

Cascade of questions to determine if the MRI suites are being cleaned

- **Is your MRI suite thoroughly cleaned and if so, how often?**
- **Who exactly cleans the MRI suite?** The common answer is the cleaning crews come in at night to clean the room.
- According to the American College of Radiology safety guide only MR Level II personnel are allowed to go into the room without supervision. **Are your cleaning crews Level II trained or is a Level II trained personnel there the entire time they are cleaning the MRI scan room? If so, who is that Level II personnel that is there?**
Especially in outpatient centers the cleaning crew comes in long after the technologist (who is the Level II person at these imaging centers leaves). I know of no imaging center that pays their technologists to wait around for the cleaning crews to come in so they can be properly supervised.
- **If the cleaning crews come in to scan the magnet, are they are personally screened for metal on their bodies or pacemaker, metal fragments in the eyes, aneurysm clips, etc. as any other patient or personnel would be that walks into the scan room?**
- **Do you have documentation of when the MRI suite was cleaned and who cleaned it?**
- **Do you have documentation on the cleaning procedure for the MRI suite?** There is extremely expensive equipment in the MRI suite that can be easily damaged by improper cleaning. Coils themselves can cost up to \$100,000 and come into direct contact with the patients. Therefore they are very important to be cleaned.
- If they say the technologist cleans the room, pads and coils as well as the internal bore of the magnet, a question should be, **“How exactly is the bore of the magnet cleaned?”** This was one place where MRSA has been cultured from an MRI. Additionally, **who cleans the floor of the MRI room, and how is it cleaned?** A bucket and mop can be a dangerous proposition inside an MRI room. I have very much doubt that the technologists clean the floors every night in an MRI suite. **Do you have training records for your cleaning crews or technologists to prove that they have been trained in the proper way to clean an MRI suite?**

- The Joint Commission recommends that, “Protocols are in place that allow maintenance and housekeeping personnel to enter the MRI suite only after proper safety education.” **Ask, do you have documentation that all individuals on the cleaning staff have proper MRI safety training?** Also, **are there procedures in place that if one of the cleaners is sick or for some reason a different cleaner comes into the magnet suite, that that person is trained in MRI safety?**
- **How is the bore of the magnet itself being cleaned on the inside?**
This is the most dangerous and difficult area to clean in an MRI. Without a written procedure on how exactly the scan room should be cleaned, one can assume that it’s not being cleaned properly on a regular basis.
- **Do you regularly check your MRI suite with a black light to make sure that the pads, coils and magnet itself is being thoroughly cleaned?** This simple procedure is what hotels do to judge if their cleaning crews are properly cleaning the hotel rooms. Ask for the name of the cleaners and to see their cleaning records.
- Another question is, **how exactly are the electronic switches cleaned, i.e, the switches on the outside of the magnet that the techs are constantly touching after touching patients?**
- Ask if the **cleaning crew consists of native English speakers. If not, who properly trained the crew in MRI safety, and in what language, and who can certify that they are allowed to go into the room by themselves?** Allowing poorly trained cleaners into Zone IV doesn’t make any sense.
- **Are the cleaners being screened for metal devices?** Even if the crew was screened, what is the procedure if one of them is sick and another one takes over or if they hire a new employee?
- **Documentation for cleaning the control area** (where the technologists sit outside the room) such as the keyboard etc. This is considered Zone III and is a restricted area.
- A simple question could be, **how exactly is the keyboard and the mouse that the technologist uses with every patient cleaned?** A common scenario is that a technologist touches the patient positioning him and goes and starts the scan without washing their hands in between. The keyboard is a place that could be transmitting bacteria.

- Are interventional procedures such as breast biopsies or intravenous gadolinium procedures being done inside the room, and if so, **what is the cleaning procedure after these interventional procedures are performed?** A minimum of the MRI suites should be cleaned after every interventional procedure.
- **Ask, is there an individual in the department that is responsible for infection control?**
- Another area is the sheets and pillowcases used on the MRI. **The question to be asked is who cleans the sheets and pillowcases?** Many outpatient imaging centers in order to save money will simply pay the technologists to take the contaminated sheets and pillowcases home to be washed in their standard washing machine along with employee's other clothes, etc. I very much doubt that these washing machines meet industry standards for sanitation. Therefore these sheets, even though they may look clean, are not clean. It should be a certified cleaning service that specifically knows how to clean the sheets in the sanitation cycle.
- Another question is, almost every patient puts her head on the pillows in the scan room. **When was the last time those pillows were changed out/replaced.** Most centers I have asked cannot remember when those pillows were obtained. I feel this is a major area where bacteria can be transmitted between patients because almost every MRI center in the country uses standard pillows that are bought off the shelf. These pillows are in no way designed for any type of infection control. This will give you a feeling for the level of precautions and sanitation an MRI center uses if they are incorporating standard pillows.
- Tourniquets are another area very common transmission of bacteria. These tourniquets are used with interventional procedures and can easily be contaminated with blood. **A question to ask is however often are the tourniquets replaced or cleaned?** They are rather inexpensive and should be replaced between patients, however my experience this is rarely if ever done and they are rarely if ever cleaned.
- Another area to ask is concerning these injections of gadolinium. This is a common procedure done multiple times a day in an imaging center. This is normally performed by MRI technologists and not a doctor or phlebotomist. A question to ask is **when you do these procedures, do you put on sterile gloves or unsterile gloves?** A majority of the sites in order to save money will use unsterile gloves. It is clear that the gloves are there to protect the technologist from the patient, not the patient from

bacteria contamination. The technologist will put on the gloves and then put on the tourniquet, tap the area of arm to do the injection and then pick up the syringe which is filled with the contrast. Unfortunately these procedures are not done sterilely and thereby adding a risk to the patient. At a minimum, the technologists should wash their hands before injecting a patient.

- **Ask, is there any specific procedure on cleaning the room after blood or urine or other body fluids get on the pads or table?** This is not an uncommon event for patients to urinate or other body fluids getting on the table. There is extreme pressure on the technologists to keep the schedule moving and not have patients wait by getting behind. There must be a written procedure forcing the technologists to stop and adequately clean the room.

Ask for documentation of the training of the technologists and infection control procedures.

Further research needs to be performed to determine the percentage of MRIs in this country that harbor MRSA. It is crucial that we assure patients that proper infection control procedures are being performed in the MRI suite to assure the success of MRI. I understand that this would be somewhat painful and expensive for MRI centers and hospitals, however in the long run, it will be crucial to address this issue before it becomes a national problem. Imaging centers and hospitals owe it to their patients to assure that their safety is top concern during their MRI experience.

Unfortunately, the emphasis has been on the magnetic field and the dangers of paramagnetic objects and aneurysm clips and pacemakers injuring the patient. However, almost no attention has been paid to infection control inside these MRIs. This is proven in that there has been one research project ever to even look at the possibility of infectious disease inside an MRI and this was done in Ireland. This study tested only one magnet and showed that there was MRSA in the magnet. This was in 1996 and there have been no followup studies done to further evaluate this area. I think it's crucial that the MRI community looks at this issue.

MRI manufacturers offer no cleaning procedures for their magnets and coils. This puts the MRI centers on their own on how the best way to clean their magnets without damaging the magnet itself or the coils. There should be a nationwide cleaning procedure done on how to clean these MRIs.