

Central Line-Associated Bloodstream Infection (CLABSI)

Agent: Bacteria, virus, or fungus

Mode of transmission: A CLABSI is a central line-associated bloodstream infection. A central line is a flexible tube that is inserted near the patient's heart or into one of the large veins or arteries that can be used to give fluids or medications or measure the amount of fluid in the body. Because a central line is located in a blood vessel, any introduction of an infectious agent during central line insertion, maintenance, or removal may lead to a bloodstream infection.

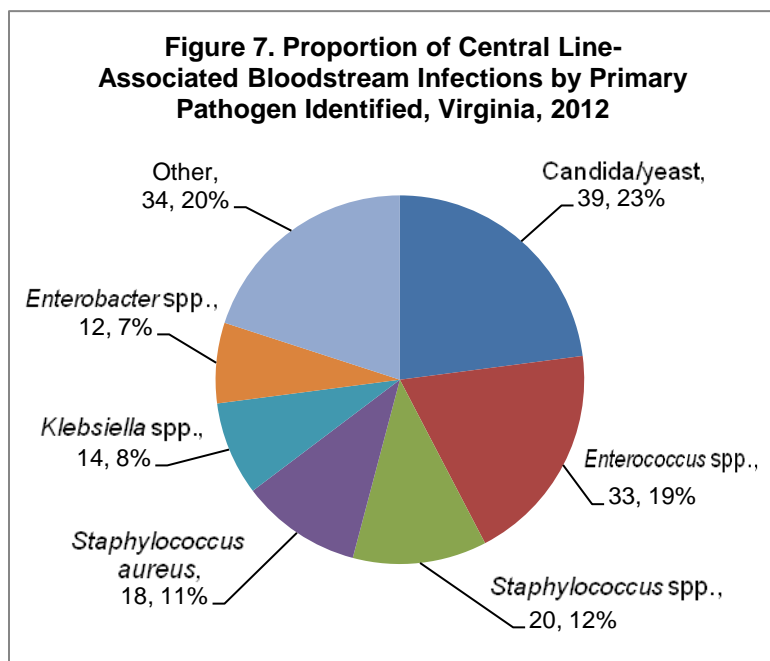
Signs/symptoms: A positive blood culture and fever, chills, low blood pressure, and/or redness or tenderness at the central line insertion site. For patients less than one year of age, symptoms may also include fever, hypothermia, apnea (suspension of breathing), and/or bradycardia (slow heart rate).

Prevention: To prevent CLABSIs, healthcare providers should follow CDC infection prevention guidelines, including removal of unnecessary central lines and compliance with recommended practices for hand hygiene, central line insertion, and central line maintenance.

Other important information: Hospitals are required to provide information on CLABSIs occurring in adult intensive care units to the Virginia Department of Health via the Centers for Disease Control and Prevention's online surveillance system, the National Healthcare Safety Network (NHSN). Hospitals have reported these data since July 2008. Reports of hospital-specific CLABSI data are available from the VDH Healthcare-Associated Infections Program upon request.

In 2012, 170 central line-associated bloodstream infections occurred among 184,031 central line days in Virginia hospital adult intensive care units (ICUs), yielding a standardized infection ratio (SIR) of 0.49. This is a 23% decrease from the SIR of 0.64 observed in 2011 and was significantly lower than the SIR of 1 observed in the baseline population of hospitals in the United States. When compared with the U.S. reference value of 1, the SIR value of 0.49 can be interpreted as indicating that 51% fewer CLABSIs were observed in Virginia adult ICUs than were predicted based on the national experience. In Virginia, approximately one in three (31%, n=53) persons with CLABSI died, and the infection was noted as contributing to the death in 21% (n=11) of the fatalities.

The mean age of CLABSI cases in 2012 was 62 years (range: 20-100) and 55% were male. The largest proportion of CLABSIs occurred in medical/surgical intensive care units (25%), followed by cardiothoracic intensive care units (17%), medical intensive care units (16%) and trauma intensive care units (9%).



Several pathogens can be present in a CLABSI, but of greatest interest is the primary pathogen, the one noted to be most responsible for causing the infection. In 2012, six primary pathogens were responsible for 80% of CLABSIs and included *Candida*/yeast, *Enterococcus* species, *Staphylococcus* species (excluding *S. aureus*), *Staphylococcus aureus*, *Klebsiella* species, and *Enterobacter* species (Figure 7). Other primary pathogens included bacteria such as *Acinetobacter* species, *Citrobacter* species, *E. coli*, *Proteus mirabilis*, *Pseudomonas* species, *Serratia* species, *Stenotrophomonas maltophilia*, and *Streptococcus* species.

In 2012, 39% of *S. aureus* CLABSIs were methicillin-resistant and 61% of the *Enterococcus* species CLABSIs were vancomycin-resistant. No carbapenem-resistant *Klebsiella pneumoniae* or *E. coli* CLABSIs were reported in 2012. Six carbapenem-resistant *K. pneumoniae* CLABSIs have been reported to VDH through NHSN since CLABSI reporting began in July 2008.