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Preventing infection in MRI: Best practices for infection control in and around MRI suites, part III

By [Dr. Peter A. Rothschild](#)

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AuntMinnie.com is pleased to present the third installment in the preventing infection in MRI series by Dr. Peter A. Rothschild. This part discusses how the current state of MRI practice management contributes to poor infection control policies. For part I of the series on healthcare-associated infections and MRI safety guidelines, [click here](#). You can also read about steps to prevent infection in the MRI suite in [part II](#).

The issue of infection control became very personal when my wife, who also is a physician, suffered an injury last year and was at a well-known medical center. Like many patients, she needed an MRI before she could be discharged.

When my wife arrived for her MRI, the facility staff was running late. This is a common situation that puts tremendous pressure on the technologist operating the MRI unit to speed up and get back on schedule.

The patient before my wife was clearly a patient from an isolation ward and appeared to have been squeezed into the schedule. Everyone was wearing a mask and gloves. She overheard that the patient had a possible unknown viral infection and was felt to be contagious.

My wife insisted that the technologist thoroughly clean the pads and especially the head coil, which was used on the previous sick patient and also would be used on her. The technologist said that there was absolutely no time for this, and if she would not get on the table right away, he would just go on and scan the next patient. She would have to explain to her doctors and insurance company why she refused her MRI. My wife desperately needed the MRI so she could be discharged from the hospital.

When she returned after completing the MRI scan, she was in tears. She knew she had made a mistake, but like many patients, she felt pressure to complete her study.

This is just one example of what happens daily in busy hospitals and imaging centers throughout the country. I have talked with numerous patients, many of whom have methicillin-resistant *Staphylococcus aureus* (MRSA), and they recount similar experiences when undergoing MRI scans.

Technologists have also expressed frustration that they are pressured from management to scan as many patients as possible and keep on schedule no matter what. Technologists have been let go because they were "slow" and could not keep up with an unrealistic number of patients to be scanned during their shifts.

This is why there must be a written infectious disease policy -- not only to protect patients, but also the technologist.

How did it get so bad?

A question frequently asked is "How did the standard of practice for infection control become so overlooked in MRI suites?" There are several reasons. First, the dangers presented by the extremely strong magnetic field make it imperative that all

personnel put magnetic safety first. Unfortunately, the focus has become solely on the dangers of the magnetic field, and infection control has taken a back seat.

Another factor is that the significant decrease in MRI reimbursement has forced MRI centers to rush patients through to scan more patients per day. Relative to this latter issue, providing financial incentives for the MRI technologist to increase patient throughput is now a common practice. That is, the technologist receives a bonus based on scanning more patients in less time.

The other practice that contributes to this situation is that MRI centers often will overbook, putting patients in time slots that are too short to perform a complete study or adding patients to a full schedule. This is similar to the airlines overbooking, knowing that a number of patients will not show up for their appointment. Unless an MRI center overbooks patients, the no-shows will have a disastrous effect on the bottom line because they take up time slots that cannot be charged. Merely two no-shows a day can mean up to a \$300,000 loss from the bottom line each year for an MRI center that may already be struggling.

The profits of these imaging centers, which are a fixed-cost business, are directly proportional to the number of scans completed in a day. The difference between scanning two patients an hour and three patients an hour can be significant, accounting for as much as an additional \$1 million to \$2 million in annual revenue.

This is why the technologists and staff are being rewarded for improved efficiency and reducing the time between scans. Taking time to clean the table and pads or even wash their hands between patients interferes with the technologists' incentive to decrease the room turnaround time, thereby increasing the total number of scans completed. Even without cash incentives, technologists are under intense pressure to get the patients on and off the table and turn around the room as fast as possible. The overbooking issue only adds to the problem.

To save money and time, many imaging centers will allow patients to wear their street clothes during their MRI scan, instead of changing into clean gowns or scrubs. This significantly reduces patient turnaround time and associated costs, such as for laundry, as well as staff time to assist patients. However, this also allows any bacteria on the patient's clothes to cross-contaminate the next patient.

Patients and their doctors also are often unaware that these centers are not required to adhere to state regulations concerning x-ray because MRI does not use any ionizing radiation. This means that the person who operates the MRI does *not* need to be a registered radiologic technologist (RT), as with an x-ray device.

Basically, anyone can scan a patient on an MRI unit, without any formal training, much less an understanding of infection control. This is seen most commonly in small imaging centers and physician's offices with MRI systems and with mobile units. There have been situations in which the truck driver who moves the mobile MRI unit also scans the patients, as well as front desk personnel being cross-trained to operate the MRI system. Using an individual who is less qualified than a highly trained and highly paid registered RT has tremendous cost benefits. Unfortunately, patients often have no way of knowing the qualifications of the person scanning them without specifically asking, which most patients are uncomfortable doing.

Conclusion

Patient safety should be the primary concern of any healthcare organization. Protecting patients and staff takes a concerted effort by all the parties involved in diagnostic imaging. There is no question that infection control has not received the attention it deserves. A growing concern is that at least some of the spread of infectious agents could be coming from outpatient imaging centers and radiology departments in hospitals.

However, almost no attention has been paid to infection control inside these MRI units. This is demonstrated by the fact that only one published research project has even explored the possibility of infectious disease inside an MRI unit -- this study was performed in Ireland and presented at the RSNA 2006 conference. The study only tested one magnet but did find MRSA present in the magnet (*Irish Journal of Medical Science*, October 2005, Vol. 174:4, pp. es3:10). It is quite telling that no follow-up studies have been done since that time.

Further research is now required to determine the percentage of MRI systems in the U.S. that harbor MRSA. It is crucial that we assure patients that proper infection control procedures are being performed in the MRI suite to ensure the future success of MRI. It is understandable that this would be somewhat painful and expensive for MRI centers and hospitals. However, in the long run, it is crucial to address this issue before it becomes a national problem requiring government intervention and regulations. Imaging centers and hospitals owe it to their patients to ensure that their safety is the top concern during their MRI experience.

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