An MRI is a complex machine that uses magnetic fields to manipulate and measure water content (hydrogen) in order to create a representation of what is inside the body. It builds the image set through a series of slices in different directions.

**What to Expect**

- After the initial waiting time in the reception area a technician will explain the process, ask a series of questions, and lead you into the MRI room.
- Once inside the generally cold MRI room, you will lie down on a flat bed.
- Because the machine is loud, you will be given ear plugs to protect your ears or headphones to listen to music and communicate with the technician.
- Depending on the equipment, a coil may be placed over your face like a mask.
- The bed will then slide into the machine, you will have a panic button to push in an emergency.
- For the next 20 minutes to 1 hour, the machine will make a series of loud noises, occasionally changing positions.

*It is crucial to stay as still as possible for an accurate picture.*

**Phase-contrast MRI (cine-MRI)**

Phase-contrast is taken the same way as a traditional MRI, with the addition of either a wristband or EKG leads on the patient’s chest to measure the heart rate.

The MRI machine is used in the same way as a traditional MRI, however, the operator will program the MRI a little differently and the computer that generates the image(s) will interpret the data it receives differently in order to show movement.

Phase-contrast allows for the visualization of cerebrospinal fluid (CSF) flow and can be used to determine if a Chiari malformation is blocking the natural back and forth flow of CSF between the brain and spine and how large the blockage is.

**Limitations of MRI**

As with any machine, it is not perfect and there are a number of areas where variability and lack of resolution occur.

- The strength of the magnet
- The MRI manufacturer
- The patient’s head position
- The patient’s movement in the machine
- The settings on the machine
- The end result is that the same person having an MRI twice, even in the same machine, will result in different pictures.