

# MRI Fact Sheet

Magnetic Resonance Imaging (MRI) is one of the best non-invasive technologies available for seeing the internal structures and workings of the human body.

MRI is not only used to diagnose diseases and identify their source, but also to learn more about those illnesses for which there is currently no cure or treatments are lacking. The technology is very safe, but people often have questions and concerns about the use of MRI.

Listed below are some common concerns and the facts related to them:

## Is MRI dangerous?

Not only does MRI provide excellent quality images, they do so without any radiation. Instead, MRIs work by using magnetic fields. The downside of the magnetic field is that there are certain restrictions as far as what you can wear in the machine, and certain metal-containing implants may not be compatible. Yale Medicine's MRI center and Magnetic Resonance Research Center (MRRRC) comprehensively evaluates each person prior to scanning to ensure safety (for more, see <https://www.yalemedicine.org/stories/mri-safety/>).

## Will I get claustrophobic?

The MRI machine is open on both ends; an angled mirror allows patients and study participants to easily see out the back end. An intercom allows communication with clinicians and research staff, studies are always performed with a staff member in the room with the participant, and the scan can always be stopped if anyone becomes anxious or uncomfortable. Many studies will allow participants to view a calming slideshow and wear headphones to dampen the machine's noise. The Center also has a mock scanner, so you can explore the dimensions and become comfortable with them before your scan.

## Will I receive contrast dye?

Not all studies or examinations involve dye, and those that do use agents that have been in widespread use for two decades. If you have healthy kidneys and your examination or study needs contrast dyes, your body will filter the agents easily. Patients with severe kidney conditions should discuss risks and benefits of an MRI scan, along with risks associated with forgoing the scan, with their medical provider or principal investigator before undergoing scanning.



Read Kathy's story, a long time MRI research participant, pictured here in an MRI machine, on the reverse side.

# HELP US DISCOVER HERO, KATHY

## MRI'S MOTIVATED BY MOM



A lifetime resident of New Haven County, Kathy (71) is also a longtime supporter of clinical research at Yale. She has volunteered for many studies involving MRI (Magnetic Resonance Imaging) machines, a technique used for visualizing the brain without radiation, so scientists can learn more about the brain and clinicians will be better equipped to treat the many diseases associated with it. One of these, Alzheimer's disease, is what first inspired Kathy to participate in research when she lost her mother to the condition.

"If I can be of any help to prevent it, I'm in. I'm onboard.

When you watch somebody with Alzheimer's, it's a terrible, terrible disease," Kathy said. "She was a beautiful, wonderful, sweet lady—a giving person—and her personality changed; she didn't know us. That's why I'm so interested in doing this."

The most recent study she volunteered for is investigating causes of cellular damage in the brain as we age. Specifically, the researchers are looking at the levels of a protective antioxidant in the brains of volunteers of different ages. Evidence from prior studies suggests that the levels decrease as people age. This research may help to explain some of the neurodegenerative changes seen in diseases like Alzheimer's and Parkinson's. The first human MRI images were produced in 1977 after decades of research. At the time, the quality was poor and the procedure took several hours. Today, the technology takes a lot less time and produces much more distinct images. It can be used to image something as large as an entire body or as microscopic as molecular motion, making it a valued tool for both clinical diagnosis and research observation.

While Kathy and her husband are intimately familiar with research participation, each having volunteered for numerous MRI studies, they also have both a daughter and daughter-in-law who work with the machines daily as MRI technicians. Kathy says her family's collective medical imaging knowledge made her not just willing, but eager to participate. "It's completely safe, and I know my daughters wouldn't allow it if it wasn't," she said, laughing. "They're very protective of their parents."

One common reason for apprehension about MRIs is a fear of the confining space and/or loud noises inside the machine. Many studies can address these concerns by providing headphones and/or a slideshow of calming images such as picturesque scenery. Yale's MRI center even has a mock machine for people to try out before their scan, and both the imitation and the real machine are open at both ends—patients and study participants can see out the back using an angled mirror. The scan is always stopped if study volunteers become uncomfortable or anxious, and a member of the study team is always present during the imaging process.

"They're very kind people," Kathy said. "Very friendly, very helpful, and they explain things very thoroughly." The study staff are vigilant, too, about the few things that can make MRI hazardous—metal objects. Since the imaging uses powerful magnets and radio waves, rather than radiation, researchers always ensure no magnetic metals enter the machine's range—including any that may be present in implanted medical devices. Newer devices are typically manufactured to be safe in an MRI, and all devices are carefully checked by Yale staff, who also have solutions for objects like piercings, electronic devices, and older metallic-ink tattoos to make the scanning process safe, whether to make a diagnosis or perform a clinical study.

Kathy is glad she can be a part of efforts to protect other families from the pain of an Alzheimer's diagnosis, especially when that part is an easy one to play. "I say it's harmless, it's painless, and it's worth the effort. It's rewarding," Kathy said. "I'm glad I did it. And I will continue."

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For more information on volunteering, contact us at [helpusdiscover@yale.edu](mailto:helpusdiscover@yale.edu) or 1-877-978-8343.

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