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OREGON PUBLIC HEALTH DIVISION • DEPARTMENT OF HUMAN SERVICES

MRSA SUPERBUG? PART I

Staphylococcus aureus is a ubiquitous bacterial pathogen that has shared a long, sometimes sordid history with human beings. Generally, the Gram-positive organisms harmlessly colonize the anterior nares or the skin, and they can be passed from person to person directly or through contact with contaminated environmental surfaces. Occasionally, *S. aureus* will invade its human host, resulting in any of a range of possible infections. The most common of these infections are confined to the skin and surrounding soft-tissue and manifest as pimples, boils, or "spider bites" (curiously, the latter very often in persons lacking a history of spider exposure). Invasive infections such as bacteremia, bacteremic pneumonia, septic arthritis, and surgical site infections can be associated with severe morbidity and mortality.

Methicillin-resistant *Staphylococcus aureus* (MRSA) was named in 1961 to describe isolates of *S. aureus* in which resistance to methicillin (and, more broadly, to the entire class of β-lactam antibiotics) had been detected. Until the late 1990's, MRSA infections were problematic primarily in the hospital setting, as the disease was limited to those with "established health care risk factors" (frequent contact with health care system, previous infection or colonization, or a history of invasive devices or procedures). Reports of "community-associated MRSA" (CA-MRSA) — infections among those without established risk factors — were first published in 1998 and 1999.[1,2] While MRSA has been known to the medical community for years, it has dwelt in relative obscurity amongst the general public.

In October 2007, the Journal of the American Medical Association published an article highlighting high morbidity and mortality associated with invasive MRSA infections.[3] In temporal proximity, the deaths of two adolescents due to invasive MRSA infection were also reported in the news. The combined effect was a media frenzy regarding this "New Superbug."

This first of a two-part *CD Summary* series on MRSA will discuss why MRSA cannot be eliminated (no matter how hard we try) and what personal and public health measures can be taken to reduce the risk of acquiring or transmitting a MRSA infection. The next issue will provide results of MRSA surveillance through the Active Bacterial Core surveillance (ABCs) Program. The goals of these two articles are to provide tools to address this issue and to keep it in perspective.

MRSA Take Home Points

Staphylococcus aureus (S. aureus) either sensitive or resistant to β–lactam antibiotics, causes a range of conditions, from asymptomatic colonization to life-threatening invasive infections.

S. aureus is carried by an estimated 1.2 million Oregonians; exposure to *S. aureus* cannot, therefore, be eliminated by aggressive disinfection of environmental areas.

Control of *S. aureus* depends upon identification and treatment of infections and prevention measures to reduce the risk of transmitting the organism to, or acquiring the organism from, other individuals.

Antibiotics are not always required for MRSA infections: >90% of deep skin abscesses caused by it can be treated with incision and drainage alone.

Physicians should be consulted for a treatment plan appropriate to a particular infection.

Individual risk-reduction strategies for preventing *S. aureus* transmission include:
- – Frequent and thorough hand washing;
- – Covering of open or draining wounds; and,
- – Avoidance of sharing personal items, such as razors, towels, soap, etc.

Environmental disinfection should be limited to those items used by more than one person or surfaces that come in contact with body fluids (including open or draining wounds). Otherwise, routine cleaning practices should be sufficient to reduce the risk of *S. aureus* transmission.

CAN'T WE JUST ELIMINATE IT?

Recent news reports have left some with the perception that MRSA is a rare disease that can easily be controlled through thorough disinfection of the environment. On the contrary, the nature of the organism is such that elimination is not a viable option. Firstly, *S. aureus* is common: the prevalence of *S. aureus* and MRSA colonization has been estimated at 32.4% and 0.8%, respectively[4]: this translates to 1.2 million Oregonians currently being colonized with *S. aureus*, 28,000 of whom are colonized with MRSA. Secondly, *S. aureus* can survive in the environment long enough to be picked up by others. One report demonstrated the survival of MRSA on several surfaces for nine or more days.[5] For as long as we interact with other human beings and touch surfaces, we will undoubtedly have some level of exposure to *S. aureus*, including MRSA.

SO NOW WHAT DO WE DO?

The infeasibility *S. aureus* elimination does not mean that we lack any means of controlling it. Rather, the risk of acquiring or transmitting an infection can be reduced through

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accurate diagnosis and treatment by health care providers; prudent infection control measures; and personal hygiene.

Identification and treatment of MRSA infections has become routine for many providers as the prevalence of MRSA infections in the community has increased. Not every MRSA infection requires antibiotic treatment: in patients with deep skin abscesses and associated cellulitis, incision and drainage alone are sufficient >90% of the time. Those more interested in the clinical management of MRSA should consult *Strategies for Clinical Management of MRSA in the Community*, released in 2006.

Outside of the health care setting, public health interventions, such as vaccines or antibiotic prophylaxis, aimed specifically at MRSA do not exist in the manner that they do for other diseases. Rather, the tactics applicable to most infections spread from person to person also are effective at reducing transmission of MRSA. These include 1) personal hygiene, namely, bathing with soap and water and frequent hand washing using soap or an alcohol-based sanitizer; 2) covering wounds with clean dressings; and 3) avoiding the sharing of potentially contaminated personal items with others.

CDC recommendations for the management of MRSA in the school setting endorse the same prevention measures listed above.[7] Oregon law further calls for exclusion of any person with "open or draining skin lesions infected with *Staphylococcus aureus* or *Streptococcus pyogenes*" from attendance at school or a child care facility, or from working in health care or food service facilities.* Noticeably absent from prevention strategies are the closure and disinfection of schools (or entire districts) following the diagnosis of MRSA in a student: for reasons noted above, such an activity would not eliminate exposure to MRSA.

CONCLUSION

As the prevalence of MRSA increases, it may be expected that news reports of this "superbug" will, *pari passu*, become more common. Although the threat of MRSA will not be eliminated, the risk of acquiring an infection is greatly reduced through simple practices available to all. Risk reduction, not elimination, should be a focus of both MRSA prevention activities and communication messages to patients and the general public.

REFERENCES:

1. Herold B, et al. Community-acquired methicillin-resistant *Staphylococcus aureus* in children with no identified predisposing risk, JAMA 1998; 279:593–8.
2. Four pediatric deaths from community-acquired methicillin-resistant *staphylococcus aureus* — Minnesota and North Dakota. MMWR 1999; 48:707–10.
3. Klevens RM, Morrison MA, Nadle J, et al. Invasive methicillin-resistant *Staphylococcus aureus* infections in the United States. JAMA 2007; 298:1763–71.
4. Kuehnert MJ, Kruszon-Moran D, Hill HA, et al. Prevalence of *Staphylococcus aureus* nasal colonization in the United States, 2001–2002. J Infect Dis 2006; 193:172–9.
5. Huang R, Mehta S, Weed D, Price CS. Methicillin-resistant *Staphylococcus aureus* survival on hospital fomites. Infect Control Hosp Epidemiol 2006; 27:1267–9.
6. Gorwitz RJ, Jernigan DB, Powers JH, Jernigan JA, and Participants in the CDC-Convened Experts' Meeting on Management of MRSA in the Community. Strategies for clinical management of MRSA in the community: summary of an experts' meeting convened by the Centers for Disease Control and Prevention. 2006. Available at *www.cdc.gov/ncidod/dhqp/pdf/ar/CAMRSA_ExpMtgStrategies.pdf*.
7. CDC. Questions and answers about methicillin-resistant *Staphylococcus aureus* (MRSA) in schools. Available at: *www.cdc.gov/Features/MRSAinSchools*.

*Oregon Administrative Rule 333-019-0010.

Hib Vaccine Shortage

PedvaxHIB® - a *Haemophilus influenzae* b conjugate vaccine, is unavailable for shipment at this time due to unspecified manufacturing issues. Merck expects the vaccine to be available sometime in the first quarter of 2008.

Sanofi Pasteur is working to increase production of ActHIB®. Providers are encouraged to substitute ActHIB® for PedvaxHIB® until further notice.

To complete a series begun with PedvaxHIB® or Comvax®, see guidelines at *www.cdc.gov/vaccines/vac-gen/shortages/downloads/hib-shortage-11-7-07.pdf.*

Vaccine supply will be monitored closely so that children are not excluded from child care because of shortages. Additional information will be provided when it becomes available. Call the Public Health Immunization on-call team at 971-673-0300 with any questions.