

Presentation to Justice A. Campbell: November 19/03 at 3:15 p.m., Toronto

Good afternoon Commissioner Campbell, ladies and gentlemen. I am Murray McQuigge a public health consultant and was the medical officer of health for Grey and Bruce counties from 1989 to 2002. During my time as medical officer of health, I was involved in the Walkerton water disaster. As a public health consultant I was asked to help out with the SARS outbreak in the York Region Health Unit area during May and June of last year.

With me is Mr. John Adams, CEO of Eelivery Solutions Incorporated. We will both be presenting to you Commissioner Campbell.

This presentation has two objectives: (Slide of Objectives)

1. To briefly review five outbreaks of infectious diseases in the last 10 years: four waterborne outbreaks in Walkerton, Ontario; North Battleford, Saskatchewan; Collingwood, Ontario; and Milwaukee, Wisconsin, and the SARS outbreak in Toronto on the question of “What do we need to change to work smarter and make a difference?”
2. To examine the necessity of and advantages of an early detection surveillance system for Ontario.

Since 1970 over 30 new diseases have emerged on our planet and threatened the lives of people. From a public health perspective, early detection of these pathogens allows the best opportunity to effectively intervene and protect the population from illness and death. As yet, in Canada and in Ontario or other provinces, there is no early detection surveillance system in place. Case data is collected as it appears and is collated weeks to months after an event. That data collection is often done by paper-based methods. The alerting system depends on the “astute health care worker” to notice unusual cases or unusual trends in cases and to report them to their local health unit. This sometimes works but is not dependable.

There is a type of surveillance called syndromic surveillance that is designed to identify diseases very early in the course of their emergence.

The term “syndromic surveillance” applies to surveillance using health-related data that precede diagnosis and signal a sufficient probability of a case or an outbreak to warrant further public health response. Although historically, syndromic surveillance has been utilized in situations where resources are to target investigation of potential cases, its utility for detecting outbreaks associated with bioterrorism is increasingly being explored by public health. Mr. Adams will speak to this.

The cases I will show you demonstrate that over-the-counter pharmaceutical sales and health care setting symptom data surveillance would allow outbreaks to be picked up much sooner.

There may well be a case to support timely, electronic collection and analysis of surveillance data from additional sources such as reports of diseased or dead animals, calls to TeleHealth Ontario – a nurse advice line, health-related calls to 911 emergency services, poison control hotlines, and other potential sources of useful information

Today I want to focus on over-the-counter pharmaceutical sale data.

By now, from the testimony that I have seen, you have been introduced to the notion of epidemiological curves; a plot of the number of cases as they occur during an outbreak. Some of the following graphs will show OTC sales of pharmaceuticals and some will show the traditional epidemiological curves of cases of illness.

(Slide of Milwaukee Wisconsin)

Milwaukee

In Milwaukee in 1993 there was a waterborne outbreak of gastroenteritis caused by the bacteria *Cryptosporidium*. Over 400,000 people became ill, 45,000 visited their doctor's office, 4400 people were hospitalized, and about 100 persons died. This is a slide of the OTC sales of antidiarrheal medication during the outbreak. There was a 3-fold increase in anti-diarrheal OTC pharmaceutical sales by March the 1st of that year and the outbreak was not declared until April the 5th. Surveillance of OTC pharmaceutical sales would have picked up this outbreak a month before it was detected. As it was, it was the pharmacists who finally raised the alarm.

Mr. Adams will provide summary information about surveillance initiatives taken since then in the Greater Milwaukee area.

(Slide of Collingwood Ontario)

Collingwood

This slide shows the OTC sales of antidiarrheal medication during the 1996 Collingwood *Cryptosporidium* waterborne outbreak. There was a 26-fold increase in antidiarrheal medication in February of 1996, long before the outbreak was detected in March. Although there were less than a hundred confirmed cases, it is estimated that many more people became ill during that outbreak.

(Slide Walkerton)

Walkerton

In the Walkerton waterborne outbreak of gastroenteritis and kidney failure caused by the bacteria *E.coli O157:H7* in May of 2000, 2300 people became ill and 7 people died.

(Slide: Health Canada slide of Walkerton)

This is a yet-to-be-published slide from work done by the Health Canada, Food Waterborne and Zoonotic Infections Division on syndromic surveillance and OTC sales of antidiarrheals during the Walkerton outbreak. We can see that over-the-counter sales of antidiarrheal medication in Walkerton started to increase the day before the boil water advisory was issued. Having OTC data would have added to public health unit concerns of an increasing problem in the Town of Walkerton.

We have had the experience of the Walkerton disaster and the subsequent Public Inquiry. Unfortunately, we have also seen a fine set of recommendations made by the Commissioner of the Walkerton Inquiry paid a lot of lip service but little action. Hope reigns eternal.

(Slide of North Battleford)

North Battleford

In 2001 in the Town of North Battleford, Saskatchewan, there was a gastroenteritis waterborne outbreak caused by the bacteria *Cryptosporidium*. Over 1900 people became ill. This slide shows the epidemiological curve and OTC antidiarrheal medication sales during the outbreak. Sales of antidiarrheals rose and peaked weeks before the drinking water advisory was issued. Knowledge of that increased OTC antidiarrheal sales would have been an early warning to public health officials and allowed for a much earlier intervention to control the spread of this outbreak.

(Slide: SARS)

SARS

We are all familiar with the illness, death, fear, and financial loss caused by the newly emerged SARS coronavirus.

What SARS epidemic demonstrated, and may do so again, is that surveillance based on symptoms and signs such as fever, chills, rigors, headache, cough, loss of appetite, confusion, diarrhea, and shortness of breath may have identified cases early on in the outbreak and allowed for more effective containment of the disease. SARS was, for the most part, a hospital-acquired disease. Syndromic surveillance of Toronto hospitals, emergency departments and Toronto pharmacies for the symptoms associated with SARS and OTC sales of such things as anti-fever and cough medication would have been an advantage in detecting this outbreak early and certainly would be in identifying a recurrence of SARS.

Each of these five case studies makes the case for greater attention to early warning – that is, before cases of disease have been confirmed and diagnosed. In the case of virulent infectious disease occurrences, if you wait for the lab results to confirm the diagnosis, the occurrence affecting the few has already become an outbreak sickening many.

(Slide: first two points on ED)

Early Detection

Early detection surveillance is important for a number of reasons:

1. It would enable public health to intervene early in the course of the disease to prevent further illnesses and death.
2. It would enhance our ability to detect a biological terrorist attack such as anthrax, smallpox, or waterborne infections.

(Slide: last three points on ED)

3. It would build on the present surveillance capabilities of Ontario's public health units.
4. It requires relevant data and adequate data for analysis to flag a possible outbreak.
5. Early detection surveillance needs adequate electronic information technology.

(Slide: Summary)

Summary

So, in summary, we have experienced several outbreaks of new diseases in the past few years. Some, like SARS, have been truly frightening and forced us to examine our ability to detect these new diseases early in their dissemination. We need to modify our surveillance methods and work smarter. Ontario public health needs an early detection surveillance system that is highly computerized and reliable.

Thank you for taking the time to listen to us today.