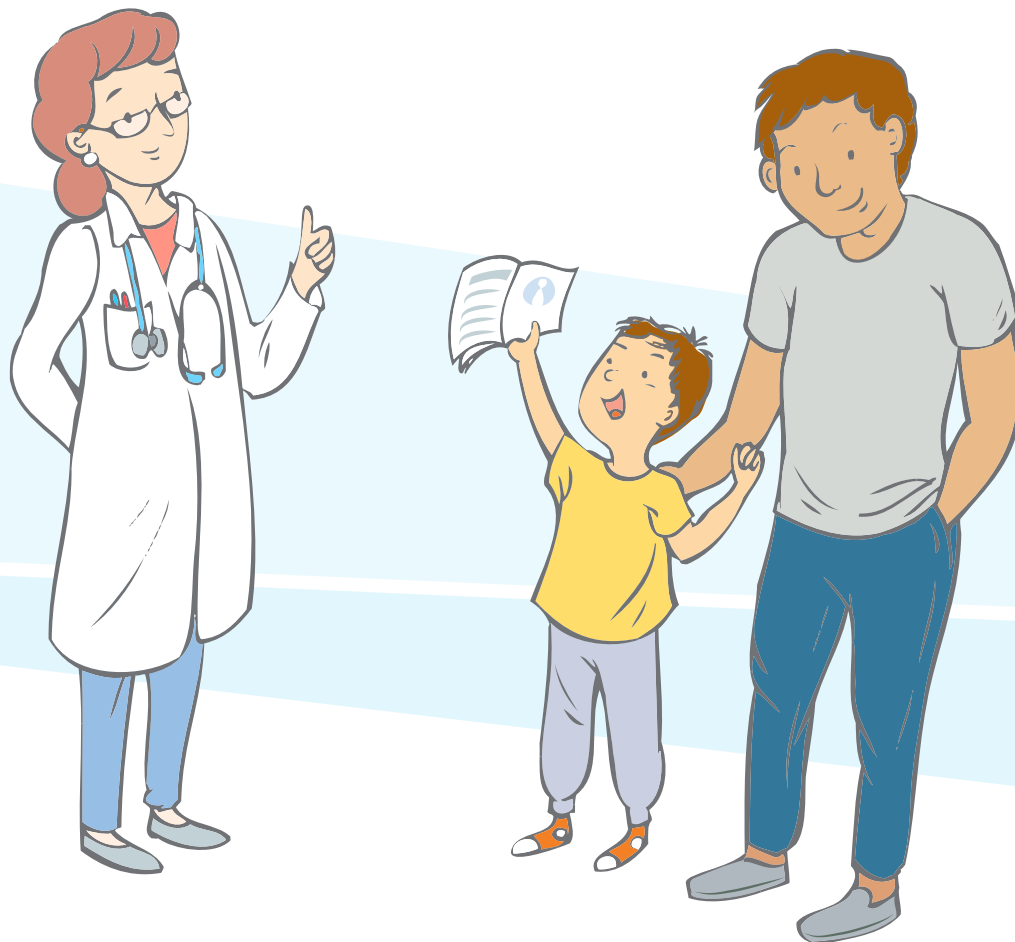


A GUIDE TO APPENDICITIS

For Patients and Families



Centre universitaire
de santé McGill



McGill University
Health Centre

Office d'éducation des patients
Patient Education Office

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IMPORTANT

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



This material is also available through the MUHC Patient Education Office website: www.muhcpatienteducation.ca

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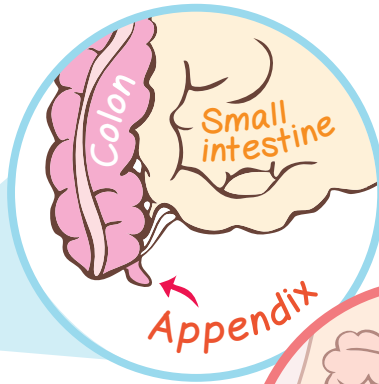
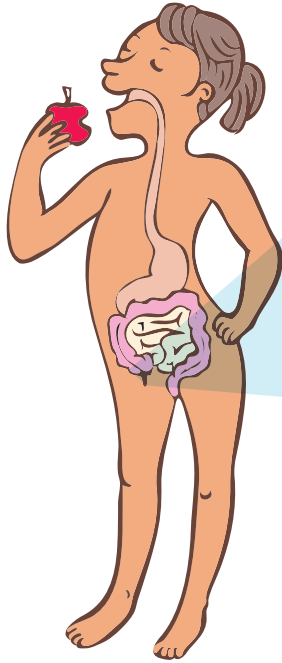
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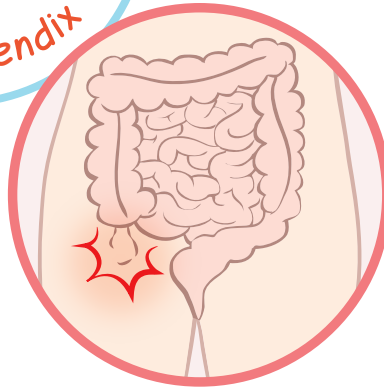
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What is appendicitis?



The **appendix** is a small organ in the belly. It connects to part of the intestine called the **colon**. Sometimes, the opening to the appendix is blocked. If this happens, it can get infected or swollen. This is called **appendicitis**. If it bursts, this is called **perforated appendicitis**.



Appendicitis is the most common reason that children need emergency surgery. About 1 out of every 8 children get acute appendicitis.

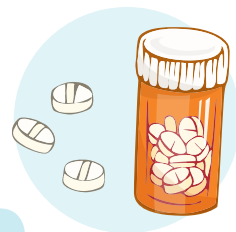
How is appendicitis diagnosed?

To diagnose appendicitis, a surgeon will do three things. They will get more information about your child's pain, examine your child and look at blood test results. In some cases, they will do an ultrasound to be sure. Your child's surgeon may also re-examine your child, repeat the ultrasound, or order a CT scan.



How is appendicitis treated?

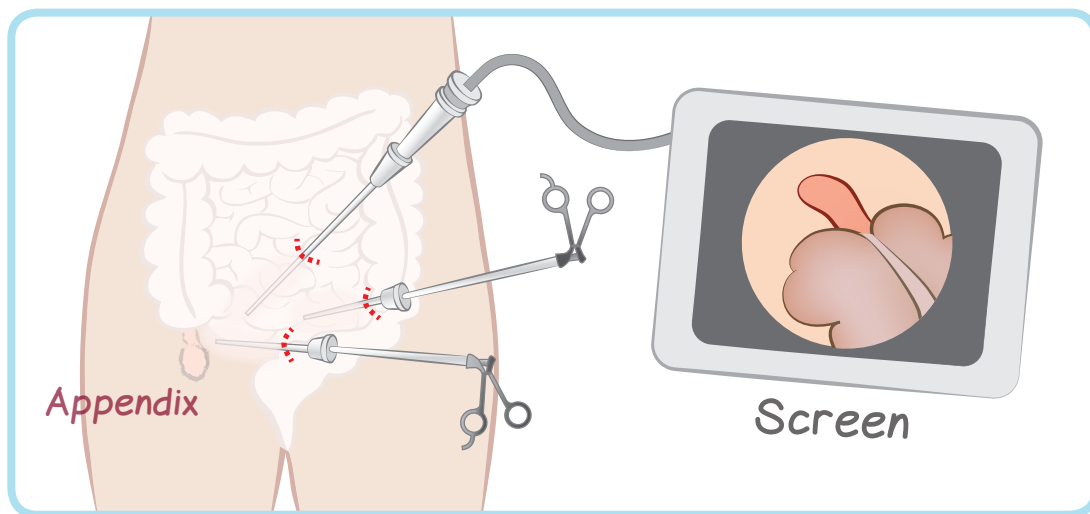
Surgery is the most common treatment for appendicitis. Your child may also need antibiotics before or after surgery.



Some research shows that appendicitis can be treated using only antibiotics. But some children will get appendicitis again when treated this way. In fact, up to 2-3 children out of 10 can get appendicitis again within one year. This is why our center recommends surgery to treat appendicitis.

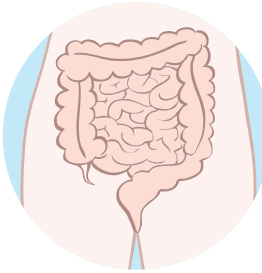
Speak with your child's surgeon to make the decision that's right for your child.

What surgery is done?



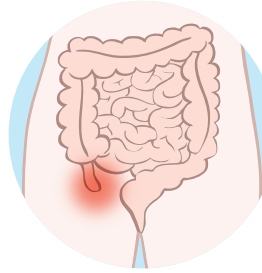
The surgery to remove the appendix is called an **appendectomy**. The surgeon makes 3 small incisions (cuts) using a camera. This is called laparoscopic surgery. Sometimes, the surgeon will need to make a bigger incision. Your child will get medication during this surgery. This is so that they are asleep and do not feel pain. This medication is called **anesthesia**. The surgery usually lasts about one hour, but depending on what is found, it can take longer. This is especially true when the appendix is perforated (burst).

Here is what we may find during the surgery:



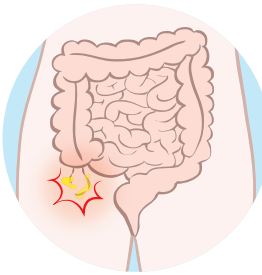
Normal appendix

The appendix does not look swollen.



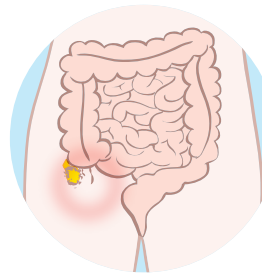
Simple appendicitis

Appendix is swollen but not burst.



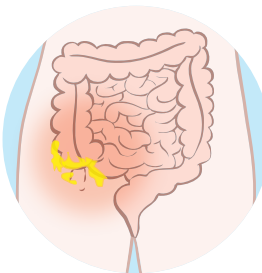
Grade I perforated appendicitis

The appendix has burst and there is a small amount of pus around it.



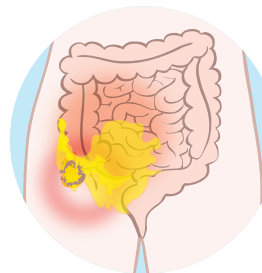
Grade II perforated appendicitis

Larger amount of pus has formed a pocket (called an abscess).



Grade III perforated appendicitis

Spreading of the pus around the belly.

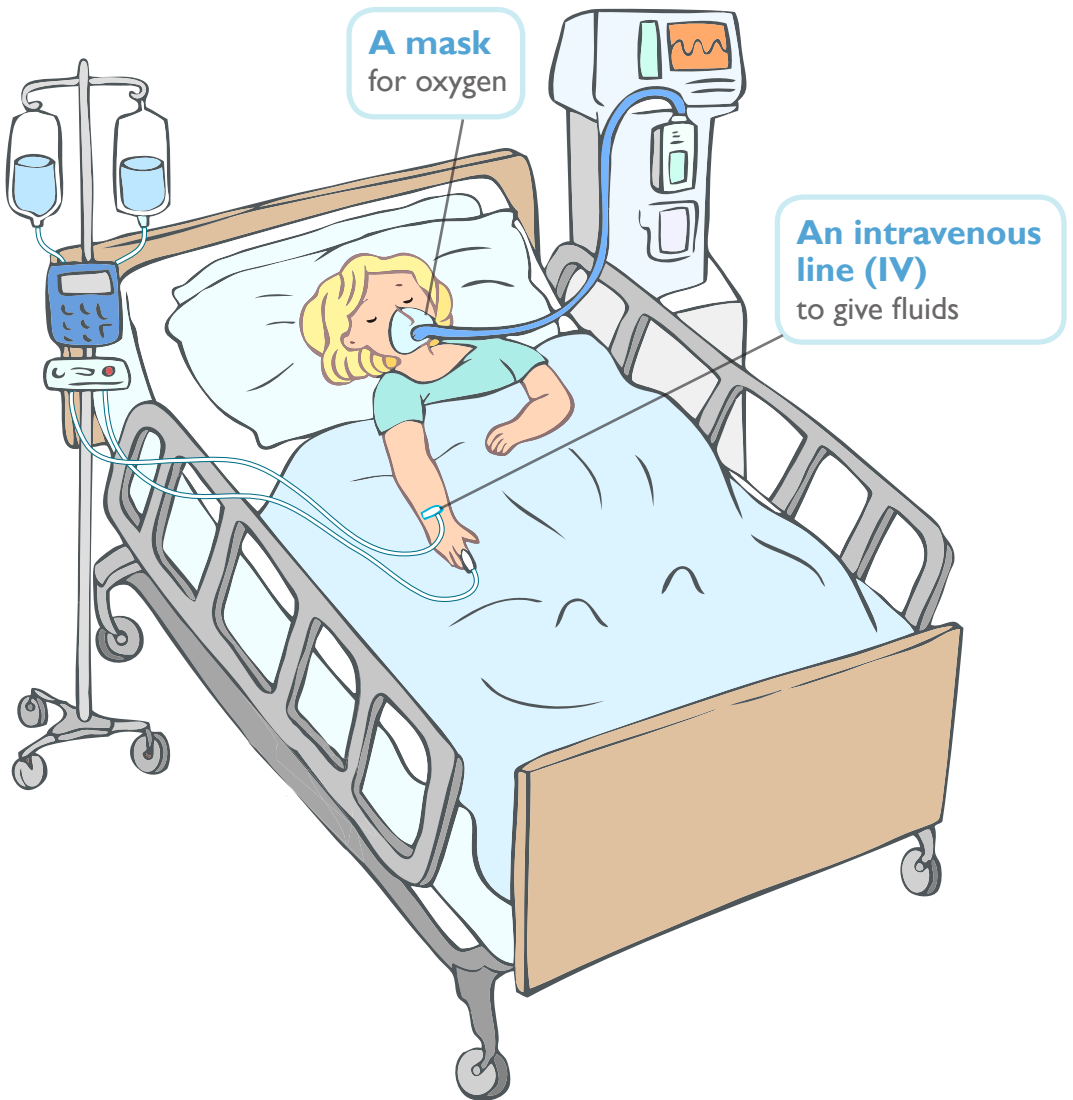


Grade IV perforated appendicitis

Spreading of the pus around the belly AND has an abscess.

Your child will go to the recovery room, which is also called the **Post Anesthesia Care Unit (PACU)**, after the surgery. The nurses will tell you when you can see your child. This will usually be after they wake up from the anesthesia medication.

In the PACU, your child may have:



A nurse will:

- Check your child's heart rate and blood pressure
- Check your child's bandage(s)
- Make sure your child is comfortable
- Give pain medications if necessary

When can my child go home?

The number of days your child is in the hospital depends on whether the appendix has burst or not.

If the appendix has not burst:

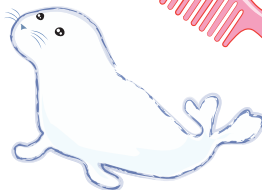
Your child can go home after they recover from the anesthesia medication. This is usually on the next day, after breakfast. Sometimes it can even be on the same day.

If the appendix has burst:

Your child will need antibiotics to treat the infection. Your child will get antibiotics through an intravenous (IV) line. This means staying in the hospital longer, usually 3-7 days.

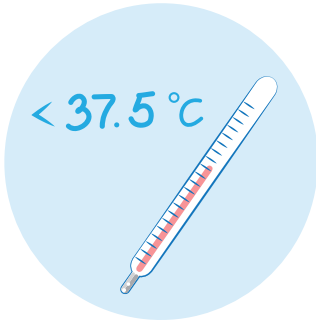
If your child needs to stay in hospital for more than one day, you can bring:

- A list of medications that your child normally takes
- Loose, comfortable clothing for your child (for when they leave the hospital)
- Slippers and a robe to wear in the hospital
- A stuffed animal, blanket or pillow
- Activities to keep them busy: coloring books, novels, games (although we have plenty of games on the surgical floor!)
- Toothbrush, toothpaste, comb, tissues
- Glasses, if needed
- This booklet



• If the appendix has burst

Our surgeons have looked after many children with appendicitis. Their experience helps them to know when your child is ready to go home. Before leaving, the team will check that your child:



Has not had fever over 37.5 degrees Celsius for 24 hours. A fever in the first 1-2 days after a burst appendix is normal.



Feels only a little pain that gets better with pain medication.



Is moving comfortably or walking well.



Is eating regular food and has an okay appetite.



Has normal blood test results.

When the team can check off the full list, then your child is probably ready to go home.

What problems can happen after surgery?

Problems after surgery do not happen very often but it is important that you know what is normal and what is not. Some common problems after surgery are:

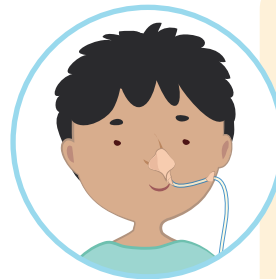
- **Persistent fever**

Your child may still have a fever over 38 degrees Celsius several days after the surgery. This can be a sign of infection. Your surgeon may do some blood tests or an ultrasound. Your child may also need to continue taking antibiotics.

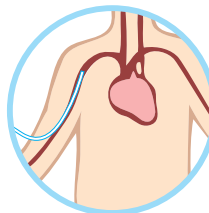
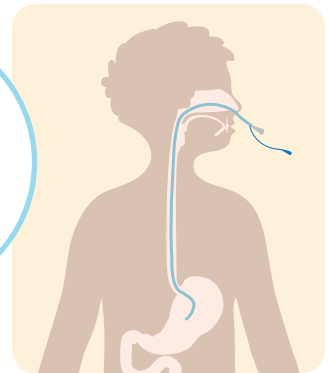
- **Ileus**

When there is an infection in the belly (peritonitis), the intestines can get swollen and stop moving things forward. This is called an **ileus**. It is like when there is something blocking the pipes under a sink and water won't go down.

If your child has an ileus, they may have a swollen belly (bloating) and may vomit. To treat an ileus, a nasogastric (NG) tube is placed through the nose into the stomach. This helps to empty the stomach. Your child may feel uncomfortable when the tube is being put in. Your child may also have a catheter put into their bladder. This is to see how much urine they are making, but this doesn't happen very often. An ileus usually lasts less than a week.

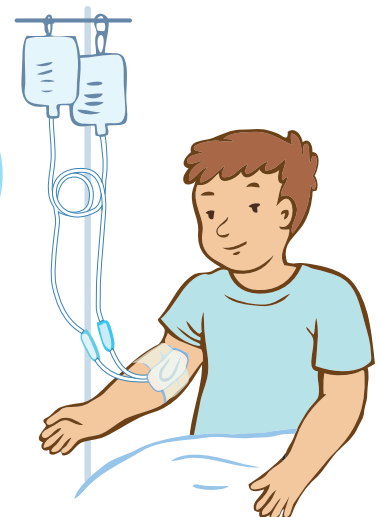


NG tube



PICC line

If your doctors think that the ileus will last longer than a week, your child may get nutrition through an intravenous (IV) line. This special IV line is called a Peripherally Inserted Central Catheter (PICC line). A PICC line is placed in a vein in the arm.



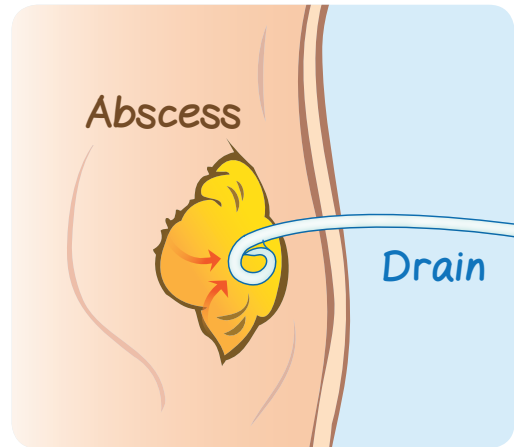
- **Abscess**

An abscess is a pocket filled with pus. Abscesses can happen before or after surgery. The chance of getting one after surgery will depend on how serious the appendicitis is. The higher the grade of appendicitis, the more likely your child may get an abscess after surgery.

If your child has an abscess, they may still have a fever, new belly pain, ileus, or diarrhea after a week. If your child still has these symptoms after surgery, the surgeon may order an ultrasound of the belly to look for an abscess.

Small abscesses are treated with antibiotics. Large abscesses can be treated with a drain. This is when a small tube is placed into the abscess to remove the pus. This happens in the Radiology Department. Here the tube is put in exactly the right spot with the help of ultrasound imaging. Your child may need anesthetic medication.

In some cases, you can stay with your child during the procedure. The radiologist will decide if this is possible.

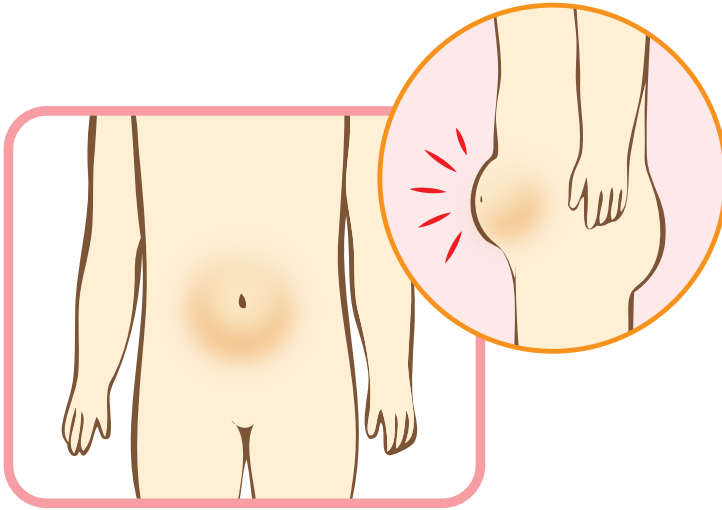


- **Urinary tract infection (UTI)**

If your child had a catheter to see how much they were peeing, they are at a higher risk of developing a UTI. Your child may feel pain while peeing or feel they need to pee badly (and often). They may also have pain or pressure in the belly or lower back, cloudy urine, or a fever. This is usually treated with antibiotics for about 3-7 days.

- **Hernia**

A hernia happens when part of an internal organ, either fat or intestine, bulges through a weak area of the muscle. This is most likely to occur in the belly button. It is called an **incisional hernia**. This looks like a round lump pushing the belly button out. A combination of muscle weakness and straining after surgery can lead to developing a hernia. Your surgeon may recommend an operation to fix the hernia if it is large or if it causes your child pain. Swelling of the belly button that happens right after surgery is not a hernia.



- **Small bowel obstruction**

This is a blockage in the intestines. It can happen when scar tissue forms inside the belly. It doesn't happen often. It happens more with burst appendicitis. Your child may vomit many times and feel worsening belly pain and bloating. If your child has a bowel obstruction, they may be treated with a nasogastric tube or they may need surgery to take out the scar tissue. If you think that your child has a small bowel obstruction, bring them to the Emergency Room.

These problems can happen at different times: while your child is still in hospital, early after leaving the hospital (1-4 weeks), or late after leaving the hospital (4-6 weeks). Problems can happen more often if your child has burst appendicitis.

• **When can problems after surgery happen?**

When they can happen	What can happen
In hospital	<ul style="list-style-type: none"> • Persistent Fever • Ileus • Pocket of pus (abscess) • Infection in the wound • Urinary tract infection • Blockage of the bowels
Soon after leaving hospital (1-4 weeks)	<ul style="list-style-type: none"> • Pocket of pus (abscess) • Infection of the wound • Urinary tract infection • Blockage of the bowels
Later after leaving hospital (4-6 weeks)	<ul style="list-style-type: none"> • Hernia • Blockage of the bowels



If you are worried that your child has any of these problems after surgery, call your surgeon or go to the Emergency Department (go to page 17 for our contact information).

What to expect after you return home

- **Diet**

Your child may eat a normal diet after surgery. Make sure they drink plenty of fluids.

- **Activity**

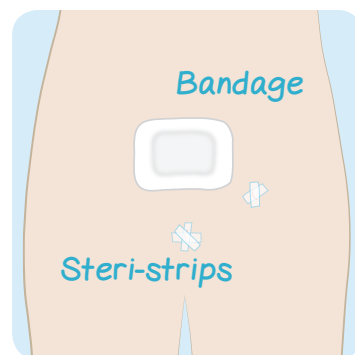
Your child should not play contact sports or do activities that take a lot of effort for about 1-2 weeks (for example: hockey, soccer, football and swimming).

They should not pick up heavy objects for 1-2 weeks after surgery. This includes not carrying a heavy backpack, heavy milk containers, or medium-sized pets. When their pain is better, they can slowly increase their activities.

- **Wound care**

Keep your child's surgical wounds (cuts) clean and dry for a few days after surgery. You can take off the dressing (bandage) over the belly button 2 days after surgery. Your child can shower after this dressing is removed. Do not take off the small transparent white tape (steri-strips) on the skin for one week. After this time, you can take them off in the bath or let them fall off on their own.

Do not let your child swim in a chlorinated pool for 7-10 days after the surgery. This is so that the wound does not get irritated.



- **School**

Your child can go back to school as soon as they are feeling better. For some children, this may be after 3-5 days. For others it may be up to 1-2 weeks before they get back their energy. This will also depend on whether they had a burst appendix or not. Your child will probably be able to go back to school and do their usual activities around 1-3 weeks after surgery.

- **When to call the doctor**

Call your doctor if your child has belly pain that is getting worse, fever (above 38°C/100.4°F), vomiting, diarrhea, problems peeing, or if the wounds are red or leaking fluid/pus. Please go to page 17 for our contact information.

When should you follow up with your surgeon?

Your follow-up appointment will depend on whether the appendix has burst or not.

If your child had a simple appendicitis, and they go home the same day or the day after surgery, they do not need to come back to the hospital for a follow-up visit. The follow-up will be a telephone appointment. It will be scheduled for about 2-3 weeks after your child's surgery. On the day of the phone follow-up, you will get a call from the team nurse. The nurse will ask you some questions to make sure that your child is doing well.

If your child had a burst appendicitis or any other problems while they were in the hospital, you will need to come to the clinic to visit the surgeon. This will happen about 2-4 weeks after the surgery or after leaving the hospital.



Frequently Asked Questions

In this section, you will find answers to some of the questions parents have after their child has an appendectomy. Use this as a general guide. However, every child is unique, and the information in this section does not replace a thorough evaluation by our surgical team.

If you have any questions about your child's health, please see page 17 for our contact information.

• Nutrition

My child is not hungry. Should I force him/her to eat?

No. The general rule is to use common sense. If your child has an ileus or feels like vomiting, don't make them eat. If your child is not hungry, do not force him/her to eat. It is normal to not feel like eating after surgery. Your child will get hungry when your child is ready!

Instead of pushing your child to eat, help your child get out of bed and walk. Some exercise also helps your child feel better and helps the intestines recover!

What can my child eat after surgery?

We usually recommend starting with a liquid diet (soup broth, popsicles or water), and moving on to more solid food if your child feels well. However, if your child feels well and feels hungry, let them eat what they want after surgery!

• Wound care

What are the bandages on my child's incisions?

There are usually two types of bandages used on the surgical incisions:

1. On the belly-button, there is usually 2-3 layers of white square bandages. These layers should be removed 2 days after surgery. If you are still in the hospital at this time, the surgical team will remove the bandages. If you are at home, you can remove the bandages yourself.
2. The other type of bandage we use is called steri-strips. They are placed on the other incisions. Steri-strips are small rectangular pieces of white tape. Steri-strips usually fall off on their own. If they have not fallen off by 7 days after the surgery, you can remove them yourself.

Please read "What to expect after you return home" on page 11 for more information about wound care.

I am having difficulty removing the steri-strips because they are very sticky. How can I remove the dressing easily?

Try to remove the steri-strips after a shower or a bath. This can help loosen the steri-strips, making them easier to remove. Another tip is to gently rub the steri-strips with a tissue (example: Kleenex®) dipped into 70% USP isopropyl alcohol.

After removing the bandage, there is some blood coming from the wound. Should I be worried?

Removing the bandage can cause a small tear on the scar. Most of the time, this is not a problem as long as you only see a few drops of blood. If you see blood, apply gentle pressure on the wound with a clean facial tissue (example: Kleenex®) for 5 to 10 minutes. This should stop the bleeding.

Contact the surgical team if you have any of these problems: bleeding continues despite pressure, clots of blood are seen, bleeding is more than a few drops and is dripping from the wound. Keep pressure on the wound and contact the surgical team.

When can my child take a shower, a bath, or swim?

Your child can shower or have a bath 2 days after surgery. Do not let your child swim in a chlorinated pool for 7-10 days after the surgery.

● **Is this normal?**

My child's wound is painful, red, or has pus leaking out. Is this normal?

Redness, swelling, warmth, or pus leaking from the wound are signs of a wound infection. If you see any of these signs, please contact your surgeon. Please read **“What problems can happen after surgery?”** on page 8 for more details about infections.

My child has a fever. Is it normal?

If your child has a fever (above 38°C/100.4°F) after his/her surgery, please contact the surgical team. Please read **“What problems can happen after surgery?”** on page 7 for more information on persistent fever.

My child is vomiting, is this normal?

Most children do not vomit once they return home. If the vomit is yellow or green, you should visit the Emergency Department and contact your surgeon. This can be a sign of bowel obstruction and needs to be treated (see **“What problems can happen after surgery?”** on page 9 for more information about bowel obstructions). If the vomit has food in it make sure that your child keeps drinking water or other fluids. If your child cannot keep fluids down, then bring them to the Emergency Department.

Since these are general guidelines, and every child is unique, please contact us to discuss your child’s case if you are worried about the number of times they are vomiting.

My child is having a lot of belly pain. Is this normal?

In general, your child should have less pain after surgery as each day passes. If your child has pain, you should try to give him/her acetaminophen (Tylenol®) and ibuprofen (Advil®). There is no danger in taking both medications together if you follow the information on the label. Do not take more pills than what is allowed per day. If the appendix is burst, doctors may also prescribe stronger pain medication for the first few days after surgery.

Use the Pain Intensity Scale to check your child’s pain. Ask your child to describe their pain using a number between 0 and 10. 0 means no pain and 10 is the worst pain they can imagine. The goal is to keep their pain below 4 out of 10. If their pain stays the same OR is more than 4 OR gets worse even when using medication, please contact us for advice.



0

No Pain



2

Hurts
Little Bit



4

Hurts
Little More



6

Hurts
Even More



8

Hurts a
Whole Lot



10

Hurts
Worst

With a burst appendicitis, the first time your child poos, it will usually be diarrhea. But this should get better with time. Diarrhea should not get worse. Diarrhea that isn't getting better over 1-2 days, or is getting worse, could be serious. It can be a sign of an abscess or a side effect of the antibiotics. If this happens when you are home, call the surgical team or go to the Emergency Room. Please read **“What problems can happen after surgery?”** on page 8 for more information about abscesses.

- **Activities**

When can my child go back to school?

If your child does not have a fever (above 38°C/100.4°F), has no diarrhea, is able to eat well, and has only a little bit or no belly pain, then it is safe to send him/her to school. Your child may be more tired the first few days after surgery. If this is the case, think about having them go just for a half day of school until they have more energy. Please read **“What to expect after you return home”** on page 11 for more information about going back to school after surgery.

When can my child start gym classes/play sports again?

Your child can go back to playing sports around 1-2 weeks after surgery. As a general rule, your child should not participate in activities that cause them pain. Light activities are better until your child gets their energy back. The surgical team can give you a medical certificate before you leave the hospital. This is so that the school knows about your child's surgery. Please read **“What to expect after you return home”** on page 11 for more information about physical activity after surgery.

Resources

Contact information

For any serious concerns, please visit the Emergency Department.

If you have any other question within 30 days of the surgery, you may get medical advice in one of these ways:

1. Call the Surgical Day Clinic at 514-412-4400 ext. 23535 from Monday to Friday between 7:30-15:30. During the hours when the clinic is closed or if you cannot reach the clinic, you can call the B8 nursing station 24h / 7 days a week at 514-412-4400 ext. 22433.

Our nurses are specially trained to answer your questions. They will forward urgent concerns to the surgeon or fellow on call as needed.

2. If the clinic or the nursing station cannot be reached:
 - Call the operator at 514-412-4400
 - Ask to speak to the “pediatric surgery fellow on call”:
3. If you wish to contact your surgeon for a non-urgent issue, please use the phone number of the staff surgeon..

Dr. Sherif Emil: 514-412-4497

Dr. Jean-Martin Laberge: 514-412-4498

Dr. Dan Poenaru: 514-412-4498

Dr. Pramod S. Puligandla: 514-412-4438

Dr. Kenneth S. Shaw: 514-412-4388

Other helpful numbers:

Surgery Clinic Nurse: 514-412-4400 ext. 23242

Pediatric Surgery Clinic: 514-412-4489

Resources

Internet access

Network : CUSM-MUHC-PUBLIC

Username : public

Password : wifi

Cafeteria

Located on Level SI of Block C at the Royal Victoria Hospital.

Opening hours:

Monday to Friday: 7:00 a.m. to 7:00 p.m.

Saturday, Sunday, and holidays: 9:00 a.m. to 7:00 p.m.

Coffee shops and restaurants

They are on Level SI and RC of the Montreal Children's Hospital and the Royal Victoria Hospital. Some are open 24 hours a day.

Bank machines

At the Montreal Children's Hospital:

Level SI in Block A

At the Royal Victoria Hospital:

Level SI and Level RC in Block C

Resources

Parking

Access via Décarie Blvd. Drop-off areas for patients and families are at the Children's main entrance and at the Emergency entrance underground on level S1.

Payment kiosks are on **Level P1** outside the Children's Emergency entrance and **Level P2** in front of the elevators. Visa, MasterCard and cash are accepted.

The Parking Office is located near the Children's main entrance, Block A, Level RC.1000. Opening hours are Monday to Friday from 7:00 a.m. to 5:00 p.m.

Family Resource Centre and Library

The Banque Nationale Family Resource Centre and Library at the Montreal Children's Hospital offers patients, parents, and family members a wide range of resources in a spacious and welcoming environment.

The professional librarians on staff can guide you to the right resources, and help you find online information and learn more about support groups.

The Centre is on the main floor of the Montreal Children's (RC) of Block A, just off the main corridor near the Atrium. It is open every day from 8:00 AM – 4:00 PM.

Visit the library's website (<http://www.mchfamilylibrary.ca/>) to find a complete listing of library resources, reserve books or request information online.

Hospital Map

B3 Pediatric Surgery and Intervention Centre

