

Enhanced surveillance for *Salmonella* Newport

Background and epidemiology:

Between Apr. 1 and Dec. 31, 2004, Health Canada, in collaboration with provincial and territorial governments, is undertaking enhanced surveillance for *Salmonella enterica* serotype Newport. Physicians are urged to collect stool specimens for suspected cases of salmonellosis as part of this initiative, which resulted from several disturbing trends observed in North America. Over the past few years, there has been a rapid increase in the number of laboratory-confirmed *Salmonella* Newport infections reported to the US Centers for Disease Control and Prevention (CDC).¹ The spectrum of illness, which includes bloody diarrhea, tends to be quite severe² and, according to the US National Antimicrobial Resistance Monitoring System for Enteric Bacteria, an increasing number of *Salmonella* Newport isolates are multidrug resistant, with the proportion of isolates resistant to 9 or more antimicrobial agents increasing from 1% in 1998 to 26% in 2001.² Some of these isolates also demonstrate reduced susceptibility to ceftriaxone, a third-generation cephalosporin commonly used to treat invasive *Salmonella* infections.

In 2002 the CDC reported an outbreak of *Salmonella* Newport involving 47 people in 5 states, 4 of which bordered Canada. Investigation of these cases implicated exposure to raw or undercooked ground beef. The following year, Ontario veterinarians were alerted to a newly detected multidrug-resistant *Salmonella* Newport and its rising incidence in bovine populations, primarily dairy cattle.³ Three clusters of infected cattle were identified in Ontario; there were also sporadic human cases reported in Canada, at least 2 of which were related to the bovine outbreaks in Ontario. The strains isolated from these outbreaks were resistant to 9 or

more antimicrobial agents and demonstrated intermediate resistance to ceftriaxone. According to the Canadian Integrated Program for Antimicrobial Resistance Surveillance and the National Microbiology Laboratory, these extensive resistance profiles had not been observed among isolates from human sources before 2003.⁴

Direct exposure to a dairy farm, ingestion of raw milk and unpasteurized cheese, and consumption of raw or undercooked ground beef are likely risk factors for human infection.² The purpose of Health Canada's enhanced surveillance is to increase the understanding of the burden of illness and the risk factors contributing to multidrug-resistant *Salmonella* Newport infections in Canada.

Clinical management: The symptoms of salmonellosis include nausea and vomiting, abdominal cramps, diarrhea, fever and headache. They can appear from 6 to 48 hours after infection with the *Salmonella* bacteria and usually last 1 or 2 days; however, they may be protracted in infants, elderly people and people with a weakened immune system. After 3 or 4 weeks arthritis may appear in some cases. Although antimicrobial agents are not needed in most cases of *Salmonella* infection, they may be life-saving in invasive infections.

Physicians are strongly encouraged to collect stool specimens from patients with suspected salmonellosis, particularly if there is a history of recent exposure to a dairy farm. For the purposes of enhanced surveillance, specimens from positive *Salmonella* cultures will be forwarded to provincial public health laboratories and the National Microbiology Laboratory for serotyping and antimicrobial-resistance testing. Public health units will be notified of laboratory-confirmed cases of

Salmonella Newport infection, and health unit staff will interview cases about the illness event, risk factors (e.g., antecedent antimicrobial use) and burden of illness.



Art Exposition

Prevention: Farming practices such as intensive farming, the tremendous movement of cattle between farms and the overuse of antimicrobial agents have probably contributed to the emergence of multidrug-resistant *Salmonella* Newport. Cefiotur, an extended-spectrum cephalosporin, is commonly used therapeutically in dairy cattle, and antimicrobial agents such as tetracycline and neomycin are used prophylactically in calf milk replacers.²

Unsafe food handling and preparation are also contributing factors. Encouraging industry to implement processes such as steam pasteurization and irradiation of ground beef may reduce the risk of exposure.¹ Patients should be reminded that meat and eggs need to be cooked to an internal temperature of 71°C (www.eatwelleat.safe.ca/inhome/temp.htm), and utensils and surfaces used to prepare raw food should never come in contact with cooked food or foods that will be eaten raw.

Infected patients should be isolated from other household members and instructed to wash their hands. They should get time off work if working in the food industry or in health

care facilities or if looking after people with risk factors such as immunosuppression and chronic diseases such as those in nursing homes. Infected patients should have 2 consecutive negative stool samples before returning to work or normal living.

Erica Weir

Associate Medical Officer of Health
Kingston, Frontenac and Lennox
& Addington Health Unit
Kingston, Ont.

Kathryn Doré

Acting Manager, Surveillance Section
Andrea Currie
Epidemiologist
Foodborne, Waterborne and
Zoonotic Infections Division
Centre for Infectious Disease
Prevention and Control
Population and Public Health Branch
Health Canada, Guelph, Ont.

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Dr. Eric Woollorton • Canadian Medical Association Journal
1867 Alta Vista Drive • Ottawa ON K1G 3Y6 Canada
or email pubs@cmaj.ca