

Methicillin-resistant *Staphylococcus aureus* in Canadian acute-care hospitals: Surveillance Report January 1, 2008 to December 31, 2012 Executive Summary

Methicillin-resistant *Staphylococcus aureus* (MRSA) is a *Staphylococcus aureus* that has become resistant to beta-lactam antibiotics (i.e., first-line antibiotics that include methicillin, oxacillin, penicillin, and amoxicillin). MRSA may asymptotically colonize the skin and mucosal surfaces of healthy humans and can also cause infections such as wound, urine, skin and soft tissue infections, osteomyelitis, endocarditis, bacteremia, etc. MRSA can be acquired in the community or in the hospital or other healthcare settings such as long-term care, dialysis and rehabilitation facilities especially among people with weakened immune systems.

MRSA is transmitted most frequently by direct skin-to-skin contact or contact with shared items or surfaces that have come into contact with MRSA.

Staphylococcus aureus infections are currently being reported as the leading cause of healthcare-associated infections worldwide and an increasing percentage of these infections are methicillin-resistant. MRSA infections place a significant burden on healthcare systems, resource utilization and are associated with increased morbidity and mortality.

The Public Health Agency of Canada (Agency) has collected data on hospitalized patients with MRSA infections and colonizations in Canadian acute-care hospitals through the Canadian Nosocomial Infection Surveillance Program (CNISP) since 1995. This report describes the epidemiology and microbiology of MRSA in Canada from 2008 to 2012. The following are some highlights of this surveillance report.

- National overall MRSA infection rates have been decreasing since 2009 with the most dramatic reduction seen in healthcare-associated infection rates. Similar trends are also seen in other developed countries.
- However, a distinct difference in the trends between adult and pediatric MRSA infection rates was observed. Adult infection rates have steadily declined since 2008 while pediatric rates have increased significantly.
- Skin, soft tissue or burns were the most common source of MRSA clinical infections in each surveillance year. Central line associated bloodstream infections accounted for just over one-quarter of the total MRSA bloodstream infections from 2008-2012.
- From 2008-2012, approximately 9% of patients with a clinical (non-blood) MRSA infection died and 25% of patients with a MRSA bloodstream infection died at 30 days after the date of positive culture
- CMRSA-2, CMRSA-7 and CMRSA-10 were the three most predominant strain types identified in both clinical (non-blood) and blood isolates. CMRSA-2 (the strain type most typically associated with hospital settings) represents the largest proportion identified followed by CMRSA-10 and CMRSA 7 (strain types most commonly associated with community settings).
- Nationally, from among the MRSA isolates tested, there has been no documented resistance to the antibiotics vancomycin, tigecycline, linezolid or daptomycin that can be used to treat MRSA infections.

To obtain a copy of the report, send your request to: ccdic-clmti@phac-aspc.gc.ca