

"MRI Safety Requires Good Policies, Signage, and Education", quotes from Abbye Alexander, Health Care Risk Management, 6-23

MRIs provide valuable information that can be vital to patient care, but they also are powerful machines that can injure or kill people when proper precautions are not taken. The potential liability from such accidents is significant.

The best example of how dangerous MRIs can be is the 2001 death of a 6-year-old boy. The boy was sedated in an MRI machine at a New York hospital when a staff member brought a metal oxygen cylinder into the room, trying to aid an anesthesiologist who could not get oxygen from the fixture in the MRI room. The powerful magnet in the MRI scanner quickly pulled the oxygen tank into the machine and fractured the boy's skull.

The hospital's investigation found a wide range of systemic failures, including poorly trained staff, and the New York State Department of Health fined the hospital \$22,000 for 11 safety violations, the maximum allowable under state law. In 2010, the family settled its lawsuit against the hospital for \$2.9 million just before going to trial.¹

The potential liability from an MRI accident should not be underestimated, says Abbye E. Alexander, JD, partner with Kaufman Dolowich in Orlando, FL. The powerful magnet requires equally strong policies and procedures.

An MRI uses powerful magnetic fields and radio waves to produce detailed images of the body's internal structures. Although they are safe when proper precautions are in place, there are significant risks associated with these machines. Because it uses such a strong magnetic field, an MRI can draw metal objects in or heat them up.

"If somebody has a metal clip in their body, or some kind of metal object, or even in their teeth from back in the day when dentists used metal, all of that can pose risks to the person because they heat up or they can move. If there's metal inside the body, that can be extremely dangerous," Alexander explains. "For example, if a patient has a pacemaker or other implantable medical device, it can cause the device to malfunction or move. Both of those things could cause serious harm to the patient."

Also, contrast agents often are used to improve MRIs. Those can cause allergic reactions, Alexander notes. They are typically considered safe, but there are rare cases in which they cause an allergic reaction. "It's important to really go through potential allergies with our patients, to take an extensive health history on patients before allowing them to get into the MRI," Alexander says.

Tight Space, Sound Can Be Problematic

Claustrophobia is another concern with MRIs. It may be important for patients to take a sedative to help them relax, and they should be asked if they have a problem with confined spaces, Alexander says. Hearing damage is another concern because the machines are quite loud. Providing music through headphones can help with both claustrophobia and noise. Generally, MRIs are considered safe for pregnant women, but there is some concern that the magnetic fields and radio waves used in the procedure could harm the developing fetus, Alexander says. Typically, healthcare providers will avoid performing an MRI on a pregnant patient unless the benefits outweigh the potential risks.

"The healthcare provider can only use the information that they're provided, so patients should always inform their healthcare provider of any medical conditions or concerns before going through an MRI," Alexander explains. "Healthcare providers should have a very good screening procedures for their patients. Patients should be carefully evaluated for any potential metal objects in their body, including medical implants, pacemakers, and dental work. It's essential to use a comprehensive screening protocol, which would

include a detailed medical history, physical examination, if possible, and an MRI compatibility checklist.”

Some patients will not remember there is a metal clip or other item in their body from previous procedures, so it is important for the physician and staff to understand what previous procedures the patient has undergone. “Especially in the elderly generation, sometimes they just don’t remember a surgery at a younger age. The patient may be trying to help and report everything, but they just don’t know,” Alexander says.

Train Staff Properly

Staff training is especially important for MRI safety, Alexander says. Staff must be trained in the risks associated with MRI scanning, how to identify and respond to potential safety hazards, and how to implement appropriate safety measures to prevent accidents. All staff members should be trained on how to communicate effectively with patients and educate them on the MRI process and safety procedures.

“It’s about layers of protection. They filled out all these forms, but it’s also important for the staff to be able to properly communicate with these people,” Alexander says. “Equipment maintenance is a key issue. Regular maintenance and inspection of the MRI equipment is absolutely essential for ensuring patient safety. There need to be regular checks with the magnets, radio frequency coils, and other components of the MRI system. Anything malfunctioning or damaged should be immediately repaired or replaced.” Facilities also should keep a regular schedule for cleaning and disinfecting the MRI room to prevent the spread of infectious diseases, Alexander notes.

Design Space for Safety

MRI environment design can play a big role in patient safety, Alexander notes. The environment must be designed to minimize the risks of accidents and injuries, which includes ensuring the MRI room is free of any metallic objects that may be attracted to the magnetic fields, such as oxygen tanks or IV stands.

It may seem obvious to anyone who works around an MRI that one should not bring any metallic object into the area, but Alexander says it is easy for staff members to overlook the danger of common metallic objects they work with every day. In the tragic New York case in which the child died, the staff member who brought the oxygen tank to the MRI room was trying to be helpful, and in the heat of the moment forgot the tank’s danger.

Prominent signage and diligent screening by MRI staff can help prevent such accidents. “It’s really sad how tragic a simple mistake can be the things that could be avoided. You should have clear signage indicating the presence of a magnetic field and warning against entry with metallic objects,” Alexander says. “Facilities also need to have policies in place for emergency response and evacuation procedures in case of an accident.”

Proper patient monitoring during the MRI scan also is important. Staff should look for signs of distress or discomfort, along with adverse reactions to the dye, dizziness, nausea, or breathing difficulties. If they detect any symptoms, staff should immediately stop the MRI and seek appropriate medical attention.

Risk managers should consider legal exposure with MRI safety. Negligence and failure to follow the standard of care are potential allegations if anything goes wrong with MRI patients. “One of the key issues that may arise in malpractice or litigation following an MRI accident is whether the healthcare provider acted negligently or failed to meet the standard of care expected of them,” Alexander says. “This may involve examining whether the provider followed proper safety protocols, properly screened patients with potential safety hazards, and maintained the equipment and the environment properly.”

Accidents involving an MRI can result in a range of injuries. Minor burns and cuts could occur, but there could also be more serious injuries like cardiac arrest or brain damage. It will be important to determine the severity of the harm and the degree to which it was

caused by the MRI.

Informed Consent Is Crucial

Informed consent is important with MRIs because patients can easily underestimate the danger posed by not providing full information about previous procedures or other details that could lead to injury. The patient needs to be informed about the risks and benefits of an MRI scan, as well as potential safety hazards that may arise.

“If a patient is injured during an MRI scan and did not receive adequate information about potential risks, the healthcare provider may be held liable for failing to obtain informed consent,” Alexander explains. “Then, there’s facility liability. Liability for an MRI accident also may extend to the facility where the accident occurred. If the facility failed to maintain the equipment or properly train the staff members, they themselves may be held liable for injuries suffered by the patient.”

Alexander says the risk of MRI accidents and liability may be greater at smaller hospitals with fewer resources. “If you go to some of these larger hospitals or places associated with hospitals, you’re going to find that they’re better equipped for that and they’re better able to follow the safety protocols. The ones that I would worry about are the smaller facilities that may not be up to date on all the laws and the safety procedures,” she says. “It’s not because they don’t care or they don’t want to do their best for patients, but they might not have the resources to do everything. That’s where risk managers might want to take a close look and see if there is room for improvement.”