

# Magnetic Resonance Imaging (MRI)

**Magnetic resonance imaging, known as MRI for short,** is a tool that can provide detailed images of the inside of the body using a strong magnetic field and radio waves.

MRI is useful to detect the structure of tissues and can reveal injury, infection, inflammation, and/or possible disorders of tissues, including identifying the presence of tumors.

MRI can provide greater detail of tissues that may not be easily seen with ultrasound or X-ray.

The MRI machine (pictured on the right) is a circular-shaped magnet that has openings on each end and a table that moves in and out of the opening. During an MRI, the patient lies on the table and the table will move into the opening while the images are being made. The magnet produces loud noises that sound like knocking or tapping. The patient will be given earplugs before the MRI starts.



To obtain the best MRI images, the patient should be calm and not move. An MRI does not hurt, but it can be difficult to lie still for the entire exam; movement during the study can ruin the images. Some children are not able to lie still for the whole study, so they are offered general anesthesia.

### **Key things to know about an MRI:**

- There is **NO** radiation exposure — MRI uses a strong magnetic field and radiofrequency.
- MRI is not painful.
- The process to complete an MRI takes more time than a CT scan or X-ray.
- The patient must remain calm and still to obtain quality images.
- A contrast agent called gadolinium may be given to enhance images — this is determined by your doctor or the radiologist — and is given only when it is necessary to help make a diagnosis.

## **Eating and drinking before the scan:**

We give some children medicine to help them relax or feel sleepy during the procedure (**anesthesia**). If there is food or liquid in your child's stomach, there is a risk it could come up and be inhaled into the lungs. This can cause serious problems and could even be fatal. If you do not follow these instructions, your child's MRI scan will be delayed or canceled.

**If your child will be given anesthesia, your child cannot eat or drink before the MRI scan. Follow these instructions:**

### **Heavy meal:**

- Last feeding **8 hours** before your child's MRI scan.
- Stop giving your child heavy foods, such as meat, fried foods, ice cream, gum, mints and candy. Instead, your child can have light foods, such as toast, oatmeal, crackers, or a granola or protein bar.

### **Light meal:**

- Last feeding **6 hours** before your child's MRI scan.
- Stop giving your child any type of food, orange juice and milk.

### **Infant formula or milk:**

- Last feeding **6 hours** before your child's MRI scan.
- Stop giving your child infant formula or milk.

### **Breastmilk:**

- Last feeding **4 hours** before your child's MRI scan.
- Stop giving your child breastmilk.

### **Clear liquids:**

- Last drink **2 hours** before your child's MRI scan.
- Clear liquids are liquids you can see through, such as water, apple juice, Gatorade® (do not give your child red, orange or purple Gatorade®), Pedialyte® or other clear juices. No orange juice.

## Medicine:

- **Your child should take his or her usual medicines before the MRI, unless given additional instructions by your doctor or nurse.**

## Before the scan:

- Ask someone you trust to pick up or care for your other children while this child is having the MRI scan. We do not offer child care at the hospital.
- To get a clear picture, your child must stay very still during the MRI scan. This is often hard for children to do. Your child may be given medicine to make him or her drowsy (**sedation**) or sleep through the scan (**general anesthesia**).
- For comfort during the MRI scan, your child should wear loose clothing or they will be given a gown to wear. You may bring a story, music, a blanket, a stuffed animal, a doll, a pacifier or other comfort item your child likes.
- Tell your child he or she will have a MRI scan. Show them the picture of the machine.
- Tell your child the machine takes pictures, like a camera. Tell your child to lie still for the pictures and explain he or she will wear a Velcro strap around the waist for safety when lying on the MRI table. Tell your child there will be a swooshing sound during the scan. Your child will move back and forth through the opening of the machine while lying on the MRI table.
- Before the MRI scan, your child may be weighed. Your child's heart rate, breathing rate and blood pressure may be checked.
- If your child will be given contrast agent, a small tube may be placed into one of your child's veins. This tube is called an **IV**, or **intravenous catheter**. This will let your child receive medicine during the exam quickly and without pain. A J-Tip™ may be used when putting in the IV. A J-Tip™ has numbing medicine that can help decrease the pain of an IV stick. A J-Tip™ does not hurt but it does make a loud noise, such as a can of soda being opened.
- If your child has ever had a **kidney problem or kidney disease**, please tell your nurse, doctor and the technologist before the MRI scan begins.
- If your child has ever had a **reaction or allergy to a contrast agent** used for any medical test, such as an MRI scan or an intravenous pyelogram (IVP) test, please tell your nurse, doctor and the technologist before the MRI scan begins.

## What to expect the day of the MRI:

- Your child should take his or her usual medicines before the MRI, unless given additional instructions by your doctor or nurse.

- An MRI screening form will be provided after registration to screen for any metal in or on your child. This must be filled out in order to go into the MRI room to make sure it's safe for your child to have an MRI. The MRI is a large magnet, so it's not safe to have metal around it. Your child will need to remove all metal items and jewelry before the test, so it is best to leave these items at home.
- Some medical devices, like shunts, rods and nerve stimulators, are made of a type of metal. If your child has any of these in their body, make sure you tell the technologist before your child's MRI. Most medical devices are safe for MRIs.
- Your child will need to change into a patient gown before the MRI. This will be provided by the radiology staff.
- If the MRI requires your child to receive contrast, a small catheter, called an IV (intravenous catheter), will be placed into one of your child's veins by the nurse prior to the MRI. A J-Tip™ may be used when putting in the IV. A J-Tip™ has numbing medicine that can help decrease the pain of an IV stick. A J-Tip™ does not hurt but it does make a loud noise, like a can of soda being opened.
- If your child has ever had a kidney problem or kidney disease, please tell your child's nurse, doctor and the technologist before the MRI begins. This is important to notify staff prior to your child receiving any contrast.
- If your child has ever had a reaction or allergy to a contrast agent used for MRI, please tell your child's nurse, doctor, and the technologist before the MRI begins. The contrast used for an MRI scan is not the same contrast used for MRI.

### **During the MRI:**

- If your child is not receiving general anesthesia for the MRI, you may sit in the room with your child, after being screened by an MRI technologist.
- The MRI magnet produces loud sounds so earplugs will be provided to protect hearing.
- If your child is receiving general anesthesia, the parent will be asked to wait in the radiology waiting area during the MRI and may be present following the MRI in the post-anesthesia care unit.
- Please let the MRI technologist know if you are pregnant before you enter the MRI room.

### **After the MRI:**

- The radiologist's report will be sent to the ordering physician; this may take one to three business days. Please call your doctor for results. The MRI staff does not provide any report of the findings.
- If your child received contrast for the MRI, the IV will be removed and the site

bandaged. Please leave the dressing on for at least an hour to prevent any bleeding. Wash the site with soap and water regularly. If the site is sore, a warm compress may be helpful.