



SICK SENSE

RADIOLOGY DEPARTMENTS AND IMAGING CENTERS ARE NOT DOING ENOUGH TO PREVENT THE SPREAD OF INFECTIOUS DISEASE. LEARN HOW TO SQUASH THESE BUGS BEFORE THEY MAKE YOUR PATIENTS ILL.

BY PETER ROTHSCHILD, MD

Hospital- and community-acquired infections are a growing problem worldwide. Radiology departments in particular can be a hub for highly communicable diseases, as demonstrated by the drug-resistant tuberculosis (TB) patient who made international headlines in May.

Although quarantined in a hospital room with a specialized ventilation and filtration system, this patient was permitted to leave his room for one purpose: to visit the radiology department for a computed tomography (CT) scan. Clearly, the radiology department didn't have this degree of protection, jeopardizing the entire department and the hospital.

This incident isn't isolated. Most patients with dangerous infections undergo imaging within a radiology department during their course of treatment, often without the most basic safeguards to prevent the spread of infection.

MRSA

While this patient's virulent strain of TB is rare, many infectious diseases are not. The most worrisome is methicillin resistant staphylococcus aureus, which has acquired antibiotic resistance to penicillin. An infectious disease commonly known as a super bug, MRSA may be community-acquired (CA-MRSA) or hospital-acquired (HA-MRSA).

Discovered in 1961, MRSA has become widespread throughout hospital and outpatient settings, and is most commonly transmitted via direct contact with asymptomatic carriers or people who have active MRSA infections. In 1974, MRSA accounted for only 2 percent of total staph infections. The number rose to 22 percent by 1995 and 63 percent by 2004.

The morbidity and mortality associated with these bacteria are staggering. On average, hospital stays for the treatment of MRSA are approximately three times longer and more expensive than other infections. Additionally, the risk of fatality is three to five times greater.

A major concern for imaging centers is that asymptomatic patients can carry MRSA. This means that any patient lying on an imaging table, even without a known history of MRSA, could be spreading these aggressive bacteria. Up to 53 million people worldwide—2.5 million of them



TOM CENTOLA / JEFFREY LEESE

Americans—are estimated to be asymptomatic MRSA carriers.

CDC and the Joint Commission

A 249-page document from the Centers for Disease Control and Prevention (CDC) and the Healthcare Infection Control Practices Advisory Committee details their recommendations concerning the cleaning and disinfecting of various surfaces, including carpeting and cloth furnishings. A chapter on laundry and bedding discusses how mattresses and pillows become contaminated and harbor bacteria, viruses and parasites—and even how health care workers can become infected. CDC studies also indicate that contaminated pads can spread MRSA.

VENDOR ADVICE FOR BETTER BUSINESS

Due to concern regarding the spread of MRSA and other aggressive bacteria, the Joint Commission has designated infection control as a special focus during inspections. (For a list of infection prevention tips, see sidebar.)

Risk areas

The greatest challenge in preventing MRSA and other infections is the magnetic resonance imaging (MRI) suite. Because most centers and hospitals prohibit cleaning crews from entering the suite due to its high magnetic field, pads are rarely (if ever) cleaned. Suites often contain over 20 table pads and positioners as well as multiple pillows. The standard solution has been to place a clean sheet over the pads and a pillowcase over pillows—which won't protect the patient from soiled and contaminated pads. An average MRI scans 3,000 to 5,000 patients a year. CT scanners usually scan double or triple that number. Many of these patients are likely infected with or carry MRSA. Additionally, studies show that 30 to 50 percent of all people carry less virulent staphylococcus on their skin, which also could pose a risk of infection.

Another potential area of exposure to infectious agents is the use of intravenous contrast material for CT and MRI, which significantly increases the risk of blood contamination. Simply removing a needle from a patient's arm is risky; blood can drip from the needle or puncture wound onto the pads, table and floor and go unnoticed.

Infectious bacteria also can be spread through direct contact between imaging staff and patients within the imaging department or center. MRSA can be acquired through a simple cut or skin break. Therefore, hand-washing between patients is crucial, as is the use of hand sanitizer among the entire staff.

Bacteria and table pads

One overlooked concern is the torn or frayed old pads used in imaging departments and centers. Once the covering material is breached, pads can not be properly cleaned and should be replaced.

When most pad systems were developed in the late 1980s and early 1990s, they weren't designed to withstand the wear and tear of 5,000 to 10,000 patients a year. These pad coverings have worn out and become impossible to clean. Also, nearly all of their cushioning properties have been lost, making the MRI process very uncomfortable for patients.

Hospital-acquired infections have become

INFECTION PREVENTION 101

INFECTION CONTROL PROCEDURES for freestanding imaging centers and hospital radiology departments are crucial in reducing the spread of MRSA and other dangerous acquired infections. Consider instituting these policies to prevent the spread of these infections.

1. Implement a hand-cleaning procedure for technologists between patient exams.
2. Clean pads with an approved disinfectant at least once daily.
3. Regularly examine padding material under a black light and confirm that any biological material can be removed.
4. Inspect pads closely, with a magnifying glass if needed, to identify fraying or tearing, particularly at the seams. Replace damaged pads with new pads containing permanent antimicrobial agents.
5. Clean MRI tables, tourniquets and any other items that come into contact with patients.
6. Consider hospital-approved air filters.
7. Replace pillows every few weeks at a minimum and use water-resistant coverings containing antimicrobial agents.
8. Ensure that sheets and patient gowns are laundered in hot water by approved laundries.
9. Promptly remove body fluids and disinfect contaminated areas.
10. Periodically clean upholstered furniture and furnishings in the patient dressing rooms and waiting areas.
11. Limit patient exposure to flowers and plants, as they can harbor bacteria.
12. Have adequate pest control in place and restrict eating areas.
13. If a patient has an open wound or any history of MRSA:
 - a. Have staff wear gloves if they come in contact with the patient. Staff should remove the gloves before touching areas that do not come into contact with the patient (e.g., door knobs, scanner consoles, computer terminals, etc.).
 - b. Completely clean the table and pads with disinfectant before scanning the next patient. For patients with any known infectious process, add 10 to 15 minutes to the scheduled scan time to thoroughly clean the room and pads.
14. Whenever any body fluids come in contact with the pads or table, they must be disinfected thoroughly before scanning the next patient. This may mean the next patient is delayed or canceled.
15. Imaging departments should follow the example of most surgery departments and scan infected patients only at the end of the day, enabling a thorough cleaning of the room, which will be unoccupied for a prolonged period to allow the air filtration system to remove airborne contaminants.
16. Have a written protocol for infection control.

—Peter Rothschild, MD

significant only in the last five to 10 years. Before that time, the risk of contamination was low, and MRSA was far from prevalent. Therefore, pads on most tables do not incorporate newer technologies developed to assist infection control. Permanent antimicrobial agents should be incorporated into all table pads and positioners. For added protection, the seams of table pads should be welded shut as well as tightly sewn.

Bodily fluid detection

To detect bodily fluid contamination, pads need to be visualized under a black light, which uses ultraviolet wavelengths that are especially sensitive to biological material such as blood, bacteria, bodily fluids, etc. Biological material remaining on the pads will show up under black light exposure.

The next step is to clean these pads using a standard hospital solution. If the black light still reveals biological material, the covering may

have been breached, allowing bodily fluids to seep into the fabric and possibly penetrate to the underlying foam. For this reason, these pads and positioners should be replaced with ones that contain permanent antimicrobial agents.

Conclusion

Protecting patients and staff requires a concerted effort and diligence from everyone. This issue hasn't received sufficient attention from the radiology community. Since at least some infectious agents could be spread through outpatient imaging centers and hospital radiology departments, everyone must do his part to combat these dangerous diseases. ■



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