

Staphylococcus aureus Infection, Invasive, Methicillin-Resistant (MRSA)

Agent: *Staphylococcus aureus* (bacteria) that has developed resistance to the class of beta-lactam antibiotics, including penicillin, cloxacillin, oxacillin, nafcillin, and methicillin, as well as cephalosporins and carbapenems.

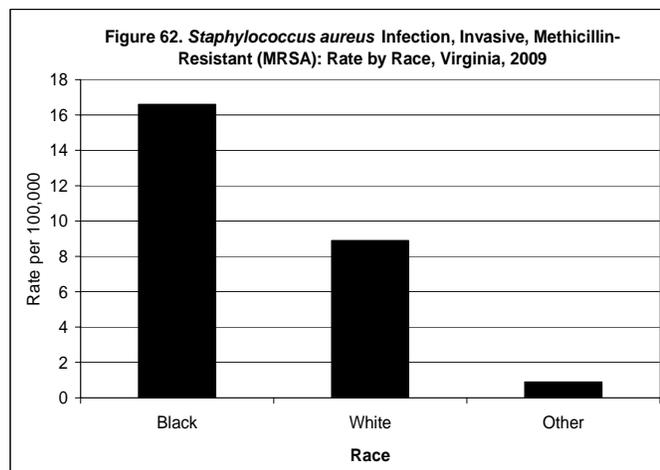
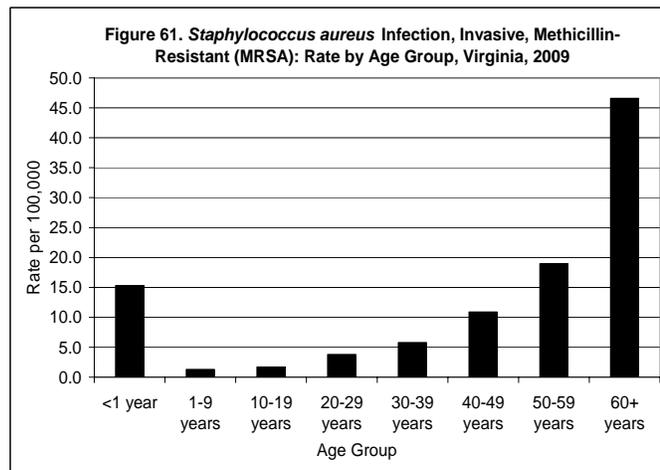
Mode of Transmission: Person-to-person transmission via direct contact with colonized skin or skin lesions of an infected person, or by indirect contact with contaminated personal items or surfaces. Invasive infections occur when the bacteria penetrate normally sterile sites.

Signs/Symptoms: Invasive infections may affect the blood, bone, lung, and lining of the brain and spinal cord and may cause fever, difficulty breathing, chills, pain and other syndrome-specific signs and symptoms. Non-invasive skin and soft tissue infections commonly cause swelling, tenderness, and redness and can manifest as abscesses, boils, or pustules.

Prevention: In the community, preventive measures include practicing proper hygiene and wound care and washing hands regularly and thoroughly with soap and water. In healthcare settings, control measures include adhering to appropriate infection control, including management of catheters or other medical equipment, and practicing prudent use of antibiotics.

Other Important Information: Only invasive MRSA infections are required to be reported in Virginia and only laboratories are required to report these infections. Asymptomatic colonization and infections from non-sterile sites (e.g., skin and soft tissue) are not reportable. Reporting of this condition became effective on October 26, 2007.

During the approximately nine-week reporting period in 2007, 253 cases of invasive MRSA infection were reported in Virginia. In 2008, the first full reporting year, 1,524 cases were reported. In 2009, 1,124 cases were reported in Virginia, demonstrating a 26% decrease from 2008. The highest incidence occurred in the 60 year and older age group (46.6 per 100,000), followed by the 50-59 age group (19.0 per 100,000) and infants (15.3 per 100,000) (Figure 61). Among the remaining age groups, there was an incremental increase in rates as age increased. Thirty-two percent of cases were missing race data. Among cases with race information, incidence in the black population (16.6 per 100,000) was nearly twice the rate in the white population (8.9 per 100,000), and eighteen times greater than the rate in the "other" population (Figure 62). This racial disparity in invasive MRSA infections has also been observed nationally; although the cause of this disparity is unknown. In Virginia, incidence was higher in males than in



females (16.0 and 12.1 per 100,000, respectively). By region, the central region had the highest incidence rate (25.9 per 100,000), while the other regions had rates ranging from 11.3 to 21.0 per 100,000. Invasive MRSA reporting was consistent throughout the year with each quarter representing 22%-27% of the cases. One MRSA outbreak was reported in 2009, involving five infants in a medical facility. Among cases reported in 2009, forty-five (4%) of the 1,124 persons with invasive MRSA infections were reported to have died from these infections. Thirty-four (75%) of these deaths were in adults aged 60 years or older. Twenty of these fatal cases were in females and twenty-five occurred in males.