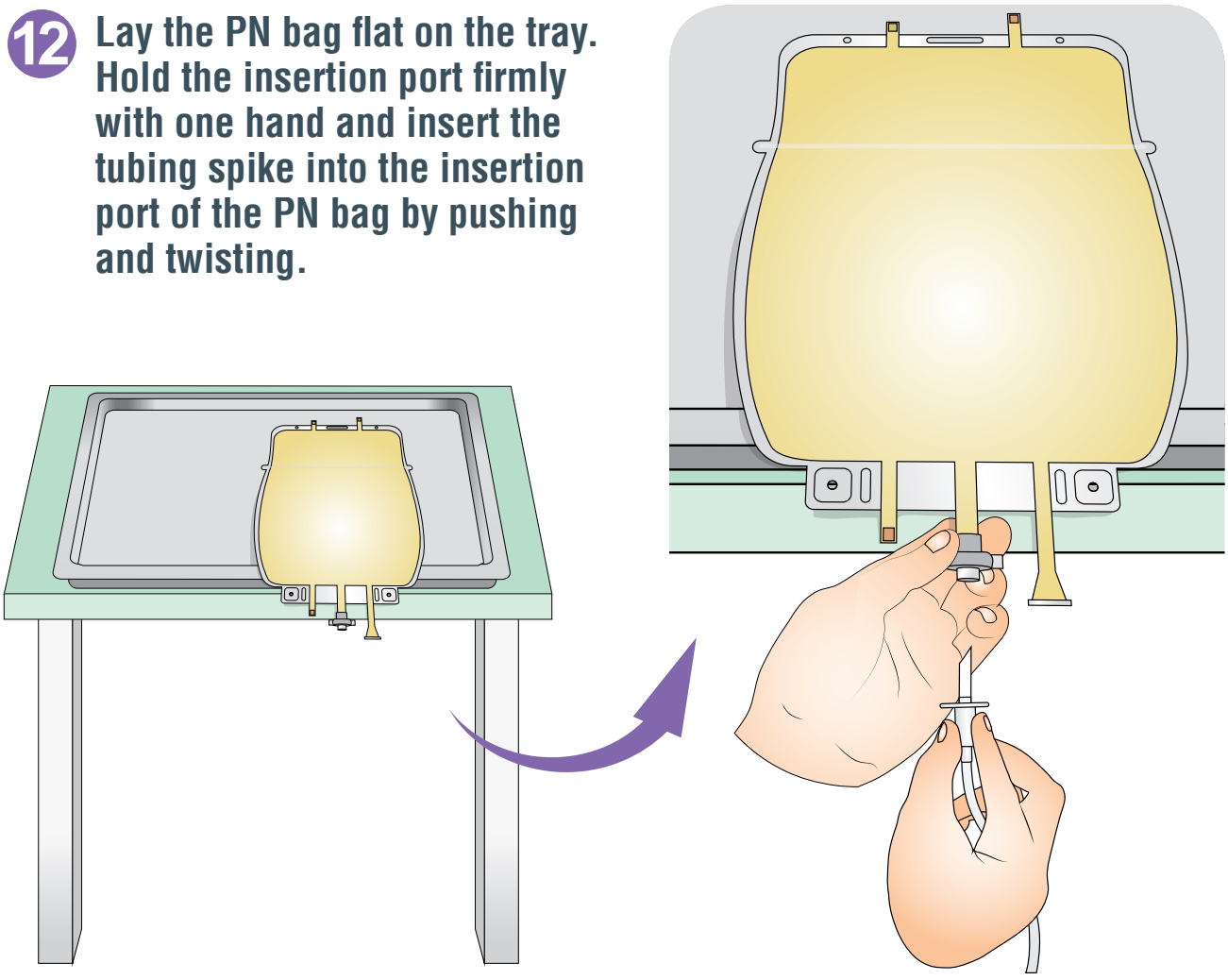
10 Pull the tab off the insertion port of the PN bag by twisting it.

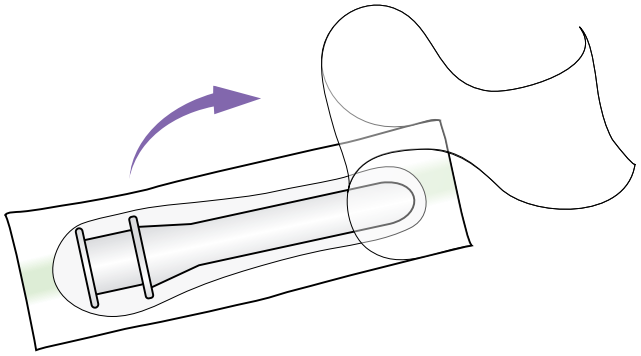
11 **Remove the protective cap from the tubing spike.**

Do not touch the spike. If you do, take a new tubing.



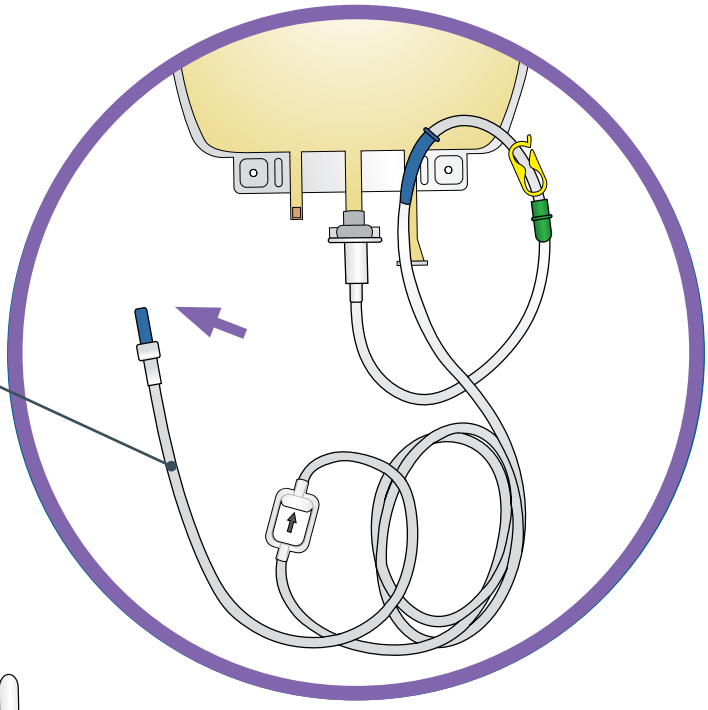
12 **Lay the PN bag flat on the tray. Hold the insertion port firmly with one hand and insert the tubing spike into the insertion port of the PN bag by pushing and twisting.**

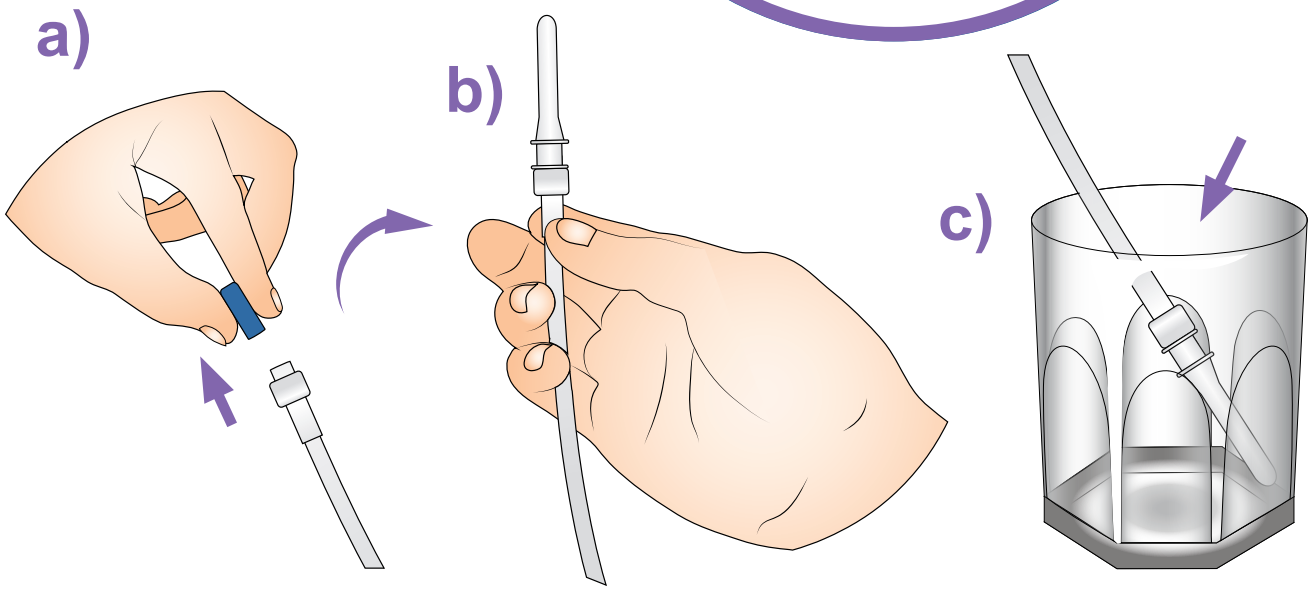




13 **Open the plastic cannula, keeping it in its “boat”.**

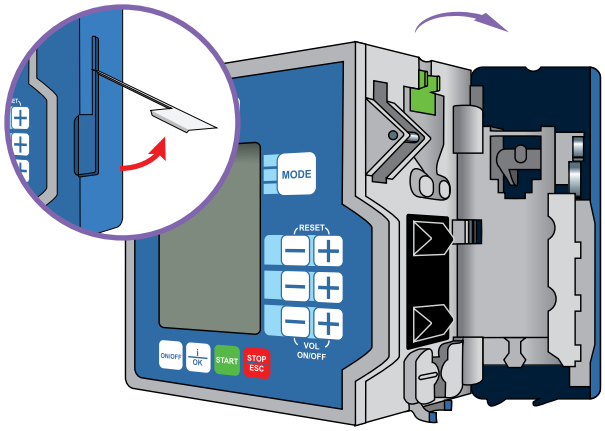
14 **Unscrew the dark blue protector from the end of the Ambix tubing and replace it with the plastic cannula. Then place the end of the tubing in the glass.**



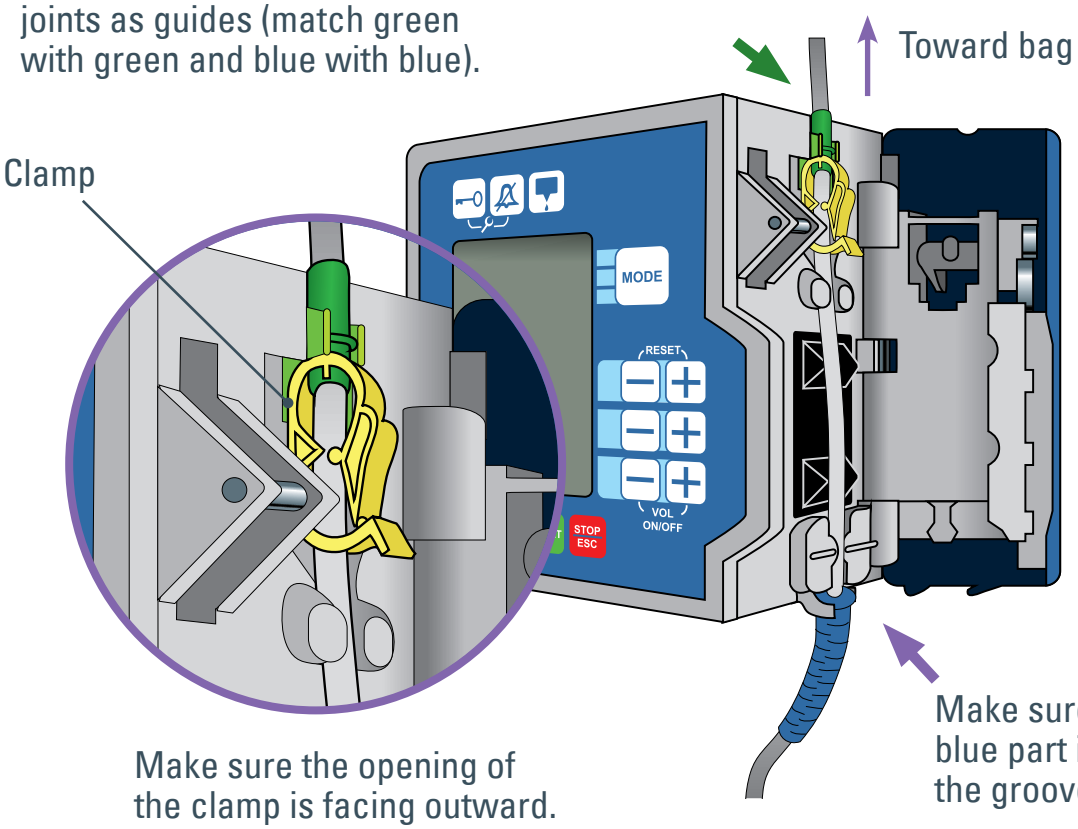


15 Insert the tubing into the pump:

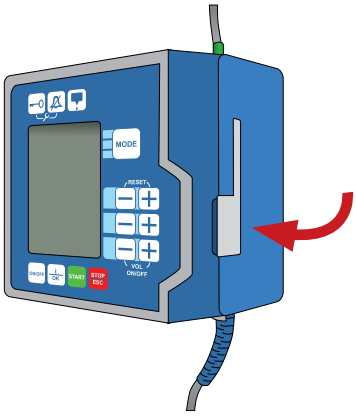
a) Using the lever, open the pump door.



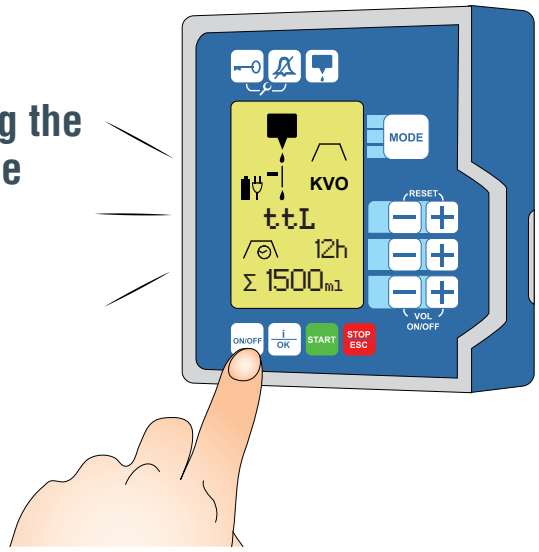
b) Insert the tubing into the pump by using the clamp and blue rubber joints as guides (match green with green and blue with blue).

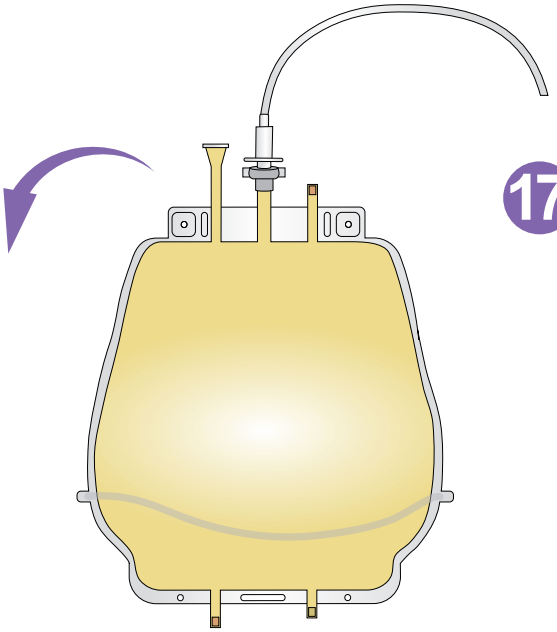


c) Close the pump door and press down the lever.



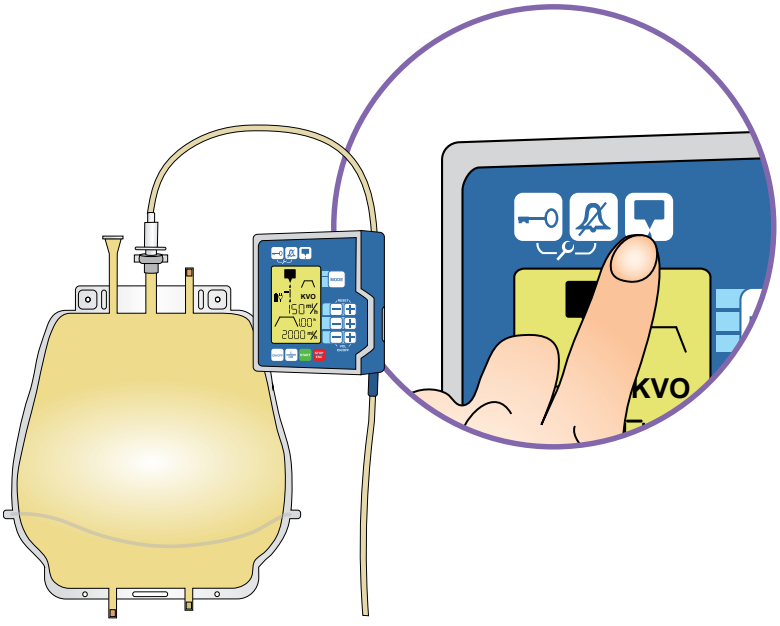
16 Turn “ON” the pump by pressing the “ON” button until you see all the display on the screen showing.



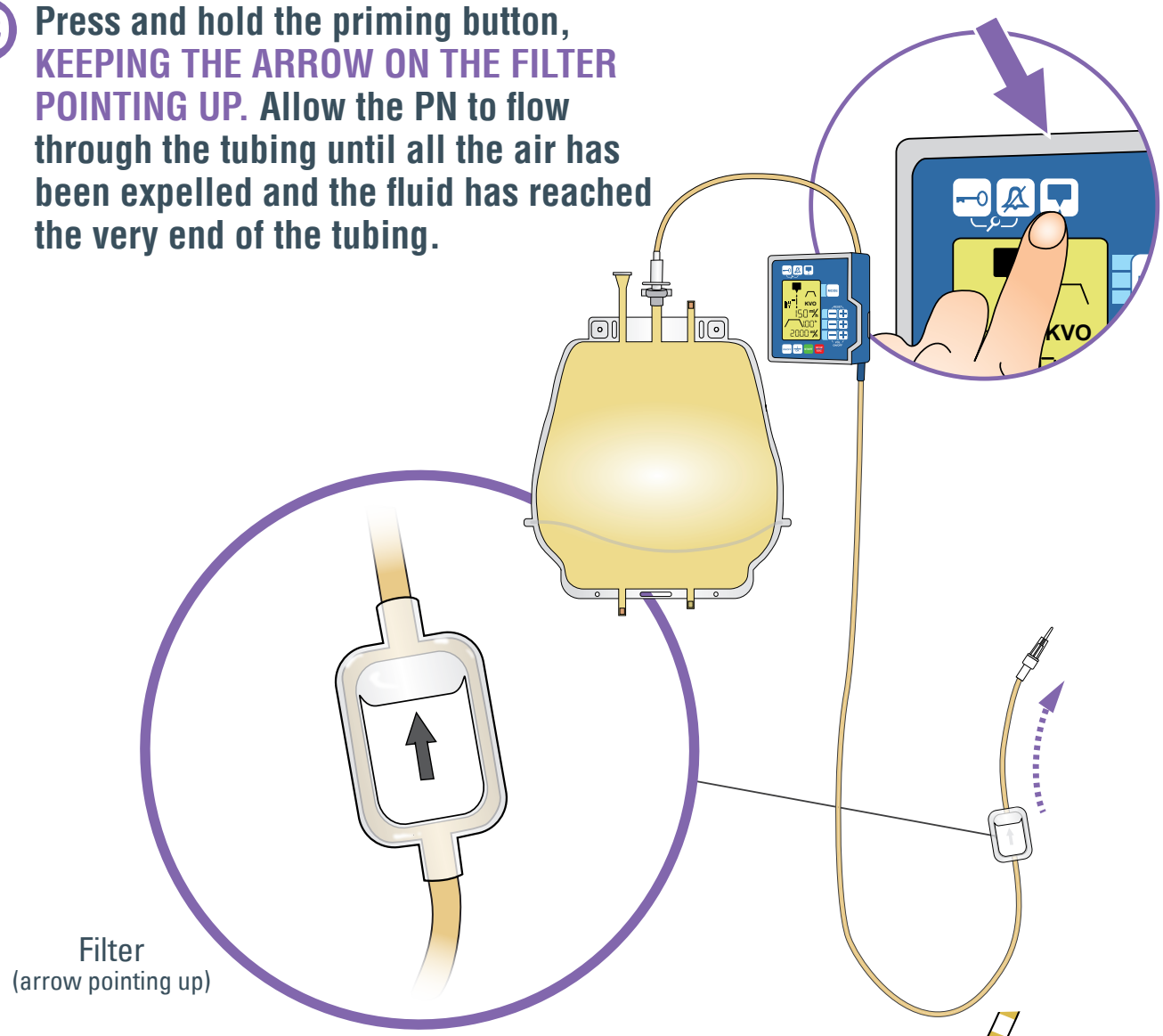


17 Place the PN bag upside down so the tubing is on top (to make all air bubbles rise to the top of the bag).

18 Press and hold the priming button until the filter is filled. Stop and wait 30 seconds.

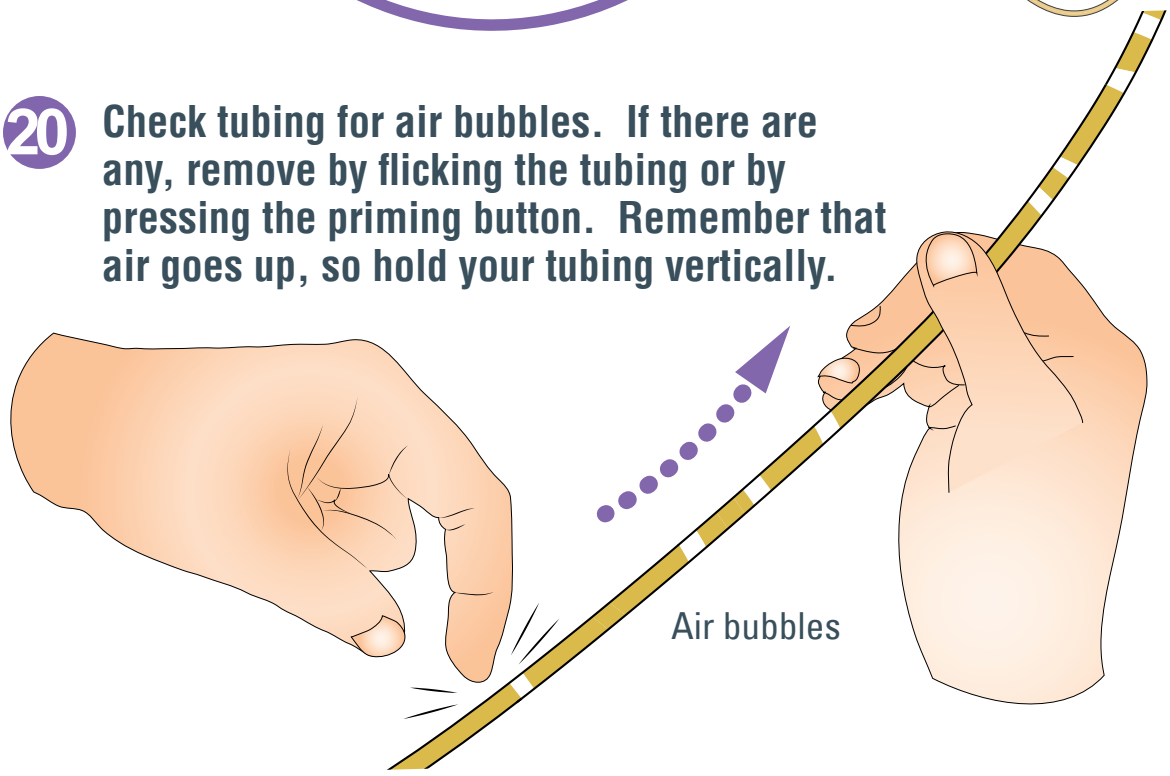


19 **Press and hold the priming button, KEEPING THE ARROW ON THE FILTER POINTING UP. Allow the PN to flow through the tubing until all the air has been expelled and the fluid has reached the very end of the tubing.**



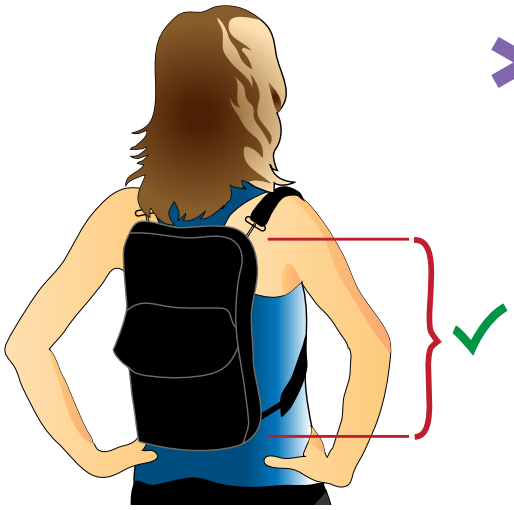
Filter
(arrow pointing up)

20 **Check tubing for air bubbles. If there are any, remove by flicking the tubing or by pressing the priming button. Remember that air goes up, so hold your tubing vertically.**



Air bubbles

21 Programming and starting the pump

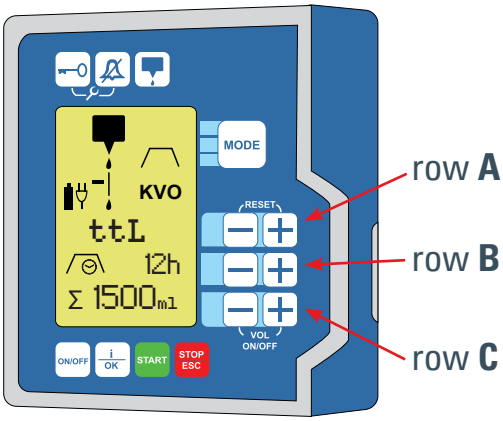


✱ The pump in the backpack should be at the level of your chest or 30-45 cm (12-18 inches) above or below your chest (maximum). So do not put the backpack on the floor or on a high piece of furniture!

To program the pump:

1 Set the number of **hours** (h) of infusion
- Press on the ⊖ or ⊕ keys of row **B**

2 Set the **volume** (or total amount) you want to infuse (in ml)
- Press on the ⊖ or ⊕ keys of row **C**



3 Set the **end** (or taper down) of your infusion
- Press on the ⊖ key of row **A**, **("do")** will appear
- Select the number of hours of taper down with the ⊖ or ⊕ keys of row **B**

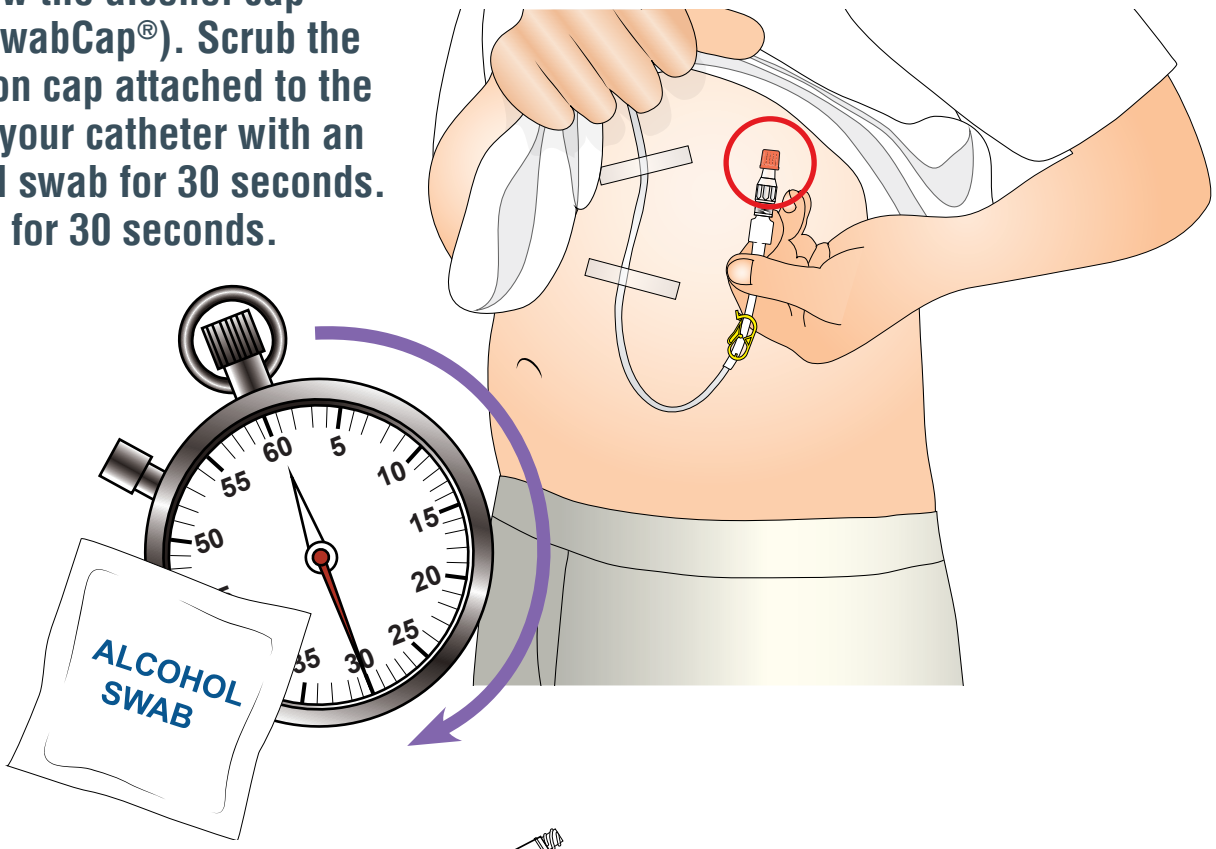
4 Set the **beginning** (or taper up) of your infusion
- Press on the ⊖ key of row **A** , **("UP")** will appear
- Select number of hours of taper up with the ⊖ or ⊕ keys of row **B**

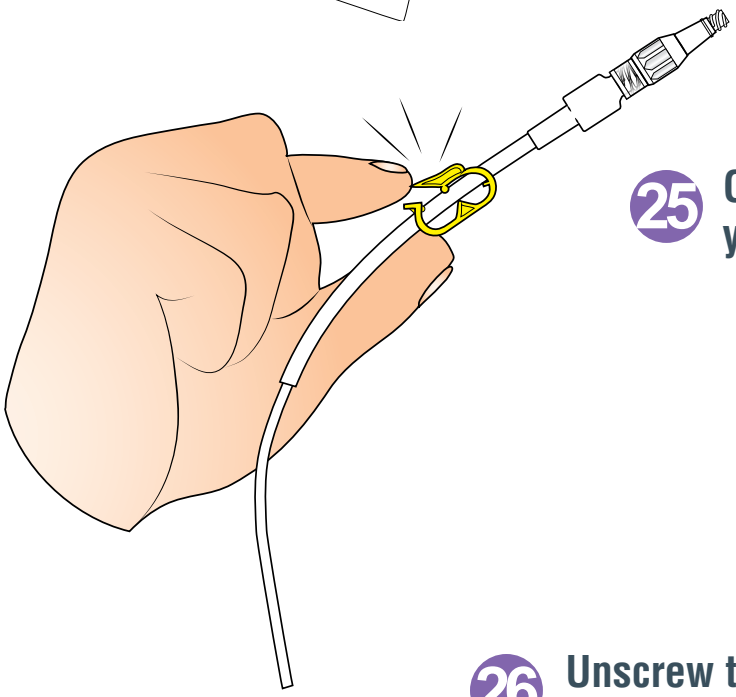
5
- Press on the ⊖ key of row **A**, your screen will return to main window

22 Recheck the values entered.

23 Clean your hands with an alcohol-based hand cleanser (e.g. Purell®). Rub the cleanser all over your hands until completely dry.

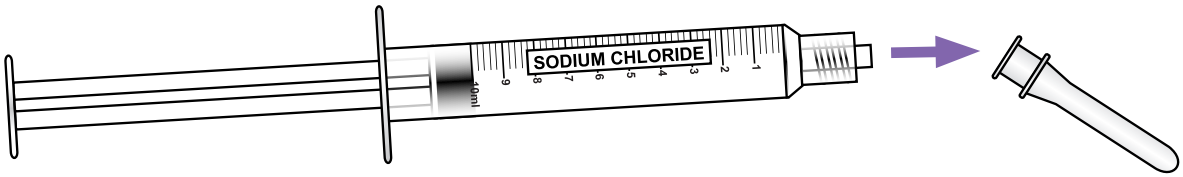
24 Unscrew the alcohol cap (e.g. SwabCap®). Scrub the injection cap attached to the end of your catheter with an alcohol swab for 30 seconds. Let dry for 30 seconds.



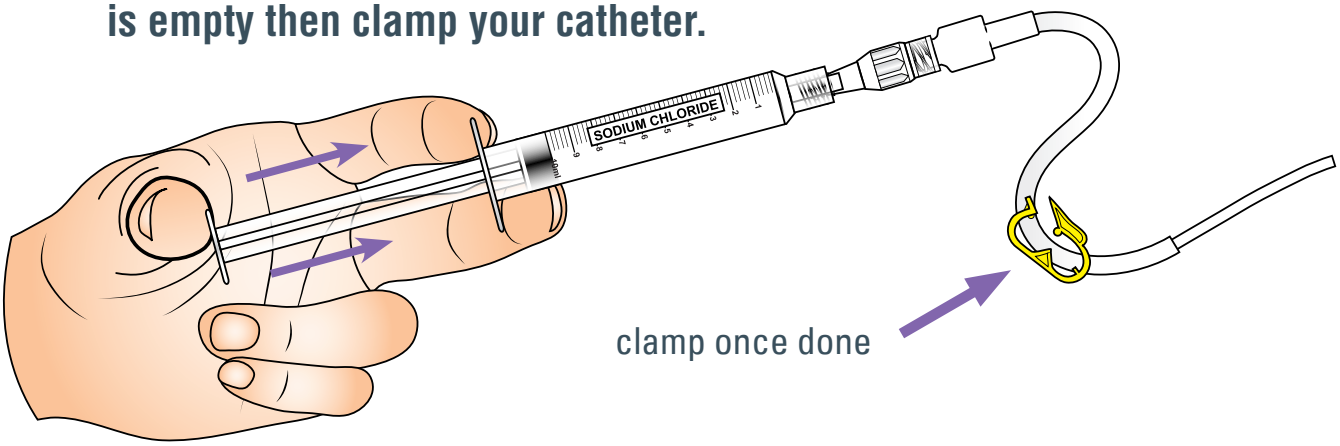


25 Open the clamp on your catheter.

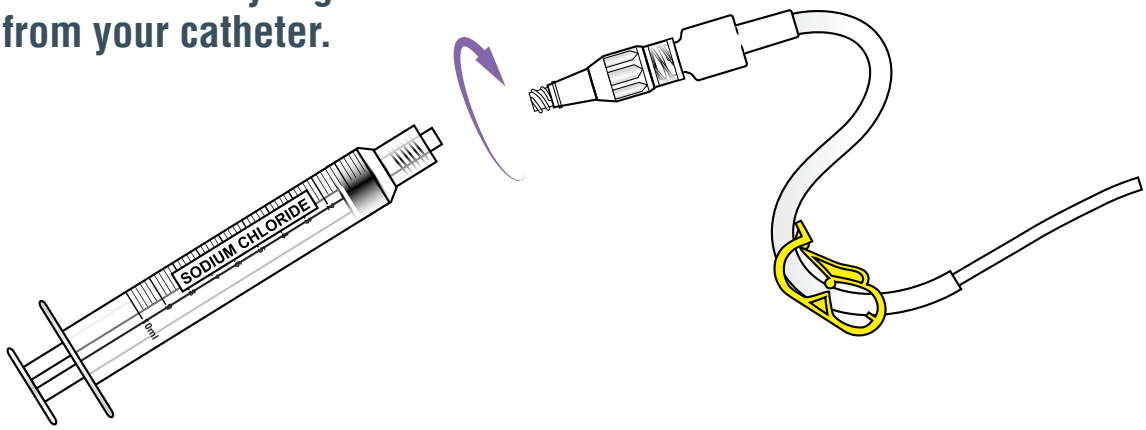
26 Unscrew the plastic cannula from the sodium chloride syringe.



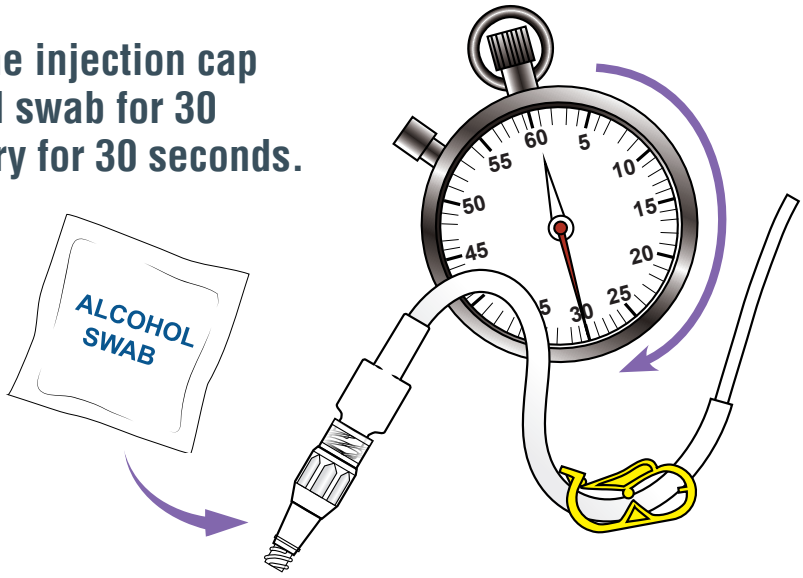
27 Screw the syringe to your catheter and flush it with 10 ml of sodium chloride – 5 ml without stopping, then 1ml at a time, until the syringe is empty then clamp your catheter.

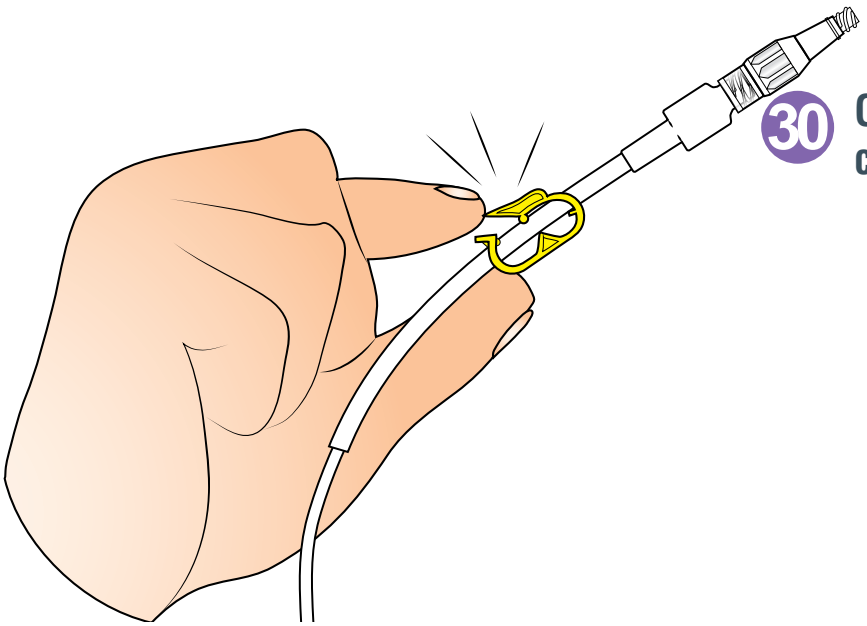


28 Unscrew the syringe from your catheter.

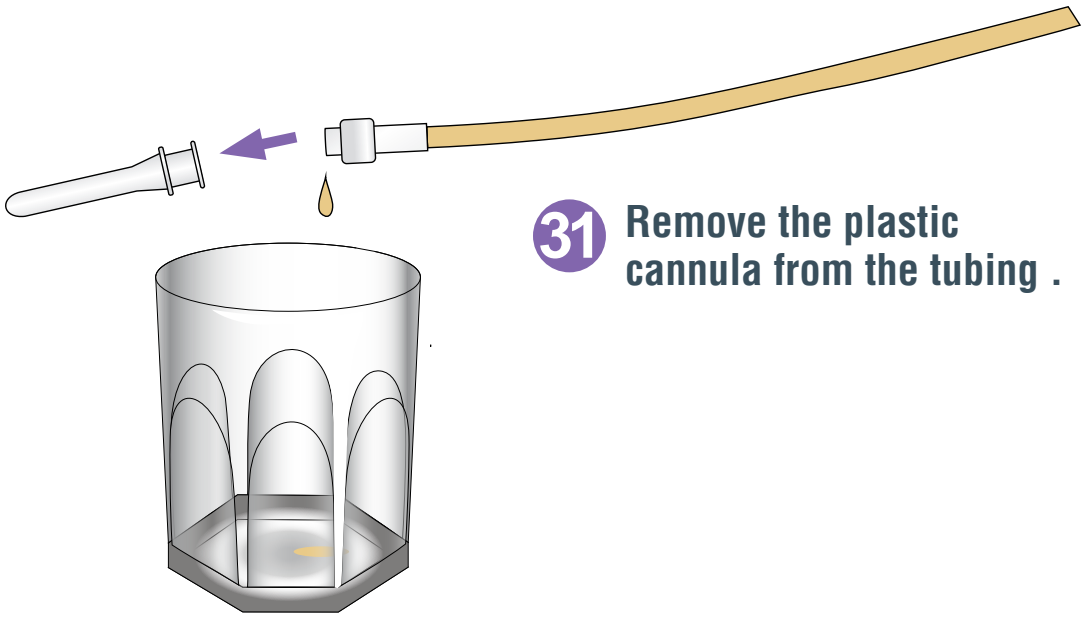


29 Again, scrub the injection cap with an alcohol swab for 30 seconds. Let dry for 30 seconds.

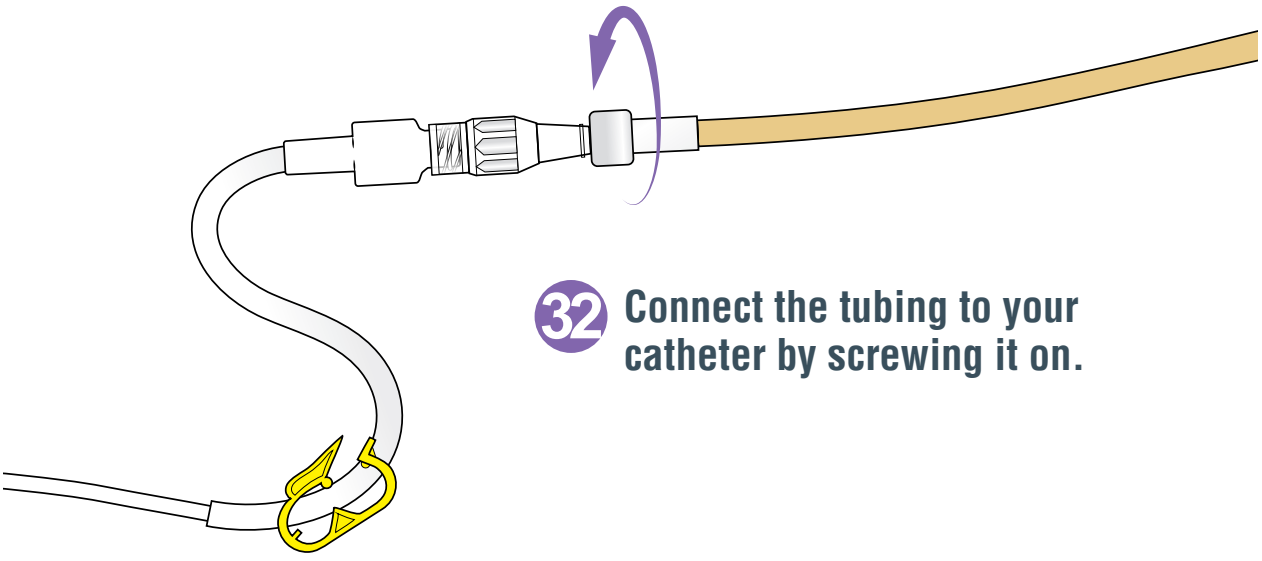




30 Open the clamp on your catheter again.

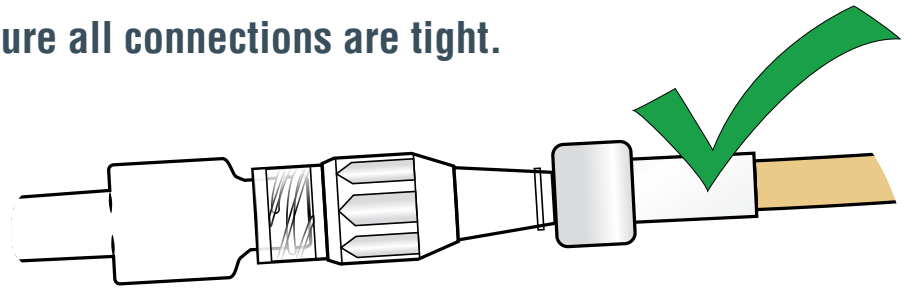


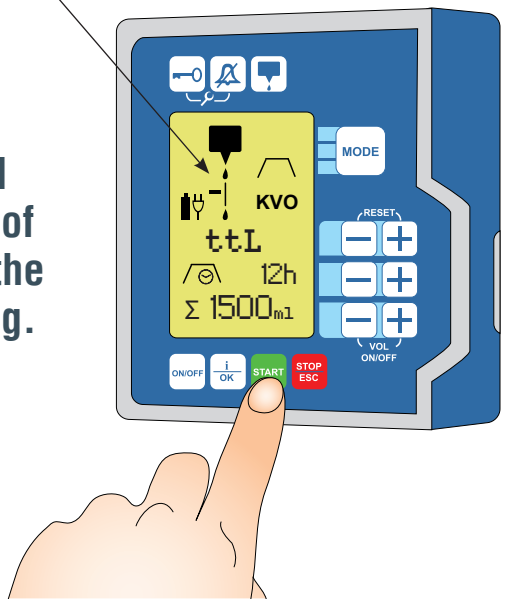
31 Remove the plastic cannula from the tubing .



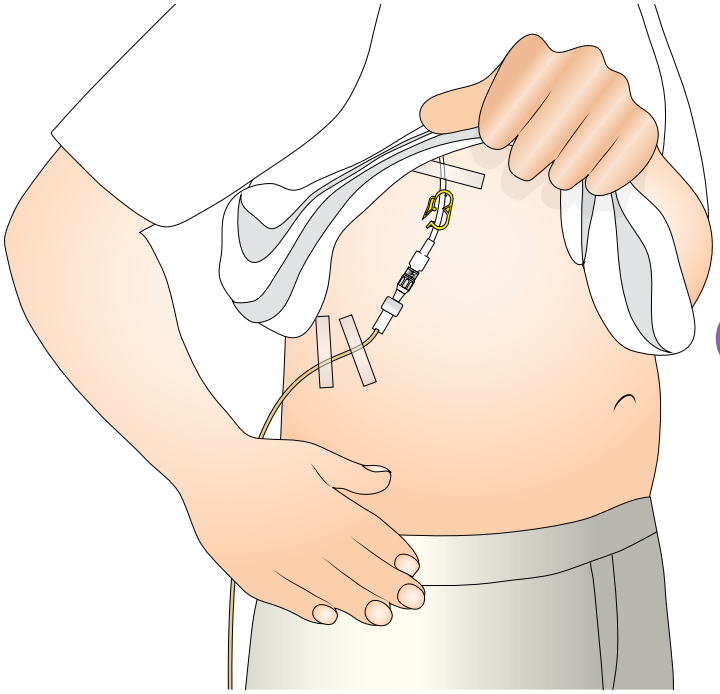
32 Connect the tubing to your catheter by screwing it on.

33 Make sure all connections are tight.





34 Press START – you will see drips and bars begin to move under the image of the PN bag on the pump screen and the image of the PN bag will stop flashing.

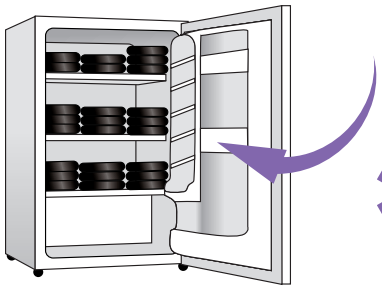


35 Tape the catheter, at least twice to prevent from being pulled accidentally.

Check it regularly to make sure that it remains well taped. Tape the end of the catheter onto your chest, keeping it away from your abdomen (stoma, fistula or other wound dressing).

Preparation of Insulin

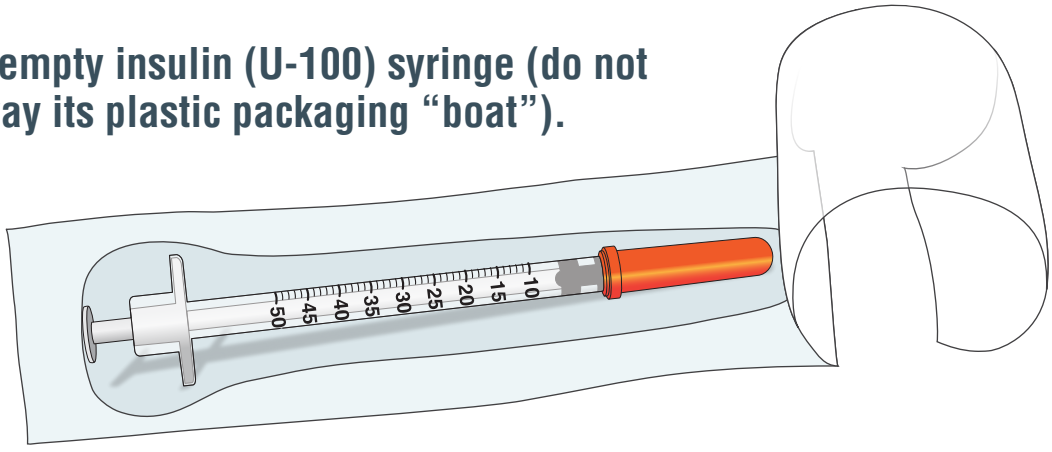
1 **Check your vial of insulin to make sure that it is the correct type of insulin, that the vial is not expired and the liquid is clear.**



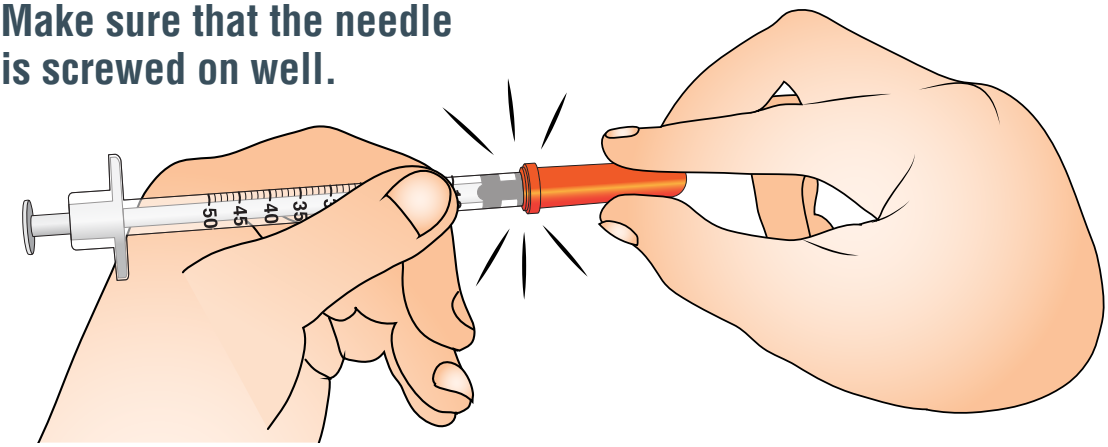
* Your insulin vial is kept in the fridge and is good for one month once opened.

2 **Clean the top of the insulin vial with one alcohol swab and let it dry for 30 seconds.**

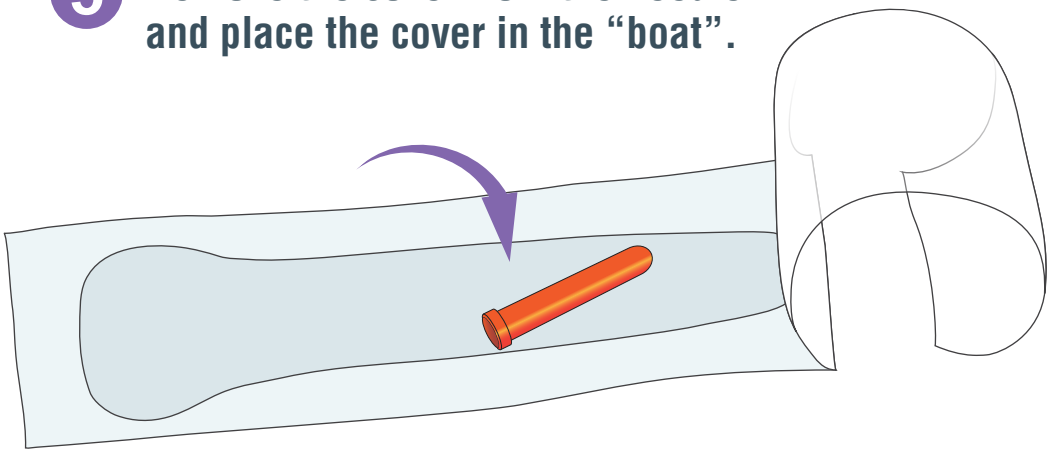
3 **Open an empty insulin (U-100) syringe (do not throw away its plastic packaging "boat").**

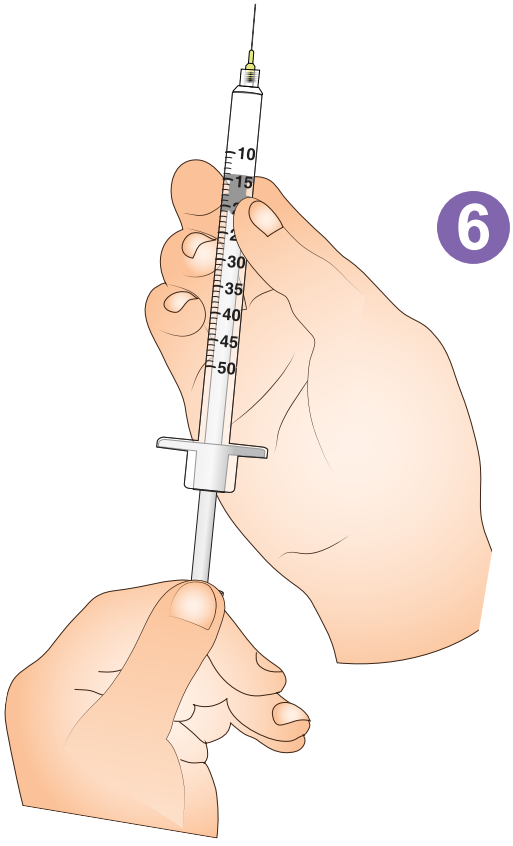


4 Make sure that the needle is screwed on well.

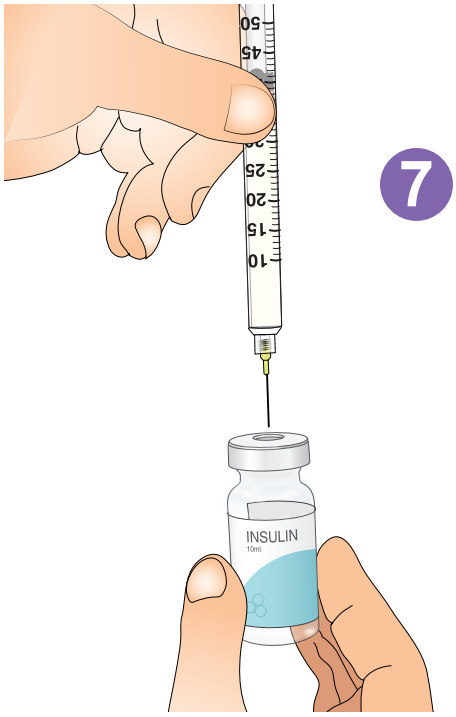


5 Remove the cover from the needle and place the cover in the “boat”.





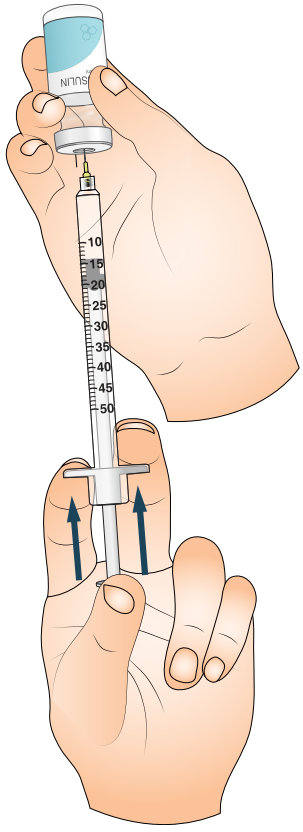
6 Draw up the correct number of units of air into the syringe.

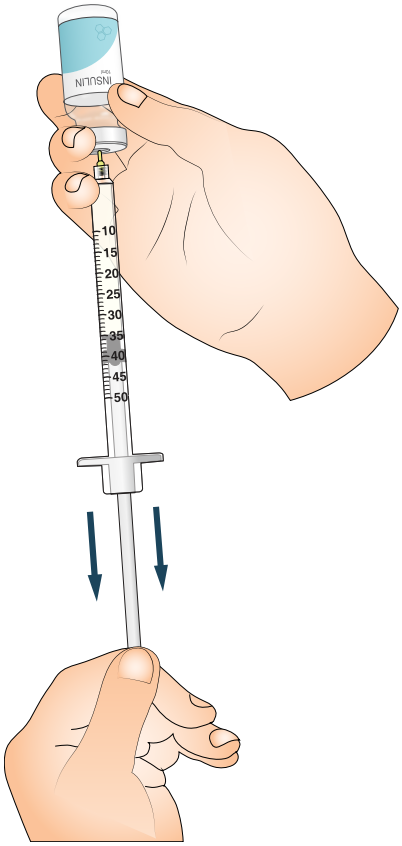


7 Push the needle through the rubber seal of the vial of insulin, then flip over the vial and syringe.

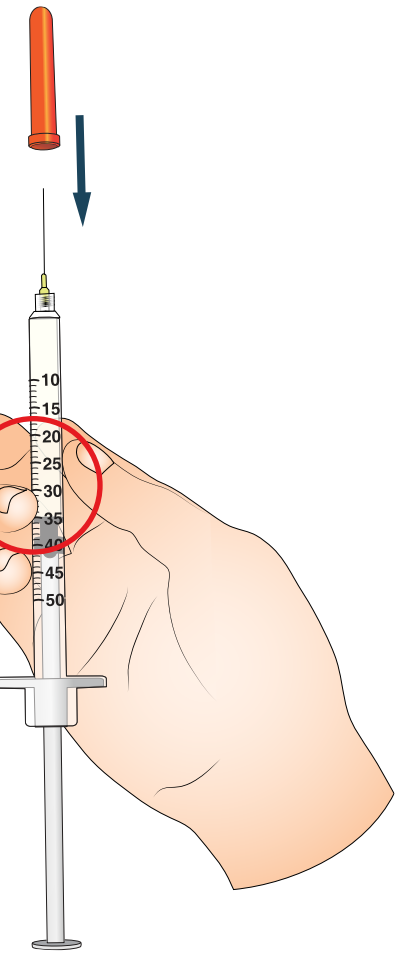
8 Inject the air into the vial and then withdraw the liquid (make sure the tip of the needle remains in the liquid).

You may have to do this back and forth until there is the exact amount of insulin with no air in the syringe.

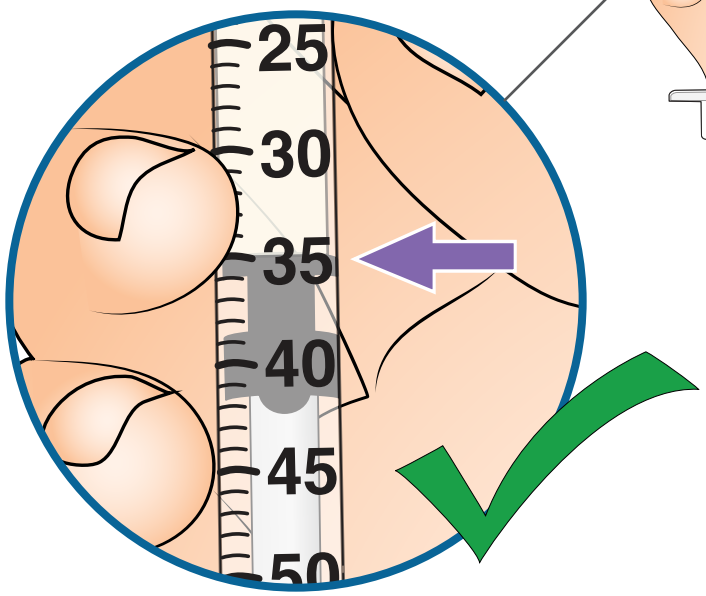


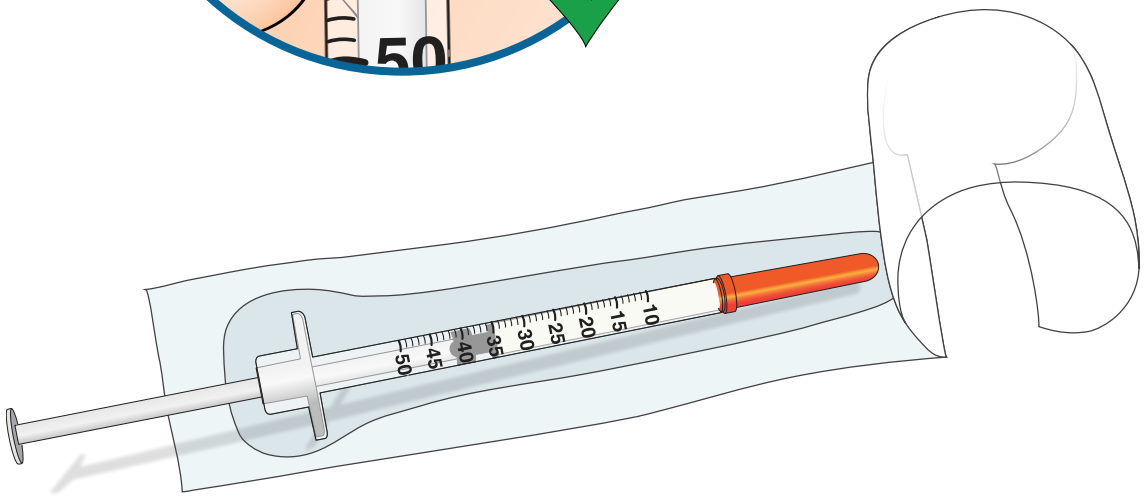


9 **Remove the needle from the vial and put the cover back on the needle.**



10 **Double-check with someone that you have the exact amount.**





11 **Place the syringe in the "boat".**

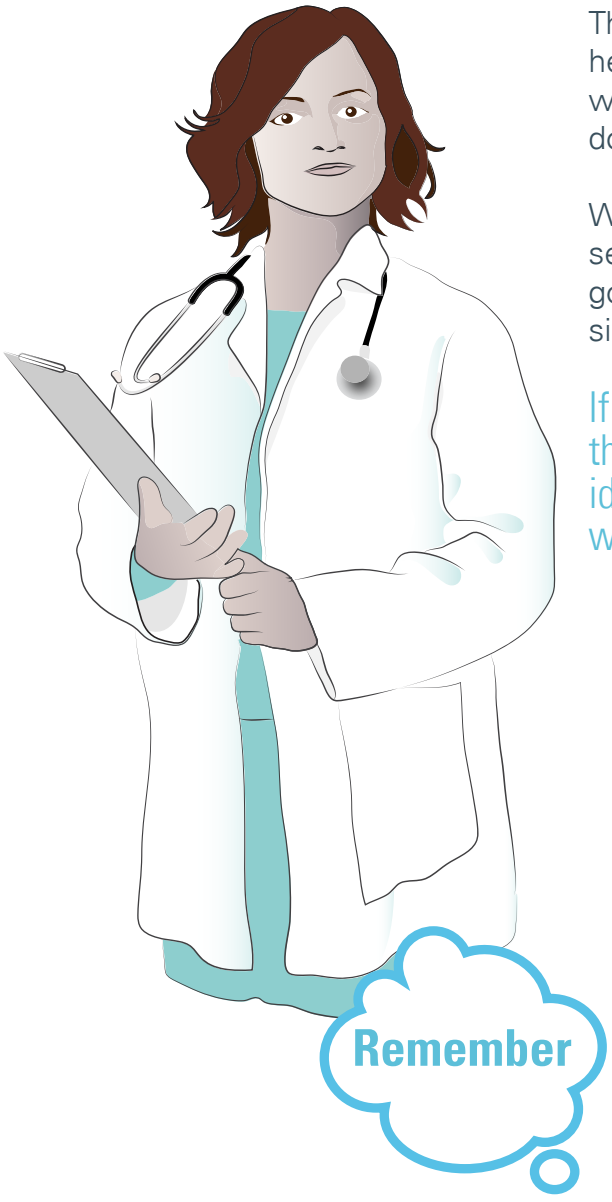
✱ **Don't forget** to add it to the PN bag
(See section **"Adding vitamins and/or medications to PN"** to learn more)

Part 4: Possible problems & what to do?

Introduction

It may happen that you suddenly feel unwell or that you notice a problem with your PN treatment while you are at home. For certain problems, you will need to seek out help and speak to a member of your health care team. For others which are more serious, you will need immediate, emergency care (that is, you must call 911).

*** However, for most issues that may come up from time to time, you will be able to handle these safely right at home.**



This section will cover all types of problems. It will help you to make sense of what is happening. You will be able to review step by step what you have to do if you are having a problem

We will start by reviewing when it is important to seek help (either by calling 911, calling our clinic, going as soon as possible to the emergency) or to simply stay home.

If you don't know how serious it is, start from the beginning (extremely serious) until you can identify your problem. This chapter will tell you what to do.

Whatever happens, you are not alone.
There is always a solution.

- **Take a deep breath.**
- **Read these steps carefully.**
- **Remind yourself: you can do it!**

EXTREMELY SERIOUS

When to call 911

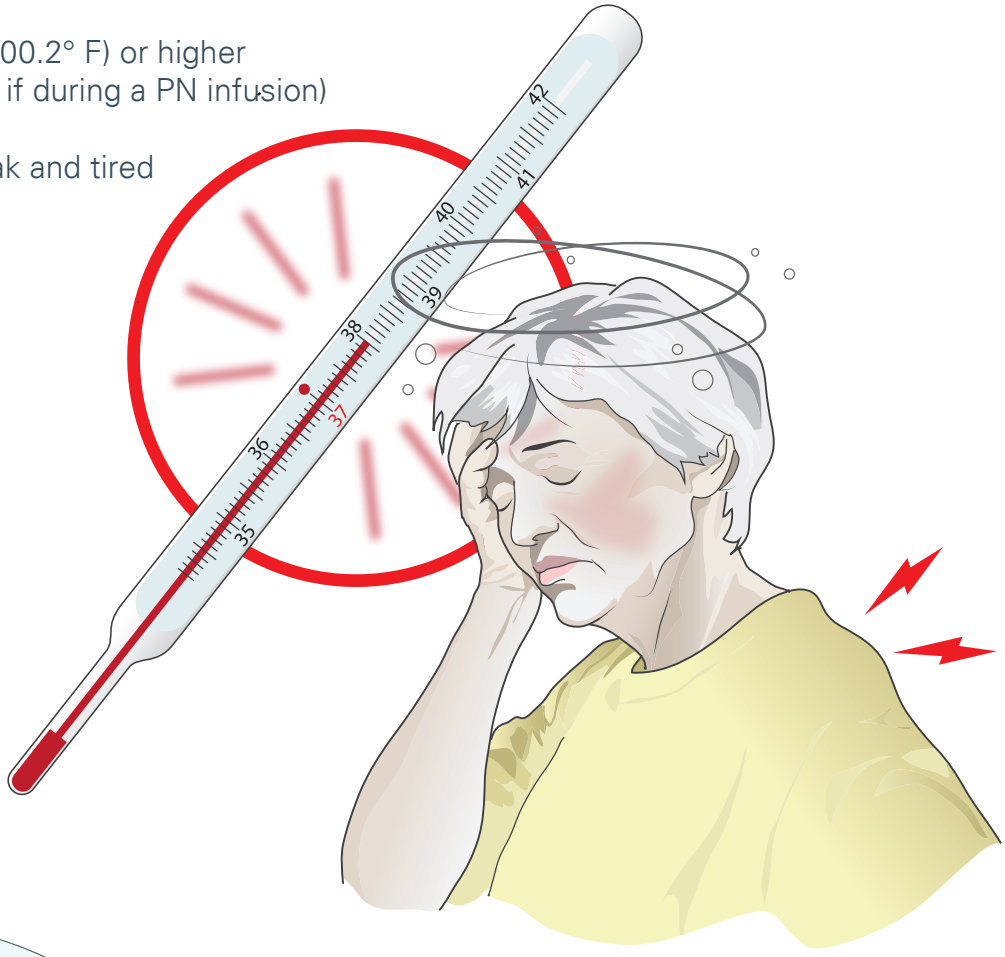
While these rarely happen, they are the most serious problems that might arise.

If you do notice any of these symptoms, DO NOT WAIT.
Do not go to the clinic or to the emergency. **Call 911.**

Fever

If you notice:

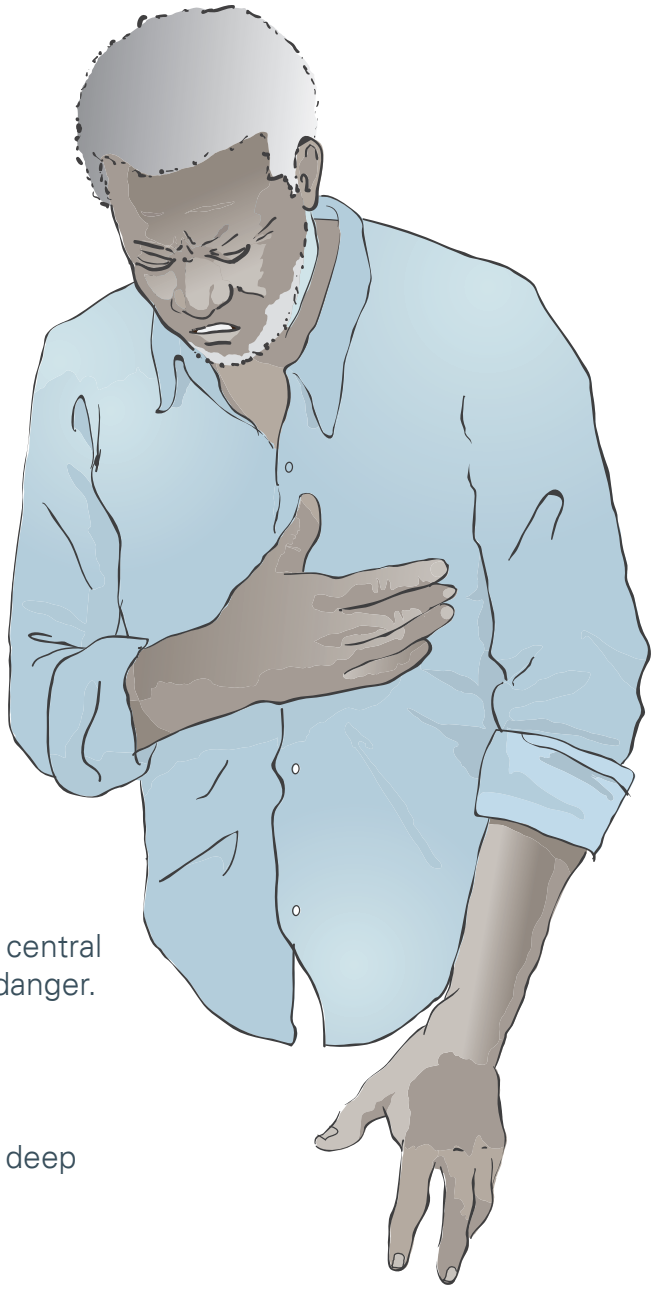
- Fever of 38° C (100.2° F) or higher
- Chills (especially if during a PN infusion)
- Shaking
- Feeling very weak and tired
- Body aches



What you must do:

1. **CALL 911**
2. Explain that you have a central catheter and that your life may be in danger.

Shortness of breath



If you, or a family member, notice:

- Shortness of breath
- Chest pain
- Coughing
- You faint or you feel you may faint.

You may also discover that your injection cap has gotten disconnected accidentally. If so, air probably entered into it.

What you must do:

1. Clamp your catheter.
2. **CALL 911** and explain that you have a central catheter and that your life may be in danger.
3. Lie on your left side.
4. Keep your head lower than your feet.
5. Take small, shallow breaths instead of deep breaths.

If you or your trained helper feels able:

- Attach an empty syringe to your catheter.
- Withdraw air until blood comes out.
- Now flush as usual and clamp.

VERY SERIOUS

You need professional advice

This section covers situations that require careful review and contact with your health care team. If you notice these problems, it is important that you do not try to troubleshoot by yourself at home.

1. **Call us right away so we can discuss the situation together over the phone.**

   (514) 934-1934 then 1 then 35392

2. **If no answer, prepare yourself and go to emergency.**

3. **If your problem happens when the clinic is closed, go to the emergency. Do not wait for the clinic to open.**

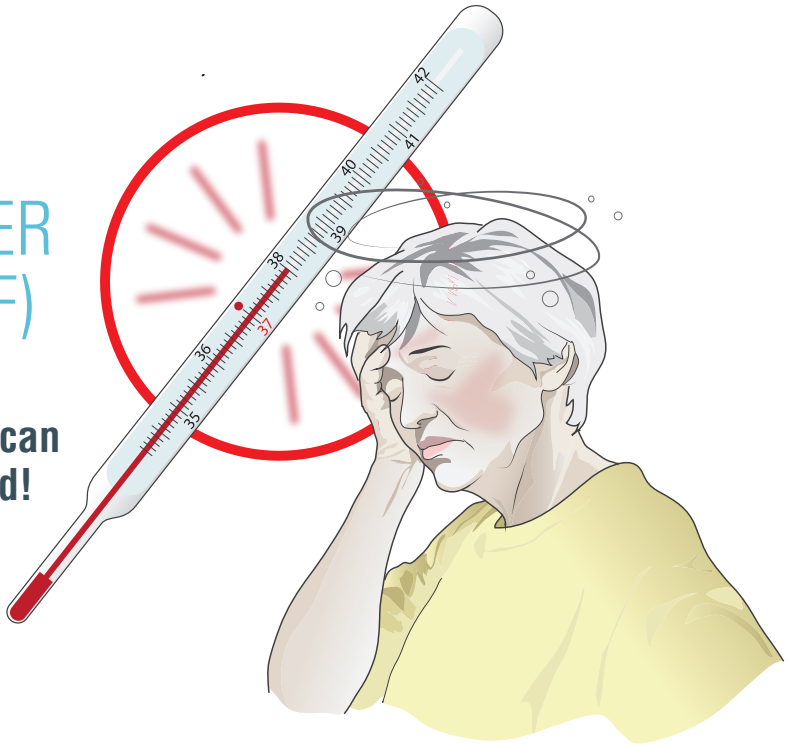
Emergency Room Tip

Prepare an infusion kit if you need to go to emergency. Bring everything you would need to flush your catheter, an extra bag of PN (do not mix the lipids), as well as any medication you need to take.

DO NOT take Acetaminophen or Ibuprofen (e.g. Tylenol™, Atasol™, Motrin™, Advil™ or Aspirin™)

1 If you have a FEVER of 38° C (100.2° F) or more

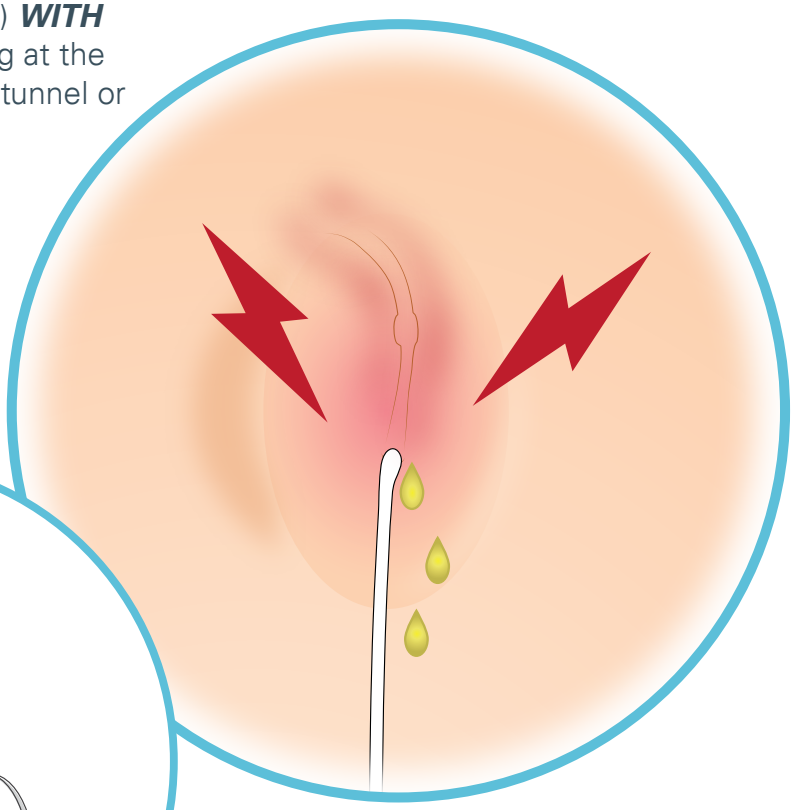
without **other symptoms. It can be an infection in your blood!**

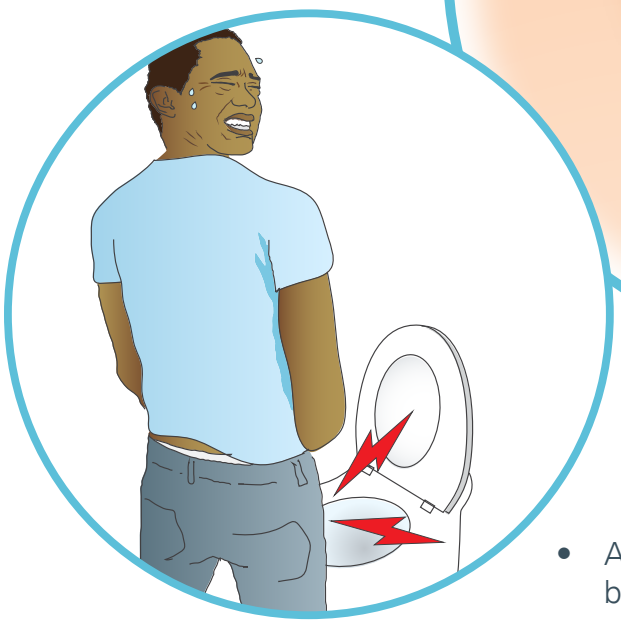


2 You have signs of a ***severe*** infection

- A fever ***above* 38° C** (100.2° F) ***WITH*** shortness of breath, sore throat, cough and phlegm.

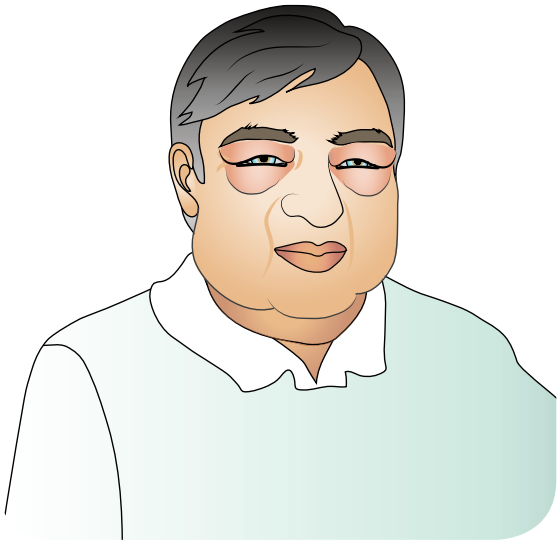
- A fever ***above* 38° C** (100.2° F) ***WITH*** pain, pus (drainage) or swelling at the exit site or along the catheter tunnel or at your PICC exit site.





- A fever ***above* 38° C** (100.2° F) ***WITH*** blood or burning while urinating or urinating more often or urgently.

3 *Severe* swelling of the face, neck and/or arms



If you notice:

- Your face and neck, followed by your arms, are progressively more swollen (it may start on the same side as the catheter)
- Your eyelids are puffy
- The swelling does not decrease during the day
- Your face might be flushed
- Your head feels full when bending forward
- Your chest feels heavier
- You notice veins on your chest or neck that you had not noticed before

What this might be:

This may be **superior vena cava (SVC) syndrome.** SVC is one of the main blood vessels that brings blood back to the heart. This blood then continues on to the lungs to pick up more oxygen to meet your body's needs. If this vein becomes blocked, blood will not flow properly to the heart. This will cause the swelling.

How did this happen?

A blocked superior vena cava may be caused by any of the following:

- A blood clot inside the vein around your catheter
- Inflammation of the vein around your catheter
- The inside end of your catheter has moved out of place

Did You Know?

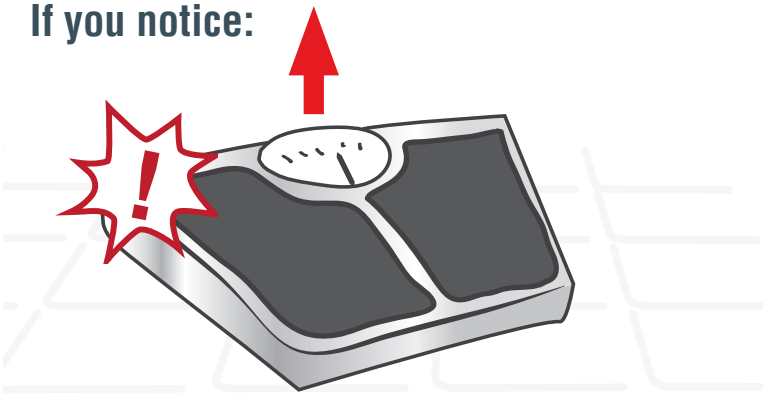
To help prevent this problem, avoid lifting heavy objects or doing exercise that makes you hold your breath.

What you must do:

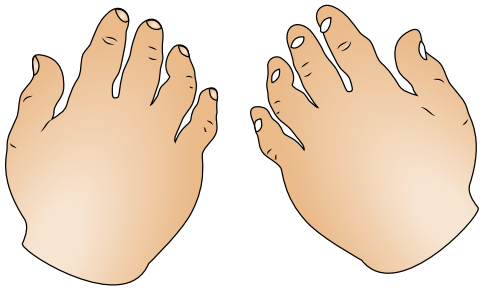
1. Call the clinic if this happens on a week day.
2. If the swelling is severe, or the clinic is closed, do not wait. Go to the emergency **right away**.

4 *Severe* progressive weight gain (e.g. 2 kg (4.4 lbs) or more), swelling & shortness of breath

If you notice:



- You have gained weight over a few days (e.g. 2 kg (4,4 lbs) or more)



- Your hands and arms are swollen in the morning

- You feel short of breath

- Your feet and legs are swollen especially later in the day

What this might be:

You may have infused your PN too quickly. Or, you may have infused an amount that was more than your body could handle.

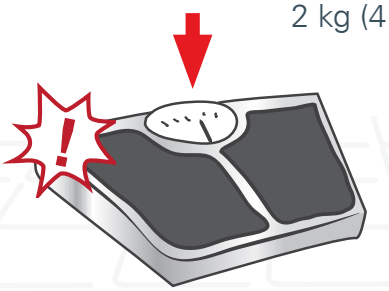
What you must do:

1. Call the clinic if this happens on a week day.
2. If the clinic is closed, do not wait. Go to emergency **right away.**

5 ***Severe*** progressive weight loss (e.g. 2 kg (4.4 lbs) or more), dizziness, weakness

If you notice:

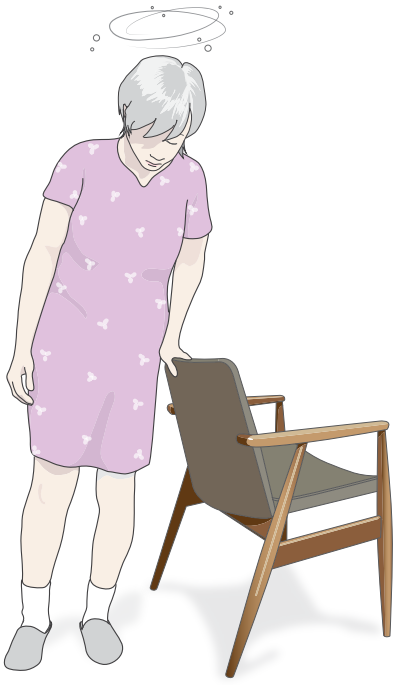
- You have lost weight (e.g. 2 kg (4.4 lbs) or more



- You are more thirsty, you have less urine and it is darker

* You should **NOT** try to fix your problem by drinking more

- You become dizzy when you stand
- You have less energy



What this might be:

Dehydration (your body has lost more fluids than it is receiving):

- You have been having more diarrhea, vomiting and / or output from your fistula
- You have been perspiring more than usual
- You have infused less than you were supposed to

What you must do:

1. Call us right away so we can review the situation together over the phone.
2. If the clinic is closed, do not wait. Go to emergency **right away.**

SERIOUS

Troubleshooting problems at home

You have a headache, you are sweating and/or shaking

You may also notice:

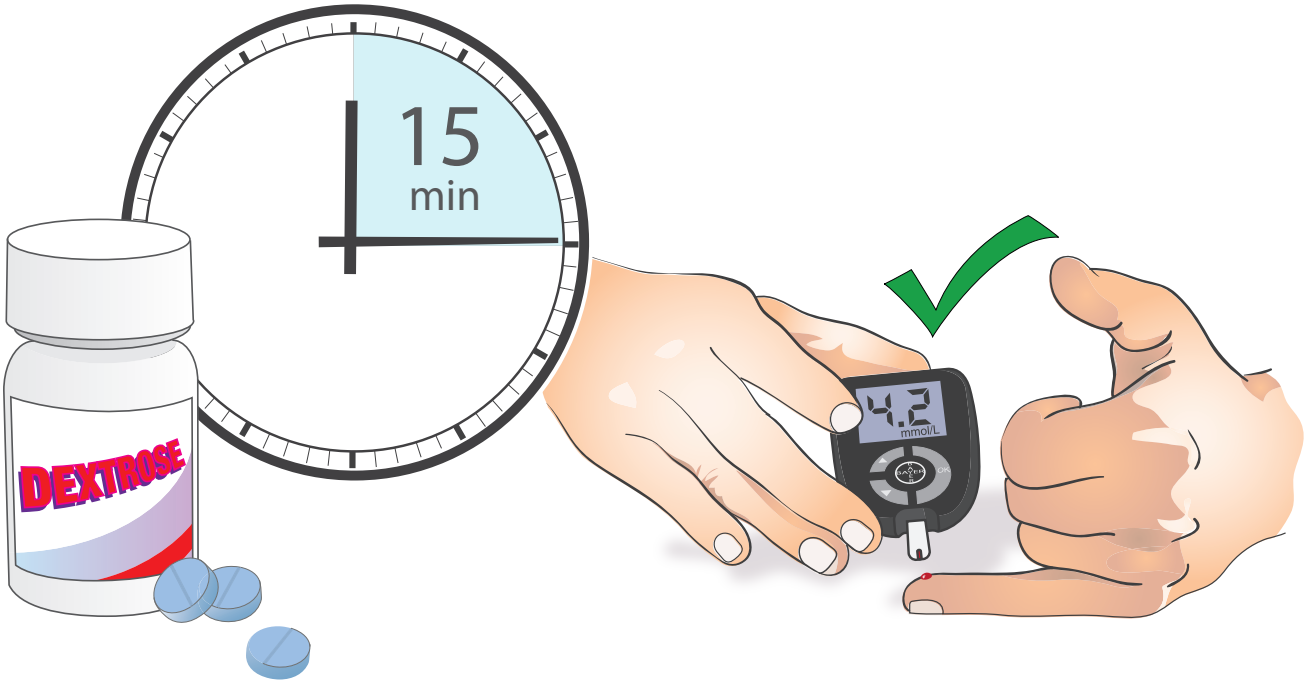
- Hunger
- Blurred vision
- Dizziness or heart palpitations
- Feeling irritable
- Trouble thinking

What this might be:

You may have low blood sugar.

What you must do:

1. Measure your blood sugar.
2. If you have low blood sugar (below 4 mmol/litre):
   - Take 3 tablets of dextrose 5 g, (or 3 teaspoons of white sugar or honey).
   - Measure your blood sugar 15 minutes later.
   - If your blood sugar is still below 4 mmol/litre, treat again and measure again 15 minutes later.
   - Repeat these steps **until your blood sugar is above 5 mmol/litre** and stays there.



3. Call the clinic during working hours to review what happened with a member of our team.

How did this happen?

You may experience low blood sugar if:

- Your PN bag finished earlier than usual
- Your infusion had no taper down, or
- There was an error in the way you programmed your pump

You are thirsty and are urinating even more than usual during your PN infusion

You may also notice:

- Nausea
- Weakness
- Headache

What this might be:

You may have high blood sugar.

What you must do:

1. Measure your blood sugar.
2. If your PN is infusing and your blood sugar **is above 15 mmol/ litre**, measure your blood sugar again in 2 hours.
3. **If your blood sugar is now <u>over 20 mmol/litre</u>:**
   - Stop your PN infusion and measure your blood sugar in the morning
   - Call the clinic in the morning. If the clinic is closed and you need to infuse, program your pump for 1/2 of your usual volume, keeping the other settings the same. If you are unable to program the pump this way, call the supplier for instructions
   - Call the clinic on the next business day.

How did this happen?

You may experience high blood sugar if:

- The bag of PN was infused faster than planned, or
- You have an infection, or
- You are taking medications (e.g. steroids) which can raise your blood sugar.

Your catheter has been pulled out completely

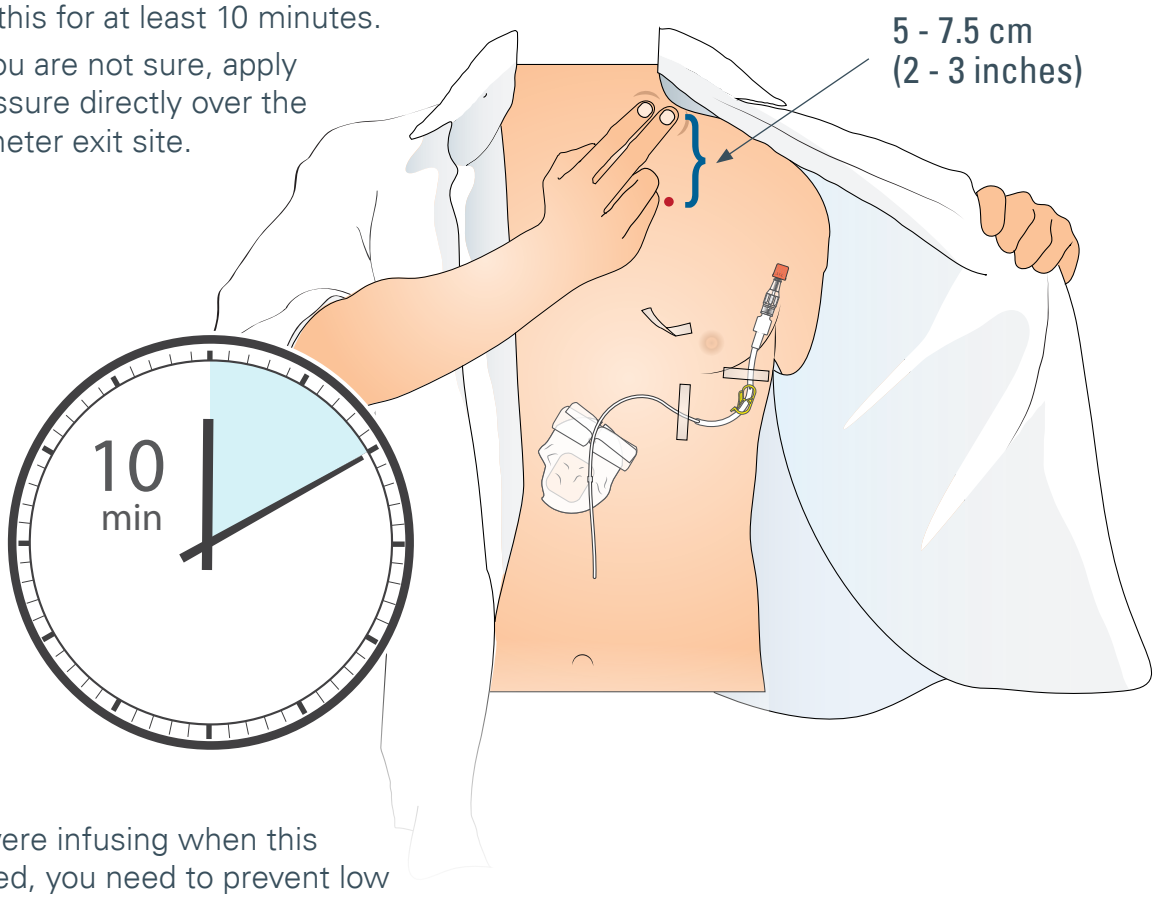
You notice:

- It is completely out of your chest or your arm.

What you must do:

1. Apply pressure to your chest, about 5 to 7.5 cm (2 to 3 inches) above the catheter exit site. (If you had a PICC, apply pressure at the catheter exit site on your arm.).

- Do this for at least 10 minutes.
- If you are not sure, apply pressure directly over the catheter exit site.



2. If you were infusing when this happened, you need to prevent low blood sugar (hypoglycemia):

- Take 3 tablets of dextrose 5 g, (or 3 teaspoons of white sugar or honey).
- Measure your blood sugar 15 minutes later.
- If your blood sugar is still below 4 mmol/litre, treat again and measure again 15 minutes later.
- Repeat these steps **until your blood sugar is above 5 mmol/litre** and stays there.

3. If you do **not** need to infuse every night, call the clinic in the morning. However, if this happens on a Friday night, you cannot go 3 nights without infusions. Go to emergency in the morning.

Your catheter is leaking

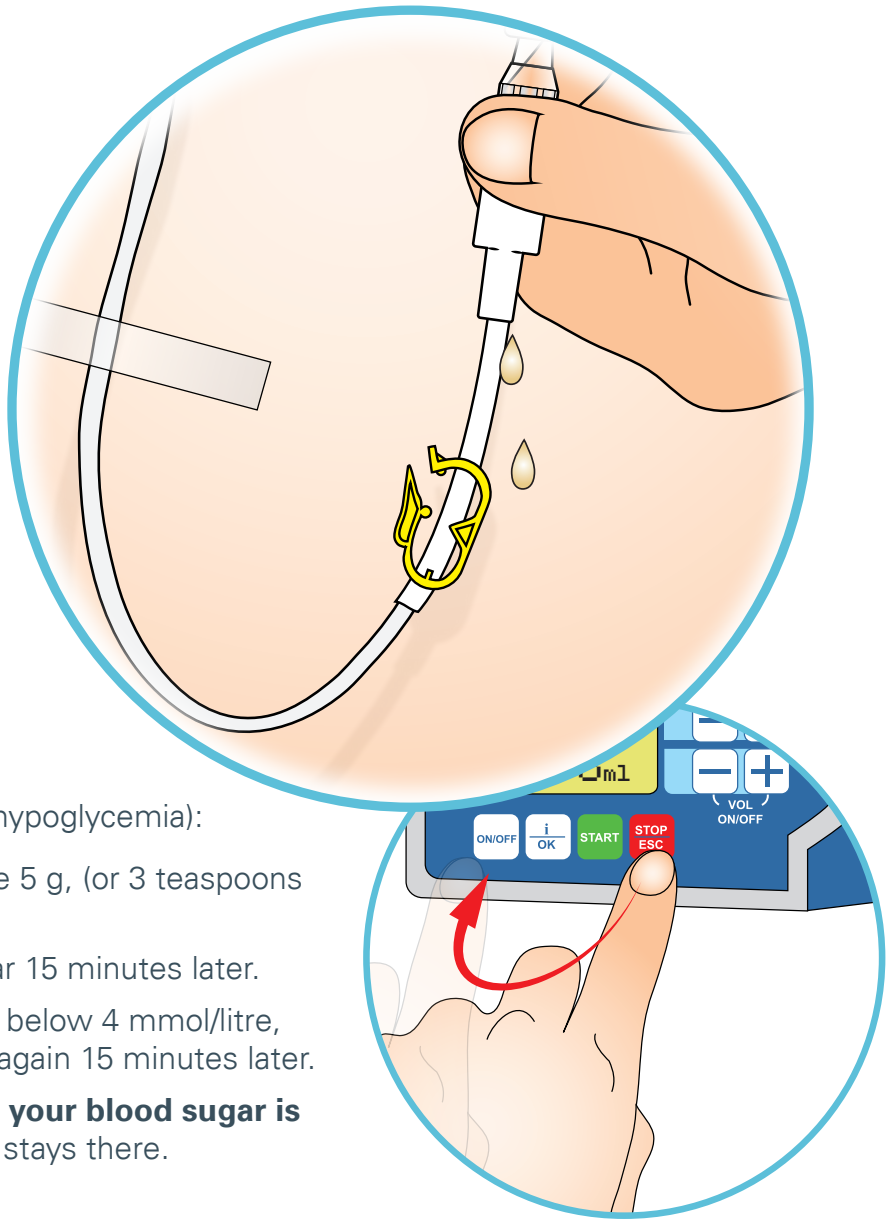
You notice:

Leaking:

- When you flush, or
- During an infusion

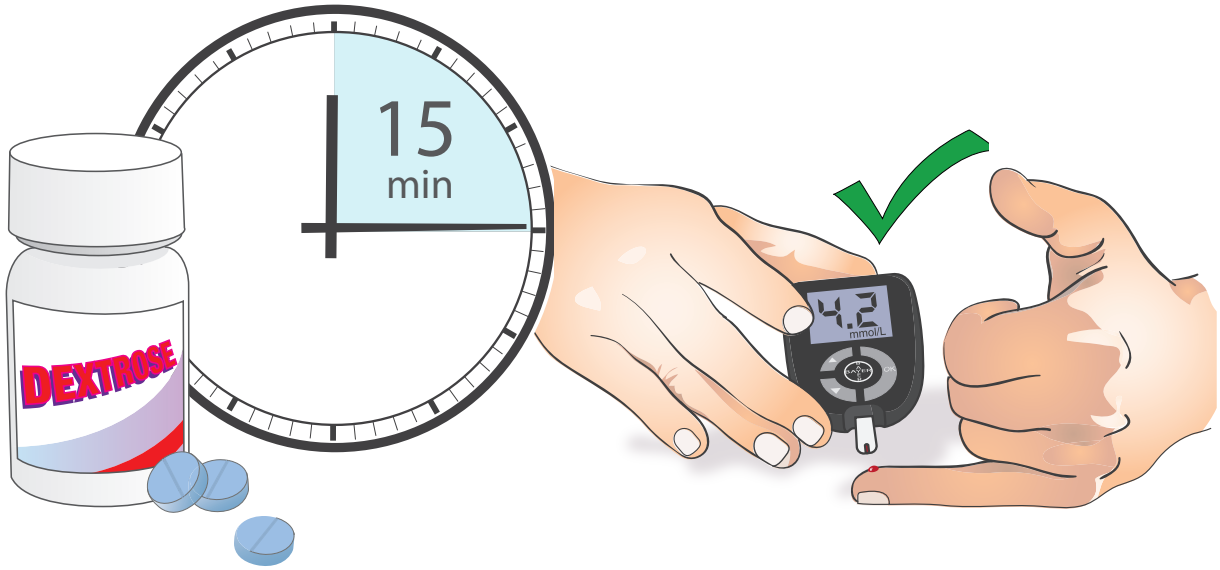
What this might be:

There may be a small hole in your catheter.

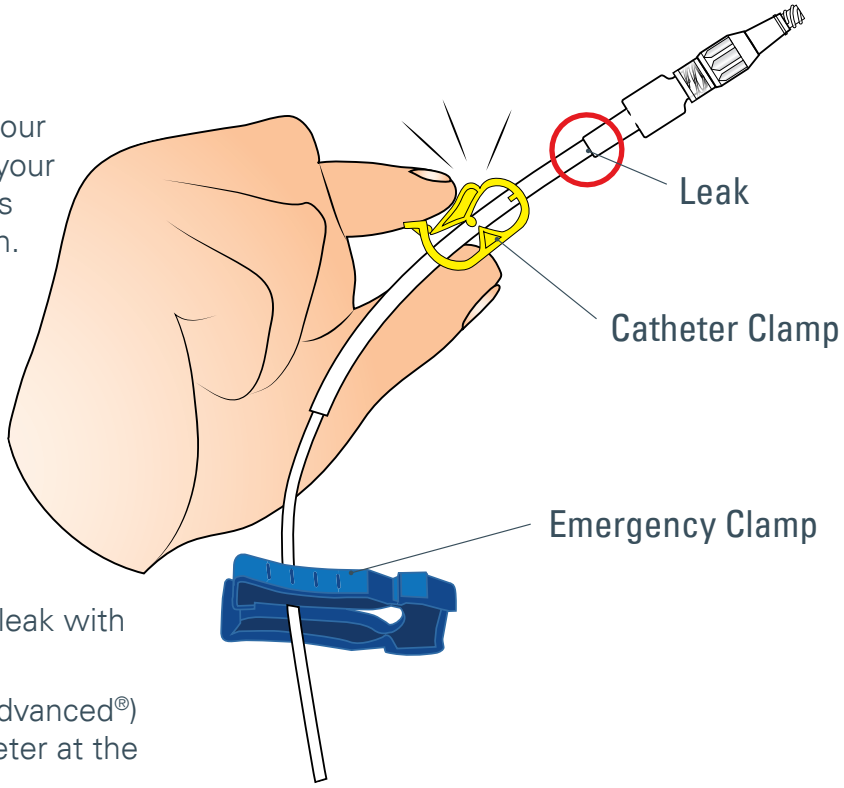


What you must do:

1. Stop your infusion
2. Prevent low blood sugar (hypoglycemia):
   - Take 3 tablets of dextrose 5 g, (or 3 teaspoons of white sugar or honey).
   - Measure your blood sugar 15 minutes later.
   - If your blood sugar is still below 4 mmol/litre, treat again and measure again 15 minutes later.
   - Repeat these steps **until your blood sugar is above 5 mmol/litre** and stays there.

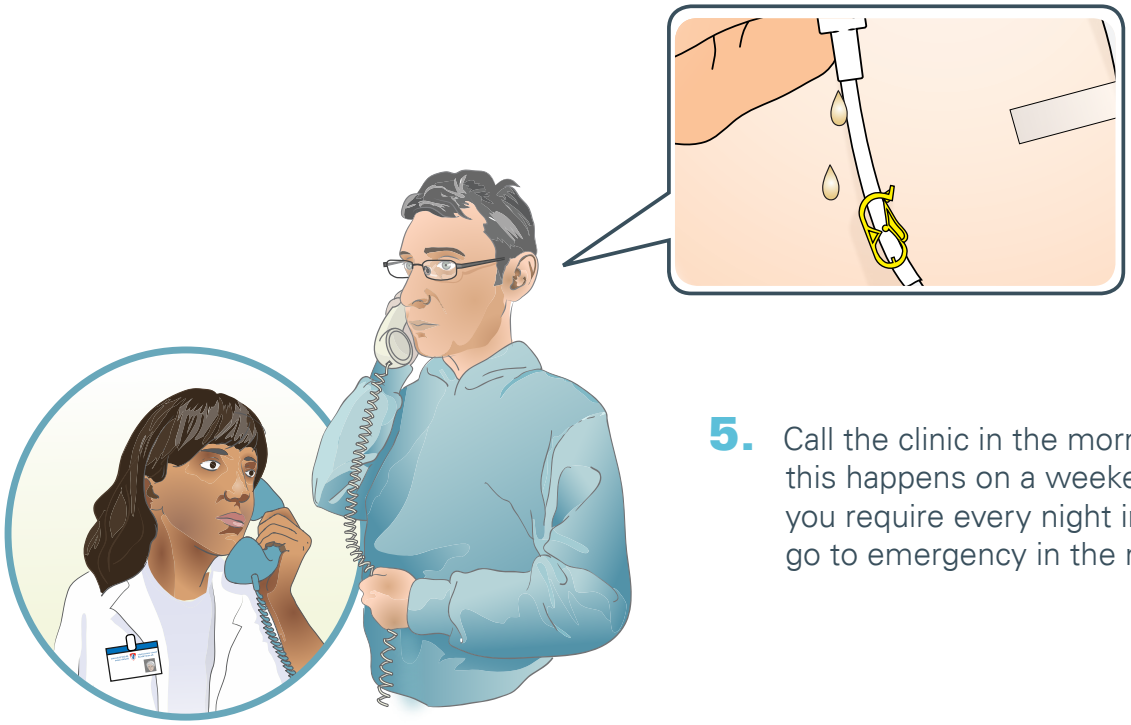


3. Use your catheter clamp and your "emergency clamp" to clamp your catheter in two separate places between the leak and your skin.



4. Cover the area that is leaking:

- Clean the area around the leak with an alcohol swab.
- Use your (IV 3000® or IV Advanced®) dressing to cover the catheter at the site of the leak



5. Call the clinic in the morning. If this happens on a weekend, and you require every night infusions, go to emergency in the morning.

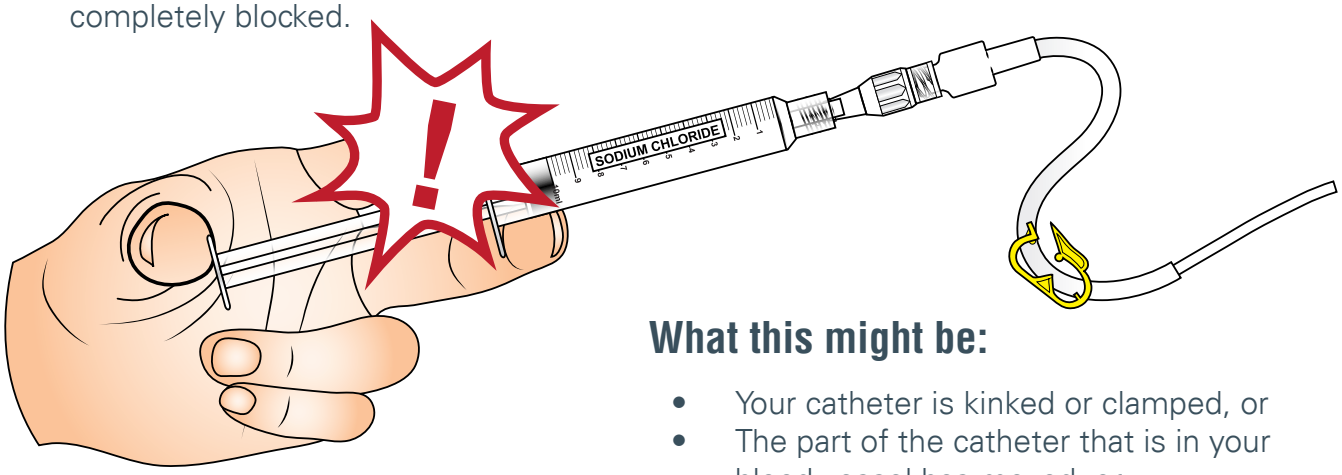
To avoid this problem:

- Do not always clamp at the same place
- Do not kink the catheter

Your catheter is hard to flush

You notice:

Resistance when you are flushing or it is completely blocked.

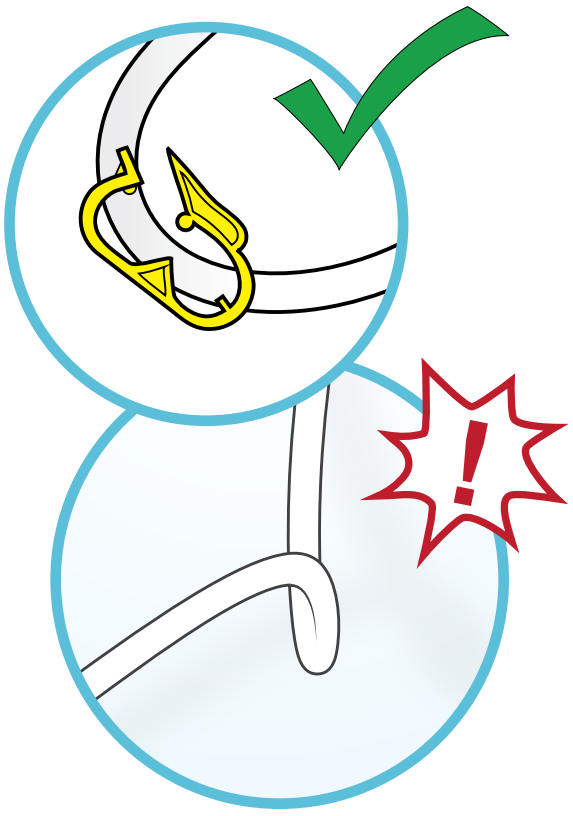


What this might be:

- Your catheter is kinked or clamped, or
- The part of the catheter that is in your blood vessel has moved, or
- A deposit is blocking the inside of your catheter.

What you must do:

1. Make sure that your catheter clamp is open and that there are no kinks in your tubing or catheter.
2. Move your arms in big circles, take a deep breath and cough.
3. Now, try to flush again. If you still feel the blockage (resistance), do not try to force it open.
4. Call the clinic in the morning. If this happens on a weekend, and you require infusions every night, go to emergency in the morning.



How can this be prevented?

- Always make sure that your catheter and tubing are well taped down.
- Always flush your catheter as instructed.

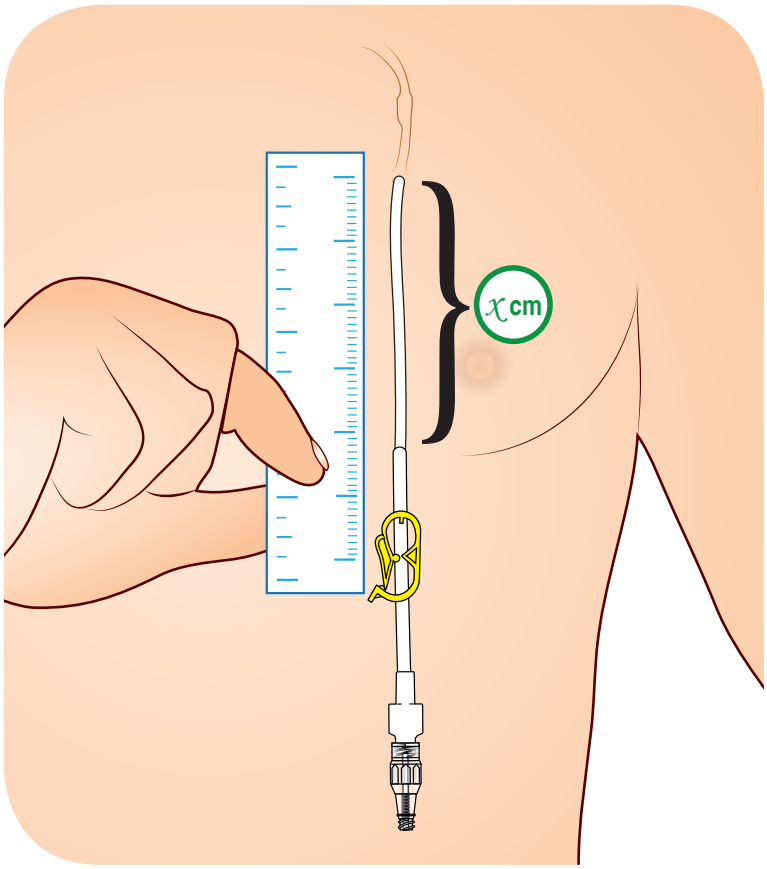
Your catheter looks longer than it used to be

You notice:

That your catheter or tubing got caught and pulled or it seems longer than usual.

What this might be:

Your catheter may be starting to slip out.



What you must do:

Measure the length of your catheter from the exit site to where the catheter gets thicker (where your clamp is).

Compare it to its usual measured length.

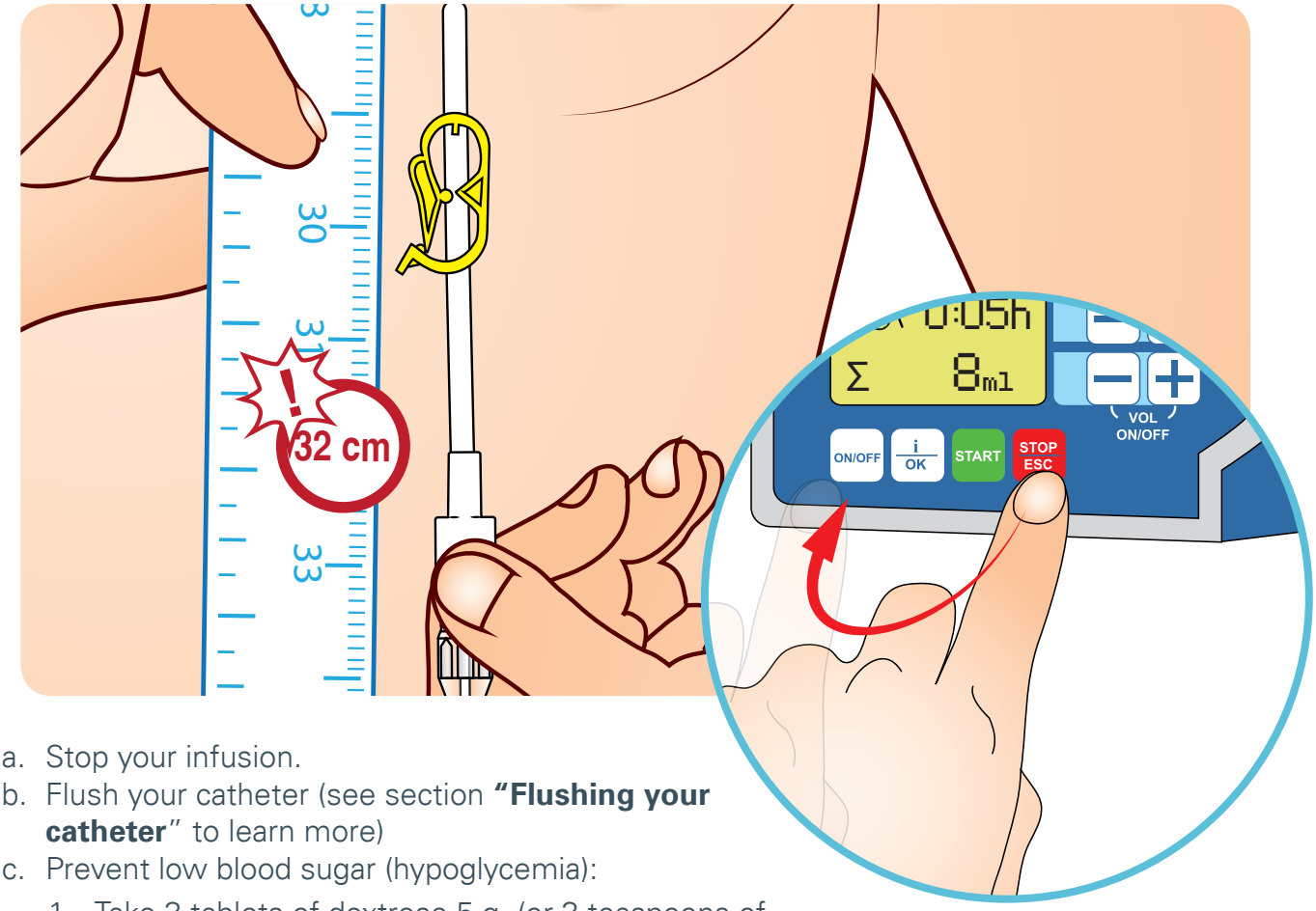
A If it is **longer than usual by 5 cm (2 inches) *or less*:**

- Continue your infusion as usual until the next business day

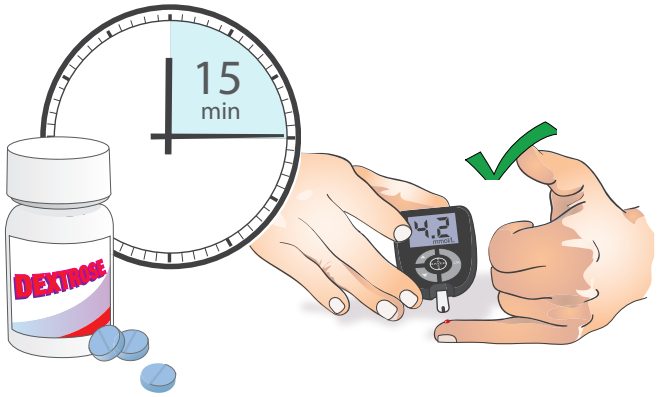
B If it is **between 5 cm (2 inches) and 7.5 cm (3 inches) longer than usual:**

- Continue your infusion but in the morning your catheter will need to be changed.
- Call the clinic early in the morning, or
- If this happens on a weekend you will have to go to the emergency in the morning.

C If the catheter is **longer than usual by 7.5 cm (3 inches) *or more:***



a. Stop your infusion.
b. Flush your catheter (see section **"Flushing your catheter"** to learn more)
c. Prevent low blood sugar (hypoglycemia):
    1. Take 3 tablets of dextrose 5 g, (or 3 teaspoons of white sugar or honey).
    2. Measure your blood sugar 15 minutes later.
    3. If your blood sugar is still below 4 mmol/litre, treat again and measure again 15 minutes later.
    4. Repeat these steps **until your blood sugar is above 5 mmol/litre** and stays there.



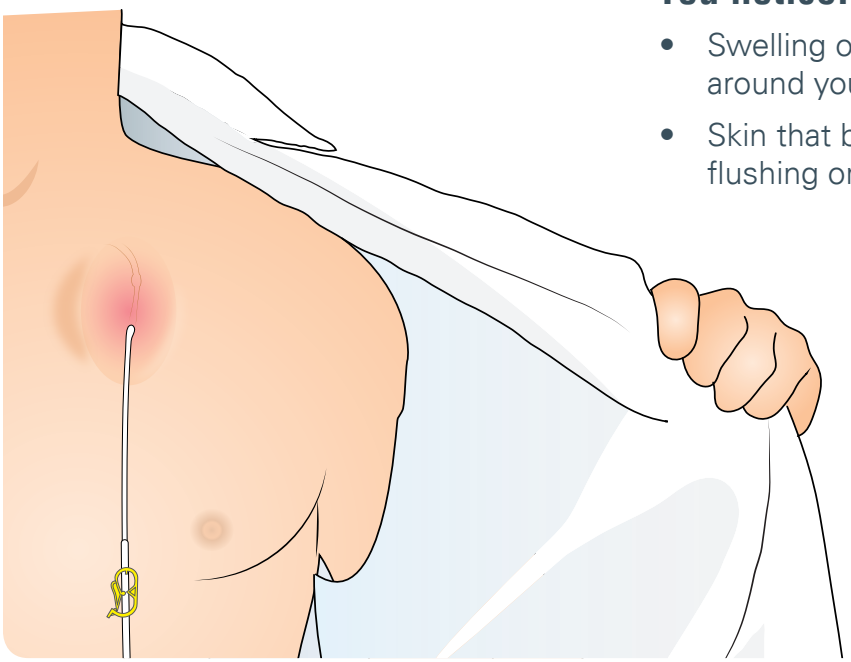
d. Call the clinic in the early morning or if this happens on a week-end, you will have to go to the emergency in the morning.

How can this be prevented?

Always make sure that your catheter and tubing are well taped down to prevent this.

✱ Call the clinic during opening hours to review the situation

The skin swelling around your catheter exit site

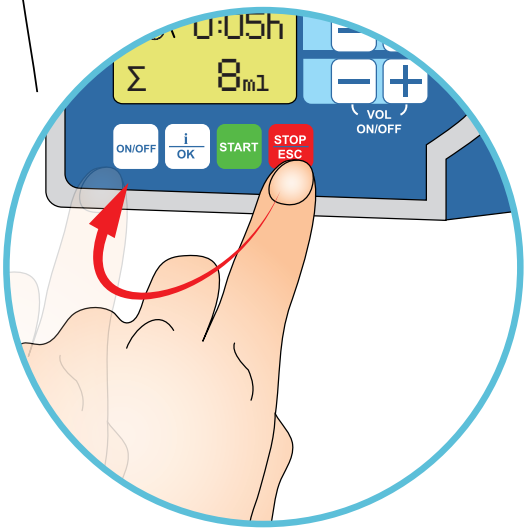


You notice:

- Swelling of the skin that comes and goes around your catheter exit site, or
- Skin that bulges along the tunnel during flushing or while infusing your PN.

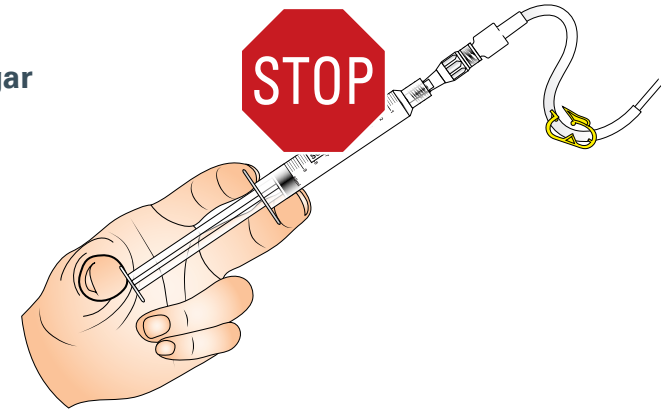
What this might be:

Your catheter may be cracked and leaking just under your skin.



What you must do:

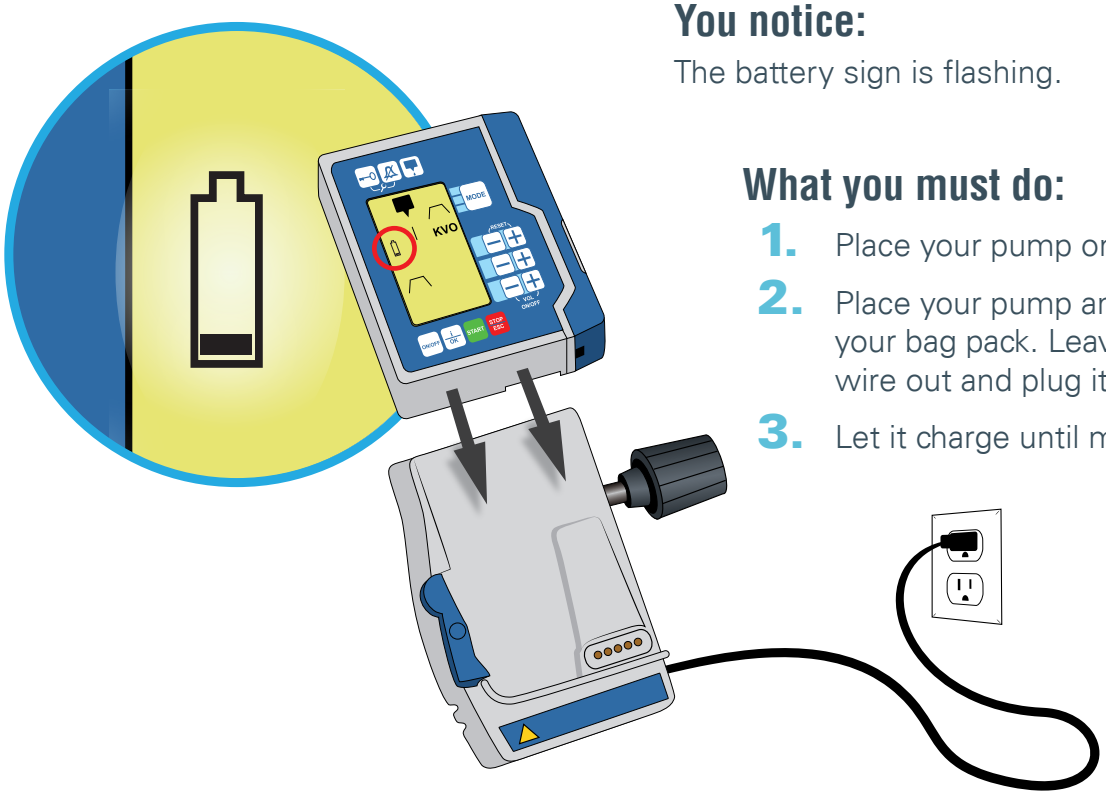
1. Stop flushing or infusing. Do not use your line.
2. Prevent low blood sugar (hypoglycemia):
   - Take 3 tablets of dextrose 5 g, (or 3 teaspoons of white sugar or honey).
   - Measure your blood sugar 15 minutes later.
   - If your blood sugar is still below 4 mmol/litre, treat again and measure again 15 minutes later.
   - Repeat these steps **until your blood sugar is above 5 mmol/litre** and stays there.
3. Seek help.
   - If you do not infuse every night, you can wait and call us the next working day.
   - If you need to infuse every night, call us in the morning. If it is happening during the week-end, go to the emergency.



How can this be prevented?

Never push hard or use force when you flush your catheter

The pump reads “low battery”



You notice:

The battery sign is flashing.

What you must do:

1. Place your pump on its charger.
2. Place your pump and charger in your bag pack. Leave the charger wire out and plug it to an outlet.
3. Let it charge until morning.

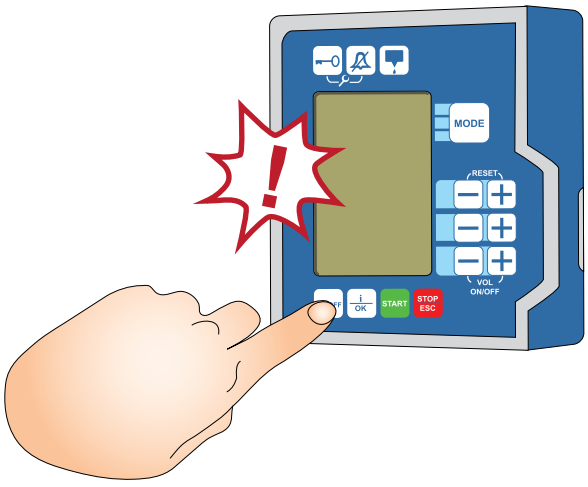
The pump is not working

You notice:

That the settings are not as usual or not responding to commands.

What this might be:

If the screen does not open, try charging it (see section **“How to take care of your pump battery”** to learn more). If the battery still does not work, this may be a mechanical problem.



What you must do:

A If you have another pump:

1. If you were in the middle of an infusion, calculate how much PN has already been infused and write it down.
2. Now subtract this amount (and the time you spent infusing so far), from your usual infusion settings on your second pump.

* For example: If you already infused for 5 hours at 150 ml per hour, you have infused (5 X 150 ml=) 750 ml already. Remove 750 ml from your total volume and remove 5 hours from your total infusion time.

Calculate your new infusion volume and time below:

△ **Time already infused:** _____

□ **Rate of current infusion:** _____

✱ (This is shown on your pump)

Rate of current infusion: **x** **Time already infused** **=** **Amount already infused:**

□ x △ = ○

(e.g. 150 ml/h **x** 5h **=** 750 ml)

Total infusion time **–** **Time already infused** **=** **New infusion Time**

My new infusion time is: _____ – △ = _____

(e.g. 10 h **-** 5h **=** 5 h)

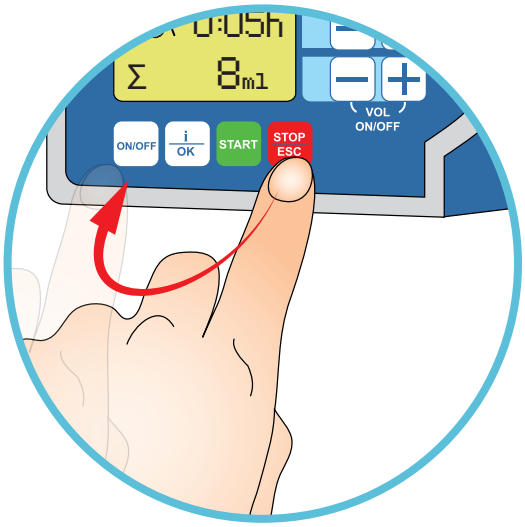
Usual total volume **–** **Amount already infused** **=** **New infusion total volume**

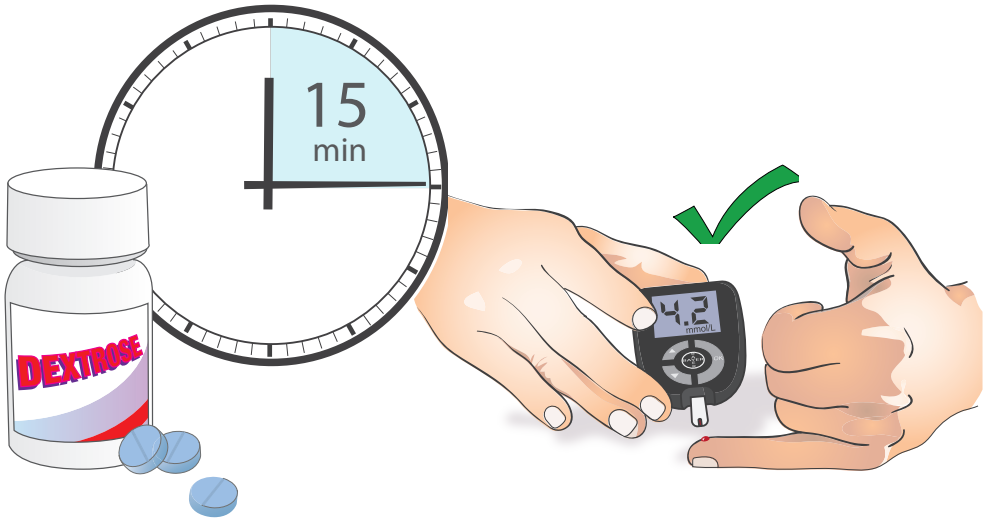
My new total infusion volume is: _____ – ○ = _____

(e.g. 1500 ml **-** 500 ml **=** 1000ml)

B If you do not have another pump:

1. Stop the infusion.
2. Prevent low blood sugar (hypoglycemia):
   - Take 3 tablets of dextrose 5 g, (or 3 teaspoons of white sugar or honey).
   - Measure your blood sugar 15 minutes later.
   - If your blood sugar is still below 4 mmol/litre, treat again and measure again 15 minutes later.
   - Repeat these steps **until your blood sugar is above 5 mmol/litre** and stays there.





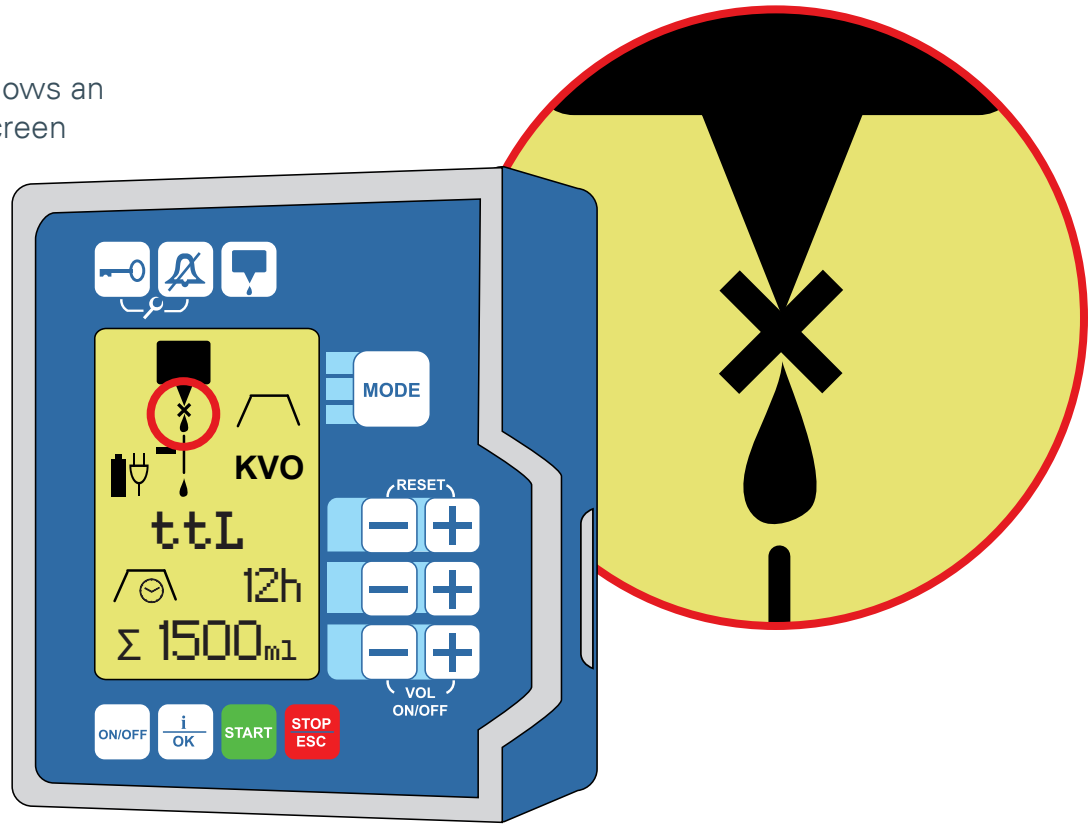
3. Since you stopped the infusion, (see section **"Flushing your catheter"** to learn more.)
4. Seek help:
   - If you infuse 3 to 4 times a week, you can take the rest of the night off. At 8:00 AM, page the supplier's pharmacist on–call (24 hours a day, 7 days a week) and make sure another pump will be delivered to you.
   - If you need infusions every night and your pump cannot be replaced the next day, go to the emergency.

Do not wait. Go to the emergency if:
You don't feel well, are dizzy or weak.

The pump reads “occlusion”

You notice:

Your pump shows an “X” on the screen

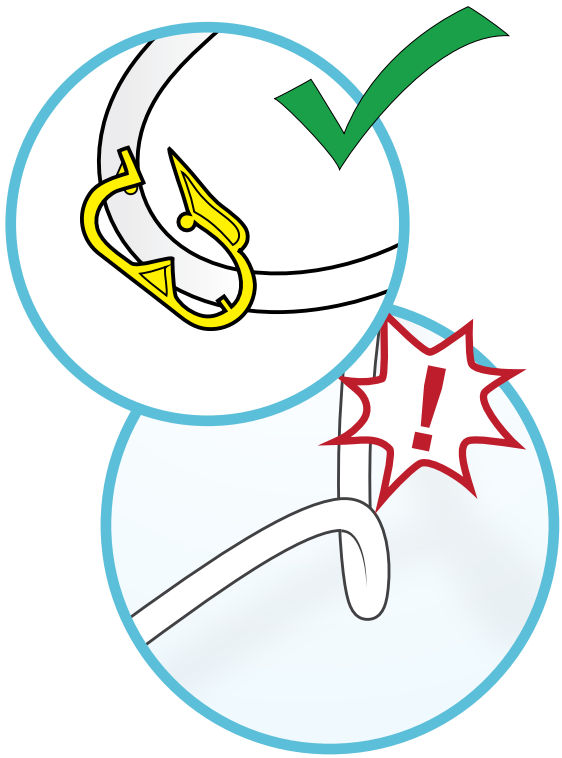


What this might be:

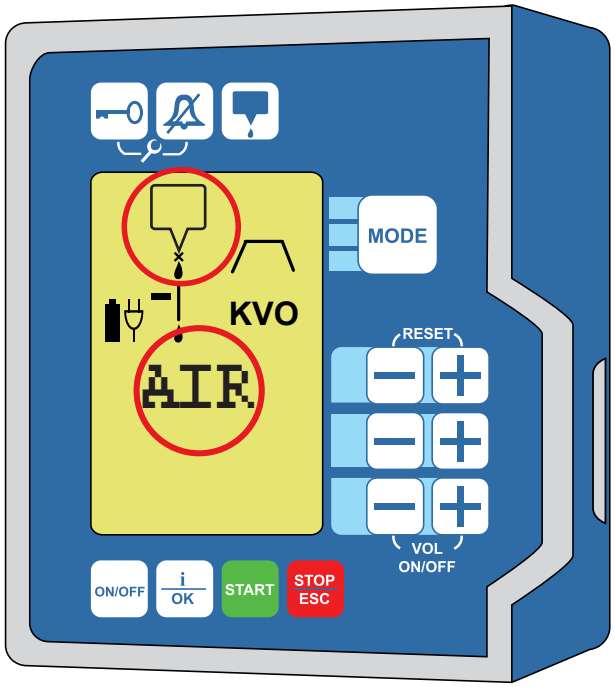
The tubing or catheter may be blocked (e.g. due to a kink in the tubing/catheter or an closed clamp).

What you must do:

1. Find where your catheter or tubing is blocked. The position of the “X” shows you where this may be.
   - Check to make sure all your clamps are open.
   - Make sure that there are no kinks.
   - Straighten your arm, if you have a PICC. (Sometimes, just bending your arm can block the line).
2. Press **“escape”**, then **“start”.**



The pump reads “air” or you see air in your tubing

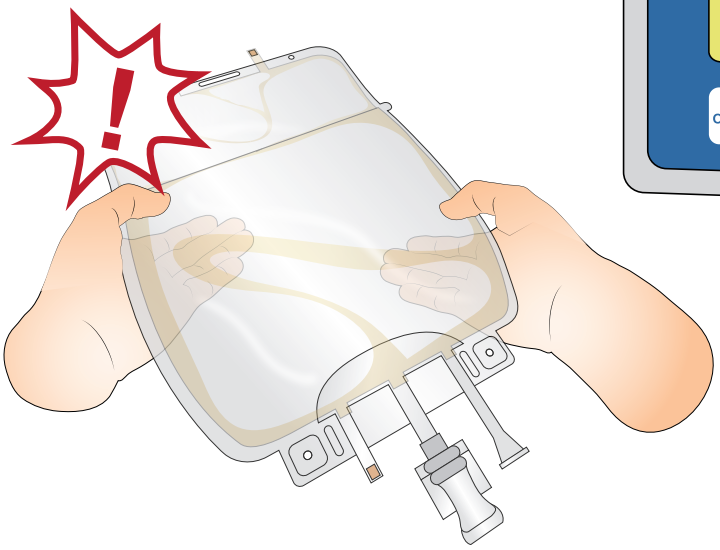


You notice:

- Your pump reads “air” by showing a picture of an empty bag, or
- Air in your tubing during your infusion.

What this must be:

Your bag may be empty, or there may be air somewhere in your tubing.

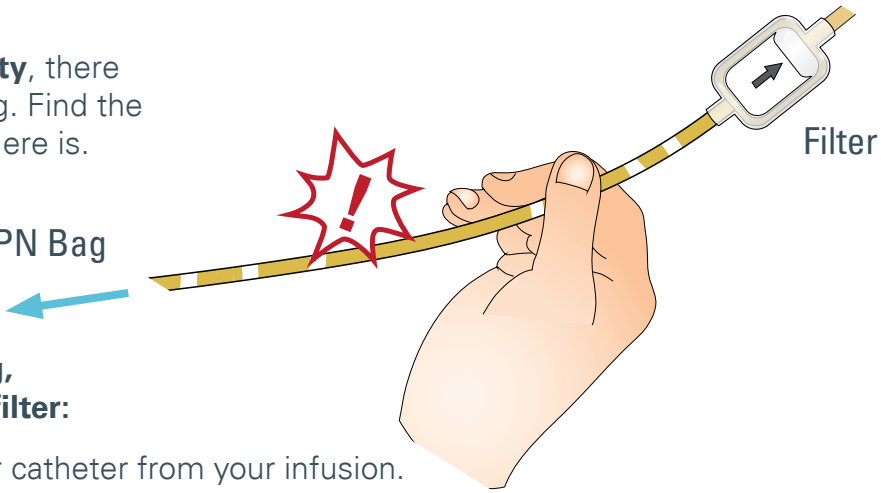


What you must do:

1. Check your bag.
   - If your bag is **empty** and you have reached the end of your infusion, flush your line (see section **“Flushing your catheter”** to learn more)
   - If your bag is **empty** before the end of your infusion time, prevent low blood sugar (hypoglycemia):
     - Take 3 tablets of dextrose 5 g, (or 3 teaspoons of white sugar or honey).
     - Measure your blood sugar 15 minutes later.
     - If your blood sugar is still below 4 mmol/litre, treat again and measure again 15 minutes later.
     - Repeat these steps **until your blood sugar is above 5 mmol/litre** and stays there.
     - Flush your line (see section **“Flushing your catheter”** to learn more)

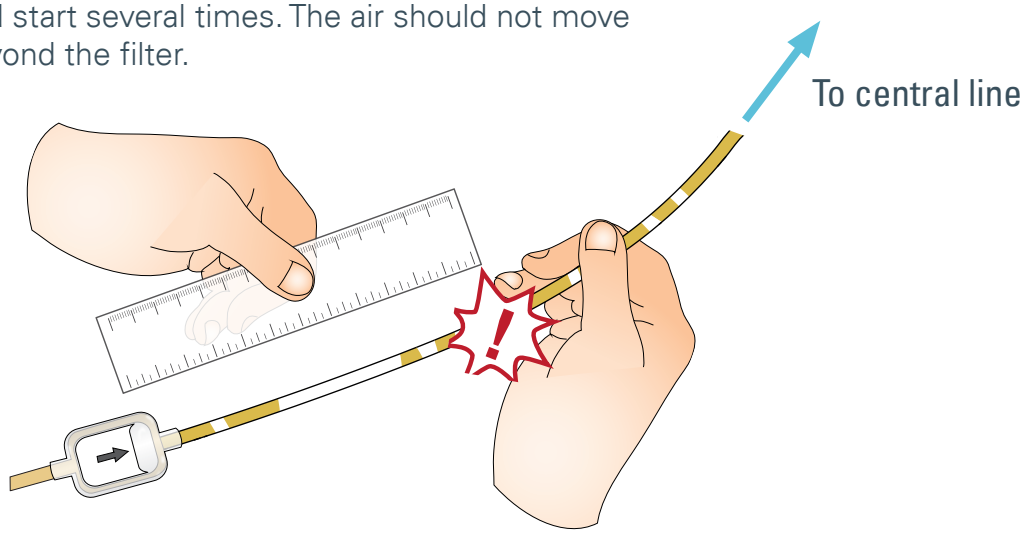
2. Check your tubing.

- If your bag is **not empty**, there may be air in the tubing. Find the air to see how much there is.



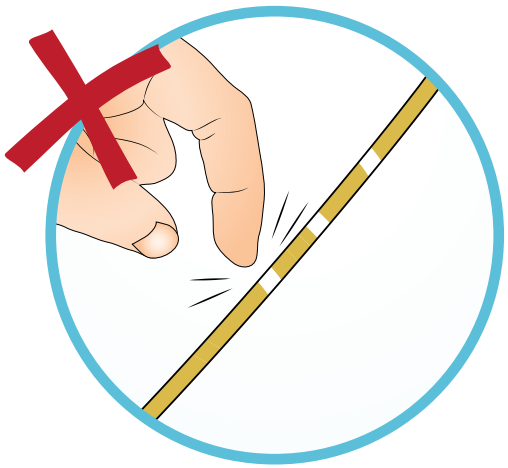
If you find air in the tubing, between the bag and the filter:

- Do not disconnect your catheter from your infusion.
- Press escape, then start, until the air is pushed out through the filter. You may have to press escape and start several times. The air should not move beyond the filter.



If you find air in the tubing between the filter and your central line, measure the length of air.

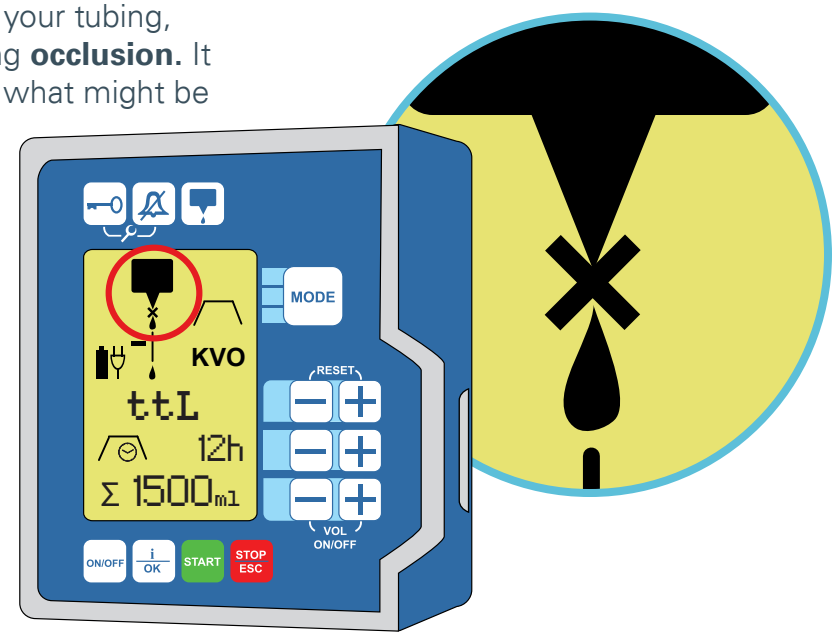
- If it is less than 3 cm (1.5 inches), let it pass through the tubing. This is not dangerous, as small bubbles are easily absorbed in the blood. Don't flick the bubbles to group them.
- If it is more than 3 cm (1.5 inches), stop your infusion. Disconnect your tubing.
    - Cover the end of your tubing with a new cannula to keep it sterile.
    - Prime your tubing: Let the liquid run out into your glass to get rid of the bubbles.
    - Scrub your catheter with an alcohol swab for 30 seconds. Let it dry for 30 seconds more.
    - Reconnect your tubing to your catheter and press start again.

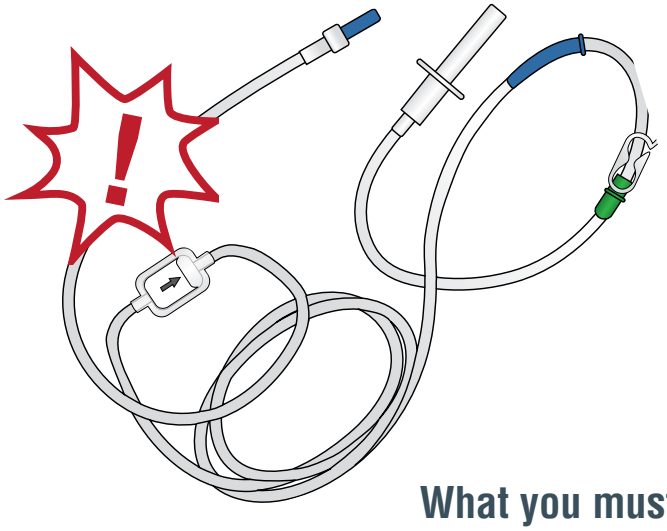


There is something wrong with the tubing.

You notice:

After priming and connecting your tubing, your pump keeps reading **occlusion.** It gives no information on what might be the cause.





What this might be:

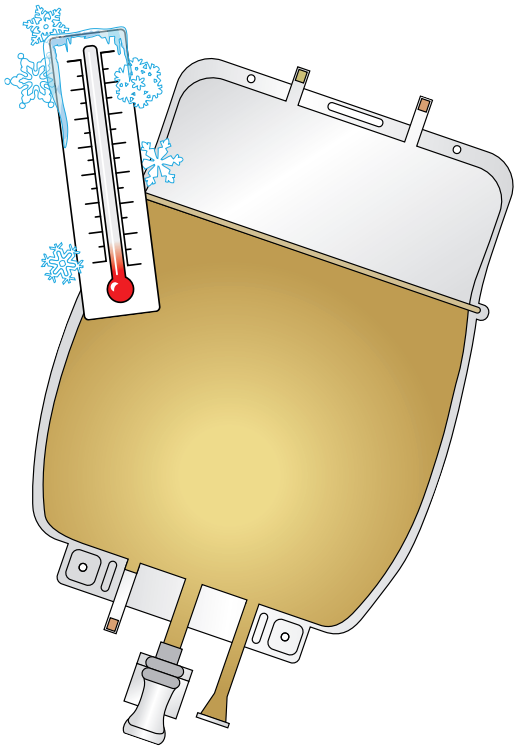
Your tubing may not be good (defective).

What you must do:

1. Disconnect and flush your central line. (see section "**Flushing your catheter"** to learn more)
2. Get a new tubing and a new cannula.
3. Follow the steps for priming your tubing. (see section **"Priming the tubing & connecting the bag"** to learn more)

Be careful when you handle the PN bag, as it is already open. Make sure that you hold the bag upside down while changing the tubing. Otherwise, the liquid will spill out.

The PN bag is too cold

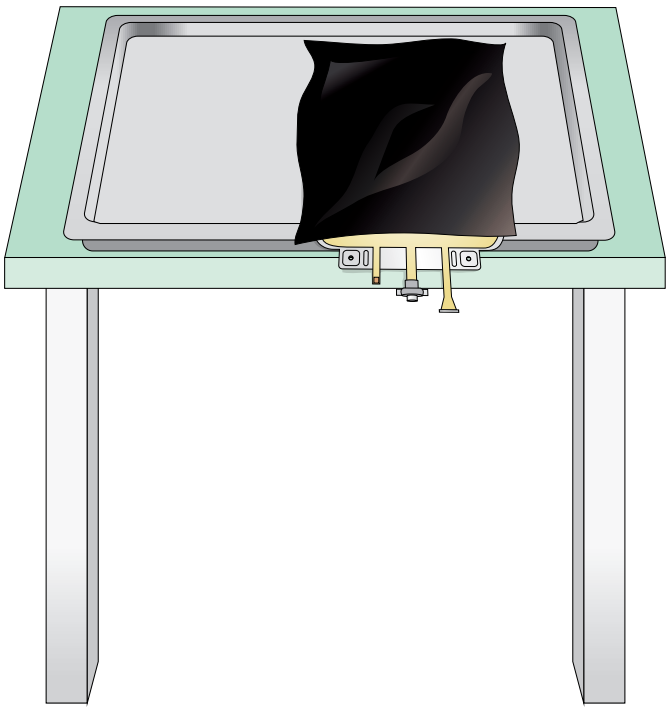


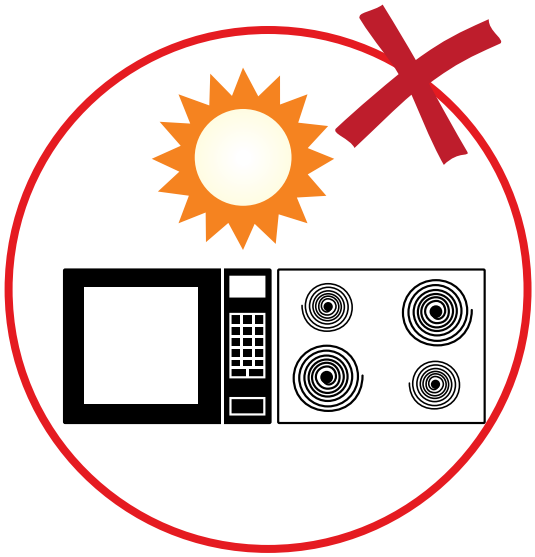
You notice:

- Your PN bag was not taken out of the refrigerator.

What you must do:

1. Always take the bag out of the refrigerator at least 2-3 hours before infusing.
2. Leave the PN bag in its black bag.





DO NOT put it in the **oven,** the **microwave,** on a **heater** or on a **window sill.**

The PN bag does not look right

You notice:

- The PN bag is sticky (the liquid has leaked)
- The liquid has turned a darker color
- The lipids have leaked into the other (clear) section of the bag
- Someone else's name is on the bag
- The PN bag expiration date has passed

What this might be:

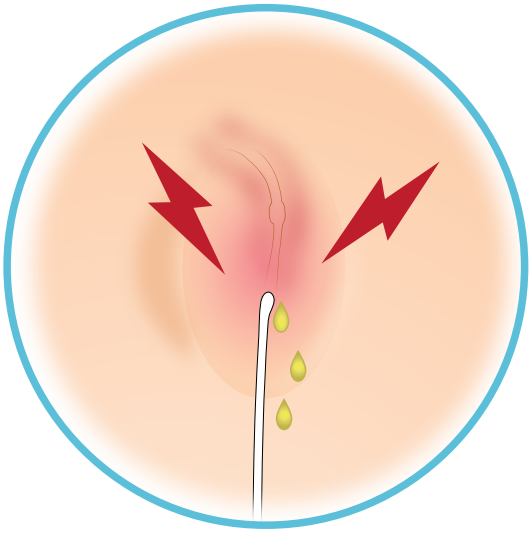
Your bag may be too old or it may have been damaged. Either way, this means the solution is no longer safe to use. If you see another name on the bag, this is a serious error.

What you must do:

1. **DO NOT USE** this bag. Place it in a sealed bag (e.g. Ziploc™) to prevent spills.
2. Take another bag to start your infusion.
3. Call the clinic the next working day or call the supplier right away, if none of your bags are usable.

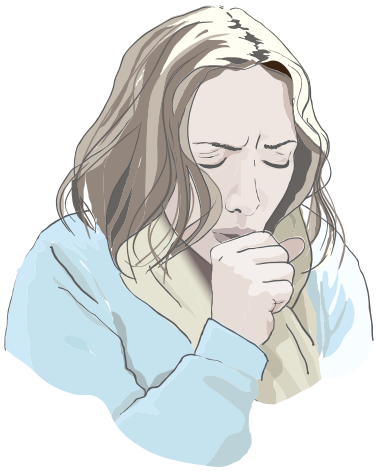
Symptoms of infection

You notice:

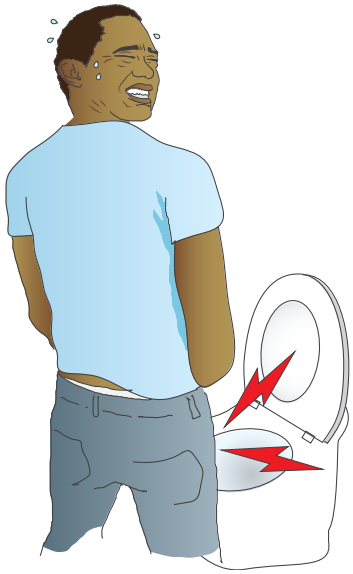


- Pain, pus (drainage) or moderate swelling at the catheter exit site
- Pain or swelling along the catheter tunnel

- Fever up to 38° C degrees



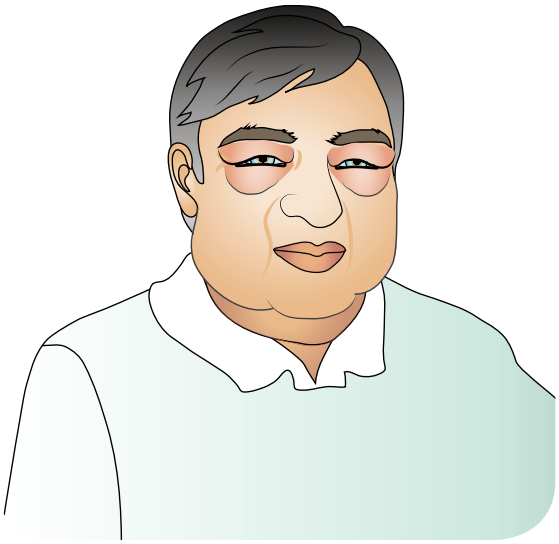
- Sore throat, cough, phlegm



- A need to urinate more often, urgently or with burning

1. Call the clinic if this happens on a week day.
2. If symptoms and fever worsen, go to emergency **RIGHT AWAY.**

Progressive swelling of the face, neck and/or arms



You notice:

- Your face and neck, followed by your arms, are progressively more swollen (it may start on the same side as the catheter)
- Your eyelids are puffy
- The swelling does not decrease during the day
- Your face might be flushed
- Your head feels full when bending forward
- Your chest feels heavier
- You notice veins on your chest or neck that you had not noticed before

What this might be:

This may be **superior vena cava (SVC) syndrome.** The SVC is one of the main blood vessels that brings blood back to the heart. This blood then continues on to the lungs to pick up more oxygen to meet your body's needs. If this vein becomes blocked, blood will not flow properly to the heart. This will cause the swelling.

How did this happen?

Swelling may be caused by any of the following:

- A blood clot inside the vein around your catheter
- Inflammation of the vein around your catheter
- The inside end of your catheter has moved out of place

Did You Know?

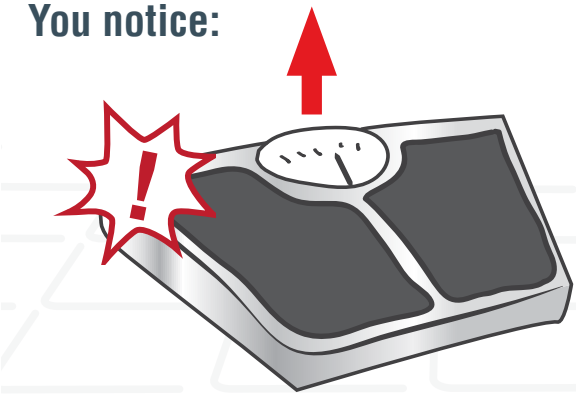
To help prevent this problem, avoid lifting heavy objects or doing exercise that makes you hold your breath.

What you must do:

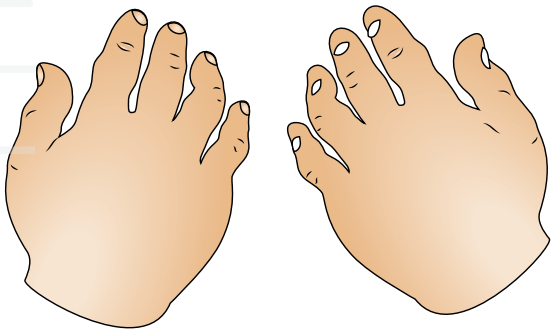
1. Call the clinic if this happens on a week day.
2. If the swelling is severe, or the clinic is closed, go to the emergency **RIGHT AWAY.**

Progressive weight gain (e.g. 1 kg (2.2 lbs) & swelling

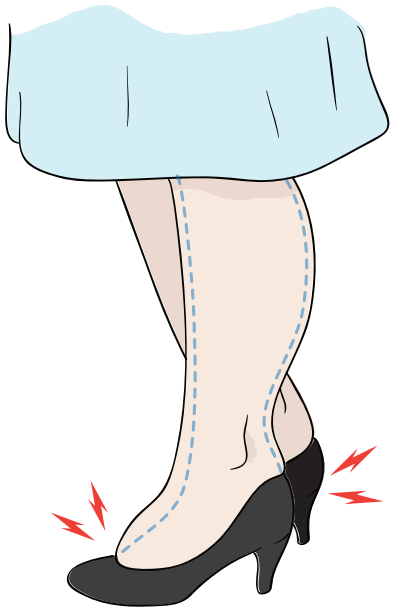
You notice:



- You have gained weight over a few days (e.g.1 kg (2,2 lbs))



- Your hands and arms are swollen in the morning



- Your feet and legs are swollen especially later in the day

What this might be:

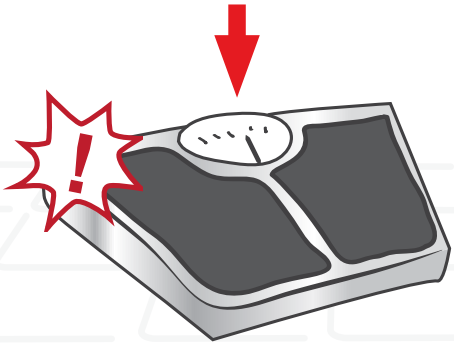
You may have infused your PN too quickly or you may have infused an amount that was more than your body could handle.

What you can do:

1. Call us so we can review the situation together over the phone.
2. If the symptoms worsen or you are short of breath, go to the emergency **RIGHT AWAY.**

Progressive weight loss (e.g. 1 kg (2.2 lbs)), dizziness or weakness

You notice:



- You have lost weight (e.g. 1 kg (2.2 lbs)
- You have less energy
- You are more thirsty, you have less urine and it is darker

* You should **NOT** try to fix your problem by drinking more

What this might be:

Dehydration (your body has lost more fluids than it is receiving):

- You have been having more vomiting, diarrhea and/or output from your fistula
- You have been perspiring more than usual
- You have infused less than you were supposed to

What you must do:

1. Call us so we can review the situation together over the phone.
2. If the symptoms worsen, or you are dizzy, go to emergency **RIGHT AWAY.**

Part 5: Looking for help or more information?

How to reach the MUHC Home PN program

The MUHC HOME PN program is located at the:

Montreal General Hospital
1650 Cedar Av.
Room: C6-244
Montreal, (Quebec), H3G 1A4
Fax: (514) 843-1438

To contact:

The PN doctor: Dr. E.B. Marliss
(514) 934-1934, then enter 1, followed by 53333

The PN nurse: Sylvie Le Bourdais: sylvie.lebourdais@muhc.mcgill.ca
Tel: (514) 934-1934, enter 1 then ext.: 35392, (or ext.: 35605 – no voice mail)
Pager: (514) 406-2452

The PN nutritionist: Caroline Brien : (514) 934-1934 enter 1 then ext. 44211

For your bone density measurement, The MUHC Nuclear Medicine Department is located at the:

Royal Victoria Hospital
at the MUHC Glen site
1001 Décarie Blvd.
Room C 02.8711
Montreal, Quebec H4A 3J1

For your bone doctor appointments

The MUHC Endocrinology Clinic is located at the:

Royal Victoria Hospital
at the MUHC Glen site
1001 Décarie Blvd.
Room D 02.3312
Montreal, Quebec H4A 3J1

How to order supplies

Contact your Calea Representative:

(514) 335-3500, ext.: 2227
Outside of Montreal: 1-800 335-1345
Fax: (514) 335-3400
Tpn-enterale@calea.ca

Susana Lazaro (supervisor)
slazaro@calea.ca
(514) 335-3500 ext. 2230

calea.

Did you know?

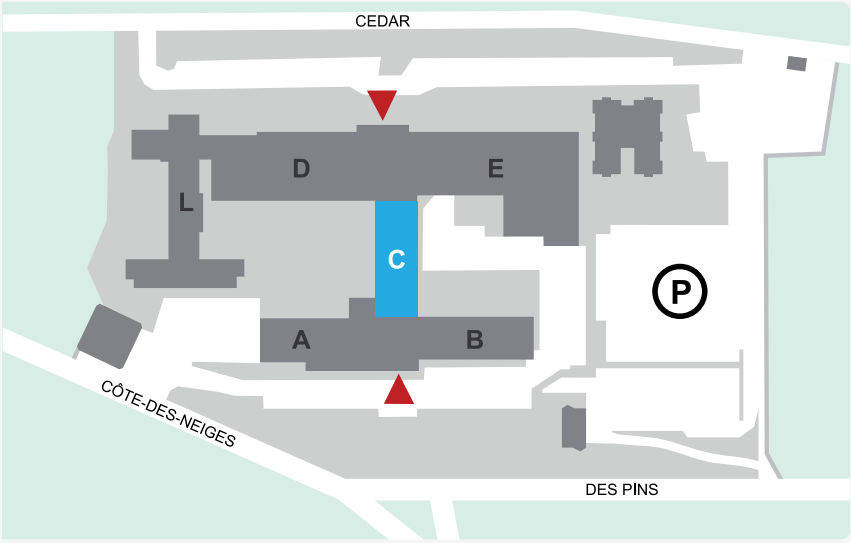
A Calea pharmacist is on-call 24 hours a day. Simply dial (514) 335-3500, then "0" to reach someone.

Hospital maps and directions

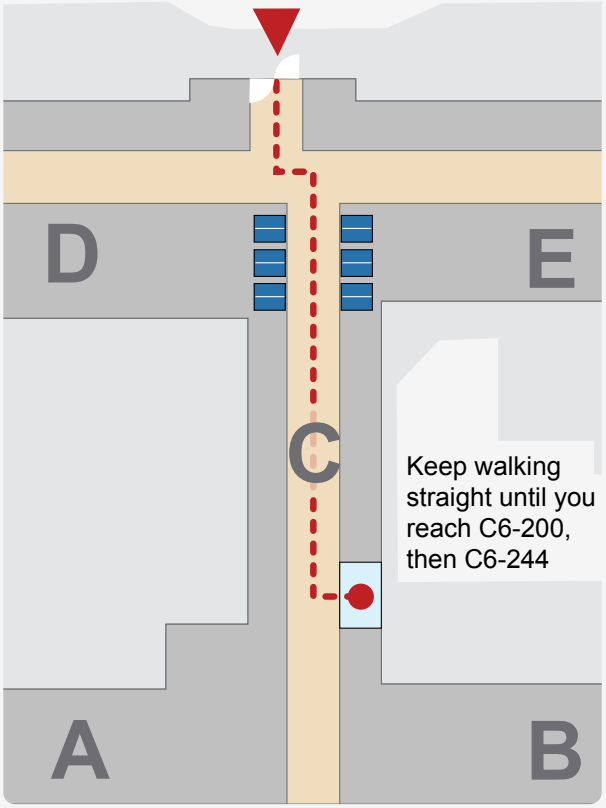
Montreal General Hospital

1650 Cedar Av.
Montreal, (Quebec), H3G 1A4

To get to the HOME PN program office in Room C6-244, follow the steps below

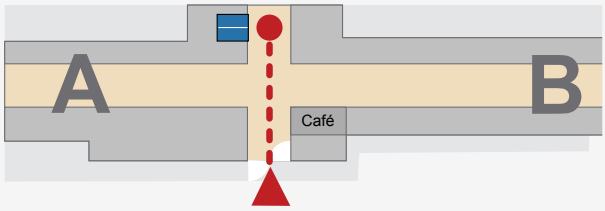


If you are entering from the **Cedar av.** entrance, walk forward past the elevators, and into the C wing (you will already be on the 6th floor)



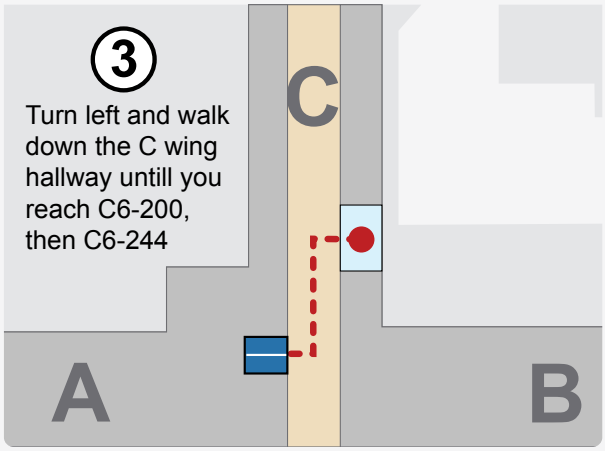
If you are entering from the **Côte-des-Neiges/ des Pins av.** entrance:

1. Walk forward past the cafe to the small elevator on your left



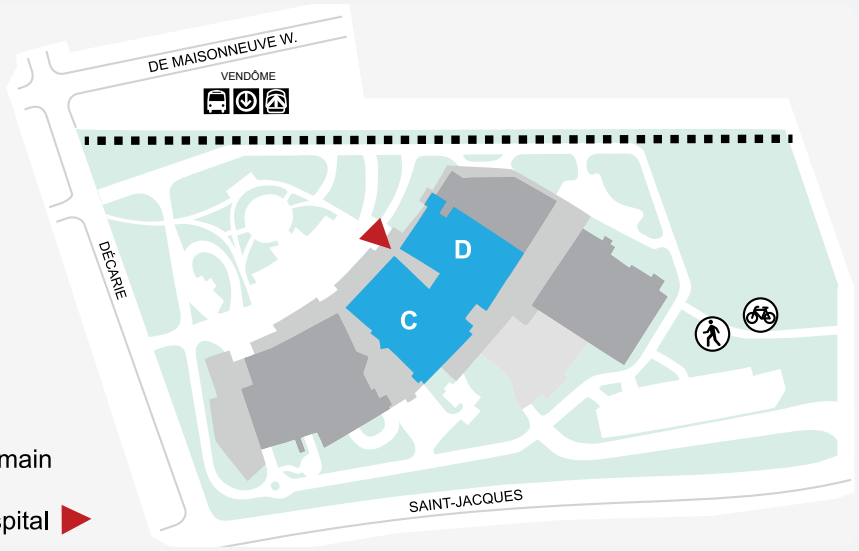
2. Take the elevator to the 6th floor

3. Turn left and walk down the C wing hallway untill you reach C6-200, then C6-244



Royal Victoria Hospital at the MUHC Glen site

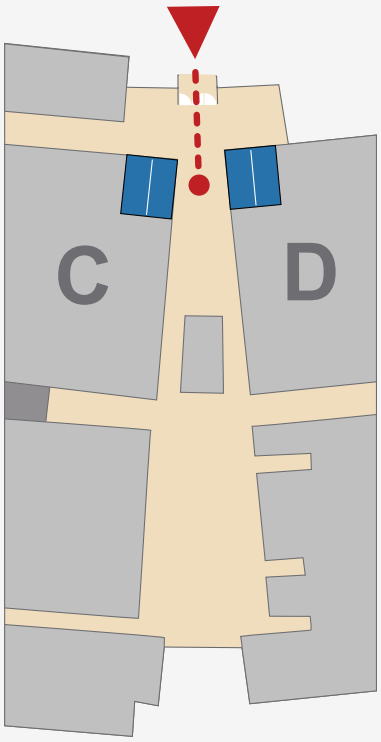
1001 Décarie Blvd.
Montreal, QC H4A 3J1



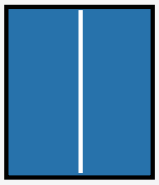
To get to the Nuclear Medicine Clinic in C 02.8711 or the Endocrinology Clinic in D 02.3312:

1 Enter through the main entrance of the Royal Victoria Hospital

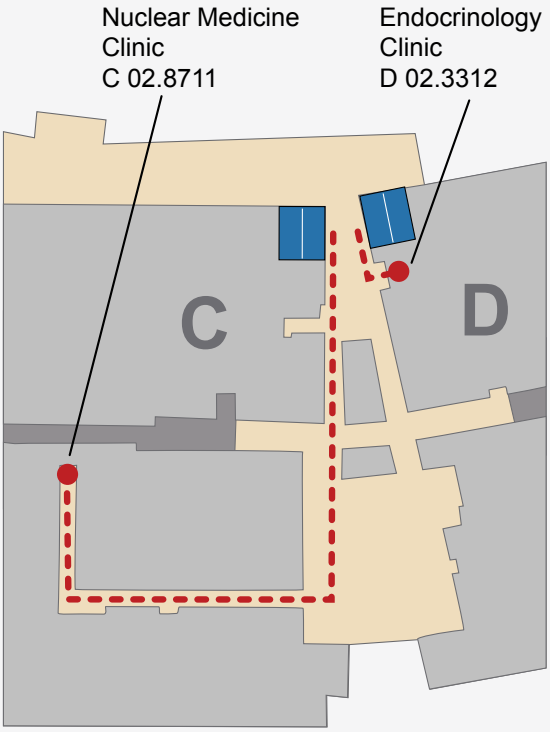
2 Walk forward towards the elevators



3 Take the elevator to the 2nd floor



4 Walk to reception:



PATIENT EDUCATION OFFICE

of the MUHC

The Patient Education Office (PEO) is dedicated to creating clear and understandable health information for patients and their families. We are committed to ensuring that patients receive timely, comprehensive and up-to-date information that responds to real information needs and models of whole-patient care.

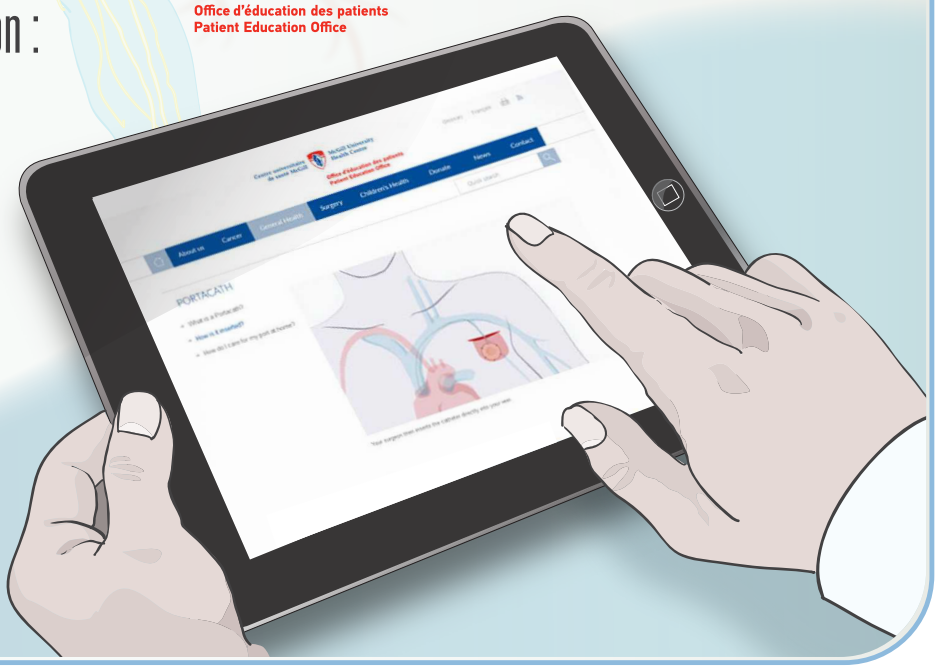
Patients and their families are at the heart of everything we do.

Centre universitaire de santé McGill
McGill University Health Centre

Office d'éducation des patients
Patient Education Office

Visit for more information on :

- Cancer
- General Health
- Children's Health
- Your Surgery



muhcpatienteducation.ca
educationdespatients.ca
(514) 934-1934 ext. 71503

Centre universitaire de santé McGill
McGill University Health Centre

Office d'éducation des patients
Patient Education Office