



## **Vancomycin Resistant *Staphylococcus aureus* (VRSA)**

### **Cause/Epidemiology**

*Staphylococcus aureus* is an aerobic or facultative anaerobic coagulase- positive organism. It appears as gram-positive clusters on gram stain. *S. aureus* colonizes the skin of humans, which leads to localized, superficial, self-limiting abscesses when the skin is disrupted.

The usual treatment for *S. aureus* infections is a group of antibiotics related to penicillin called methicillin. Included in this group are oxacillin and doxycillin. In the 1980's, methicillin-resistant *S. aureus* (MRSA) emerged and has become endemic in many hospitals. This led to increased use of vancomycin. While most *S. aureus* are susceptible to vancomycin, a few have developed resistance and cannot be successfully treated with vancomycin. These antimicrobial resistant *S. aureus* are classified as either vancomycin intermediate *Staphylococcus aureus* (VISA), or vancomycin resistant *Staphylococcus aureus* (VRSA) based on laboratory tests which determine the degree of resistance. VRSA cause similar infections to sensitive *S. aureus* strains but infections may be difficult to treat because of limited effective antibiotics.

Vancomycin-Resistant *Staphylococcus aureus* has the potential to become a prevalent, virulent and transmissible bacterium for which no effective therapy would be available. The threat of the growth of VRSA is considered a public health catastrophe because patients with *S. aureus* infections are likely to have poor outcome.

Colonization of healthcare workers or family members associated with the case patients has not been reported.

### **Clinical Presentation**

Risk factors are not well described except that all cases have received long courses of vancomycin or other glycopeptide antibiotic.

In some cases, antecedent MRSA infection (peritoneal, bloodstream, and/or device-related) was treated repeatedly and for long time periods with a glycopeptide. Over time, isolates developed reduced susceptibility to vancomycin.

### **Incubation**

The incubation period is variable and indefinite.



## Transmission

VRSA infections occur the same as Vancomycin Sensitive *Staphylococcus aureus* (VSSA) infections. Common bacterial infections include impetigo, folliculitis, furuncles, carbuncles, abscesses and infected lacerations.

Within institutions, healthcare workers' hands and the environment are the most common means of spreading VRSA. In the case of staphylococcal pneumonia, droplet transmission can spread VRSA. Healthcare workers who are colonized or infected are rarely the reservoir. VRSA may invade the blood and cause potentially serious complications such as bacteremia, septic shock, and serious metastatic infections (endocarditis, pneumonia, osteomyelitis, and arthritis).

## Infection Prevention and Control Practices

### Routine Practices

Notify Infection Prevention and Control immediately when a resident is positive for Vancomycin-Resistant *Staphylococcus aureus* (VRSA).

Refer to the Management of Communicable Diseases in Personal Care Homes table for specific disease/microorganism information.

## Occupational Health

Healthcare workers exposed to or infected with VRSA shall be dealt with on a case- by-case basis and in consultation with Infection Prevention and Control and Infectious Disease.

Pregnant health care workers can work with residents who are colonized/infected with VRSA provided they adhere to Routine Practices and Additional Precautions for the specific situation.

Pregnant health care workers who have concerns regarding working with residents who are colonized/infected with VRSA should be referred to occupational health/designate.