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Best treatment identified to reduce deadly Staph infections

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One type of over-the-counter product for topical wound care is more effective than others in killing methicillin-resistant Staphylococcus aureus bacteria, or MRSA, which is potentially deadly and in recent years has moved from its historic hospital setting to a much broader public concern.

A new laboratory study indicates that many antibacterial products have some value, but a product made with benzethonium chloride kills common types of non-hospital – or "community associated" – MRSA bacteria better than other compounds. Clinical studies to confirm the results are needed, experts say.

The findings were presented today at a meeting of the American Society of Health-System Pharmacists, by David Bearden, a clinical associate professor in the College of Pharmacy at Oregon State University.

The surge in MRSA infections – which have been called a "superbug" and medical experts say killed more people than AIDS in 2005 – has alarmed health professionals. Many new cases are being found in a public, rather than health care setting, and are now attacking younger, healthier individuals. Since many of these systemic infections begin with cuts, minor wounds or skin infections, proper first aid care is taking on greater importance than ever.

"A good cleaning with soap and warm water is still the first and best line of defense against infection in the cuts, scrapes and minor wounds that

everyone gets," Bearden said. "But there's also a place for antibacterial treatments, usually creams or ointments. With the significant increase in community-associated MRSA infections in recent years, we wanted to find out which products might work the best for this concern."

In laboratory studies, OSU scientists compared three types of compounds for their effectiveness in killing four strains of MRSA bacteria that are most commonly found in a public setting. The compounds were those made with neomycin and polymyxin; those made with polymyxin and gramicidin; and those made with benzethonium chloride with tea tree and white thyme oil.

The first two types of products are commonly found, with slight variations, in "maximum strength" or "triple antibiotic" compounds routinely sold in drug stores. The third product is comparatively new.

"Comparing these three product groups, the study showed that the benzethonium chloride product killed the community-associated MRSA bacteria more rapidly, and worked well against all four of the strains we tested," Bearden said.

All of the products had some antibacterial effectiveness against MRSA bacteria, the OSU study found, but only the benzethonium chloride compound had a genuine "bactericidal" effect – meaning it reduced the number of bacteria by a factor of 1,000 – against all four of the tested MRSA strains.

"It's worth noting that there's not a lot of data about the proven effectiveness of any of these topical, antibacterial products in preventing infections," Bearden said. "However, we know that it takes a large number of bacteria to ultimately produce an infection, and antibacterial treatments can greatly reduce their number. It's reasonable to believe that these products, which are inexpensive and easily available, have a place

in protecting a nasty cut or scrape and trying to prevent a more serious infection."

The OSU study was funded by Tec Laboratories of Albany, Ore., a company that sells the benzethonium chloride product.

According to medical experts, the growing prevalence of virulent MRSA strains in a public setting has somewhat changed the rules for health care.

"MRSA infections can be very aggressive and pathogenic, and many people have died from them," Bearden said. "We've had problems with MRSA in hospitals for decades, but it wasn't until 2000 that some strains started to appear more frequently in public settings. Because of that, you just can't afford any more to take a minor injury or skin infection too lightly. You should treat the wound, try to prevent infection, and anything that is overly red, painful, swollen or has pus associated with it should be seen by a physician."

The reference to staph infections as "methicillin resistant," Bearden said, means that they are highly resistant to treatment by most common groups of antibiotics – it's a very short list of medication that will work against them. Staphylococcus aureus, itself, is a bacteria that's commonly found on the skin or in people's noses, but sometimes through skin infections or other processes it can cause a systemic infection, and death from such causes as pneumonia, meningitis, or blood stream infections.

"The antibiotic-resistant forms of staph evolved in hospitals where very ill people were constantly being treated with powerful antibiotics," Bearden said. "It's only just recently that slightly different strains have moved into a more public setting. We've had outbreaks in schools, it's a concern with some contact sports."

A study published recently in the Journal of the American Medical Association found that in 2005, 14 percent of MRSA infections began in a public setting with no known cause, and another 58 percent began in a public setting after a person had been in a health care facility. Only 27 percent of the infections began in a hospital. In that year, nearly 19,000 Americans died from MRSA infections.

The study concluded that invasive MRSA “is a major health problem . . . no longer confined to intensive care units, acute care hospitals or any health care institution.”

Source: Oregon State University