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A Risk Management Approach to Staph and MRSA Exposures

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Recent reports of infections caused by *Staphylococcus aureus* (staph) and the more serious methicillin-resistant *Staphylococcus aureus* (MRSA) have evoked worldwide concern. However, neither of these bacteria is new. One only has to browse the web or read articles on the Centers for Disease Control's (CDC) web site or in the *Journal of the American Medical Association* to see that they have been with us for a long time. What is new and cause for concern is the apparent increase in frequency of infections, especially from MRSA. According to the CDC, MRSA infections accounted for two percent of the total number of staph infections in 1974; in 1995 the figure increased to 22 percent; in 2004, the number of reported cases of MRSA almost tripled to 63 percent.

How do we, as risk professionals, respond to this growing peril? This paper will review basic steps to evaluate the risks your organization faces and to effectively and proactively address this exposure. But first, a few definitions and facts.

Definitions and Facts

What Is *Staphylococcus aureus* (Staph)?

Staphylococcus aureus, often referred to simply as staph, is a bacterium commonly carried on the skin or in the nose of healthy people. Approximately 25 to 30 percent of the population is colonized (meaning bacteria are present, but not causing an infection) in the nose. Staph sometimes causes infection when damage to skin or other injury allows the bacteria to overcome the body's natural defenses. Staph, in fact, is one of the most common causes of skin infections in the US, though most staph infections are minor (such as pimples and boils) and can be treated without antibiotics (also known as antimicrobials or antibacterials). Staph can, however, also cause serious infections, such as surgical wound infections, bloodstream infections and pneumonia.

What Is MRSA?

A new, more invasive strain of staph is called methicillin-resistant *Staphylococcus aureus*, or MRSA. As its name suggests, this type of staph is resistant to those antibiotics called beta-lactams, which include methicillin and other more common antibiotics such as oxacillin, penicillin and amoxicillin. Only about one percent of the population is colonized with MRSA.

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Who Gets Staph or MRSA Infections?

Staph infections, including MRSA, occur most frequently in hospitals and healthcare facilities (such as nursing homes and dialysis centers) among those who have weakened immune systems. These healthcare-associated staph infections include surgical wound, urinary tract and bloodstream infections as well as pneumonia. A recent

CDC press release[1] stated, "…about 85 percent of all invasive MRSA infections were associated with healthcare."

What Is Community-Associated MRSA?

Staph and MRSA can also cause illness in persons outside of hospitals and healthcare facilities. MRSA infections that are acquired by persons who **have not** recently (within the past year) been hospitalized or had a medical procedure (e.g., dialysis, surgery, catheters) are known as community-acquired MRSA (CA-MRSA) infections. Staph or CA-MRSA infections usually manifest as skin infections, such as pimples and boils, and can occur in otherwise healthy people.

Are Certain People at Greater Risk for Community-Associated Staph or MRSA Infections?

The CDC has investigated clusters of CA-MRSA skin infections among athletes, military recruits, children, Pacific Islanders, Alaskan Natives, Native Americans, gay men and prisoners. Factors associated with the spread of MRSA skin infections include close skin-to-skin contact, openings in the skin such as cuts or abrasions, contaminated items and surfaces, crowded living conditions and poor hygiene.

How Common Are Staph and MRSA Infections?

Staph bacteria are among the most common causes of skin infection in the US and are a common cause of pneumonia, surgical wound infections and bloodstream infections. The majority of MRSA infections occur among patients in hospitals or other healthcare settings. Approximately 85 percent of all invasive MRSA infections were associated with healthcare, and of those, about two-thirds occurred outside of the hospital, while about one-third occurred during hospitalization. Of new concern is that about 14 percent of all the infections occurred in persons without obvious exposures to healthcare.[2]

What Does a Staph or MRSA Infection Look Like?

Staph bacteria, including MRSA, can cause skin infections that may look like a pimple or boil and can be red, swollen or painful, or produce pus or other drainage. Serious infections may cause pneumonia, bloodstream infections or surgical wound infections.

Evaluating Your Organization's Risk for Staph and MRSA Infections

Central to addressing the potential risk to your organization is answering the question: is this peril covered under your current policy? While this paper does not detail coverage issues, a few scenarios should be mentioned.

The exposure of most concern is the potential for an institution to be sued for negligence, such as failure to provide a safe working environment or adequate medical care. Such concerns are valid, considering the nature of the problem: bacteria are invisible to the naked eye, and fear of infection can often generate misunderstanding and mistrust among employees. Minimizing the possibility of being sued for negligence requires a diligent and thorough evaluation of possible situations where negligence could occur or be claimed.

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If a person contracts staph/MRSA at work (and it can be proven that it was acquired in the working environment), then it may result in a compensable Workers' Compensation claim. In the public sector, paramedics, teachers and corrections officers are among those most likely to acquire staph/MRSA on the job. However, others, such as office workers, are not immune. Regardless of their job or work environment, everyone should understand the importance of their personal role in reducing the likelihood of contracting infection.

By the same token, depending on the setting or activity involved, an employer or institution might be held liable for failure to take appropriate steps to minimize the risks of infection in the workplace. Protection measures may include frequently sanitizing common areas, requiring the use of personal protective equipment (PPE) where necessary, educational materials and training in maintaining a clean environment and personal hygiene, and communicating openly regarding events

in the news and company rumors. Given the potential for liability, any measures taken should be well documented.

The Classic Risk Management Process

To thoroughly evaluate your organization's risk profile, simply follow the classic risk management process:

1. Identify and analyze the known or potential loss exposure
2. Examine alternative risk management techniques
3. Select the most appropriate risk management techniques for your situation
4. Implement your chosen techniques
5. Monitor results

Given the recurring nature of these infections, their increasing occurrence, and the potential liabilities involved, utilizing this process is highly recommended.

1. Identify and Analyze the Loss Exposure

Various resources and tools can help you identify your organization's potential for outbreaks of these infections. An appropriate resource for most organizations is OSHA. Among OSHA tools are 300 logs, including first aid logs, vacation/sick day records and loss history forms.

The main task is identifying circumstances or environments within your organization that are conducive to the spread of infection (e.g., showers, locker rooms, weight rooms). Certainly, hospitals, schools, day-care facilities, jails or community centers will not have to look far. Even though the loss exposure may not be as evident in an office, such a setting can still be a breeding ground for staph infections through commonly used items and spaces such as phones, copiers, door knobs and bathrooms, as well as through skin contact with co-workers – especially if open wounds are present.

Once the analysis has been done, determine your potential for loss frequency and loss severity. Then you are ready to look for solutions.

2. Examine Alternative Risk Management Techniques

Two broad risk management techniques can be applied to any known or potential loss exposure: risk control and risk financing.

Risk Control Techniques

Loss Prevention

Sound loss prevention measures can reduce the frequency of staph/MRSA infections. Proactive practices and procedures include educating employees on the crucial role of personal hygiene (e.g., how to *thoroughly* wash hands[3]) in preventing staph/MRSA and other infections and contagious illness. A good place to start in the education process is placing posters or reminders of the importance of personal hygiene in bathrooms and common use areas.

Loss prevention efforts also include establishing sanitizing protocols for your facilities and reevaluating the way your organization deals with blood-borne pathogens and first aid issues. If your institution already has a sanitation procedure in place, examine it in light of any internally reported cases of infection. Training on blood-borne pathogens (if applicable to your organization) and expanding the number of first aid responders are effective measures that can be implemented quickly at little or no cost.

Loss Reduction

In addition to proactive efforts to reduce the frequency of staph and MRSA exposures and incidents, you can also curtail the cost of such exposures by providing staph infection tests for employees who were exposed to an employee with a confirmed case of staph or MRSA infection and immediately quarantining an area where an infected person may have been until it has been thoroughly sanitized. Furthermore, prompt communication to all employees of the facts surrounding a confirmed case (including the organization's response) is a crucial loss reduction measure. These are just some examples of loss reduction measures every institution should take.

Risk Financing Techniques

Financing this exposure can be accomplished by risk retention, risk transfer or some combination of the two. An institution that has a greater potential for staph/MRSA infections (e.g., a hospital or other medical facility) usually seeks to transfer the exposure by either an insurance policy or hold-harmless

agreement. However, if the risk cannot be transferred, then financing can take various forms (depending on the institution's potential for loss, cash flow and risk tolerance), including current expensing of losses, funded or unfunded loss reserves or borrowing. If your institution has paid for losses in previous years, you can use the experience to help determine where the balance lies in establishing funds to pay for future losses.

3. Select Risk Management Techniques

Once you have systematically considered the various risk control and risk financing options and how they can be best applied to staph/MRSA loss exposures, your next step is to determine what combination of the two best reflects your organization's objectives. In other words, you must use your forecast of the probable or potential frequency/severity of this peril in choosing the right balance between risk management techniques. You must also factor into your approach any legal and humanitarian concerns, as well as operating efficiencies that may be relevant and/or required.

4. Implement Techniques

The implementation of agreed upon control measures are the visible, outward signs employees and the public see (and scrutinize). If in fact there is concern about possible claims of negligence, the implementation of risk control and risk financing techniques becomes critical. Efforts to address staph/MRSA infection must be thorough, focused, diligently and consistently practiced and must have the committed support of leaders/decision makers within your organization. Maintaining feedback and communication with employees at all levels is also crucial. Finally, the implementation of your prevention efforts must be monitored.

5. Monitor Results

One of the most critical elements of any risk management program is the monitoring of its results. Without that, you cannot be certain that your exposure and liabilities have been effectively addressed. If your organization goes through this risk management process, and yet in a few months is still dealing with infections, you will know where your risk management program has fallen short only if you have monitored all aspects of the program. *Remember: what does not get measured does not get done!*

What Should You Do to Address this Exposure?

How your organization responds to the risk of staph/MRSA infections will vary according to its structure, culture and financial resources. However, there are some basic steps that all organizations should take. The most crucial is the education of employees on the basics of infectious diseases, their responsibilities for their own hygiene, and the importance of communicating with each other on signs of potential cases.

Outlining how various types of organizations should address this exposure is beyond the scope of this article. However, below we offer a valuable risk control program reported in the UE Corner (United Educators) column "Don't Let Illness Spread at the Game," in Volume 16, Number 1 of *From the Gym to the Jury*.

The most effective policies focus on the athletes' health and hygiene, the players' and officials' vigilance, and sanitation at the facility. Elements of a good policy include:

1. Encouraging good hygiene, including washing with soap and hot water after the activity
2. Prohibiting the sharing of towels, water bottles or other personal items
3. Requiring cleaning and disinfecting of shared equipment and spaces – ideally after each use (e.g., hot tubs, showers, weight rooms)
4. Requiring laundering of personal items after each use
5. Training coaches and players or their parents to recognize infectious wounds and excluding from play anyone with a potentially infectious skin lesion until it can be properly covered or the infection has passed
6. Training coaches and players in first aid
7. Prohibiting anyone with a cut or bandage from participating in a water sport
8. Treating blood as a biohazard and following federal safety guidelines in controlling bleeding and handling bloody fluids
9. Requiring a physician's note to permit players with skin lesions to play and to permit formerly contaminated players to return to the activity

The most important element in the protocol of a school district or athletic facility is the implementation and unequivocal enforcement of policies on contamination.

Loss Prevention

As mentioned earlier, some loss prevention measures your institution can take include:

1. Placing posters or other educational material in common areas such as break/lunch rooms, bathrooms, locker rooms or workout facilities
2. Establishing sanitizing procedures
3. Examining and evaluating your institution's blood-borne pathogen and first aid programs
4. Emphasizing good personal hygiene
   - Keep hands clean by washing thoroughly with soap and water or using an alcohol-based hand sanitizer
   - Keep cuts and scrapes clean and covered with a bandage until healed
   - Avoid contact with other people's wounds or bandages
   - Avoid sharing personal items such as towels or razors

Individuals can prevent spreading staph or MRSA skin infections to others by close attention to the fundamentals of personal hygiene.

1. **Covering your wound.** Cover wounds that are draining or producing pus with clean, dry bandages. Follow your healthcare provider's instructions on proper care of the wound. Pus from infected wounds can contain staph and MRSA, so keeping the infection covered will help prevent the spread to others. Bandages or tape can be discarded with the regular trash.
2. **Keeping your hands clean.** You, your family and others in close contact should wash hands frequently with soap and warm water or use an alcohol-based hand sanitizer, especially after changing a bandage or touching an infected wound.
3. **Not sharing personal items.** Avoid sharing personal items such as towels, washcloths, razors, clothing or uniforms that may have had contact with an infected wound or bandage. Wash soiled sheets, towels and clothes with water and laundry detergent. Drying laundered items in a hot dryer, rather than air-drying, also helps kill bacteria in fabrics.

Potential Exposures to Consider

Sanitation

Should sanitation of facilities be contracted out? Some organizations may do so in order to reduce their liability for staph/MRSA infections. Hospitals, jails and perhaps some school districts often transfer this exposure to another organization. Transferring sanitation efforts has its pros and cons. On the positive side, potential liability can be curtailed. On the negative side, the cost may be prohibitive. Furthermore, if the rising threat of infection means that sanitation activities must increase in frequency or may exceed the capabilities of a sanitation vendor, the question must be weighed all over again.

Regardless of whether your organization has a formal sanitizing procedure or not, the use of sanitizing chemicals presents hazards that are often overlooked or ignored. Employees carrying out a sanitation protocol may be subject to hazards ranging from dermatitis to inhalation and eye exposures. To avoid injuries, establish comprehensive protocols/procedures for cleaning/sanitizing that include consulting all relevant material safety data sheets (MSDS), professional guidance published by product manufacturers, industry organizations and others. Moreover, consistent and diligent enforcement of current safety rules should be established.

Communication

Another potential exposure concerns communication of a confirmed or possible case of a staph/MRSA infection within your institution to either exposed or infected employees, students (and legal guardians if applicable) or the public. Communicating a possible or confirmed case is especially important in schools. Many school districts send out letters to parents/guardians when there is a confirmed case of staph/MRSA. Others have educational material posted on their school web sites. Employees and/or parents (if dealing with schools) must be informed of confirmed cases of staph/MRSA infection, because failing to do so will not only put more employees/students at risk, but will also invite public scrutiny and unwanted media attention.

Key points to cover in any type of communication.

1. Everyone should wash their hands frequently and thoroughly with soap and water.
2. If employees engage in physical activities such as running, biking or other forms of exercise during their lunch break, they should be encouraged to shower thoroughly with an anti-bacterial soap immediately after their physical activity.
3. Carefully self-check all skin daily for rashes, pimples and boils that get worse instead of better. Employees should be encouraged to report these conditions to their superior immediately.
4. Encourage the use of sanitizing wipes on commonly used surfaces.
5. Remind all that staph/MRSA infections can also occur at home – where common items such as towels, linens, razors, etc. are often shared.

When communicating to whatever audience your institution must deal with, also include facts regarding confirmed cases, preventative efforts your institution has taken/is taking (site formal procedures and documentation if applicable), and tips, recommendations and resources for them to consider. In discussing confirmed cases, privacy rights must be respected. Above all, ensure that communication is genuine and conveys your commitment to a safe environment.

Potential Exposures to Consider

No matter the type, size or structure of your organization, many simple and inexpensive measures can be taken to effectively reduce your exposure to the risks associated with staph/MRSA infection. The most important of these elements are establishing a protocol, communicating and educating openly and widely, and enforcing the protocol.

The checklists and suggestions provided in this white paper will help you on your way to improving your risk profile.

Resources

Centers for Disease Control
http://www.cdc.gov/ncidod/dhqp/ar_mrsa_ca.html
http://www.cdc.gov/Features/MRSAinSchools/
A podcast regarding MRSA can be found at: http://www2a.cdc.gov/podcasts/player.asp?f=6936

The Journal of the American Medical Association
http://jama.ama-assn.org/
For information on a recent a teleconference titled "Invasive MRSA Infections in the United States," please go to: http://www.ihi.org/IHI/Programs/AudioAndWebPrograms/Author+in+the+Room.htm

Mayo Clinic
http://www.mayoclinic.com/health/mrsa/DS00735/DSECTION=8

National Network for Immunization Information
http://www.immunizationinfo.org

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[1] http://www.cdc.gov/ncidod/dhqp/ar_mrsa_Invasive_FS.html, October 17, 2007
[2] http://www.cdc.gov/ncidod/dhqp/ar_mrsa_Invasive_FS.html, October 17, 2007
[3] http://www.mayoclinic.com/health/hand-washing/HQ00407