

Pediatric Procedures

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1. Esophagogastroduodenoscopy(EGD) or Upper Endoscopy
 - a. An esophagogastroduodenoscopy(EGD) or upper endoscopy is a procedure in which a thin, flexible scope is passed through the mouth, into the esophagus, the stomach, and the first portion of the small intestine. The scope is equipped with a light and camera to visualize these areas. Small biopsies (approximately the size of a pinhead) can be obtained. The patient is asleep throughout the procedure and biopsies are not painful. The procedure itself generally takes less than 15 minutes. Accounting for transport and anesthesia, the time a parent or guardian will spend away from the child is generally 35-45minutes.
 - b. Preparation for the procedure may vary according to the performing endoscopist or the condition being evaluated/treated. If you have received specific instructions regarding pre-procedure preparations, please follow those noted. A nothing by mouth (NPO) period is required and generally begins at midnight prior to the procedure.
 - c. Given that this procedure is an aerosolizing event, COVID precautions are required. These precautions currently include completing COVID testing within five days of the procedure (confirmation of negative results must be received by Carilion prior to the procedure date) and five days of in-home isolation. Other household members are not required to isolate during this time.
 - d. The procedural risks, benefits, and acceptable alternatives will be discussed in detail with the parent/guardian during the informed consent process. These include risk of infection, bleeding, and perforation (a hole made in the intestinal wall). These risks are low and endoscopy is considered to be a safe procedure. Endoscopy is not a surgical procedure as no external incisions are made.
 - e. After the procedure, recovery occurs in the PACU and consists of waking from anesthesia. Post-procedural pain, vomiting, or other complications are rare. Once the patient is awake and tolerating liquids by mouth, they can be discharged home and resume their normal diet. The patient should be observed that day and restricted from tasks that require fine motor coordination (i.e. operating heavy equipment, sports activities, etc.). They can resume these activities the following day.
 - f. You should contact your provider if your child has any of the following after their procedure: severe abdominal pain, a distended taught abdomen, more than a tablespoon of blood in vomit or stool, bleeding that continues beyond the second day, fever (greater than 100.4 degrees), or persistent vomiting.
 - g. A provider will discuss the endoscopic findings with you after the procedure. If biopsies are obtained, they will be viewed under a microscope and results will be available approximately one week from the procedure date. If you have not been contacted with biopsy results one week after procedure completion, please send a MyChart message to your provider or contact our office at 540-769-0976.
 - h. Additional Resource: <https://gikids.org/tests-procedures/endoscopy-upper/>

2. Colonoscopy

- a. A colonoscopy is a procedure in which a thin, flexible scope is passed through the anus, into the colon and the last portion of the small intestine. The scope is equipped with a light and camera to visualize these areas. Small biopsies (approximately the size of a pinhead) can be obtained. The patient is asleep throughout the procedure and biopsies are not painful. The procedure itself generally takes less than 30 minutes. Accounting for transport and anesthesia, the time a parent or guardian will spend away from their child is generally 60-90 minutes.
 - b. Preparation for the procedure may vary according to the performing endoscopist or the condition being evaluated/treated. If you have received specific instructions regarding pre-procedure preparations, please follow those noted. A bowel preparation is required to flush out all stool, which consists of large doses of laxative taken over one or multiple days. A clear liquid diet (only drink what you can see through) is required during bowel preparation. A nothing by mouth (NPO) period is required and generally begins at midnight prior to the procedure.
 - c. Given that this procedure is an aerosolizing event, COVID precautions are required. These precautions currently include completing COVID testing within five days of the procedure (confirmation of negative results must be received by Carilion prior to the procedure date) and five days of in-home isolation. Other household members are not required to isolate during this time.
 - d. The procedural risks, benefits, and acceptable alternatives will be discussed in detail with the parent/guardian during the informed consent process. These include risk of infection, bleeding, and perforation (a hole made in the intestinal wall). These risks are low and colonoscopy is considered to be a safe procedure. Colonoscopy is not a surgical procedure as no external incisions are made.
 - e. After the procedure, recovery occurs in the PACU and consists of waking from anesthesia. Post-procedural pain, vomiting, or other complications are rare. Once the patient is awake and tolerating liquids by mouth, they can be discharged home and resume their normal diet. The patient should be observed that day and restricted from tasks that require fine motor coordination (i.e. operating heavy equipment, sports activities, etc.). They can resume these activities the following day.
 - f. Your child may have a small amount of blood in their stool for the next 2-3 bowel movements. You should contact your provider if your child has any of the following after their procedure: severe abdominal pain, a distended taught abdomen, bleeding that continues beyond the second day, fever (greater than 100.4 degrees), or persistent vomiting.
 - g. A provider will discuss the endoscopic findings with you after the procedure. If biopsies are obtained, they will be viewed under a microscope and results will be available approximately one week from the procedure date. If you have not been contacted with biopsy results one week after procedure completion, please send a MyChart message to your provider or contact our office at 540-769-0976.
 - h. Additional Resource: <https://gikids.org/tests-procedures/colonoscopy/>
- ## 3. Video Capsule Endoscopy (VCE)
- a. Video Capsule Endoscopy (VCE) consists of swallowing or endoscopic placement of a large pill that contains a light and camera. Pictures are obtained as it passes through the esophagus, stomach, small intestine, and large intestine. The camera passes in the patient's stool and does not require collection.

- b. Preparation for the procedure may vary according to the performing physician or the condition being evaluated/treated. If you have received specific instructions regarding pre-procedure preparations, please follow those noted. A clear liquid diet (only drink what you can see through) or nothing by mouth (NPO) period is generally required.
- c. The procedural risks, benefits, and acceptable alternatives will be discussed in detail with the parent/guardian during the informed consent process. These include risk of the capsule not passing through the intestine, bleeding, and perforation (a hole made in the intestinal wall). These risks are low and video capsule endoscopy is considered to be a safe procedure.
- d. During the capsules transit, the patient wears a belt. This contains a device that receives and stores the images from the capsule. Once the belt equipment is returned to our department, the physician will review the images and contact you with results. If you have not received results one week after procedure completion, please send a MyChart message to your provider or contact our office at 540-769-0976.
- e. During the capsules transit, there are no specific activity or dietary restrictions.
- f. You should contact your provider if your child has any of the following after their procedure: severe abdominal pain, a distended taught abdomen, blood in vomit or stool, fever (greater than 100.4 degrees), or persistent vomiting.
- g. Additional Resource: <https://gikids.org/tests-procedures/endoscopy-capsule/>

4. Liver Biopsy

- a. A liver biopsy is a procedure to obtain small samples of liver tissue to analyze under the microscope. The patient is asleep throughout the procedure and does not feel the biopsies. The procedure itself generally takes less than 15 minutes. Accounting for transport, ultrasound, and anesthesia, the time a parent or guardian will spend away from the child is generally 45-60 minutes.
- b. Preparation for the procedure includes a required nothing by mouth (NPO) period to ensure highest safety during anesthesia.
- c. To ensure the safety of our patients COVID precautions are required. These precautions currently include completing COVID testing within five days of the procedure (confirmation of negative results must be received by Carilion prior to the procedure date) and five days of in-home isolation. Other household members are not required to isolate during this time.
- d. The procedural risks, benefits, and acceptable alternatives will be discussed in detail with the parent/guardian during the informed consent process. These include risk of infection and bleeding.
- e. After the procedure, recovery occurs in the PACU and consists of waking from anesthesia and laying on the right side for approximately 4 hours. Post-procedural pain or other complications are rare. After a satisfactory period of observation, the patient can be discharged home and resume their normal diet. The patient should be observed and restricted that day from tasks that require fine motor coordination (i.e. operating heavy equipment, sports activities, etc.). They can resume these activities the following day. The patient should not remove their dressing until 48hrs after the procedure.
- f. You should contact your provider if your child has any of the following after their procedure: severe abdominal pain, swelling or redness of skin at the biopsy site, a distended taught abdomen, more than a tablespoon of blood from the biopsy

site, bleeding that continues beyond the second day, fever (greater than 100.4 degrees), or persistent vomiting.

- g. Biopsies will be viewed under a microscope and results will be available approximately one week from the procedure date. If you have not been contacted with results one week after procedure completion, please send a MyChart message to your provider or contact our office at 540-769-0976.
 - h. Additional Resource: <https://gikids.org/tests-procedures/liver-biopsy/>
5. pH/Impedance Study
- a. A pH/impedance study is a procedure to obtain information about the frequency, severity, and acid content of reflux. It involves placement of a thin catheter (approximately the diameter of a spaghetti noodle) through the nose, into the esophagus and stomach. The probe is taped in place, usually for 24 hours. A belt with a small computer is also worn during the study. This test can typically be completed in the outpatient setting.
 - b. Placement of the probe can be uncomfortable but is not typically painful. Child life specialists are often available to help your child feel more at ease.
 - c. Throughout the study, parents/guardians are required to press buttons on the computer indicating when symptoms occur, when meals/snacks are taken, and when the patient is laying down.
 - d. The procedural risks, benefits, and acceptable alternatives will be discussed in detail with the parent/guardian during the informed consent process. These include risk of bleeding, infection, and damage to surrounding structures. These risks are low and pH/impedance is considered to be a safe study.
 - e. Once completed, the catheter will be removed and the study data analyzed.
 - f. A provider will discuss the findings with you approximately one week from the study date. If you have not been contacted within that time frame, please send a MyChart message to your provider or contact our office at 540-769-0976.
 - g. Additional Resource: <https://gikids.org/tests-procedures/ph-impedance-study/>
6. Lactose Hydrogen Breath Test
- a. The lactose hydrogen breath test is a test that allows your physician to determine if your child is lactose intolerant. You will collect timed breath samples from your child using the kit given to you by the office staff. The breath samples will be analyzed in our office by a machine designed for that purpose.
 - b. Preparation for the lactose hydrogen breath test includes the following:
 - i. 3 weeks prior to the procedure, off all antibiotics
 - ii. 24hours prior to the procedure your child should avoid all dairy (milk, cheese, ice cream, yogurt, butter), grain products (cereals, brans, wheat bread), fruits (fruit juices, applesauce apricots, bananas, berries, cantaloupe, cherry, grapes, honeydew, peaches, watermelon, etc), vegetables (vegetable juices, potatoes alfalfa sprouts beets, beans carrots, celery, cucumber eggplant, lettuce, mushrooms, pepper, squash, broccoli, cauliflower, zucchini, brussel sprouts, cabbage, kale, lentils, etc), nuts/seeds.
 - iii. 24 hours prior to the procedure your child should be on a low-fat, low-carbohydrate, low-spicy food diet
 - iv. Examples of acceptable foods for the 24 hours preceding the procedure include turkey or ham sandwich, peanut butter sandwich, chicken noodle soup, baked or boiled chicken/turkey/fish, plain steamed white rice, hard boiled eggs, chicken/beef broth.

- v. 12 hours prior to the procedure and during the procedure, your child should not have anything to eat or drink other than water.
- vi. 1 hour before the procedure and during the procedure, no smoking (including secondhand smoke exposure) and no sleeping or vigorous exercise
- c. The test kit will include 7 glass vials, a blue bag with a mouthpiece, labels, 2 bubble packs, and the lactose Lac-Test powder. You will collect an initial breath prior to drinking the lactose powder by exhaling slowly through the mouthpiece to a count of 6. When you get to the number 3, insert the glass vial into the mouthpiece port to collect the remaining seconds of exhaled breath. Once you have collected that breath sample, label it with child's name, date, and Sample #1. Then, mix the Lac-Test powder with 8oz of water and have your child drink it (preferably through a straw). -Using the above method, collect another breath 30 minutes after the Lac-Test solution has been taken. Continue collecting breath samples in a new vial every 30 minutes until all 7 vials have been filled. Be sure to label each sample with your child's name, date, exact time the breath was obtained, and the sequential sample number (1 through 7). Place all 7 vials in the bubble packs and return in the box within 1 week of completing the test.
- d. The kit can be turned in in person or mailed to the clinic (to the address listed on the bottom of the test kit). The clinic is open Monday through Friday from 8 AM to 4:30 PM.
- e. A provider will discuss the findings with you once they have resulted. If you have not been contacted with testing results one week after procedure completion, please send a MyChart message to your provider or contact our office at 540-769-0976.

