

Guidelines Established for Preventing MRSA Infections in MRI Scanning

By Medimaging International staff writers

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There is a growing concern that patients may contract methicillin-resistant *Staphylococcus aureus* (MRSA) infections when undergoing magnetic resonance imaging (MRI) scanning. This concern is based on a combination of highly contagious patients being scanned at MRI centers that lack even the most rudimentary infection control procedures.

Dr. Peter Rothschild, M.D., a recognized expert in open MRI technology and former medical director of the research laboratory at the University of California, San Francisco (USA) where he helped develop the first commercially available open MRI scanner), has developed guidelines that encompass 11 steps for infection control in MRI with the assistance of the Infectious Disease Control division of The Joint Commission (Oakbrook Terrace, IL, USA). This report is meant to be a guideline for imaging centers and hospital radiology departments to develop their own infectious disease policies.

According to Dr. Rothschild, these 11 steps should be thought of as baseline procedures necessary to assure patient safety from life-threatening infectious diseases during their MRI. Each imaging center or hospital radiology department should develop procedures that meet their own specific needs. When writing procedures, personnel at mobile MRI units should also address the unique concerns of the mobile environment, such as the lack of a sink and running water, necessary for hand washing.

Some of the procedures may not be appropriate for every MRI center. However, having no written procedures at all is an unacceptable situation that relies upon the individual MRI technologist to decide what, if anything, he or she thinks is appropriate. Very few of these technologists have a thorough understanding of infectious disease control. Therefore, a policy that is well thought through will not only protect patients but will protect MRI centers in case of an MRSA lawsuit. Unfortunately, there are an increasing number of law firms specializing in MRSA lawsuits, and without an infection control policy it would be very difficult, if not impossible, to defend the center, particularly after MRSA was cultured from the pads or the bore of the MRI unit.

The most common source for transmission of MRSA is by direct or indirect contact with individuals who have MRSA infections or are asymptomatic carriers. A major concern for imaging centers is MRSA carried by asymptomatic patients. Worldwide, it is estimated that up to 53 million people are asymptomatic carriers of MRSA. Of these, it is estimated that 2.5 million reside in the United States. About 1% of the U.S. population is colonized with MRSA. Both infected and colonized patients contaminate their environment with the same relative frequency.

The morbidity and mortality of these bacteria is staggering. On average, hospitalizations for the treatment of MRSA versus other infections have a length of stay approximately three times longer and are three times more expensive. Moreover, the risk of death is three to five times greater for patients infected with MRSA versus methicillin-sensitive Staph infections.

Any patient lying on an imaging table could be a carrier capable of contaminating surfaces in the radiology suite. MRSA and other pathogens can live on and in common MRI table pads and positioners for periods as long as several months.

At many MRI centers, there exists a mistaken belief that just by placing a clean sheet over contaminated table pads, without actually cleaning them between patients, will somehow prevent the spread of infectious agents. What is most concerning is that very few MRI centers routinely clean their pads even once a day, much less between patients. Moreover, almost all pad sets Dr. Rothschild reported that he has seen in use that are over a few years old are torn or frayed, and should have been discarded long ago. Old, torn, and frayed pads are impossible to properly clean and are a breeding ground for bacteria.

This is why many of the 11 steps are centered on the pads that come in contact with the patient, according to Dr. Rothschild. For example, using a magnifying glass to thoroughly examine all the seams for tears or fraying and the use of a black light to check pads for biologic contamination are critical to prevent spread of infection. This will be the first thing an expert witness in a court case will do. However, few, if any MRI centers have adopted even these simple safety procedures.

Another area of great concern, according to Dr. Rothschild, is the lack of special procedures for dealing with highly contagious patients, particularly at outpatient imaging centers as well as mobile centers. These patients are simply put on the table and scanned and the next patient, possibly an immunosuppressed child with a sprained knee, is put on the table directly after this highly contagious patient without cleaning the table, pads, or washing their hands. This can be, Dr. Rothschild reported, a serious situation and infection control procedures must be in place to protect patients.

Dr. Rothschild has created a video concerning these issues:

<http://www.youtube.com/watch?v=HK8caVCrLBg>

It provides insight into understanding how to perform these procedures and why they are very important.

Suggestions for infection control procedures for free-standing imaging centers and hospital radiology departments include: (1) Have a written infectious control policy to include MRI cleaning procedures as well as the cleaning schedule and have it posted throughout the center. (2) Implement a mandatory hand-washing/hand-sanitizing procedure between patient exams for technologists and any others who come into contact with patients. (3) Clean the MRI tables, inside the bore of the magnet and any other items that come into contact with a patient. Infection control experts recommend this be done between each patient. (4) Clean all pads and positioners with an approved disinfectant. Infection control experts recommend cleaning after each patient. (5) Periodically inspect the pads with a magnifying glass, particularly at the seams, to identify fraying or tearing. If present, the pads should be replaced. (6) Regularly check all padding material with an ultraviolet (black) light and make sure that any biologic material detected on the pads can be removed. (7) Replace damaged or contaminated pads with new pads incorporating permanent antimicrobial agents. (8) Use pillows with a waterproof covering that is designed to be surface wiped. Replace pillows when their barrier is compromised. (9) Promptly remove body fluids, and then surface disinfect all contaminated areas. (10) If a patient has an open wound or any history of MRSA/other infection: (a) gloves and gowns should be worn by all staff coming in contact with the patient. These barriers must be removed before touching other areas not coming in contact with the patient, i.e., door knobs, scanner console, and computer terminals; (b) the table and all the pads should be completely cleaned with disinfectant before the next patient is scanned, if it is not already being performed between every patient. For patients with any known infectious process, add 10-15 minutes onto the scheduled scan time to assure there is enough time to thoroughly clean the room and all the pads. (11) Lastly, all furniture should be periodically cleaned. Ideal surfaces are those that are waterproof and wipeable. Infection control experts recommend this be done between each patient.

Dr. Rothschild is founder and president of Patient Comfort Systems, Inc. (Hayward, CA, USA), a company focused on patient comfort and safety.