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

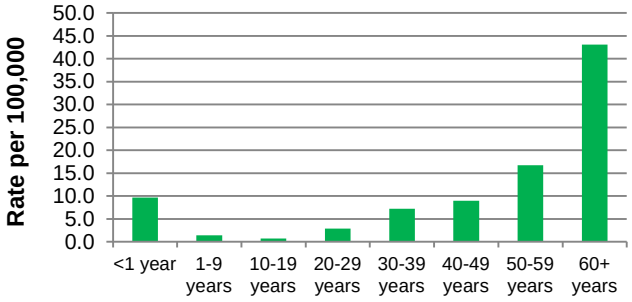
Agent: *Staphylococcus aureus* (bacteria) that have developed resistance to the class of beta-lactam antibiotics, including penicillin, cloxacillin, oxacillin, nafcillin, and methicillin, as well as cephalosporins and carbapenems.
Mode of Transmission: Person-to-person transmission via direct contact 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) do not have to be reported to the health department. Reporting of this condition became effective in Virginia on October 26, 2007. As of September 25, 2015, hospitals are also required to provide information to VDH on MRSA bacteremia laboratory-identified events via the CDC's National Healthcare Safety Network. State aggregate data on MRSA bacteremia laboratory-identified events are available in the Healthcare-Associated Infections chapter of this report.

***Staphylococcus aureus* Infection, Invasive, Methicillin-Resistant (MRSA): 2015 Data Summary**	
Number of Cases:	1,142
5-Year Average Number of Cases:	1,236.0
% Change from 5-Year Average:	-8%
Incidence Rate per 100,000:	13.7

In Virginia, 1,142 cases of invasive MRSA infection were reported during 2015. This represents a slight increase from the 1,134 cases reported in 2014, and an 8% decrease from the 5-year average of 1,236 cases per year. The first full reporting year for invasive MRSA infection in Virginia was 2008, with 1,524 cases reported in that year.

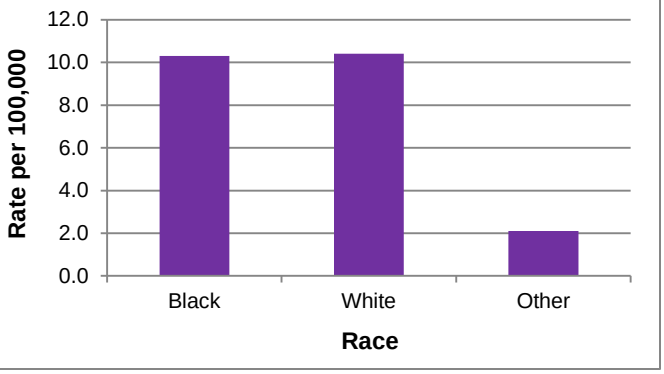
In 2015, with the exception of infants, incidence rates generally increased as age increased (Figure 77). Consistent with previous years, persons 60 years and older experienced the highest number of cases and incidence rate (699 cases, 43.1 per 100,000), followed by the 50-59 year age group (196 cases, 16.7 per 100,000). With 10 cases, infants had an incidence rate of 9.7 per 100,000. Children 10-19 years of age had the lowest number of cases and lowest incidence of all age groups in 2015 (7 cases, 0.7 per 100,000).

Figure 77. *Staphylococcus aureus* Infection, Invasive, Methicillin-Resistant (MRSA): Rate by Age Group, Virginia, 2015



Race was not provided for 29% of cases. Among cases with a known race, the incidence rate in the white population (10.4 per 100,000) was similar to the incidence in the black population (10.3 per 100,000) (Figure 78). This represents the third consecutive year that incidence among the black population was not substantially higher than incidence among the white population. Racial disparities in invasive MRSA have been noted nationally, with the black population having two-fold the incidence rate of the white population. It is unclear why Virginia has seen little difference in incidence between these two populations since 2013. In Virginia, incidence was higher in males compared to females (16.8 and 10.8 per 100,000, respectively).

Figure 78. *Staphylococcus aureus* Infection, Invasive, Methicillin-Resistant (MRSA): Rate by Race, Virginia, 2015



The southwest region had the highest incidence rate (24.9 per 100,000) and the northern region had the lowest (7.4 per 100,000). Incidence is typically higher in the western half of the state. Incidence rates by locality can be viewed in the map below. In general, invasive MRSA infections occurred throughout the year with little seasonal variation.

Three MRSA outbreaks were reported in 2015, but none caused invasive illness. These outbreaks occurred in a hospital in the northwest region, a correctional facility in the central region, and a school in the southwest region. In all situations, the facilities instituted numerous control measures that prevented additional cases.

In 2015, 25 (2%) persons with invasive MRSA infections died. The case-fatality rate was slightly higher in females than males (1% and 0.7%, respectively).

Staphylococcus aureus Infection, Invasive, Methicillin-Resistant (MRSA), Incidence Rate by Locality, Virginia, 2015