

New studies are needed to monitor the spread of drug-resistant bacteria in Canada

What is this research about?

The appearance and rapid spread of drug-resistant bacteria are serious and ongoing public health problems around the world. Drug-resistant strains of bacteria are harder to treat, and their spread is harder to control in the broader community setting. Drug resistance also adds significantly to healthcare costs – if levels in Canada rise to match those found in the United States, costs could increase by up to \$100 million a year.

Two important causes of drug-resistant bacterial infection in the community are community-associated methicillin-resistant *Staphylococcus aureus* (CA-MRSA) and resistant enteric bacteria, which infect the gut. Important enteric bacteria include *Campylobacter*, *Salmonella*, *Shigella*, and *E. coli*.

The causes and risk factors that contribute to drug resistance in hospital and other health care settings have been well studied, but less

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is known about the risk factors in the wider community. Similarly, while there are many different strategies for controlling the spread of hospital-based infections, their effectiveness on community-based infections has not yet been determined. The aim of this study was to review the community-based control strategies and treatments that are currently available.

What did the researchers do?

The authors assessed all scientific articles and government publications (published between 1970 and 2009) which dealt with CA-MRSA or drug-resistant enteric bacteria. Articles were included if they focused on risk groups or risk factors for infection, or if they studied the effectiveness of prevention and control strategies. Articles on hospital-acquired infections were included if the strategies could potentially apply to the community setting. Using key word searches of scientific article databases, 203 articles met all criteria and were reviewed.

What did the researchers find?

Risk groups and risk factors for CA-MRSA included: children, athletes, drug users, men who have sex with men, military personnel, veterinarians/animal handlers, living with an infected/colonized person, and antibiotic use. Higher rates of infection with drug-resistant enteric bacteria were linked to daycare centres, schools, nursing homes, and crowded housing situations. For both types of infection, control strategies included: better hand washing and personal hygiene, careful use of antibiotics, early diagnosis and treatment, and better cleaning of households and facilities. However, only hand washing programs have been thoroughly studied for their effectiveness, so public health care professionals will continue to rely upon existing strategies even though they are scientifically unproven.

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What you need to know:

There are numerous risk factors and high-risk groups for acquiring drug-resistant bacterial infections. While there are several strategies for prevention and control in the community-at-large, few have been scientifically tested to see how effective they are.

About the University of Guelph researcher:

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How can you use this research?

Public health groups can use this research to better understand the risk factors of CA-MRSA and drug-resistant enteric bacteria, and use the information to design more effective prevention programs.

Government health agencies can build upon this research and choose promising strategies for further study.

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