

# Study indicates some MRSA infections in ICU patients have been decreasing in recent years

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In contrast to the perception that methicillin-resistant *Staphylococcus aureus* (MRSA) bloodstream infections associated with use of a catheter is an increasing problem in intensive care unit (ICU) patients, the incidence of this type of infection decreased by nearly 50 percent from 1997 - 2007, according to a study in the February 18 issue of JAMA.

*Staphylococcus aureus*, a bacteria that is a cause of staph infections, is a common cause of potentially serious and costly health care-associated infections, appearing frequently in hospitals as central line-associated bloodstream infections (BSIs). Central line is defined as a catheter that is inserted into a large blood vessel in the body, with the tip of the catheter typically located at or close to the heart or in one of the great vessels (such as aorta or internal jugular vein). The emergence of MRSA in health care settings has drawn the attention of clinicians, public health agencies and the public, and has prompted calls for mandatory screening or reporting in efforts to reduce infections, according to background information in the article. Despite these concerns, there is a lack of recent data on the direction in which the problem of health care-associated MRSA infections is going in the U.S.

To provide information on the recent trend in the incidence of MRSA central line-associated BSIs in U.S. intensive care units, Deron C. Burton, M.D., J.D., M.P.H., of the Centers for Disease Control and Prevention (CDC), Atlanta, and colleagues analyzed national health care-

associated infection surveillance data reported by hospitals to the CDC. These data, covering the period from 1997-2007, were used to calculate annual central line-associated BSI incidence rates for seven types of adult and pediatric ICUs.

From 1997 through 2007, 1,684 ICUs reported 33,587 central line-associated BSIs, of which 2,498 (7.4 percent) were MRSA and 1,590 (4.7 percent) were methicillin-susceptible *Staphylococcus aureus* (MSSA). The researchers found that although the overall percentage of *S aureus* central line-associated BSIs due to MRSA (called "percent MRSA") increased 25.8 percent from 1997 through 2007, the overall incidence rate of MRSA central line-associated BSIs declined 49.6 percent from 1997 through 2007. This overall decline occurred despite an initial increase in infection rate from 1997 through 2001, after which the rate steadily declined through 2007.

From 2001 through 2007, MRSA central line-associated BSI incidence declined significantly in all six adult ICU types and was stable in pediatric ICUs. Changes in MRSA central line-associated BSI incidence ranged from –51.5 percent in medical-surgical ICUs without a major teaching affiliation to –69.2 percent in surgical ICUs. In every ICU type, MSSA central line-associated BSI incidence declined continuously and significantly from 1997 through 2007, with estimated incidence changes ranging from –60.1 percent in surgical ICUs to –77.7 percent in medical ICUs.

The authors suggest that these decreases in incidence may be attributable to efforts by health care facilities to improve adherence to CDC's evidence-based prevention guidelines, the implementation of strategies designed to improve central line insertion and care practices, and increasing success in preventing MRSA transmission between patients by health care facilities.

"In summary, MRSA central line-associated BSI incidence has declined in recent years in all major adult ICU types and has remained stable in pediatric ICUs. The overall decline in incidence stands in sharp contrast to trends in percent MRSA, which give an incomplete picture of changes in the magnitude of the MRSA problem over time and may have led to a misperception that the MRSA central line-associated BSI problem in ICUs has been increasing," the authors write.

They add that large declines in incidence across all types of central line-associated BSIs, which included regular staph and drug-resistant staph (MRSA), in all major non-neonatal ICU types also suggest that general central line-associated BSI prevention efforts are succeeding and may have contributed to the declining MRSA trends. "Further study is needed to assess MRSA infection incidence in other patient populations and patient care areas and to determine the effect of specific prevention measures and of participation in national health care-associated infection surveillance on the observed trends."

More information: JAMA. 2009;301[7]:727-736.

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