

MRSA 'Superbug' On the Rise in Canadian Hospitals

Representative, long-term surveillance study is the first in Canada to link clinical and epidemiological data with well characterized laboratory isolates.

March 10, 2010, Toronto – Over a 13-year period in Canadian hospitals, MRSA (methicillin-resistant *Staphylococcus aureus*) increased an alarming 17-fold and there was a dramatic increase of almost three times as many MRSA infections associated with more virulent strains from the community, say researchers at Sunnybrook and Canadian Nosocomial Surveillance Program who conducted a MRSA infection and colonization surveillance study from 1995 to 2007 with 48 hospitals across Canada, published in *Infection Control and Hospital Epidemiology*.

"This is the most comprehensive and representative picture we have to date of MRSA in Canada," says Dr. Andrew Simor, lead author, and chief, Microbiology, and Infectious Diseases, Sunnybrook Health Sciences Centre. "This surveillance is the first in Canada to be able to link clinical and epidemiologic data –for example, the types of patients who are most at risk – with well characterized laboratory isolates where we can match a specific patient to a specific isolate, to further our understanding of the impact of MRSA on hospitalized patients."

MRSA is a major cause of healthcare-associated infections and has recently emerged as significant cause of community-associated infections. *Staphylococcus aureus* is a bacterium frequently living on the skin of a healthy person. The bacterium can go on to cause illness from minor skin infections to life-threatening disease. MRSA (methicillin-resistant *Staphylococcus aureus*) is a common bacterial pathogen resistant to antibiotics, and there are distinct healthcare-associated and community-associated strains.

"From a global perspective, this surveillance shows that Canada needs to be doing better," says Dr. Simor, professor, Departments of Medicine, and Laboratory Medicine and Pathobiology, University of Toronto. "We need to continue to be vigilant in controlling this infection and monitoring, and developing more effective interventions to control the rapid emergence of more virulent CA-MRSA (community-associated MRSA) strains from the community that have now been introduced into hospital settings in Canada."

From 1995 to 2007, the researchers conducted surveillance of MRSA infections and colonizations in 48 Canadian hospitals participating in the Canadian Nosocomial Surveillance Program, and identified 37,169 hospitalized patients with either MRSA infection or colonization.

Overall incidence of MRSA in participating hospitals increased from 0.65 per 10,000 patient days in 1995, to 11.04 per 10,000 patient days in 2007. The mean MRSA infection rate increased from 0.36 infections per 10,000 patient days in 1995 to 3.43 infections per 10,000 patient days in 2007 indicating modest success in hospital-based MRSA control in Canada.

Other key findings include the rapid emergence, from 6 per cent in 1995 to 23 per cent in 2007 of MRSA infections associated with MRSA strains from the community.

Detailed typing and characterization of Canadian strains of MRSA was conducted at the Microbiology Laboratory, Sunnybrook Health Sciences Centre in Toronto, and the National Microbiology Laboratory in Winnipeg.

The Canadian Nosocomial Surveillance Program is a joint initiative involving sentinel hospitals across Canada, participating as members of the Canadian Hospital Epidemiology Committee (a subcommittee of the Association of Medical Microbiology and Infectious Disease Canada), in collaboration with the Centre for Infectious Disease Prevention and Control, and the National Microbiology Laboratory, both of the Public Health Agency of Canada.

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