

A photograph of a woman and a young girl washing their hands in a sink. The woman is smiling and looking down at the girl's hands. The girl is looking down at her hands. The sink is a light blue color. The background is a white wall with a blue and white tiled backsplash.

Infectious Disease Prevention and Control in Ontario: Continuing the Investment in Public Health in 2008

2008 Annual Report of the Chief Medical Officer of Health of
Ontario to the Legislative Assembly of Ontario

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LETTER OF TRANSMISSION

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December 2009

The Honourable Steve Peters
Speaker of the Legislative Assembly of Ontario
Room 180, Main Legislative Building
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Dear Mr. Speaker:

I am pleased to provide the 2008 Annual Report of the Chief Medical Officer of Health of Ontario for submission to the Assembly in accordance with the provision of section 81.(4) of the Health Protection and Promotion Act.

I am conveying this report in my former role as Acting Chief Medical Officer of Health of Ontario.

Yours truly,

Original signed by David C. Williams

David C. Williams, MD, MHSc, FRCPC
Associate Chief Medical Officer of Health, Health Protection and Prevention
Acting Chief Medical Officer of Health, November 2007-June 2009

Attachment



EXECUTIVE SUMMARY

Public health touches many Ontarians every day. Promoting healthy eating and an active lifestyle, chronic disease and injury prevention, healthy child development, family and community health, environmental health as well as infectious disease prevention and control – these are all part of the broad spectrum of public health.

Although this report focuses on the prevention and control of infectious diseases and the investments and resources that support this, it is not intended to diminish the importance of the many other worthwhile areas to which those working in the public health field contribute daily.

However, 2008 marked five years since Ontario combated Severe Acute Respiratory Syndrome (SARS). It seems fitting to examine the progress the province has made and the challenges that remain in building its capacity to respond more effectively to the threat of an infectious disease outbreak, than it did during the dark days of 2003.

The tabling of this report in the legislature was delayed as a result of the fact that the resources of the Office of the Chief Medical Officer of Health (CMOH) were focused for much of 2009 on responding to the emergence of a novel H1N1 influenza virus and the two waves of outbreaks of the virus that we saw this year. Still, the primary focus of this report is 2008.

The threats faced by the public health system in infection prevention and control today are far-reaching and complex. At the same time, the province's public health system has grown more robust in the past five years in its ability to detect and respond to the spread of infectious diseases. Investments in technology and human resources have resulted in improved surveillance tools and laboratory diagnostic capabilities to more effectively monitor, detect and respond to infectious diseases and promote infection control measures. But perhaps the most powerful weapons the public health system possesses to respond effectively to a potential health crisis are as ancient as human society itself – cooperation, collaboration and collective action taken in response to a common threat.

In the 1970s and 80s the infectious disease aspects of public health were relegated to the sidelines, as medical advances seemed to have wrestled infectious diseases into submission. SARS was a pivotal event – as outlined in reports by Justice Archie Campbell, Dr. David Naylor and Dr. David Walker, which noted the relative neglect of investments – that caught the system so ill-prepared. This led to renewed and refocused attention on infectious diseases and the ability of the public health system to cope.

This year's report centers on Ontario's capacity to prevent and respond to infectious disease outbreaks. It examines the progress made in key areas, including:

- Enhancements to infectious disease surveillance systems and practices
- Improved collaboration across jurisdictional levels
- Continued emergency preparedness planning and response activities

However, the listeriosis outbreak in the summer of 2008 pointed out areas where an increase in surveillance investments and supports is still needed to address remaining weaknesses and gaps in the system, particularly those involving complex, multi-jurisdictional outbreaks.

Last year's report discussed the impact of Operation Health Protection (OHP) on public health renewal in Ontario. This year's report continues to examine the building blocks that were put in place to strengthen the foundations of the public health system.

A striking evolution in the system over the past five years is the number of new partners that are currently involved in the prevention of infectious diseases, the protection of the public against them and system preparedness to respond to health threats. The partners include the Ontario Agency for Health Protection and Promotion, the Provincial Infectious Diseases Advisory Committee, the Regional Infection Control Networks and the Ministry of Health and Long-Term Care's (the ministry) Emergency Management Branch.

A better understanding has also developed in the intervening years that public health cannot exist in a silo. Public health is generally understood to consist of the ministry's Public Health Division working in conjunction with local public health units across the province. But Ontario's public health system should optimally be linked to a range of provincially funded health services, including acute care, long-term care, occupational health, primary health care and other community-based health care. Neglecting to maintain strong connections between public health and a range of health care services contributed to the fallout of SARS.

Whether it is preventing the spread of food-borne illness, ensuring optimal immunization coverage or reducing the transmission of health care-associated infections, strong partnerships are required with stakeholders. Infection prevention and control is a shared responsibility among many diverse players. Several collective steps have played – and will continue to play – an important part in strengthening the public health system and safeguarding the health of Ontarians.



■ Introduction



INTRODUCTION

The province's population is very diverse and mobile. Ontarians daily traverse all corners of the globe. This carries with it epidemiological consequences. Microbes can travel thousands of kilometres within hours thanks to the efficiency of modern transportation. The country's borders cannot be closed to emerging health threats and potential pandemics. As a result, issues surrounding disease prevention and surveillance must be viewed from much more than a local, provincial or even national perspective.

The province's food supply also spans the globe. Compared to previous generations, Ontarians consume a broad variety of foods that can originate from thousands of kilometres away. Mass food production and distribution methods also mean that there is a high probability that a food-borne illness related to a consumer product can impact multiple health jurisdictions in Canada. This leads to many complex issues that must be addressed to ensure food safety and to mount effective responses to food-related health threats.

The demographics and health status of Ontarians today are also different from those of previous generations. Ontarians are living longer and many are coping with multiple chronic diseases – another important focus for public health, but not the subject of this report. Nearly 80 per cent of the province's population over the age of 45 has a chronic condition and, of those, about 70 per cent have two or more chronic illnesses.

Since the 1970s an increasing number of hospital patients have been immuno-compromised. Of those admitted to hospitals, a significant percentage includes the most vulnerable of the sick and they are susceptible to pathogens like health care-associated infections.

In addition to changes in the province's population characteristics, we are also challenged by the fact that the organisms that present a threat are ever-evolving in their efficiency to adapt and propagate. Antibiotic resistant bacteria or so-called "super bugs" became a dawning concern within the medical community throughout the 1980s with the realization that commonly used antibiotics no longer offered an assumed line of defence. Even more troubling was the growing awareness that super bugs were thriving because of the overuse and, at times, misuse of antibiotics. Antibiotics, in this context, have turned out to be a double-edged sword that has fostered more formidable organisms for the health care system to confront.

Over a period of three decades, the health system's focus and resources shifted away from infectious disease prevention and control to other priorities. There were few infection control practitioners to be found on staff at many Ontario hospitals. Simple protective procedures like hand washing – the primary line of defence prior to the introduction of antibiotics – diminished in importance. But old diseases had not disappeared: they lay dormant, waiting for an opportunity to strike. Emerging viruses lurked on the horizon.

It was in this atmosphere of complacency that the Severe Acute Respiratory Syndrome (SARS) took hold in 2003. It caught the province's health system unprepared and uncoordinated on infection prevention and control. The hard lessons learned from SARS led to the province taking many steps to rebuild the foundation of the public health system's capacity for disease prevention and infection control.

Last year's report reviewed the impact of the introduction of Operation Health Protection (OHP), a comprehensive action plan to revitalize the province's public health system.

This year's report does a further examination of the strengths and challenges within the system as they relate to three broad areas:

- Surveillance
- Prevention and Protection
- Coordination and Communication

Strong surveillance capabilities are essential because they comprise an early warning system that alerts public health officials to emerging and existing threats from dangerous pathogens. Ongoing monitoring and detection supply crucial information that helps to determine necessary steps to prevent the spread of infectious diseases and protect Ontarians.

SARS demonstrated that curbing the spread of disease required the involvement of a range of areas in health care such as acute care and long-term care. For instance, infection control culture and practices in hospitals had to be addressed as part of the overall push to improve the capacity of the public health system to limit the spread of infectious diseases.

The experience of SARS also led to new entities being created to support public health in protecting and promoting the health of Ontarians. For example, the Ontario Agency for Health Protection and Promotion (OAHP) – the province's first ever arms-length public health agency – was created. It is essential for the various stakeholders entrusted with a role to support and serve the public health system to work collaboratively. Cooperative and coordinated action has become increasingly important in public health within the past five years. This is particularly the case as the province copes with the threat of infectious diseases that have a high probability of involving multi-jurisdictions due to the mobile nature of the population and the complexities of modern life.

The legacy of SARS underscores the imperative of remaining ever vigilant and in a state of preparedness. Investments that have been made to strengthen the public health system require continued support and improvement. The complacency which caught the province off guard in 2003 must never again be repeated because the question is not if there will be another serious global public health threat – but rather, 'when'.

Ontario's Public Health Model

Ontario's public health model is unique in Canada. It involves shared authority at the provincial and municipal levels. The system is flexible enough to meet local needs; at the same time, it can coordinate measures, programs, services and responses across the province. The sharing of authority and accountability between the provincial and municipal levels requires a great deal of dialogue, cooperation and collaboration to make this model work effectively.

There are 36 local boards of health in Ontario that are individually responsible for serving the population within their geographic boundaries. Each board oversees a public health unit with a Medical Officer of Health (MOH) position and staff who deliver programs and services. The boards are required to implement 14 mandatory public health programs and services that contribute to the physical, mental and emotional well-being of Ontarians.

The programs and services are outlined in the Ontario Public Health Standards (OPHS) that are promulgated under the Health Protection and Promotion Act (HPPA). The standards set out minimum requirements for public health services and programs covering a broad range of areas including chronic diseases and injury prevention, family, reproductive and child health, environmental health and emergency preparedness, as well as infectious diseases prevention and control. There are also 26 detailed protocols that accompany the OPHS, providing specific direction on public health services and programs.

The OPHS came into effect on January 1, 2009 (the standard for the Safe Water Program came into effect on December 1, 2008), replacing the Mandatory Health Programs and Services Guidelines (1997).

The ministry collaborated with the Ministry of Health Promotion (MHP) and the Ministry of Children and Youth Services (MCYS) in developing the OPHS. In partnership, the three ministries are responsible for establishing a public health performance management framework and ensuring compliance with the standards and protocols. The ministry's Public Health Division, along with MHP and MCYS, also support Ontario's boards of health by providing professional, technical and financial resources. An Ontario Public Health Standards website, www.ontario.ca/publichealthstandards, was also created to support the implementation of the new standards.

Public health funding has been traditionally cost-shared between the province and the municipalities. The cost-sharing split has varied over the years. The province's share for mandatory programs and services is currently 75 per cent. It is distributed through a provincial grant. Since 2003, provincial funding has increased by 90 per cent – including uploading and increased investments.

Role and Mandate of the Chief Medical Officer of Health

The Health Protection and Promotion Act was amended in December 2004 to increase the independence of the Chief Medical Officer of Health. The measures include appointing the CMOH to a five-year renewable term by the Lieutenant Governor in Council. The legislation requires the CMOH to table an annual report to the legislature. It also allows the CMOH to release other reports to the public whenever he or she considers it necessary. The CMOH is authorized, under certain circumstances, to take any action considered appropriate to prevent, eliminate or decrease a risk to public health. The CMOH can also issue directives to health care providers when he or she believes that there is an immediate or imminent public health threat.

An Acting Chief Medical Officer of Health filled the position from November 2007 until June 2009.

The role of the CMOH is one of leadership within Ontario's public health system – whether during a health crisis or on an ongoing basis – to inform, protect and promote the public's health. In matters of public health, the CMOH is often called upon to be the reassuring voice informing, as well as advocating on behalf of, Ontarians.

However, while the role of the CMOH has expanded in the past five years, there has been no corresponding expansion of the resources of the CMOH office. The CMOH has a much larger role to play at both the provincial and federal levels than in the past, including coordinating and liaising with various organizations and networks that did not exist prior to the SARS outbreak. For example, federal/provincial/territorial activities have evolved exponentially with the creation of the Pan-Canadian Public Health Network – a vehicle that brings together academics, scientists and public health representatives from all levels of government. It is important for Ontario's CMOH to fully participate in such key organizations, but the CMOH office lacks adequate staff and resources to meet the increasing demands and expectations of the role.

It is imperative that the resources of the office be reviewed and evaluated by the provincial government to ensure that the CMOH is well-equipped to meet all aspects of the mandate of the role, including providing continued public health leadership in Ontario.

Renewed Focus on Infectious Diseases

Dr. Vivek Goel reflected on the medical community's mindset in 1974 when the University of Toronto (U of T) made the decision to close its 48-year old School of Hygiene – a pioneer of the early 20th century public health movement in Canada. The programs of the world-renowned institution were merged into the Faculty of Medicine.

“There was a task force at U of T that did a report and concluded that a school of hygiene was not needed. The report essentially said that infectious disease had been beaten and the next scourge was chronic diseases and that will be dealt with by modern medicine through treatment and not prevention,” said Goel, who was Vice-President and Provost at the university, prior to assuming his current post as President and CEO of the Ontario Agency for Health Protection and Promotion.

Goel recounted this piece of history when he attended the launch of U of T's new Dalla Lana School of Public Health in April 2008. In the space of a little over three decades the cycle had come full circle with a renewed focus on public health.

“With the development of vaccines and antibiotics throughout the 1930s, 40s and 50s, by the time we got into the 60s people thought that as we moved forward the concern was going to be about chronic disease. We had vaccines and antibiotics for infectious diseases and there was a sense that these were essentially conquered,” Goel said. “Funding to public health slipped going into the 1980s and paved the way for Walkerton and SARS.”

“Modern medicine was going to save us. The mindset was that it was going to wipe out the need for public health because if anyone gets sick we'll just treat them. But in reality, the use of the antibiotics led to the emergence of drug-resistant 'super bugs'.”

“And global travel patterns have provided new and old pathogens with the ability to move around the world. So the world of infectious diseases has unfolded very differently than previously thought in the 70s. Infectious diseases came back with a vengeance and what they thought in the 70s was way off,” Goel said.



■ Surveillance





SURVEILLANCE

Surveillance is the sentinel of Ontario's public health safety net. It determines the system's effectiveness in anticipating, identifying and responding to a variety of public health threats. The strength of any surveillance system stems from its responsiveness and its ability to adapt to an ever-changing landscape. The Ontario government began making substantial investments in the province's surveillance system after SARS and other health threats revealed its weaknesses.

What has evolved over the last five years is a stronger, more cohesive system. Today, the province has a much more effective line of defence to protect the health of Ontarians. However, health surveillance is a dynamic and iterative process that needs continual focus and resources to ensure an agile system that is readily able to detect and respond to public health threats. Additional investments and resources are needed to continue to improve and integrate the surveillance tools that the province relies on to monitor and detect dangerous, existing and emerging pathogens. Surveillance is a 24/7 occupation of the public health system and there is no room for complacency.

Integrated Public Health Information System (iPHIS)

The Integrated Public Health Information System (iPHIS) is a province-wide secure web-based integrated public health information system for reporting infectious diseases. It was created by the Public Health Agency of Canada, and some components of the system were customized in Ontario. First introduced in the province in April 2005, implementation was completed by the end of that year.

iPHIS is used by all local public health units to electronically collect and transmit surveillance information on reportable infectious diseases. iPHIS allows local public health units to identify and track unusual and unexpected instances of infectious diseases. In the past, as local public health units recorded their data in isolation, links were much more difficult to uncover. With iPHIS, local public health units have shared access to all of the case, contact and exposure data that can point to cross-jurisdictional outbreaks.

Staff at the ministry's Public Health Division (PHD) conduct daily analysis of data on reportable infectious diseases entered by local public health units in iPHIS. The data provided in the previous 24 hours are examined to detect aberrations above normal. Through a program called the Early Aberration Reporting System (EARS), increases above expected baseline or single cases of concern are flagged and investigated in partnership with the relevant program area and affected local public health units.

Enhanced Surveillance Directives (ESD) are issued to local public health units if at least one of the following conditions is met: 1) there is an increased number of cases of a disease 2) a disease spans multiple health units or there is a high potential of it doing so, or 3) a common exposure has been identified.

When ESDs are issued, local public health units must give priority to entering the requested data into iPHIS. iPHIS fosters better communication and allows for the identification of common links that may previously have been unapparent.

Utilizing iPHIS and other post-SARS tools, PHD's surveillance staff succeeded in sounding an early warning bell to an evolving problem in early July 2008, when the listeriosis outbreak began in Ontario. The source of the outbreak was meat cold cuts from two production lines at a packaging plant operated in the province by Maple Leaf Foods. The company supplies meats to long-term care homes and other institutional settings in Ontario, as well as distributing nationally.

The first cases were revealed by aberration detection through routine surveillance analysis of iPHIS data, which alerted public health staff to a higher number of cases than usual. This led to PHD issuing an Enhanced Surveillance Directive to local public health units to enter listeriosis cases in iPHIS within one business day of receiving notification from a health care facility or laboratory. As a result, the ministry was better able to determine the extent of the outbreak and take necessary steps in its investigation.

Unfortunately, there were 41 confirmed cases of listeriosis in Ontario and 16 deaths. However, without iPHIS and EARS, the number of initial cases of illness across the province might not have been linked and the outbreak likely would have continued undetected for a much longer period, resulting in more people becoming ill, and potentially, more deaths.

Still, it is very important to recognize that iPHIS is only as good as the completeness and timeliness of the information being entered into the system. Local public health units are responsible for inputting crucial information into iPHIS in a timely and accurate basis. Sometimes there is a lag between the time a health unit becomes aware of a case and the time the data is entered into iPHIS. In some circumstances, incomplete data entry or a delay in reporting can hamper identification and linkage with other similar cases in the system.

iPHIS has demonstrated itself to be an important surveillance tool, but in order for it to have optimal effect, local public health units must be urged to enter information on high-risk diseases completely and on a timely basis. The ministry should also ensure that the Public Health Division and the local public health units have the skilled staff and the necessary resources to respond and investigate when warning flags are raised by iPHIS and other surveillance systems. Good surveillance requires coordination, cooperation and consistent action of all the various players within the system.

Progress on Syndromic Surveillance

Syndromic surveillance is a public health tool that monitors in real time (or as close to it as possible) information from electronic data collected for other purposes – such as emergency department visits – to detect emerging patterns of disease outbreak earlier than that possible with traditional public health methods.

Telehealth data is one source the Public Health Division uses for syndromic surveillance. During 2008, weekly analysis was conducted of Telehealth data. This is increased to daily during a pandemic. Telehealth calls are grouped by syndrome – for example, respiratory, fever/influenza-like illness or gastrointestinal – and analyzed for statistically aberrant geographical or temporal clusters. Any clusters identified are investigated in conjunction with traditional routine public health surveillance data collected through iPHIS and laboratory surveillance to provide a more comprehensive picture of infectious disease activity in the province.

In September 2004, the Kingston, Frontenac, Lennox and Addington Public Health Unit collaborated with the ministry, Queen's University, the Public Health Agency of Canada, Kingston General Hospital and Hotel Dieu Hospital on a two-year pilot to implement and evaluate an emergency department chief complaint syndromic surveillance system. A study conducted on the pilot and published in 2008 concluded that real time linkages between emergency departments and public health could provide information that enhances outbreak detection, response and recovery. The pilot proved useful in detecting seasonal influenza and food-borne outbreaks.¹

Syndromic surveillance remains in its infancy, but it appears to hold great promise for future use by public health to support and enhance more conventional surveillance methods.²



Other Surveillance Highlights

- Daily reports are generated on new *Clostridium difficile* Associated Disease, and respiratory infection and gastrointestinal outbreaks in institutions entered in iPHIS from the previous day.
- Daily reports are created on cases of West Nile Virus and Lyme Disease entered into iPHIS.
- Reports are created weekly, monthly and by age and gender on reportable disease incidences by local public health unit.
- A weekly influenza bulletin – this is enhanced during a pandemic – integrates data from many sources such as the Public Health Agency of Canada, iPHIS, activity reports from public health units and laboratory testing to provide a provincial picture of respiratory infection and influenza activity in Ontario. It is posted on the ministry website and sent electronically to local public health units.
- Monthly and quarterly reports provide analysis or links to epidemiologic summaries of outbreaks and clusters of reportable diseases.

Enhanced Public Health Laboratory System

The Ontario Public Health Laboratories (OPHL) – consisting of a central laboratory in Toronto and 11 regional facilities – were transferred to the Ontario Agency for Health Protection and Promotion (OAHPP) in December 2008. Coupled with significant reinvestments in the last few years, the modernized laboratories are well positioned to better support local public health units in quickly identifying infectious pathogens and linking cases. For example, through the introduction of molecular diagnostic tools, the public health laboratories can more efficiently and precisely identify and link cases during an outbreak. During 2008, the public health laboratories increased their capacity for molecular typing, which is moving from a research tool into more standard use.

Beginning in 2007, a new Laboratory Information System (LIS) was introduced throughout the OPHL to electronically manage the processing and handling of clinical samples. This multi-year investment continues to be implemented. LIS was not fully operational at the time of the listeriosis outbreak in the summer of 2008. The OAHPP continues to work toward a completely integrated laboratory information system that will provide timely analysis and reporting to appropriate public health partners both on an ongoing basis and during outbreaks.

A province-wide surveillance response capability will also be greatly enhanced once the Ontario Laboratories Information System (OLIS) is fully implemented. OLIS is an integrated information source that will allow for laboratory test information across the province to be electronically exchanged among authorized health care providers, hospitals and community laboratories. OLIS holds great promise for a strong and cohesive laboratory system to support the province's public health surveillance requirements. But OLIS remains in the early stages of roll out. The growing complexity of public health challenges, coupled with heightened community expectation, make continued investments in this area essential.

It is also important for the OAHPP to relocate the central laboratory from the outskirts of Toronto to a common facility with the agency which is located in downtown Toronto. Having the laboratory facility in close proximity to the agency is a key step in creating a public health hub that can readily connect with the academic and research community as well as government partners, to build a cohesive system.

Monitoring Small Drinking Water Systems

As of December 1, 2008, the ministry assumed legislative oversight for the province's Small Drinking Water Systems (SDWS) from the Ministry of the Environment. The goal is to provide better monitoring and surveillance of small systems that make drinking water available to the public and which are not connected to a municipal drinking water system. The operators of small drinking water systems can include restaurants, seasonal trailer parks, gas stations, motels, places of worship and many other public facilities. Improperly maintained drinking water systems can become contaminated with pathogens that can cause serious illness.

The transfer of the SDWS is supported by new regulations under the Health Protection and Promotion Act. Under the new regulations, local public health units will inspect small drinking water systems in Ontario. Public health inspectors will conduct risk assessments on every small drinking water system in the province. They will determine what owners and operators must do in order to keep their drinking water safe by issuing directives that can require water testing, treatment and training. Funding has been allocated to the local public health units for the SDWS program. Once the program is fully implemented, monitoring drinking water test results through a customized computer application will provide an ongoing method of surveillance.

Surveillance Next Steps

In 2007, the Ontario government announced its plan to join the Panorama Project – part of the Canadian Public Health Communicable Disease Surveillance and Management System. Panorama will provide authorized health care professionals with an enhanced real-time ability to collect, share and analyze the health information necessary to handle communicable diseases at the regional, provincial and federal levels. In 2008, the provincial government released an update indicating that it would implement Panorama in 2011. To date, the public health system is still waiting for its introduction.

The Panorama components include:

- Communicable disease/outbreak management
- Immunization registry and management
- Vaccine ordering and distribution

Physicians currently provide information on less than 10 per cent of the cases of reportable diseases. The majority of this information is obtained through laboratory confirmed data, sometimes received long after the onset of symptoms. Panorama will give health care providers a web-based interface that will readily allow them to report cases directly to the province. Panorama will also enable health care providers to readily provide and update immunization data for their patients; this will contribute to a centralized immunization registry.

Under the current system, public health receives the bulk of children's immunization records only after they have registered in school for kindergarten. It leaves a gap of knowledge of who is immunized in the province between birth and age four.

iPHIS represents a vast improvement over pre-SARS disease surveillance management. But it is important not to become lulled into thinking that this surveillance improvement is good enough. There is an urgent need to implement Panorama – the next generation of surveillance system – because potentially dangerous viruses will not wait for government to commit the necessary resources to bring a more effective surveillance system to fruition.

The SARS Legacy

Toronto marked the 5th anniversary of the SARS outbreak in 2008. Paul LoStracco – a 19-year nursing veteran at Sunnybrook Health Sciences Centre – has vivid recollections of what it was like to be on the frontlines of a new and unknown threat. “Those hard lessons learned in 2003 will not be forgotten,” he said, because as a health care worker, he vows to never be caught so unprepared again.

“It was very frightening. Every day you would arrive at work and you would have your temperature taken and you would worry whether this was the day you would be running a fever – whether this was the day you would end up sick,” said LoStracco, who works in the orthopaedic and neurosurgery department at the hospital. “At the height of things I was terrified. I didn’t know if I would be next.”

All the hygiene procedures and protective gear that nurses donned during SARS made LoStracco shudder to think just how lax things had been prior to the outbreak. “Health care workers would go from room to room and bed to bed and not think twice about washing their hands unless they had done something specific to soil them. SARS hit and it all changed.”

“Today the big thing is hand hygiene. We attend workshops. We’re audited and marked on our hand hygiene. Most people tend to be much more focused on hygiene. Nurses have had to become advocates,” LoStracco said. “If we see a doctor or another colleague approaching a room without following the proper procedure, we’ll go up to them and say you didn’t clean your hands.” Similarly a nurse will stop and question hospital visitors whom they notice have a cough. “We might ask them to put on a mask or question if they should even be visiting the hospital. We want to protect ourselves. We want to protect our patients. And, most importantly, we want to be prepared.”



■ Prevention and Protection



PREVENTION AND PROTECTION

Safeguarding the health of Ontarians is the pivotal role of Ontario's Chief Medical Officer of Health. The Health Protection and Promotion Act mandates the CMOH to investigate and take appropriate action to prevent, eliminate or reduce the risk of any possible health threats to Ontarians.

Post-SARS, a number of significant entities were created and major initiatives launched to support the work of the CMOH and the public health field in enhancing the province's ability to protect Ontarians from the spread of infectious diseases. Collectively, these measures have strengthened the public health safety net. It is critical to continue to support stakeholders and initiatives that foster a better environment for disease and infection prevention and control in Ontario.

The Ontario Agency for Health Protection and Promotion

The Ontario Agency for Health Protection and Promotion (OAHPP) – the province's first arms-length public health agency – has a broad mandate to provide scientific and technical expertise and advice for those working in the field to protect and promote the health of Ontarians.

In 2008, at the same time as it was developing a strategic planning framework and gearing up to its full operational capacity, the OAHPP took steps in key infection control areas to support the health system. In September 2008, the agency established Infection Control Resource Teams to provide rapid, on-site assistance with outbreak investigation and management in hospitals. The teams, which are assembled by the agency, have already visited a number of institutions and provided much needed advice, recommendations and action plans. The OAHPP also offered support to various local public health units, including sending an epidemiologist to assist the Niagara region during an E. coli outbreak. The agency is also developing a "virtual rolodex" of consultants to allow agency staff to help connect local public health units with experts close to home (or internationally) to respond to an immediate or emerging issue.

The agency made inroads in other areas, including starting to work with the Ontario Hospital Association and other stakeholders to promote appropriate prescribing and use of antibiotics in hospitals to discourage the spread of antibiotic resistant bacteria. They are also exploring opportunities to promote safer hospital design – for example, well placed sinks that encourage more frequent hand washing and the inclusion of more private/individual rooms.

The OAHPP is also becoming involved in a number of research initiatives regarding infectious and communicable diseases. These include a study on deaths attributed to Clostridium difficile Associated Disease and a report on the human, social and economic burden of infectious diseases in conjunction with the Institute for Clinical Evaluative Sciences (ICES).

Moving forward, the agency is well situated to play an ever-increasing role in supporting public health whether through scientific research, epidemiological field advice, enhancing infection control training and tools, or serving as a focal point to help coalesce Ontario's public health system. Its success will, in part, rest on the level of ongoing commitment by the province to ensure that it is sufficiently resourced to achieve its full potential.

Provincial Infectious Diseases Advisory Committee (PIDAC)

Since 2004, a broad range of health care experts, with backgrounds in epidemiology, public health, acute care, long-term care, occupational health, microbiology, pediatrics and zoonotic disease, have collaborated towards a common goal of improving infection control in a variety of settings – hospitals, community clinics, long-term homes and primary care.

The Provincial Infectious Diseases Advisory Committee (PIDAC), created to advise the CMOH and be a resource to the health system, continues to be invaluable in pulling together a wide range of expertise and producing learning tools for those on the frontlines of the health care system. Whether it is a best practice manual on surveillance of health care-associated infections or guidelines on cleaning, disinfection and sterilization, PIDAC has become a touchstone – truly helpful as the province's infection prevention and control network seeks cohesive standards and practices.

In 2008, PIDAC developed and posted three best practices manuals on its website. One document was on hand hygiene and complemented the ministry's *Just Clean Your Hands* program – which aims to promote proper hand hygiene in health care facilities. PIDAC also worked with ministry staff on policies related to measles and bat rabies post-exposure prophylaxis administration.

Regional Infection Control Networks

Ontario's Regional Infection Control Networks (RICNs), with borders aligning with the province's 14 Local Health Integration Networks (LHINs), have provided further support to public health as well as to the broader health care system by bridging gaps and fostering deeper connections between public health and the acute care, long-term care and community health sectors.

RICNs coordinate activities and promote standardized approaches in health care settings across the province. They facilitate greater sharing of knowledge, open communication, and the coordination of surveillance activities. They also promote better integration of prevention and control practices. RICNs work closely with PIDAC to facilitate the implementation of policies and procedures at the grassroots level. PIDAC has focused on the development of quality standards of care, while the RICNs have evolved strategies to support them being put into action on the frontlines.

Infection Prevention and Control Positions

The number of infection prevention and control staff working in the province in recent years has increased significantly because of funding by the Ontario government to enhance the number of health care staff with specialized training and expertise in infection prevention and control. As of September 2008, the province had provided funding for 166 infection prevention and control positions in acute care settings across the province – an investment of over \$13 million since 2004-2005. The funding is provided on the basis of one infection prevention and control practitioner (ICP) for every 100 hospital beds – one of the best ratios in North America. In addition, the province has provided 100 per cent funding for 180 full-time infectious disease control staff and 36 new infection prevention and control nurses in local public health units.

These investments have led to a higher presence and profile for infection prevention and control staff within the system, including on the hospital frontlines. These professionals help educate and train other health care staff on effective infection control procedures and approaches. They are a resource in a wide range of areas that might impact on the prevention and control of infectious diseases. Their presence has supported a shift in the province's hospitals to one more focused on patient safety.

Infection prevention and control staff will continue to be important resources required within the health system as hospitals endeavour to overcome challenges like antibiotic resistant bacteria, health care-associated infections, and emerging pathogens that may pose future threats.

Hand Hygiene

The ministry's *Just Clean Your Hands* program, spearheaded by the Public Health Division, received recognition from the World Health Organization (WHO). A multi-faceted program that aims to reduce the spread of infection in hospitals by educating staff on the importance of proper hand hygiene, it was launched across Ontario in March 2008.

Between December 2006 and August 2007, the ministry pilot tested the program in 10 Ontario hospitals. Hand hygiene compliance increased steadily across all pilot sites and the program was refined for provincial rollout. Ontario was showcased on the world stage, when Public Health Division representatives were invited by the WHO in August 2007 to present the findings of the hand hygiene pilot. An advisory committee of multi-disciplinary experts guided the province-wide implementation of the program. By July 2008 all Ontario hospitals had attended a training session, providing an overview of the program as well as implementation details.

Good hand hygiene is critical to curbing infection in hospitals. There is evidence that infection-causing bacteria are most often carried from patient to patient on the hands of health care providers. Infections can easily be spread during routine procedures unless health care providers have a clear understanding of when to clean their hands.

About one in 10 adults and one in 12 children contract a health care-associated illness, the Canadian Institute for Health Information (CIHI) noted in an October 2008 brief.³ Hospital patients with weakened immune systems or chronic illnesses are particularly susceptible to these infections. Health care-associated infections are among the most common types of reported adverse events in Canadian acute care facilities and are a major cause of morbidity and death. Despite the link between hand hygiene practices and health care-associated infections, research shows that only between 30 to 60 per cent of hospital staff follow proper hand hygiene procedures.⁴

Studies have shown that infection rates associated with health care may be reduced by 15 to 50 per cent with good hand hygiene and other infection control programs, the CIHI noted in its brief on health care-associated infection control practices.⁵

Good hand hygiene practices may be the only difference that protects or exposes a patient to infection. This straightforward public health practice, which has been saving lives for generations, will continue to do so in the future as long as the system remains diligent and mindful of the power of foundational infection control strategies.

An emerging infection control culture

Prior to 2003, Sunnybrook Health Sciences Centre had four infection control practitioners (ICPs) on staff. Today, Sandra Callery, Director of Infection Prevention and Control at Sunnybrook, leads a team of 11. “You see, the world has changed. We couldn’t be busier,” said Callery, who is also a member of PIDAC.

“We actively carry out surveillance and target key infections. We work closely with the hospital’s microbiology laboratory, looking at the significant organisms the lab has identified,” Callery said. Members of the infection prevention and control team also visit the hospital units daily and review patient charts with nurses. She noted that the team is now involved in broad and diverse initiatives throughout the hospital. “We’re contributing to policy and procedures. We’re working with architects involved in any expansion or redesign of the hospital. In the past, we wouldn’t have even been invited to the table,” Callery said.

“SARS was a humbling experience. We had placed our emphasis on technology and treatment and we didn’t watch closely enough what was happening with the basics, such as environmental cleaning and hand hygiene. We have returned to fundamentals,” Callery said.

Dr. Michael Baker, Medical Director of the Medicine and Community Health Program, University Health Network and Executive Lead of the province’s Patient Safety agenda, reflects on the increased focus on infection control measures in Ontario hospitals. “Since the SARS outbreak in Toronto we’ve had more infection control practitioners in hospitals. We’ve had massive re-education programs,” Baker said. “There has been a growing awareness among health care professionals of hospital-acquired, antibiotic resistant bacteria and the risks patients face being admitted to a hospital.”

In the fall of 2008, Ontario hospitals began publicly reporting on hospital-acquired infections as part of the ministry’s Patient Safety initiative. “Some anticipated statistics would show a dramatic rise in infections in hospitals and it has not materialized,” Baker said.

“What we’ve observed in the first few months of publicly reporting antibiotic resistant bacteria is that the levels measured have been surprisingly low in number. Incidence of infection has flattened out and it’s because of heightened awareness on the frontlines.” Baker said that the ministry’s declaration of war on hospital-acquired infections has given health care institutions greater incentive to address the issue. “It became priority number one. There is more discussion and commitment to the practice of safety standards. The bar has been raised and hospitals have risen to the task,” Baker said.

Influenza Protection

The Universal Influenza Immunization Program

In 2000, Ontario initiated a Universal Influenza Immunization Program (UIIP) to provide free influenza vaccines to everyone in the province over six months of age. It was the first large-scale program of its kind in North America. Most influenza programs tend to only target groups at highest risk for complications, including seniors over 65 years of age.

The province's ongoing commitment to health promotion and disease prevention through the UIIP helps Ontarians to keep healthy and reduces the impact of influenza illness on the province's health care system.

Nearly a decade has passed since the UIIP was implemented. During this period influenza immunization increased more rapidly in younger age groups in Ontario, compared to other Canadian provinces that offer targeted immunization programs.⁶

A 2008 study led by Dr. Jeff Kwong, a scientist at the Institute for Clinical Evaluative Sciences (ICES), evaluated the impact of the UIIP on influenza associated mortality, hospitalizations and visits to doctors' offices. The study found that, compared to targeted programs in other provinces, the UIIP was associated with relative reductions in influenza-associated mortality and health care use.⁷ It suggests that the UIIP is an effective measure for reducing the annual burden of influenza. This effect could be more significant if an increased number of Ontarians were immunized against influenza.

The ministry's 2008 review of the province's annual influenza program indicates that nine in 10 Ontarians express their approval of the government's free influenza immunization program and its popular advertising campaign. However, fewer than 50 per cent of Ontarians were immunized through the UIIP in 2008. This has remained relatively unchanged for the past five years.

According to the Public Agency of Canada, influenza results in 20,000 hospitalizations and 4,000 deaths each year⁸ – primarily among those who are elderly or in fragile health. However, Ontarians have tended to view seasonal influenza as more of a yearly nuisance rather than a serious health threat. But for individuals at higher risk of becoming infected with influenza, it can be deadly. For example, an elderly neighbour or a hospitalized friend could be put at undue risk if the influenza virus is passed on to them.

Even more concerning is the influenza immunization participation rate among health care workers. The median immunization rate reported to the ministry as of November 15, 2008 was 51 per cent for Ontario hospital staff and 77 per cent for those working in long-term care homes. The National Advisory Committee on Immunization (NACI) recommends that individuals who are at high risk of transmitting influenza should be immunized by mid-November annually.

Immunized health care workers are much less likely to pass on the influenza virus to vulnerable hospital patients or residents of long-term care homes. A 2008 study indicated that as health care workers' immunization rates increase, the expected average incidence of influenza decreases among long-term care residents at a constant rate.⁹ Health care workers have a responsibility to do what they can to protect their patients from the spread of infection. Influenza immunization for workers in the health and long-term care sector is a patient safety issue.

The UIIP continues to be an important ally in keeping Ontarians healthy. Unfortunately, overall public participation rates are disappointing, and in particular, the participation rate among some groups of health care workers remains an ongoing concern. Getting an annual seasonal flu shot is a simple but effective way to take responsibility for one's own health and protect the health of vulnerable individuals.

Increasing participation in UIIP is one of the challenges public health must continue to work to overcome. Immunization was one of the early breakthroughs of public health and it has saved countless lives. Innovative strategies need to be explored to focus attention and remind the public of what previous generations understood so well: immunization is a powerful tool to prevent disease and stay healthy.

Immunization not to be taken for granted

Dr. Ian Gemmill, Medical Officer of Health in Kingston and co-chair of the Canadian Coalition for Immunization Awareness and Promotion, said he would like to see a change in mindset towards seasonal influenza vaccines.

Gemmill believes Ontarians should take greater personal responsibility in ensuring they are adequately immunized, particularly those who come in contact with vulnerable individuals. "I am very disappointed by the participation rates of health care professionals in influenza vaccine programs. If health care professionals aren't behind it, then why should anyone else be?"

Gemmill said immunization should be more highly promoted in innovative ways to capture the public's attention. "The public health system needs to assess and overcome the barriers to immunization."



■ Coordination and Communication



COORDINATION AND COMMUNICATION

The province's public health system is made up of many players in various levels of government, the health sector and the community at large – all involved in carrying out various roles and responsibilities that collectively help to keep Ontarians healthy. The ministry's Public Health Division and the province's 36 public health units are primary examples of the entities with responsibilities and mandates that must work individually and in concert to support, deliver and oversee a range of complex initiatives and programs central to the effective functioning of the public health system.

The Public Health Division has about 175 staff members housed in five different locations in Toronto. For the past decade there have been plans in the works to co-locate PHD staff under one roof, but this has not occurred. It is important to create a central site for PHD staff that can serve as a hub to foster better coordination, communication and collaboration. For example, this will facilitate the work of the Ministry Emergency Operation Centre (MEOC), which provides direction and operational management to the health care sector in times of crisis. The central PHD site should be located in close proximity to the OAHPP to foster a dynamic focal point of public health resources and expertise.

There are many provincial partners with which the ministry must plan and interact, including various groups within the health system that serve in advisory roles to the CMOH. In addition, there are government-based public health counterparts in other provincial jurisdictions. At the federal level, there are public health stakeholders within government and other agencies with whom Ontario must partner to address issues that are cross jurisdictional and national in scope. The continuing movement of people and food products, along with the potential for bacteria and viruses to piggyback a ride across international boundaries, also necessitates that the province connect with a range of public health organizations on a global level.

Within Ontario it is also important to recognize that there are a variety of public health measures that rely on broader health system partnerships – for example, communicable disease prevention and control – with family physicians or family health teams. There are also important public health links that must be maintained with acute care hospital settings and long-term care institutions to respond to issues like health care-associated infections and effective infection control measures.

Finally, Ontarians are also important public health partners who must be communicated with and engaged in order to promote many initiatives and responses, whether on a day-to-day basis or during times of heightened public health threats.

The experience of SARS did much to focus attention on the need for effective coordination and communication to navigate the complex mix involved in the public health system to protect Ontarians from the threat of infectious diseases.

Cross-Jurisdictional Coordination and Communication

Diseases do not respect borders – whether local, provincial, national or international. The complexity of life today contributes to outbreaks that span jurisdictions and highlights the need for coordination and good communications to support effective management and response to a health threat.

For example, the 2008 listeriosis outbreak involved nearly 50 local, provincial and federal partners, including the province's 36 public health units, the ministry, OAHPP, the Canadian Food Inspection Agency and the Public Health Agency of Canada. Attempting to coordinate and communicate effectively with so many players involved in various roles and responsibilities was a daunting task. During a cross-jurisdictional outbreak a lack of good coordination can hamper investigation and mounting an effective and timely response. Inadequate or undefined communication procedures can lead to confusion on the part of some of the players involved as well as the public, and can impact negatively on public trust and confidence in the system.

Greater federal/provincial/territorial dialogue is needed to develop consistent coordination and communication protocols required to respond to complex cross-jurisdictional outbreaks. There have been extensive pan-Canadian discussions on data sharing and the need for collaboration regarding infectious disease reporting and management. Still, Canada has yet to implement a national outbreak management strategy that incorporates a range of federal agencies and ensures coordination with provincial ministries. Such a pan-Canadian strategy would be a welcome addition to support the management and response to cross-jurisdictional outbreaks which Ontario may face in future.

Emergency Planning and Preparedness

The critical need to coordinate and communicate effectively during a public health crisis was one of the early lessons of SARS. Ontario's Emergency Management Unit (the EMU, now the EMB – Emergency Management Branch) was created in 2003 following the SARS outbreak, and in 2006 it became part of the ministry's Public Health Division, reporting directly to the CMOH/Assistant Deputy Minister. EMB has the mandate to plan, coordinate and communicate so that the government and the health system may be well prepared to respond in times of crisis and serious public health threats.

Since its inception, EMB has become known as the leader in health emergency management and much of its work has been recognized as a role model by other jurisdictions. EMB has led pandemic preparedness for the health sector in Ontario. It has developed many plans and programs to address coordination and response to public health risks and hazards, including:

- Development and management of the Emergency Medical Assistance Team (EMAT) – a 56-bed mobile field unit that can be sent anywhere in Ontario with road access within 24 hours;
- Distribution of 15,000 Emergency Infection Control Kits to community-based health practitioners;
- Stockpiling and warehousing of emergency and pandemic supplies and equipment (including protective equipment, antibiotics and antivirals) to keep health care workers and the public safe during an infectious disease emergency; and
- Setting up a process for issuing Important Health Notices to alert the health system to a developing emergency.

Influenza Pandemic Planning

EMB is also responsible for developing, revising and maintaining the Ontario Health Plan for an Influenza Pandemic (OHPIP) which provides a template for coordinated response in the event of an influenza pandemic. The province's plan was put to its first major test with the outbreak of a novel H1N1 virus, which was declared a pandemic by the World Health Organization in June 2009.

OHPIP outlines a comprehensive and integrated strategy to support the province's health system in protecting Ontarians. It sets out steps for a range of activities, including:

- Heightened community surveillance
- Guidance to the health sector
- Enhanced monitoring at the local public health unit level
- Public communication

It is important to underscore that the strength of the OHPIP lies in the ongoing investment of resources and expertise that over the years has supported an evolving document that prepares the province to respond in a coordinated way to a developing influenza – and other large scale infectious disease – outbreak.

The OHPIP document is updated annually with the input and collaboration of a broad range of experts from across the health sector, labour and government. The fifth iteration of the OHPIP was released in August 2008.

The 2008 edition of OHPIP provides more detail on surveillance and reporting systems to monitor a pandemic, occupational health and safety, and infection prevention and control measures. It also covers the timing, use and availability of antiviral treatment and how influenza-related primary health care services would be organized and delivered. The province's stockpile of antiviral drugs was increased to treat 25 per cent of Ontario's population in the event of a severe flu pandemic as recommended by the WHO.

Vigilance and ongoing investment in pandemic planning is a necessity for Ontario to be adequately prepared to respond to a serious health crisis that poses life-threatening consequences. The OHPIP also sets out important protocols for communicating with the public in a timely and transparent manner. A well-informed public can be important partners in promoting appropriate behaviours and actions to curb the spread of disease. Investments that support coordination and communication in public health can go a long way to help protect the health of the community in times of crisis.

Incident Management System

Ontario began developing a uniform Information Management System (IMS) in 2006 to ensure a coordinated response to large scale and complex emergencies, including a health crisis. IMS is an operational framework for emergency response. It fosters communication and cooperation within and between organizations to respond to emergencies in a cohesive manner. A provincial steering committee of over 30 key stakeholders, including the ministry and other health sector stakeholders, developed a guidance document and draft training program in 2007. The province's IMS continued to take shape and evolve in 2008. It promises to strengthen Ontario's ability to mount a more effective response to a crisis like SARS in the future.

Local Coordination

Part of the strength of Ontario's public health environment is its flexibility and shared authority at the provincial and municipal levels. But with 36 public health units and the complexity of issues faced by the system, there is a need for coordination and consistency, particularly regarding infectious diseases management.

Two protocols accompanying the Ontario Public Health Standards address this need for coordinated action at the local level to protect Ontarians from health threats. The Infectious Diseases Protocol, 2008, was amended and released in early 2009 as the Infectious Diseases Protocol, 2009. The new protocol includes two appendices: Appendix A – Disease Specific Chapters and Appendix B – Provincial Surveillance Case Definitions.

The protocol is the first ever made-in-Ontario document developed to provide direction to all public health units regarding the prevention and management of all reportable diseases. The new disease prevention and management protocol is a positive step in supporting a consistent response to better safeguard the health of Ontarians, regardless of where they might live in the province.

In addition, the Rabies Prevention and Control Protocol, 2008, was updated and re-issued as the Rabies Prevention and Control Protocol, 2009. The new protocol has updates reflecting revised expectations with respect to timeliness in reporting and post exposure prophylaxis.

While the revised standards are a key step to ensure consistent delivery of services at the local level, it is equally important to make sure that public health units have sufficient resources and expertise to deliver on these expectations. There is continued need to build capacity within public health units to ensure they are able to adequately deliver a basic set of core services. This may require additional human resources with the appropriate expertise as well as technical support.

As part of its commitment to public health renewal the ministry released the Initial Report on Public Health in August 2009, which examines the capabilities of health units to provide public health programs and service delivery. It is the first step toward the ministry developing a performance management system to ensure the accountability and sustainability of public health. It is important to move forward with this process so that Ontarians can count on an adequate level of public health services, regardless of where they reside in the province.

Vacancies at the public health units are also an ongoing concern, particularly for the leadership positions of Medical Officers of Health and Associate Medical Officers of Health (AMOH) (See Appendix C and D). In the 2007 CMOH annual report, it was discussed that nearly one third of Ontario's 36 public health units were without a permanent MOH. Little had changed as of September 1, 2009. A lack of competitive compensation for MOHs and AMOHs has been partly to blame for long standing vacancies in some health units.

In September 2008, the provincial government reached a tentative agreement with the Ontario Medical Association (OMA) that included a more competitive salary scale for MOH and AMOH positions. It is hoped that this will make a tangible difference. However, given the economic disparity between various areas of the province, it would be a welcomed step to see the government directly fund the salaries of MOH/AMOH positions in all public health units. The economic variances of local areas should not be allowed to negatively impact on the local public health leadership and services available to the residents of Ontario.

Communication to the Public

Maintaining public trust and confidence in the public health system is important. Having ready access to information about relevant initiatives within the health system supports maintaining that trust.

The ministry took a bold step in 2008 to provide the public with web-based access to data involving patient safety issues occurring in Ontario hospitals. Starting in September 2008, hospitals were required to report the incidence of Clostridium difficile Associated Disease on a Patient Safety website (www.health.gov.on.ca/patient_safety). Members of the public, health care professionals and the media could all access the data which hospitals reported in a standardized way.

By April 2009, Ontario hospitals were required to start reporting on eight patient safety indicators (See appendix B), including surgical site infections, ventilator-associated pneumonia, central line infections and hand hygiene compliance. The ministry has partnered with Ontario hospitals to build a patient safety culture where information on the risk and spread of infections is readily communicated not only to health system partners, but also to the public. Public health is strengthened by a shared sense of partnership that includes the public who have a vested interest in the system's ability to prevent and inhibit the spread of disease.

■ Conclusion





CONCLUSION

2008 marked an important anniversary in Ontario's public health system. Five years had passed since SARS jolted the province and the health system into taking a hard look at the neglected state of public health.

Since then, the public health landscape in Ontario has changed dramatically. Prior to SARS there was no Ontario Agency for Health Protection and Promotion, no Regional Infection Control Networks, no emphasis on information and computer technology enhanced surveillance, no Emergency Management Branch developing a pandemic plan and no provincial stockpile of protective equipment for health care workers. The provincial health laboratories were outdated and hygiene was not top of mind in most health care settings. There was little interaction between public health and the acute care sector.

The post-SARS era led to an expanded role for the CMOH to take leadership and responsibility for protecting and advocating on behalf of Ontarians. Through entities like the OAHPP, PIDAC and infection control practitioners in hospitals and public health units, a network of experts has been created. This is expertise that the ministry and the CMOH office can effectively consult with and utilize to respond to public health threats and protect Ontarians.

However, the listeriosis outbreak demonstrated that even greater cohesion is needed within the system. This cross-jurisdictional outbreak showed that more coordination is required within the provincial system as well as an integrated pan-Canadian system.

It also highlighted the need for ongoing investments to continue to build capacity and further strengthen surveillance tools, capabilities and other resources to better respond to potential complex health threats in the future. The past five years has set a higher level of expectations for public health on the part of government and Ontarians. More is demanded. More is required.

Public health requires a collective effort – cooperation and communication between countries; various levels of government working in concert; a broad range of health care experts and organizations collaborating, coordinating and networking at the provincial and local levels.

Many players have a role in public health and this includes members of the public. For example, an immunization program cannot be successful unless individuals are motivated to take the necessary steps to be immunized. Public health policy and strategies need buy-in from the public to be effective. Therefore, community members have to be engaged through quality communication and education to become true partners in helping to enhance the public safety net.

SARS forced the public health system to take stock. Five years later, the province must remain vigilant and committed to supporting continued improvements in the public health system's ability to combat and control the spread of infectious diseases. It can ill afford to ever again revert to the complacency that caught it off guard in 2003. The threat of infectious diseases is ever present and public health, working in concert with its stakeholders, remains the best line of defence.

Recommendations

- Panorama – part of the Canadian Public Health Communicable Disease Surveillance and Management System – will offer significantly improved capabilities to monitor, track and respond to potential infectious diseases outbreaks. The provincial government should expedite the implementation of the following components of Panorama:
 - Communicable disease/outbreak management
 - Immunization registry and management
 - Vaccine ordering and distribution
- The Public Health Division of the Ministry of Health and Long-Term Care should be located under one roof. Steps should be taken to bring together staff currently spread across five sites to facilitate better interaction and coordination of the important work PHD carries out. PHD should be situated in close proximity to the Ontario Agency for Health Protection and Promotion to foster a dynamic public health hub of activity.
- The Agency for Health Protection and Promotion should take steps to relocate the central public health laboratory within its facility. The OAHPP must continue to work toward a completely integrated laboratory information system that will provide timely analysis and reporting to appropriate public health partners both on an ongoing basis and during outbreaks. The provincial government must also ensure that Ontario's first arms-length public health agency is sufficiently resourced to reach its full potential.
- The resources of the office of the Chief Medical Officer of Health should be reviewed and evaluated in view of the expanded role and mandate of the CMOH.
- The provincial government must ensure that public health units have sufficient human resources and other necessary supports to provide consistency in the level of programs and service delivery to all Ontarians, regardless of where they live in the province.
- The federal government should develop and implement a national outbreak management strategy to foster consistent coordination and communication protocols in response to complex cross-jurisdictional outbreaks such as the listeriosis outbreak in the summer of 2008.

Appendix A

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Appendix B

Patient Safety Indicators

All Ontario hospitals must report on eight different indicators related to patient safety. The information is accessible through the ministry website:
www.health.gov.on.ca/patient_safety

Reportable as of September 2008

Clostridium Difficile Associated Disease (CDAD)

C. difficile is a bacterium that causes infectious diarrhea and can spread in health care settings.

Reportable as of December 2008

Methicillin Resistant Staphylococcus Aureus (MRSA)

MRSA is a bacterium that can cause infections and spread in health care settings.

Vancomycin Resistant Enterococcus (VRE)

VRE is a bacterium that causes difficult-to-treat infections, and can spread in health care settings.

Hospital Standardized Mortality Ratio (HSMR)

Reportable as of April 2009

Central-Line Primary Blood Stream Infection (CLI)

Ventilator-Associated Pneumonia (VAP)

Surgical Site Infection Prevention

Hand Hygiene Compliance

Source: Ministry of Health and Long-Term Care website

Appendix C

Ontario Health Units with Vacant MOH Positions Filled by Acting MOHs as of September 1, 2009

Chatham-Kent Health Unit

Elgin-St. Thomas Health Unit

Haldimand-Norfolk Health Unit

Lambton Health Unit

North Bay Parry Sound District Health Unit

Northwestern Health Unit

Oxford County Public Health and Emergency Services Department

Perth District Health Unit

Porcupine Health Unit

Thunder Bay District Health Unit

Timiskaming Health Unit

Wellington-Dufferin-Guelph Health Unit

Total = 12

Appendix D

Ontario Health Units with Vacant AMOH* Positions as of September 1, 2009

Durham Regional Health Unit

City of Hamilton Health Unit

Kingston Frontenac Lennox and Addington Health Unit

City of Ottawa Health Unit

Peel Regional Health Unit

Sudbury and District Health Unit

Windsor-Essex County Health Unit

Total = 7 Health Units with AMOH Vacancies**

* Under 62. (1)(b) of the Health Protection and Promotion Act, every board of health may appoint one or more Associate Medical Officers of Health.

** NB: Vacancies may include less than or more than one FTE position per health unit and do not reflect positions filled by qualified physicians awaiting appointment by boards of health and ministerial approval.

