

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.

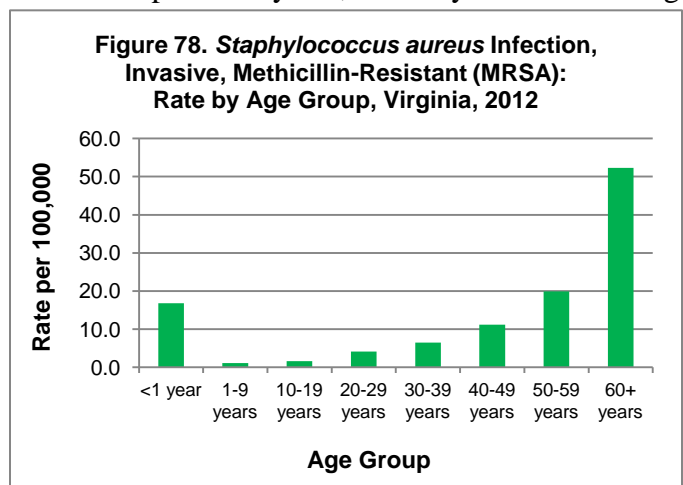
Signs/Symptoms: Invasive infections may affect the blood, bone, lung, and lining of the brain and spinal cord and may cause fever, difficulty breathing, chills, pain and other syndrome-specific signs and symptoms. Non-invasive skin and soft tissue infections commonly cause swelling, tenderness, and redness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

Prevention: In the community, preventive measures include practicing proper hygiene and wound care and cleaning hands regularly and thoroughly with soap and water or alcohol-based hand sanitizer. In healthcare settings, control measures include adhering to appropriate infection prevention practices, 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.

The 1,294 cases of invasive MRSA infection reported in 2012 are similar to the 1,304 cases reported in 2011, but represent a 15% decrease from the 1,524 cases reported in 2008, the first full reporting year for invasive MRSA infection in Virginia.

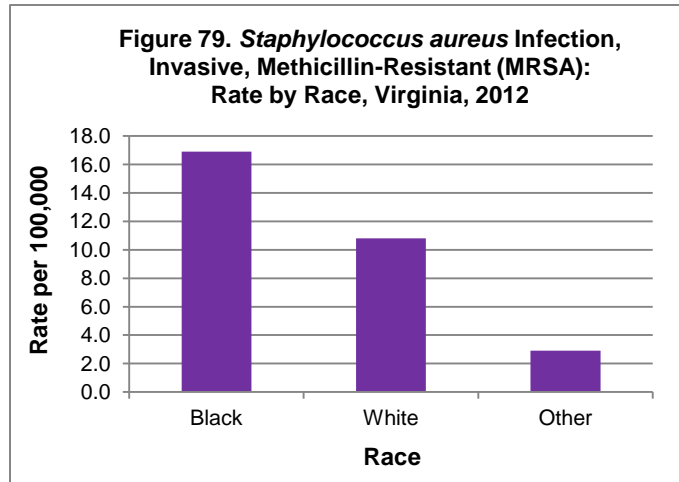
In general, with the exception of the less than one year age group, both the number of cases and the incidence rate increased with age in 2012. As in previous years, the 60 year and older age group experienced both the highest number of cases and highest incidence rate (773 cases, 52.3 per 100,000), followed by the 50-59 year age group (225 cases, 19.9 per 100,000) (Figure 78). The less than one year age group had the third highest incidence rate (16.8 per 100,000), although the number of cases in that age group was among the lowest of all age groups (17 cases). The 1-9 year age group had the lowest number of cases and incidence rate of all age groups in 2012 (10 cases, 1.1 per 100,000).



Twenty-eight percent of cases were missing race data; however, among cases with race information, incidence in the black population (16.9 per 100,000) was 1.6 times the rate in the white population (10.8 per 100,000), and more than 5.8 times the rate in the “other” race population (2.9 per 100,000) (Figure 79). Although the cause is unknown, this racial disparity in

invasive MRSA infections has also been observed nationally. In Virginia, incidence was higher in males than in females (19.1 and 12.5 per 100,000, respectively).

By region, the southwest region had the highest incidence rate (22.5 per 100,000) and the northern region experienced the lowest rate (8.9 per 100,000). In general, invasive MRSA infections occurred throughout the year with little seasonal variation.



One outbreak due to MRSA was reported in 2012. It occurred in a medical facility in the northwest region and involved 15 infants. Two of the infants were identified with invasive MRSA infection, and surveillance cultures submitted in response to that finding identified thirteen additional colonized infants. The hospital instituted numerous measures to halt the spread of the organism.

Among those with invasive MRSA infections reported in 2012, slightly more than 2% (32 cases) were reported to have died from these infections. This is similar to the case-fatality rate for the previous two years. Among the deaths in 2012, 84% occurred in adults aged 60 years and older. This is a larger proportion than in 2011, when 70% of the reported deaths occurred in adults in this age group. Case-fatality was similar for males and females (around 2% each).