

# A Resource Booklet for Families

## Tube Feeding Your Child by: Nasogastric Tube

### You Can Do This!

Everything about tube feeding may be new and strange to you.

We will teach you what you need to know.

You will practice your new skills *before* you go home.

Be sure to tell us about any questions or concerns you have.

There are no silly questions!

We want tube feeding at home to be a positive experience for your child and family.



---

# Pediatric Home Nutrition Support Program

---

The Pediatric Home Nutrition Support Program (PHNSP) at the Stollery Children's Hospital is a program designed to assist children who need tube feeding at home.



We are a team of dietitians, nurses, social workers and feeding therapists (occupational therapists or speech language therapists) working together to help you manage tube feeding at home.

PHNSP provides teaching on tube feeding for home as well as provides supplies and assistance obtaining formula.

At home, you will receive follow up phone calls from a member of our team.

You will also be seen in our clinic for on-going support with your child's feeding and nutritional needs.

This booklet gives you information about naso-gastric tubes and naso-jejunal tubes and feeding. If your questions are not answered here, please write them down and ask your doctor or Home Nutrition Support Team.

Be sure to write notes about your child's care.

***Your Pediatric Home Nutrition Support Team***

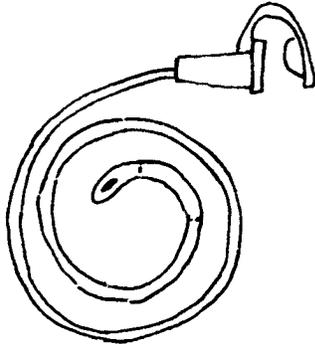
# Table of Contents

---

<b>About Nasogastric (NG) tubes</b>	
What is a nasogastric (NG) tubes.....	3
Who needs a NG tube .....	3
What are the goals for NG tube feeding .....	3
How will my family react to tube feeding .....	4
<b>About Nasojejunal (NJ) Tube.....</b>	<b>4</b>
Washing your hands.....	5
Inserting the NG tube.....	6-8
Checking NG tube placement.....	9-10
Frequent questions .....	11
Removing the NG tube .....	11
Preventing tubing entanglement .....	12
<b>Tubing Stabilizers .....</b>	<b>13</b>
<b>Feeding and Giving Medication</b>	
Positioning.....	14-15
Feeding by tubes: four methods.....	16
Feeding routine.....	17-18
Preparing breast milk or formula.....	19-22
Giving medicine by the NG tube .....	23
Mouth care.....	24
<b>Caring for your child’s feeding equipment.....</b>	<b>24</b>
<b>Connecting with your Child.....</b>	<b>25</b>
<b>Preparing Your Child to Eat by Mouth.....</b>	<b>26-28</b>
<b>Appendix 1: use of well water for enteral feeding.....</b>	<b>29</b>
<b>Contacting the PHNSP Team .....</b>	<b>30</b>
<b>NG tube feeding supplies.....</b>	<b>30</b>
<b>Appendix 2: Solving NG tube feeding problems.....</b>	<b>31-34</b>

# About Nasogastric (NG) Tubes

---



Nasogastric tube

## What is a nasogastric (NG) tube?

A nasogastric (NG) tube is a hollow, thin, soft tube that is passed through your child's nose, down the throat and into the stomach. The tube is used to feed your child breast milk or formula and may also be used to give other fluids and medicine.

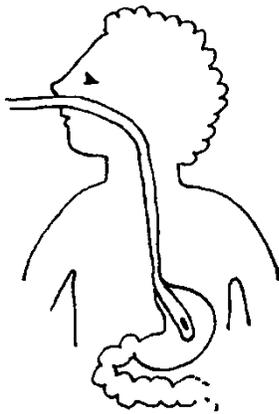
## Who needs a NG tube?

A NG tube may be needed if your child:

- Cannot eat or drink by mouth safely.
- Cannot or will not take in enough calories by mouth.

Nasogastric tube feedings will be important for your child for proper growth, healing and development. Parents soon become experts at tube feeding.

You and your child's Pediatric Home Nutrition Support Team will decide on the type of NG tube needed and design a feeding program that is best for your child and for your family.



Nasogastric tube in place

## What are the goals for NG tube feeding?

- To help families provide a safe way to feed their child at home that will promote health and growth.
- To help manage a disease or health problem.

For some children, the goal is to increase the amount of food the child will eat by mouth and to use the tube less and less.

# About Nasogastric (NG) Tubes (continued)

---

How will my family react to tube feeding?



Many parents and family members experience a wide range of feelings about not feeding their child in a “normal” way. There may be times when you or your family feel overwhelmed and these feelings are **normal** and will change from day to day and over time.

Your Home Nutrition team is here to support you and your family. The social worker can be available to help you with your feelings, or you can talk to any member of your team. Your team members can also connect you with other families who have a child tube feeding at home.

## Nasojejunal (NJ) Tube

---

A Nasojejunal or NJ-tube is similar to an NG-tube except that it is threaded through the stomach and into the jejunum, the middle section of the small intestine. The same type of tube is used for NG or NJ feeding. A NJ tube is used when a child is unable to tolerate feeding into the stomach, due to dysfunction of the stomach, impaired gastric motility, severe reflux and/or vomiting.

**NJ tubes must be placed in a hospital setting by medical staff and placement confirmed by an abdominal x ray**

### PLACEMENT CHECK FOR NJ

Attach 10ml syringe to the NJ tube, gently pull back on plunger, you will feel suction “snap-back” and may get a small amount of fluid (less than 1 ml). Check placement before each feed, flush or medication. If able to get back more than 2 mls of fluid/formula or child vomits formula the **NJ tube is in the stomach not the intestine**. STOP the feed and call your doctor or go to the local emergency room for an x- ray to confirm placement or have the feeding tube reinserted.

Check placement and flush with 3-5mls of water every 4 hours.

NJ feeds are usually small volumes of formula delivered by a feeding pump over many hours.

# Washing Your Hands

---

Stop the spread of germs with one simple step:

**Wash your hands.**



Good hand washing will help stop the spread of germs from your hands to your child or to your child's tube supplies or formula.

Follow these steps to wash your hands:

- a. Wet your hands with warm, running water.
- b. Use liquid soap or a clean bar of soap. You don't need antibacterial soap; regular soap is fine. Rub on soap. Lather well.
- c. Rub your hands together briskly for at least 20 seconds. Hint: Sing "Twinkle, Twinkle, Little Star", and 20 seconds will have passed.
- d. Scrub all over, including the backs of your hands, wrists, between your fingers, thumbs and under your fingernails.
- e. Rinse under running water for at least 10 seconds.
- f. Dry with a clean towel.

## **Hand Sanitizer**

Hand sanitizer can only be used if hands are not visibly dirty. Let your hands dry completely before touching tube feeding equipment.

## **Always start clean!**

Clean hands, clean supplies, and clean working area.

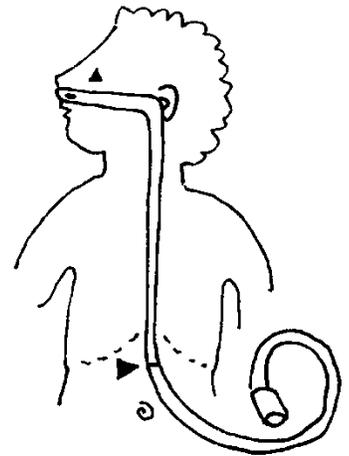
# Inserting the NG Tube

---

Inserting or putting in a NG tube may frighten you at first, but parents learn this skill very quickly. Many older children prefer to put in their own tube. Your child may gag at first, but this often stops as they become used to the feeling of the tube going in.

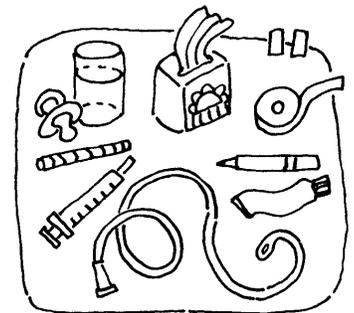
## Gather supplies:

- NG tube.
- Syringe.
- Skin barrier wipes, adhesive wafer and tapes.
- Glass of water or soother, depending on your child's age.
- Tissue to clean nostril.
- Water-soluble lubricant to make the tube easier to pass down the throat.
- Straw for older children (optional).
- Permanent marker.



## Prepare NG tube

- a) Check the NG tube for cracks, leaks or blockage. You can test the tube by flushing it with water from a syringe and looking for leaks along the tube. Throw away damaged tubes.
- b) Use the tube to measure the distance from the nose to the stomach. Place the tip of the tube on the end of the nose, measure to the ear lobe and then to the midpoint between the bottom of the sternum (breastbone) and the navel (belly button). Do this each time you insert the NG tube.
- c) Mark this measured distance with a permanent marker. Once you insert the tube, this mark will be at the nostril and the tip of the tube will be in the stomach.
- d) Close the cap on the NG tube to prevent air from getting into the tube and to stop stomach fluids from draining out through the tube once it is inserted.
- e) Cover the tip of the feeding tube with water-soluble lubricant or wet with water.



# Inserting the NG Tube (continued)

---

Prepare your child for tube insertion:

**For babies:**

- Giving a soother may help keep your baby calm.
- Bundle your baby in a blanket.
- If your baby's nose is plugged, try to gently clear the nasal passage with normal saline drops and a nasal bulb syringe. These are available at pharmacies or from your health care team.

**For older children:**

- Have your child gently blow his or her nose to clear nasal passages. If there is thick mucous in a younger child's nose, you may need to clean the nostril gently with normal saline drops and a nasal bulb syringe.
- If your child is allowed to take fluids by mouth, you can give him or her ice to suck on or sip on a glass of ice cold water while the tube is being put in. This will numb and moisten the throat.

Insert the tube:

- a) Position your child. Smaller children or babies should be bundled and lie on their back with their upper bodies and heads propped at a 30 degree angle. It is helpful to have someone else hold your child's head and shoulders while you insert the tube. Older children may choose to sit up for NG insertion.
  - b) Insert the lubricated tube gently along the bottom of the nostril. Keep the head straight and the chin tucked in.
  - c) Push the tube in gently. **If the tube curls in the mouth, don't be alarmed**, just pull the tube out. Start again.
- Swallowing helps move the tube down to the stomach. Giving a soother to suck may help your baby swallow. If oral fluids are allowed, older children may take sips of water through a straw to help the tube pass down.
  - It is common for children to gag, cough or choke as the tube passes down the back of the throat. **If your child is very upset (crying, coughing) pause and comfort your child.** For instance, a baby may suck on a soother or an older child could try slow breathing. Once the child is calmer, continue to gently insert the tube.
  - If you are not able to move the tube forward, **do not force**. Pull the tube back slightly and then try to move it forward again. Using a slight twisting motion might help. Next time, you may want to add more lubrication to the tube prior to insertion.

**If your child has any trouble breathing or turns "blue", remove the tube right away as it may have entered the airway or lungs** Advance the tube until your mark reaches the nostril. The tip of the tube should be in the stomach.

- d) Tape the tube in place. See the sections on Keeping the NG tube in Place and Taping (page 11).
- e) Check tube placement (page 10-11).

Change nostrils every time you insert the tube to give each side a chance to rest.

Sometimes there may be a small amount of blood in the tube after tube insertion. The blood is from irritation of the nostril. This is not uncommon but call your Pediatric Home Nutrition Support nurse if you are concerned.

# Checking NG Tube Placement

---

## Why check tube placement?

- To be sure that the tube is in the stomach and not in the lungs.
- The tube may move due to activity, play and/or by “curious fingers”.
- Normal motion of the stomach may move the NG tube out of place.

## When to check placement:

- **After** you insert a tube
- **Before** you give a feed, flush or medication
- **After** coughing, choking, throwing up, gagging or blowing nose

## How to check tube placement:

You may need to use more than one method.

Please do **ALL** of the steps listed below to check if the tube is in the stomach:

### Step 1: Check the mark on the tube.

- If the mark is **at the nostril**, go on to Step 2.
- If the mark **has moved into the nostril**, un-tape the tube and pull it out until the mark is at the nostril. Re-tape tube.
- If the tube has come partway out and the mark **is outside of the nostril**, gently push the tube in until the mark is at the nostril. Re-tape tube.
- If the pen mark has **rubbed off**, use a new tube to measure and compare where the appropriate pen mark or tape should be, then place a new mark on the tube that is in place. Or, you could remove the tube, measure it, and insert it again.

**Step 2: Withdraw fluid from the stomach** by attaching an empty syringe to the end of the NG tube and pulling fluid up into the syringe.

**If you can withdraw stomach contents**, it means the tube is in the stomach.

- Normal stomach contents may appear grassy green, tan to off-white (mixed with formula), brown, clear and colourless, or mixed with mucous. It is common to see small flecks of blood if a tube has been inserted recently.

# Checking NG Tube Placement (continued)

---

Do not start a feeding if:

- your child has problems breathing or speaking, at any time. Remove the tube.
- you think the NG tube is not in the right place. Recheck placement or remove the tube.
- After checking the colour of the fluid, gently inject the stomach contents back into the tube. These stomach contents contain important fluids your child needs. Flush with water to clear the tube after each placement check.
- If you are not able to withdraw any stomach contents, first recheck the tube position. Then, change the child's position - try sitting upright, lying on the right or left side, or lying flat. With the syringe inject 2mLs of air into the tube and try Step 2 again.
- If your child is allowed to have fluids by mouth, give a small amount then check placement again.
- If you are still unable to withdraw fluid from the stomach, call the home care nurse or the Pediatric Home Nutrition Support Team.

**Only when placement is confirmed, you may start feeding your child.**

## Keeping the NG tube in place

Your child's tube must be firmly taped to his or her cheek.

**Try these tips for taping the tubing:**

- a) Clean and dry your child's skin and apply protective film barrier to area before putting on the tape.
- b) Cut pieces of tape to have ready before putting the NG tube in.
- c) Place a piece of adhesive wafer on your child's cheek as close as possible to the nostril into which you are putting the tube.
- d) Place the inserted NG tube over the adhesive wafer. Hold in place with another piece of tape over the tube.
- e) Use extra strips of tape to attach the tube along the back or side of the child's clothing.
- f) Place a piece of tape with tabbed ends further down the NG tube. Pin the tape to your child's diaper or clothing to protect the tube from being pulled out. You may want to tape over the pin to stop it from opening by mistake.
- g) Coil up any extra length of NG tube and tape the coil.
- h) Change the tapes when they become loose or dirty or at least once a week.

## Frequent Questions:

---

### **Does the tube hurt or bother the back of my child's throat?**

There is some discomfort while the tube is being passed. After the tube is in place, the child may have a funny feeling in the nose and throat, but this usually goes away after a short period of time.

### **Can I take the tube out if my child is going somewhere special or getting pictures taken?**

Yes, taking the tube out for special events is all right! Once you and your child get used to having the NG tube inserted and removed, it will become part of your routine.

### **How do I know if my child is getting enough calories and fluid?**

- The best way to tell if your child is getting enough is to keep checking his or her growth.
- Your child will be weighed and measured by your health care team regularly.
- Your child's height, weight and head size will be marked on a growth chart. The chart will show any changes in your child's growth curve. Your dietician will review your child's growth chart regularly.
- When your child receives good nutrition, their general health may improve.
- Regular urination and bowel movements are signs that your child is getting enough fluid each day.

## Removing the NG Tube

---

### **Unhook the NG tube from the feeding tube set.**

- a) Clean NG tube with 1mL air to prevent fluid leaking out during removal. Close cap on NG tube.
- b) Pull the NG tube out using a **quick**, steady motion.
- c) Wash the NG tube: draw up 5 – 10 mLs of water in syringe and push water through the NG tube and wipe the outside with a clean wet cloth.
- d) Reinsert NG tube. (NG tubes can be used up to 30 days)

# Prevent Tube Entanglement

---

Children with higher risk of getting tangled in tubing:

- 4 to 36 months of age.
- Active or restless.
- Cognitively or developmentally delayed and not able to untangle themselves.
- History of past tangling problems.
- Parents feel their child is at higher risk.
- Receive continuous tube feedings, especially at night when parents are sleeping.

How can I keep my child from getting tangled in the tubing?

- Place the feeding set at the foot of the bed while your child is sleeping.
- Run the tubing down inside the clothing, coming out at the ankle or bottom of the shirt.
- Use a **tubing stabilizer**. This stiffens the tubing to avoid tangling around the neck. (See next page).

**The best method depends on your child's condition and the way he or she is being fed.**

**Ask your Home Nutrition Support Team.**

# Tubing Stabilizer

---

## What is it?

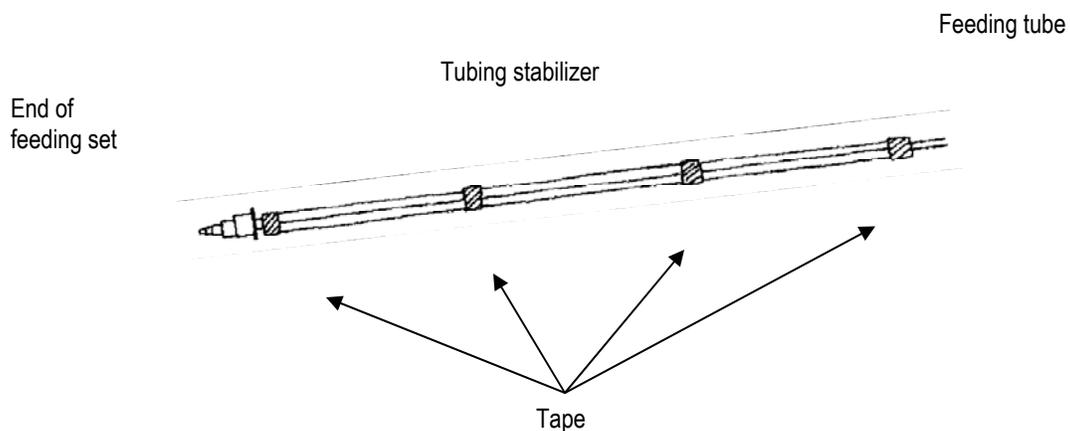
A tubing stabilizer is a stiff, plastic channel that looks like a tube. It can be placed around the tubing of the feeding set to prevent your child from getting tangled in the tube.

## Before you use it

Check the tubing stabilizer for any kinking, damage or excessive wear. If there is any sign of damage throw it out and use a new one

## How do you place it on the tubing of the feeding set?

- Have your child lie down. Place the pole at the foot of the bed. Ensure that the tubing of the feeding set is straight and lying beside your child.
- Find the end of the feeding set. You will want to place the stabilizer as close to the end of the feeding set as possible (see picture below).
- Starting at the end of the feeding set, begin pressing the tubing into the opening of the stabilizer using your thumb. Continue pressing the tube into the opening along the entire length of the stabilizer.
- Double-wrap adhesive tape around the stabilizer at each end (see #1 on the picture below).
- About 8 inches from each end, double-wrap adhesive tape around the stabilizer to keep the tube from coming out (see #2 on the picture below).



\* Actual product name is the "IV/Medical Line Stabilizer" by IVY Devices Inc.

Teaching material adapted from:  
<http://www.ivydevices.ca/stabilizer%20instruction.pdf>

# Positioning your Child

---

**Diagram #1**



This is a **good** feeding position

**Diagram #2**



This is **not** a good feeding position

## How should I position my child during and after feeding?

A good feeding position will help your child feel more secure during feeding times. This will help them with sucking, swallowing and chewing.

### Babies:

- Make sure you are sitting comfortably, with your arm well-supported by a pillow.
  - Hold your baby firmly on your lap as you would if you were bottle-feeding (refer to Diagram #1). Or, you can place your baby in an infant seat.
  - The baby's head should be higher than the stomach. Support head and neck.
  - Baby's back should be fairly straight with hips and knees slightly bent, with arms and hands in front of their body so that they can sit comfortably on your lap.
- **Do not lay your child down flat for 30 minutes after a tube feed.**
- If sitting, avoid the "C" body position (see Diagram 2) because it decreases the space for formula and digestion in your child's stomach.
- **Continuous Feedings:** Feeds are better tolerated if the child's head and shoulders are elevated. Elevate front legs of crib or bed to 30-45 degrees. Do NOT elevate only the mattress. Brace foot of crib or bed against a wall. Once child can roll over do not elevate crib or bed. Do **not** use extra pillows to raise your child's head.

**A good rule of thumb: Raise the BED, not the BABY.**

## Positioning your Child (continued)

---



### Toddlers & Older Children:

- As your child gets older, they still need to have good back and foot support.
- Your child should not be able to slip or slide forward in the seat.
- Small children can sit in a booster seat at the table or in a small child-size table and chair.
- Look at your child's position from the side. The body should be shaped like the letter "L" with the lower back fairly straight.
- Avoid the "C" body position because it does not give your child's stomach very much room for formula and digestion.

If your child has poor motor control, check with your Home Nutrition Support Team for advice about safe positioning for feeding.

# Feeding by Tube: Four methods

---



You and your Home Nutrition Support Team will determine which type of feeding will be best for your child. There are four ways to give tube feedings. Your Home Nutrition Support team will discuss each of these methods with you.

## 1. "Top-up" feedings

"Top-up" tube feedings are small volumes often given after feeding your child by mouth. These feedings may be given by gravity or syringe.

## 2. Bolus feedings

Your child may need an entire meal to be given by NG-tube. This is called a "bolus" feeding.

Bolus feedings are often given by gravity but may be given by syringe or pump as well. The time it takes to give a bolus feed is specific to your child.

## 3. Continuous feeding

This is when small amounts of formula are needed to be given slowly over several hours or overnight using a feeding pump.

## 4. Combination feeding

Your child may need a combination of feeding methods. For example, he or she may need "top-up" or "bolus" feedings at mealtimes and a continuous feeding during the night.

Every child changes as he or she grows. Your child may progress from small, frequent feedings to meal size feedings. As your child eats and drinks more by mouth, the amount of their tube feed will decrease.

**The method used to tube feed your child may change over time.**

# Feeding Routine

---

## 1. Prepare:

- Wash hands (see page 5).
- Gather supplies
- Formula (check expiry date).
- Pump (if needed).
- Feeding bag.
- Syringes (empty one for aspiration and flush with water).

## Important Note:

- **Water flushes** – Your Pediatric Home Nutrition Support Team will tell you how often to flush the tube with water and how much water to use. This will be part of your tube feeding plan.
- Use sterile water for water flushes if your baby is less than 4 months old.

## 2. Check to be sure:

- Tube is the **feeding tube** and not another medical tube.
- Tube is in the stomach (see Checking NG Placement page 9-10).
- Tube is not plugged. Do this by flushing tube with at least 3-5mL of water (use cool boiled water for babies under 4 months of age).
- The tubing and supplies are clean and have no leaks, cracks or bad smell.
- Formula is at room temperature.
- Shake the formula well.
- Wash the top of can with warm soapy water before opening.

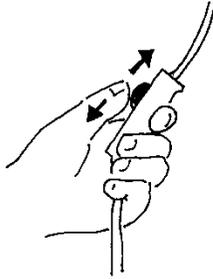
## 3. Feeding:

### a) Bolus or “Top up” Feeding

- Position your child for feeding (see page 14-15).
- Offer your child food by mouth, if this is allowed.
- Pour the feed into the container. Run the liquid to the end of the tubing to reduce the amount of air given to your child. Connect the tubing.

# Feeding Routine (continued)

---



Roller clamp

**Remember:**

If the tube is not being used for feeding, flush with at least 3-5mLs of water once a day.

- Give the feed slowly using a gravity bag set. Adjust the speed of the feed by moving the roller clamp up or down and/or by adjusting the height of the feeding bag above your child's head. The higher the feeding bag, the faster the feed will go. A feed should last 15 to 30 minutes.
- For small feedings, a 60mL syringe can be used to feed by gravity or by slowly pushing the syringe plunger.
- Burp your child if needed.
- If using a pump, see continuous feeding schedule below.

**b) Continuous Feeding or Night Feeding**

- Position your child for feeding (see page 14-15).
- Pour the formula into the bag and run it to the end of the tubing. This reduces the amount of air given to your child.
- Set the pump at the desired dose and rate.
- Run tubing through pajama pant leg and position pump at end of bed for night feeds.
- Attach tubing stabilizer and start feed.
- Flush NG-tube with water every 4 hours to prevent clogging.
- Formulas can be unrefrigerated for different amounts of time. Check with your dietitian for directions.

**4. End of Feed:**

- Flush the tube with 3-5 mLs of water
- Clamp or plug the end of your child's tube between feeds.
- Allow 20-30 min quiet time after a feed is completed. Have your child lay on their right side or back with head and shoulders elevated. If reflux is a concern, ask your child's health care provider for further advice.
- Clean all supplies (see page 24).

# Preparing Breast Milk or Formula

---

What kind of water should I use for tube feeding my child?

- **Treated tap water, and commercially bottled** water such as natural spring water with low mineral content are safe to use. **Well water** can be used if it has been tested for safety. (see Appendix 1, page 29 for more information)
- **Other bottled water** such as mineral water, vitamin water, flavored water, water with high mineral content, and softened water **should not be used**. Water from carbon filtered taps or pitchers and fridge filters should be used cautiously as bacteria can buildup in the filters if not changed regularly or as recommended by the manufacturer.
- Use **sterile water** for flushing the NG tube, medication flushes and formula preparation is recommended for a baby **less than 4 months old**.

## Important Notes:

- *If you use water from a well, sterilizing it may not be enough. Ask your community health centre about having your water tested for safety.*
- *Distilled or bottled water is not sterilized water.*

Babies under 4 months of age:

## Use only boiled water:

- Run cold water tap until you feel the water getting colder. Then you know you are getting fresh water.
- Water should be brought to a rolling boil for at least two minutes.
- Cool to room temperature prior to mixing formula.

## Storage of boiled water:

- Store boiled water in a covered container that has been cleaned well.
- Boiled water can be stored for up to 3 days in the fridge or at room temperature for 24 hours.
- This water can be used for flushing the tube or for preparing formula.

## Sterilizing equipment:

- All mixing and storage equipment needs to be covered by cold water.
- Cover the pot with a lid and bring to a boil. Boil for two minutes.
- Let cool and remove the equipment and store in a clean place.

# Preparing Breast Milk

---

## Breast milk

- You can express breast milk for use in your child's tube feed.
- Wash your hands with soap and water before expressing (see page 5).
- For babies less than 4 months, sterilize expressing and storage equipment as above. Use a sterilized container, or storage and freezer bags specially designed for breast milk.
- Label bag or container with the date. Always use the oldest milk first.
- Chill expressed breast milk for one hour in a fridge or ice packed cooler before freezing.

### Storage of freshly expressed breast milk:

Room Temp	Refrigerator	Freezer (1-door fridge)	Separate Freezer	Deep Freeze
up to 4 hours	up to 2 days	up to 2 weeks	3 to 4 months	up to 12 months

*HEALTHY U: BREASTFEEDING YOUR BABY* GOVERNMENT OF ALBERTA NT0063 March 2008

- Thaw frozen breast milk in a bowl of warm water, or in the fridge. If milk has separated shake the container gently to mix.
- Refrigerate thawed breast milk and use within 24 hours

### Important Notes:

- **For breast milk alone or breast milk mixed with non-powdered formula put only enough for 4 hours in the feeding bag at one time.**
- If powdered formula is added to breast milk, feed child immediately or within 2 hours.
- If you express breast milk away from home, it can be stored for up to 24 hours in a cooler with an ice pack.
- If on a continuous feeding, freshly expressed breast milk can hang up to 8 hours.

### Tip for warm weather:

- On hot days you can help keep formula cool by putting a freezer pack beside the formula bag or in the backpack.

# Preparing Formula

---

## Formula:

- Wash hands with soap and water before mixing the formula.
- Clean all equipment that will be used for measuring and mixing. If baby is under 4 months old (see page 24).
- Check the “best before” date on the bottom of the formula can.

Three types of infant formula	How to prepare	How to store after opening	How long can you store open container	How long can you store prepared formula
<b>Powder</b> (Is not sterile)	Follow directions on can for amount of sterilized water and number of scoops of powder	Covered in a cool, dark place	Less than 30 days	Follow the storage Instructions on the formula can
<b>Concentrated Liquid</b>	Mix with equal parts sterilized water	Covered in refrigerator	Less than 24 hours	Follow the storage Instructions on the formula can
<b>Ready-to-use</b>	No mixing required	Covered in refrigerator	Less than 24 hours	Follow the storage Instructions on the formula can

*HEALTHY U: BREASTFEEDING YOUR BABY* GOVERNMENT OF ALBERTA NT0063 March 2008

- **Put only enough formula for 4 hours in the feeding bag at one time.**
- Throw out any formula left in the feeding bag as soon as the feed is finished.

## Storing prepared formula:

- **DO NOT leave prepared formula at room temperature.**
- Cover container and store in the fridge. Write date and time on the container.
- Throw out unused prepared formula after 24 hours.
- Store any unmixed liquid concentrate covered in the refrigerator for up to 24 hours. After 24 hours, throw it out.

## Important notes:

- If a formula recipe is needed, keep a copy of the current recipe and feeding schedule on the refrigerator.
- Never add extra formula, water or cereal to prepared formula unless instructed to do so by your dietitian.

# Preparing Formula (continued)

---

## Formula from powder

Sterile liquid infant formula (ready to feed or concentrate) is a better choice for infants who are premature, have a low birth weight or weakened immune system. **Powdered formula is not sterile.** Some formulas are available only in powdered forms. Caregivers need to make sure that formula is prepared properly. Follow directions from your PHNSP team.

### Tip:

- Add powdered formula to warm water just before giving a feed.
- Never keep milk warm in thermos or bottle heater.

### If warming breast milk or prepared formula:

- Warmed formula is usually only needed for bolus or top-up feeds.
- Warm cold formula or breast milk to room temperature by putting the container in a bowl of warm water for no more than 15 minutes.
- **Shake the container well and then check the temperature of the formula on your wrist.**
- **Do not heat expressed breast milk or prepared formula in a microwave.** Microwaves heat unevenly and there can be “hot spots” that could burn your baby’s mouth.

# Giving Medicine by Feeding Tube

---

How do I give my child medicine by tube?

- Prepare the medicine as directed by your pharmacist making sure each medicine has its own syringe.
- Stop the tube feeding.
- Flush the tube with 3-5 mL of water.
- Push the medication slowly through the syringe into the tube.
- When more than 1 medication is needed, flush the tube with 1ml of water between each medication.
- If resistance is felt stop immediately and flush the tube with more water before continuing (thick syrups or powder medication may need to be mixed with more water to prevent clogging of the tube).
- Flush the tube with water to push the medicine into the stomach and clear the tube completely. Close the tube.
- Complete your child's tube feeding.
- Wash and air dry the syringe and other supplies so they are ready to use again.

## **Important notes:**

- **Do not** mix medication with breast milk or formula because it may react or become lumpy and block the tube.
- **Do not** put medications directly into the feeding bag. Give medication directly into the NG tube.
- **Flush** the NG tube with 1-3mL before and ½-1mL between each medicine and flush with 3-5mL after the last medication.
- For children who tend to spit up, try giving medications at the beginning of the feed.
- Do not mix different medications in same syringe.
- Your pharmacist can help you decide the best times to give medications.

# Cleaning Your Child's Mouth

---

It is very important to clean your child's mouth **at least twice a day**, even if not eating food.

- Make sure your child is in a comfortable, secure position (on your lap or in an infant seat).
- Rub the inside of your baby's gums and tongue with an infant finger toothbrush. Wipe with a moist, soft cloth until the inside of the mouth is clean.
- Toddlers and older children should brush their teeth and tongue with a soft toothbrush and toothpaste. Toothpaste should be spit out or drained from the mouth.
- If your child is over 1 year old and their lips are dry or cracking, put a lip moisturizer on the lips to keep them moist.

Ask your feeding therapist for more detailed information as you need it.

# Caring for Your Child's Feeding Equipment

---

**Clean feeding set and syringes after each use. This will help keep your child healthy.**

After each feed:

- a. Throw out any remaining formula in the bag.
- b. Wash bags with a 5% vinegar and water solution once in 24 hours. Rinse with warm water between feeds. To make the solution, add 1 tablespoon (15 ml) vinegar to 1 cup (250 ml) of warm tap water. Run the 5% solution or warm water through the bag and line. Empty the water out of the line by running air through the tube.
- c. Place the feeding bag in a container with lid or zippered plastic bag and store in the refrigerator until your next tube feed.
- d. **Feeding sets that are used for continuous feedings should be washed at least once in 24 hours.**
- e. Wash your syringes by pulling them apart. Wash both sections in warm, soapy water and rinse thoroughly. Place them on a clean tea towel to air dry. Do not refrigerate your syringes or clean them in a dishwasher or boil. Discard the syringe when the plunger becomes hard to move or unable to read numbers clearly.
- f. If your child uses a pump, wipe daily with damp cloth. Once a week, run water over inside of pump and wipe dry.



# Connecting with Your Child

---

## Mealtimes for a child who gets tube feedings



- Do the same things with your baby during a tube feeding that you would do during an oral feed.
- Gently cuddle or rock your baby in a rocking chair.
- If your baby takes a soother, give it during tube feedings
- For **toddlers or older children**, running a tube feeding during a family meal helps the child be part of the family and learn about eating food.

# Preparing Your Child to Eat by Mouth

---

How do I know if my child is ready to eat by mouth?

It is very important for children to be safe when they start oral feeding. Your child's feeding therapist will work with you to decide if your child is ready to eat by mouth.

There are a few things to think about when deciding whether your child is ready:

1. **Is your child's medical condition stable?**
2. **Can your child eat and/or drink safely in a reasonable amount of time?**

Feeding by mouth may not be safe if your child:

- Cannot handle saliva or secretions in the mouth
- Has breathing which sounds wet or noisy
- Must swallow more than once to clear food from the throat
- Has many respiratory illnesses or chest infections
- Coughs or chokes while eating or drinking.
- Stops breathing or turns blue while eating or drinking.



### 3. **Nutrition**

- Can your child tolerate bolus feeds?
- Is your child at a healthy enough weight to tolerate a possible small loss while transitioning?

### 4. **Behavior**

- Is your child comfortable around food?
- Is your child showing signs of hunger?
- Is your child showing interest in food?

## How can I prepare my child to eat by mouth?

Many children who have not been eating need to start with pleasurable experiences in and around their mouth. These experiences are often called “oral stimulation”. You and your therapist can decide which experiences would be best for your child. These experiences may involve the touch of a familiar person or mouthing toys. They may include smelling and tasting food, if your child allows it and it is safe for your child.

Oral stimulation may help your child:

- learn to be more at ease with mouth care
- learn to enjoy touch around the mouth and face
- reduce gagging if this is a problem
- prepare for eating by mouth, **or**
- improve the way your child is eating by mouth

## Babies

- Help your baby to suck on their hand, your finger or a soother while being tube fed. This teaches them that sucking and the feeling of a full tummy go together.
- Follow your child’s cues of readiness to eat. Make meals times enjoyable.
- Encourage your child to explore safe baby toys with his or her hands and mouth. This gives your baby practice sucking, biting and moving the tongue and jaw. Mouthing toys lowers sensitivity in your baby’s mouth.

## Older Children

- Try playing face games such as patting, kissing and blowing. Take turns so your child can touch your face as well.
- Regular tooth brushing is very important.
- Some children’s faces are more sensitive and need time to accept being touched. Wipe the face with a firm dabbing motion rather than wiping. Don’t forget to watch your child’s response.
- Get your child to play with bowls, spoons and cups. Have them pretend to feed a puppet, a doll or you.

- Allow your child to explore play items with lots of texture. Some examples include:
  - a large container of water with cups and bowls
  - a bucket of sand
  - a bowl of uncooked lentils or rice with toys hidden in it
  - pudding with crumbs or pieces of cookie in it

### Remember:

Learning to eat is a gradual process. Once your child is safe to begin eating by mouth, offer your child tastes when he or she is hungry or at family meal times. Begin feeding by mouth and follow with tube feeds. In this way your child receives good nutrition while developing their feeding skills.

It is important to move ahead with oral feeding at your child's own pace. Forcing your child to eat orally can be a negative experience for him or her. If you find yourself pushing your child to eat orally, talk to your feeding therapist for assistance.

# Appendix 1

## Use of well water for enteral feeding

---

If you are using well water at home, please be aware of the following:

- **Well water** can be used to flush the NG tube **only after the water has been tested and found to be safe for human consumption**
- A standard bacterial test should be done twice a year (spring and fall). If your well is less than 50 feet deep, it is suggested you have your well water tested four times per year. A water chemistry test should be done every two to five years.
- **Drinking water should be tested any time there is a change in the color, odor or taste.** Water should also be tested after long dry spells, heavy rains, if the well has not been used for more than one year, before a new baby arrives, when moving into a new home or if the water has not been tested in a year or more.
- Water testing kits are available from your Community Health Center or Health Unit or by calling (780) 407-8971 (Provincial Lab in Edmonton). Follow the instructions in the kit to collect water samples.
- Once the water has been tested and found to be safe for human consumption, you can “sterilize” the water by bringing the water to a rolling boil for 2 minutes. The “sterilized” water can be stored in the refrigerator for up to 72 hours or at room temperature for 24 hours.
- **Bottled water** maybe used for flushing NG tubes. (Children under 4 months of age use sterilized water, see above).

More information is available at:

**“Working Well-Alberta Environment”** (type this term in Google search line)

[www.albertahealthservices.ca](http://www.albertahealthservices.ca) (type well water testing in search bar)

# Contacting the PHNSP Team

---

Stollery Children's Health Centre Main Switchboard: 780-407-8822

Alberta Health Services Website: [www.albertahealthservices.ca](http://www.albertahealthservices.ca)

Northern Alberta Pediatric Home Nutrition Support Reception/Bookings:  
780-407-1341. TOLL FREE Phone #: 1-855-497-1341

Other: \_\_\_\_\_

If you have concerns about your child's tube feeding:  
During program hours (Monday to Friday, 8:00a.m. to 4:00p.m.) call one of your PHNSP team members.

After hours contact your Home Care Nurse or HEALTH Link Alberta:

- 780-408-LINK (5465) (in Edmonton)
- 1-866-408-LINK (5465) (toll free outside Edmonton)

**For concerns that need immediate attention, talk with your doctor. After office hours, go to the nearest emergency room.**

## NG Tube Feeding Supplies

The Northern Alberta Pediatric Home Nutrition Support Program will provide you with the feeding supplies you need, such as NG tubes, feeding bag systems, syringes and feeding pump if necessary.

To order supplies call 780-407-7806 (toll-free 1-855-497-1341) or submit order by email to [PedsHomeNutrition@albertahealthservices.ca](mailto:PedsHomeNutrition@albertahealthservices.ca).

Clearly say and spell your child's first and last name and a phone number where you can be reached. Please order only what you need.

Please allow **10 working days** for delivery of supply refills. Supplies will be delivered by courier, Greyhound or Canada Post depending on your home location.

### **If you are travelling with your child:**

- Ensure you have spare NG tubes, supplies and formula as they can be difficult to find in case your travel gets unexpectedly extended.
- If you are travelling by air, ensure you have a **medical letter** to transport your formula and supplies. Also contact your airline for further instructions specific to that airline.

# Solving NG tube Feeding Problems

Aspiration	
<b>What could this mean?</b>	<b>What to do:</b>
<p>Aspiration occurs when a liquid or food enters the lungs. This can occur if the tube is in the wrong place or if your child gags, refluxes or vomits.</p> <p>Aspiration can be very serious and potentially life threatening, and can over time lead to lung problems.</p>	<p><b>If your child chokes or coughs during feedings, stop the tube feeding.</b></p> <ul style="list-style-type: none"> <li>• Watch your child closely. Is he or she breathing harder?</li> </ul> <p><b>If your child has trouble breathing or turns blue, STOP the feeding and call 911 (or the emergency number where you live).</b></p> <p><b>If your child settles and is breathing normally:</b></p> <ul style="list-style-type: none"> <li>✓ Recheck tube placement.</li> <li>✓ Try to burp your child.</li> <li>✓ Make sure your child's head and shoulders are raised during feeding.</li> <li>✓ Restart the tube feeding at a slower rate and watch your child closely.</li> </ul>
Tube blockage	
<b>What could this mean?</b>	<b>What to do;</b>
<p>The tube may become blocked if:</p> <ul style="list-style-type: none"> <li>• It is not flushed well.</li> <li>• Some medicines that are thick, lumpy, or have not been fully crushed or mixed with water. Some medicines will clump when mixed with the feed.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Be sure the NG tube is not bent over.</li> <li>✓ Flush the NG tube before and after each feeding.</li> <li>✓ Flush the NG tube after checking tube placement.</li> <li>✓ Use liquid medicine or dissolve finely crushed tablets in water.</li> <li>✓ Flush the tube before, in between and after giving medicine.</li> <li>✓ Try to unblock the tube (see below "How do I Unblock the Tube?").</li> </ul>
<b>How do I unblock the tube?</b>	
<ol style="list-style-type: none"> <li>1) Fill a 10mL syringe with 5mL <b>warm</b> (not hot) water.</li> <li>2) Try to pull back first then push gently; repeat in 5 mins. <b>DO NOT FORCE WATER INTO THE TUBE.</b> Clamp the tube and leave for 5 minutes. Unclamp the tube and try to withdraw fluid from the tube.</li> <li>3) Gently pull the plunger, drawing water back into the syringe. Repeat steps 2 and 3 several times. No more than 10mins.</li> </ol> <p><b>If the tube will not unblock, either remove the tube and put in a new tube, call home care or go to your local ER to have the NG inserted.</b></p>	

Nausea	
<b>What could this mean?</b>	<b>What to do:</b>
<p>Nausea can be caused by:</p> <ul style="list-style-type: none"> <li>• Too much air in the stomach.</li> <li>• Feeding that is given too quickly.</li> <li>• Changes in medications.</li> </ul> <p><b>Avoid letting air enter the stomach during the feeding. This can be prevented by running the feed to the end of the tubing before attaching to the NG tube.</b></p>	<ul style="list-style-type: none"> <li>✓ Check NG tube placement.</li> <li>✓ Give feeding more slowly.</li> <li>✓ Keep head raised at a 30-45 degree angle during and after feeding.</li> <li>✓ Burp your child before, during and/or after the feeding even if the majority of the feed was given by NG tube.</li> </ul>
Retching or Gagging	
<b>What could this mean?</b>	<b>What to do:</b>
<p>Reasons for gagging or vomiting:</p> <ul style="list-style-type: none"> <li>• The first movement of formula or breast milk through the tube.</li> <li>• The stomach is too full.</li> <li>• The tube is in the wrong place.</li> <li>• The feeding is given too quickly.</li> <li>• During certain times of the day your child may be more likely to gag or vomit. Your child may gag or vomit with the first feed of the day because of mucous swallowed during the night.</li> <li>• Air in the stomach.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Check tube placement.</li> <li>✓ Start feeding very slowly. After a few minutes, increase speed of feeding to desired rate.</li> <li>✓ Allow a quiet time after feeds.</li> <li>✓ Burp your child before, during and/or after the feeding.</li> <li>✓ When flushing the tube, do so slowly.</li> <li>✓ If your child vomits, stop the feeding. If your child is lying down, turn head to the side or have child sit up.</li> <li>✓ <b>Discuss changing the feeding schedule with the dietitian. The dietitian may suggest:</b> <ul style="list-style-type: none"> <li>• Give smaller, more frequent feedings.</li> <li>• If your child gags and vomits at a certain time, make that feeding smaller. Divide the missed amount of formula and add to the next 2-3 feeds.</li> </ul> </li> </ul>
Cramping (tummy ache)	
<b>What could this mean?</b>	<b>What to do:</b>
<p>Cramping can be caused by:</p> <ul style="list-style-type: none"> <li>• Formula or breast milk that is too cold.</li> <li>• A tube that is not in the correct place.</li> <li>• Too much air in the stomach.</li> <li>• A feeding that is given too quickly.</li> <li>• A side effect of medications.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Warm formula to room temperature.</li> <li>✓ Check tube placement.</li> <li>✓ Give feeding more slowly.</li> <li>✓ Burp your child before, during and/or after the feeding.</li> <li>✓ If cramping continues, call your PHNSP team.</li> </ul>
Constipation	

<b>What could this mean?</b>	<b>What to do:</b>
<p>Constipation is when bowel movements do not happen regularly and are hard or painful to pass. Constipation may be caused by:</p> <ul style="list-style-type: none"> <li>• Low fluid intake</li> <li>• Low fibre intake</li> <li>• Low activity level</li> <li>• A side effect of medicine</li> <li>• Slow movement of the intestines</li> </ul>	<ul style="list-style-type: none"> <li>✓ Increase fluid intake.</li> <li>✓ Increase fibre intake.</li> <li>✓ Increase activity level.</li> </ul> <p>Ask your health care provider before changing the amount of fluid, fibre or activity as the amounts required will vary with each child.</p>
<b>Diarrhea</b>	
<b>What could this mean?</b>	<b>What to do:</b>
<p>Diarrhea is frequent, loose, liquid bowel movements and may be caused by</p> <ul style="list-style-type: none"> <li>• Giving a feeding too quickly.</li> <li>• An NG tube in the wrong place.</li> <li>• Spoiled formula.</li> <li>• A side effect of medication.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Check NG tube placement.</li> <li>✓ Give feedings more slowly.</li> <li>✓ Make and store formula as directed.</li> <li>✓ Keep feeding supplies very clean.</li> </ul> <p><b>If your child is younger than 6 months and has diarrhea, call your doctor.</b></p> <p><b>If your child has diarrhea and signs of illness (e.g. fever, cranky, increased sleepiness, throwing up), call your doctor.</b></p> <ul style="list-style-type: none"> <li>✓ Do not stop feeds unless directed to do so.</li> </ul>