

***C. difficile* may have killed 2000 in Quebec: study**

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As many as 2000 patients may have died in Quebec in 2003–2004 during an outbreak of *Clostridium difficile*, which the majority of those patients contracted in hospital.

The figures — far higher than any that the Province of Quebec officially released — are an extrapolation from a research study that infectious disease consultant Dr. Jacques Pépin conducted at the Centre Hospitalier Universitaire de Sherbrooke. The *C. difficile* outbreak hit the institution hard, and Pépin reported in August 2004 (*CMAJ* 2004;171[5]:436) that his hospital lost at least 100 patients over that time period.

At the time, Pépin predicted that more than 1000 patients across the province likely died within 30 days of contracting the infection in 2003–2004. With his colleagues Louis Valiquette and Benoit Cossette, the Sherbrooke physician has now completed a cohort study to measure mortality attributable to hospital-acquired *C. difficile* at their institution during the same period. Their study of 5619 patients compared those with *C. difficile* to others with similar underlying medical conditions. They found that 23% of patients who developed *C. difficile*-associated diarrhea died within 30 days, compared to 7% of the control group. The Sherbrooke mortality rate is identical to that measured by a surveillance system Quebec created to monitor *C. difficile* after news of the outbreak broke.

The cumulative 1-year mortality rate was 16.7%, Pépin found.

Since the provincial database re-

ported 7731 cases of hospital-acquired *C. difficile* during fiscal 2003/04, and preliminary results suggest a similar incidence in 2004/05, Pépin assumes 14 000 cases in Quebec for 2003–2004. Based on his results in Sherbrooke, and allowing for a 1-year mortality rate of slightly lower than 16.7%, Pépin estimates that 2000 people died as a result of the epidemic.

The findings surprised even himself, Pépin told *CMAJ*. “Two thousand is the most plausible number based on the data I have,” he says.

But the head of the Public Health Institute of Quebec quickly rejected the figure, although he acknowledged the province does not know how many people died from *C. difficile* in the 2003/2004 period because the province only began collecting data in August 2004 and is not reviewing charts or discharge reports before that date.

“That extrapolation is too high,” Dr. Alain Poirier said in an interview. “Is it 500, 1000 or 2000 — it is difficult to say. For sure, it’s not 2000. That we know.”

Quebec’s Ministry of Health and Social Services could eventually use the province’s administrative discharge database, known as Med-Echo, to replicate the study, Pépin suggested. But Poirier, who had read a draft of Pépin’s paper, says the Med-Echo data do not distinguish between direct and indirect cause of death, and so the province will not use it to compile mortality figures for the outbreak.

Sherbrooke had a high number of cases of a more virulent strain of *C. difficile*, which caused correspondingly higher death rates, Poirier said, contending that Pépin’s extrapolation to the province has an inherent bias.

Although the disease took its greatest toll on elderly patients, about one-sixth of the patients who developed *C. difficile* would have been expected to survive for at least a year if they had not

contracted it, Pépin says.

“This represents a major change in the epidemiology and pathogenicity of *C. difficile*, which until recently was considered a nuisance pathogen with no measurable impact on mortality,” he writes.

Quebec’s creation of a provincial surveillance system last year and its transparency are steps in the right direction to combat *C. difficile*, Pépin says. “It’s impossible to control an epidemic when the existence of that epidemic is denied,” he added. But last year’s emphasis on infection control measures that most hospitals had already been taking was a mistake, he says, because those measures did not reduce the incidence. “This year the emphasis will be, I hope, on more judicious selection of antimicrobials.”

The province is to release updated figures about *C. difficile* infections at the end of October, but so far the incidence of infection is decreasing, Poirier reported. The province has acted on recommendations from Pépin and other microbiologists and has increased the number of nurses assigned to infection control, improved its small equipment maintenance and sterilization, and is monitoring the use of antibiotics. The public health official also praised Pépin’s success in reducing the spread of *C. difficile* at the Sherbrooke institution.

Although Pépin and his colleagues do not resolve the question of why this strain of *C. difficile* spread so extensively within and between Quebec hospitals, they point to shared bathrooms and lack of investment in hospital infrastructure over several decades.

“Providing modern medical care within hospitals built a century ago is no longer acceptable,” the paper concludes. — *Laura Eggertson, CMAJ*

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