

# **Chapter Two: Infection Control**



# Chapter Two: Infection Control

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## Introduction

The SARS outbreak highlighted a problem that has received far too little attention in the past decade, despite being raised as far back as December 1994 at the Lac Tremblant Declaration.<sup>1</sup> The problem is infectious disease control. Prior to the outbreak, many people within different parts of the healthcare sector, as well as the Ministry of Health and Long-Term Care, had a false sense of security with respect to infectious disease control. Certain infectious diseases received intense scrutiny by the broad healthcare sector over the past decade (for example, HIV and Hepatitis C),

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which led to significant systemic change in certain practices related to infectious disease control. However, outside of a handful of individuals in the area of infection control and public health, the issue of facility-acquired (nosocomial) infections was

largely invisible. Infectious disease outbreaks have been largely concealed by the presumed effectiveness of antibiotics and the absence of effective mechanisms to identify and track facility-acquired infections. As a result, in many cases, healthcare facilities faced with a range of competing demands have placed less importance on infectious disease control and have demonstrated limited compliance with even basic prevention and control techniques, such as handwashing. This is exacerbated by the fact that infection control is invisible until an outbreak occurs.

In recent years, funding pressures have further reduced the resources applied for infection control, as with other services that are often in the background of health care. This is evidenced by the sub-optimal level of infection control training, staffing, and accountability in place before the SARS outbreak. As one respondent commented, "SARS certainly illustrated the need for increased awareness of infectious diseases, and showed us all how quickly an entire health care system could be 'shut down'. It showed us how unprepared we are in our ability to contain and control not only new and emerging diseases, but those such as influenza and tuberculosis."

Training in infection control principles clearly has not been a priority in recent years and as a result most frontline healthcare workers were not

well-equipped with the necessary knowledge to handle SARS when it hit. There is, the Panel has heard, a noted absence of infection control training within both facilities and institutions and within healthcare education programs. This problem is mirrored in the limited availability of courses for health workers to upgrade their skills to become infection control practitioners. For the purposes of this report, we are defining infection control practitioners as “physicians, [nurses] or other qualified individuals responsible for implementing and overseeing the policies and procedures followed by a health care facility to reduce the risk of [the spread of] infection [whether hospital or community-acquired] to patients and staff.”<sup>2</sup> Infection control practitioners are also referred to as infection control professionals in some jurisdictions, although we have chosen to use the former in this Report.

Because SARS was so effectively transmitted in hospitals, many regard the outbreak as a cogent reminder of the need to better manage all facility-acquired infections. In fact, SARS is the tip of the iceberg of the largely unrecognized problem of facility-acquired infections. Furthermore, we cannot emphasize enough the extent and devastating impact of such infections, which are closely related to inadequate infection control practices.

In developed countries, about 5-10% of patients in acute care hospitals acquire an infection that was not present or incubating on admission.<sup>3</sup> In the United States, hospital-acquired infections are the second most

frequent type of adverse incident occurring in hospitals – second only to medication errors.<sup>4,5,6</sup>

**The precise rate of facility-acquired infection in Canada is not known...[but] based on US studies, it is estimated that there are 220,000 occurrences of facility-acquired infections in Canadian hospitals annually, resulting in excess of 8,000 deaths.**

The precise rate of facility-acquired infection in Canada is not known, because these figures are not comprehensively reported to any central authority or body. Based on US studies, it is estimated that there are 220,000 occurrences of

facility-acquired infections in Canadian hospitals annually, resulting in excess of 8,000 deaths.<sup>7</sup>

The number of occurrences appears to be on the increase, partly due to a surge in the number of antibiotic-resistant pathogens. For example, 440 identified cases of methicillin-resistant *Staphylococcus aureus* (MSRA) were found in 20 of the 21 Canadian hospitals and long-term care facilities studied in the first Canadian MSRA surveillance study, conducted in 1995 over an 18-month period.<sup>8</sup> More recent studies have shown that the rate

of MSRA infections has increased 10-fold over the past decade.<sup>9</sup>

The impact of facility-acquired infections can be significant – prolonged illness, possible death, and the costs of extended hospital stays and associated treatment.<sup>10,11</sup> In the United States, for example, the Centers for Disease Control (CDC) estimated the annual cost of hospital-acquired infections to be \$5 billion.<sup>12</sup> Although there are no published data on the total costs of facility-acquired infection in Canada, targeted studies suggest that the costs of these infections are similar. For example, according to one study, the annual costs associated with MRSA infections in Canadian hospitals are estimated to be between \$42 to \$59 million.<sup>13</sup>

While SARS was not solely a facility-acquired infection, the high risk for its transmission within the healthcare setting has highlighted and reinforced the need for lasting changes to infection control practices. This means ensuring that infection control programs within Ontario healthcare facilities are effective in reducing the risk of facility-acquired infection in patients, staff, and visitors through surveillance, prevention, control, education, and training.

The Panel is aware that an audit of existing infection control resources, policies, and practices (including sterilization and disinfection protocols for equipment) has recently been initiated in hospitals. However, the Panel believes that much more needs to be done on a formal and ongoing basis to ensure appropriate infection control in Ontario healthcare facilities, particularly in the area of standards and monitoring, facility design, as well as training and education.

## Provincial Structure for Infection Control

Infectious disease is envisioned by the Panel as having a critical role in a new public health agency for Ontario, operating as one spoke of the wheel. How it should be organized and its various functions are critical issues that will be addressed in detail in our final report. What has become evident is the need for a provincial structure to support infection control resources, policies, and standards within hospitals and other healthcare facilities.

The Panel also heard that the current multi-layered and somewhat disjointed approach to infectious disease control presents real barriers to coordination; this approach involved planning regions, Public Health Units, and the Ministry. The consensus is that this model should be replaced by a regional model, with infection control expertise available regionally and supported centrally by a new public health agency. This model is consistent with the National Advisory Committee recommendation to create

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regional networks for infection control.

The Panel will seek input from providers and organizations to identify how best to operationalize the concept of a provincial structure for infection control and the relationship with regional networks. We will integrate this input and provide a more detailed discussion in our final report. At this point, however, the Panel anticipates that these regional infection control networks will need to have appropriate linkages with experts in hospitals, along with other healthcare facilities, relevant community settings, and Public Health Units. The networks also have a role in the ongoing monitoring of standards, and in ensuring that staff receive the necessary education and training.

## **Standards, Accreditation, and Monitoring**

### **Introduction**

During the SARS outbreak, most institutions adopted the infection control protocols recommended in the provincial directives; some institutions chose to take an even more cautious approach and implemented more stringent directives than were required for their facility; and others struggled with translating how to apply the specifics of the directives in their

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organization. However, over the longer term these new protocols have the potential to galvanize healthcare providers and organizations around the need for consistency in infection control approaches. In submissions to the Panel, healthcare providers and organizations at every level of the healthcare system identified as a current priority the development of clear standards for the 'new normal,' accompanied by continuous quality improvement initiatives including practice audits to ensure compliance. Post-SARS fatigue and the potential to revert back to old ways must be countered.

### **Key Learnings**

**A need for consistency:** Most acute healthcare facilities have infection control policies, and indeed, many of these facilities have updated their policies to address such threats as methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant enterococci (VRE), and Norwalk

virus. However, because such policies are not based on any one standard or set of standards, their content often varies significantly between institutions.<sup>14</sup> Furthermore, acute healthcare providers indicated that during periods where there are no infectious disease outbreaks, many have not adhered to their infection control policies. This is due to a broad range of factors, including the low perceived risk, staffing shortages within infection control, and unclear responsibilities related to infection control assumed by healthcare workers that are traditionally not directly involved in infection control. Respondents cited the lack of a formal compliance-monitoring vehicle at the facility or provincial level as a predominant reason for poor adherence to infection control policies. If clear expectations are not set and supported centrally, we can only assume that it will simply be a matter of time before the situation will return to the pre-SARS status quo. This is clearly unacceptable. The Panel heard, therefore, that it is vitally important to remedy this and to place a renewed emphasis on surveillance and monitoring of infection control practices, in compliance with clearly articulated and enforceable standards. A culture of continuous quality improvement must permeate through infection control programs.

What could standards stipulate? As one respondent noted, "Infection control standards are required for hospitals and other healthcare facilities [and should] include surveillance, training, policies, procedures, outbreak management, research, epidemiology and audit." Accordingly, standards could stipulate several requirements, namely that:

- Each facility have an organized program of infection control.
- Each facility designate a minimum number of infection control practitioners within their institution based on national standards, and that these practitioners have clear responsibility for surveillance and outbreak management.
- The infection control program include sanitation practices, surveillance and outbreak management protocols, facility policies and procedures, as well as education to support these areas.
- There be a contingency plan in the event of an outbreak, including a process for early communication of the outbreak.

At a minimum, the Panel heard that infection control standards should apply across the province, although it would be preferable to have national standards. This is consistent with the recommendations made by both the Ontario SARS Scientific Advisory Committee (OSSAC) and the National Advisory Committee on SARS and Public Health. The National Advisory Committee called on the provincial government, healthcare providers, facilities, and stakeholders to work collaboratively with the Canadian Council on Health Services Accreditation (CCHSA) and other relevant accrediting bodies to develop pan-Canadian infection control standards.<sup>15</sup>

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Such standards could potentially draw on numerous national and international guidelines that reflect best practices in the area of infection control. For example, guidelines have been developed by Health Canada, the Community and Hospital Infection Control Association (CHICA), the Canadian Infectious Disease Society (CIDS), the Association of Professionals in Infection Control and Epidemiology (APIC), the US Centers for Disease Control (CDC), and the Joint Commission on Accreditation of Healthcare Organizations (JCAHO).

The Panel recognizes that the Ministry has recently established a task force to address this issue and endorses this as a welcome first step in developing comprehensive infection control standards. However, attention to infection control must move from being reactive and issue-driven to becoming ongoing in nature and consistent in its depth.

**...it is equally important to enhance professional standards of practice for infection control...**

**Broad coverage of standards:** Some have suggested that protocols or standards for healthcare facilities “should be commonly known and respected across the entire healthcare continuum.” That could potentially include hospitals, as well as physician’s offices and community clinics, non-acute and long-term care facilities, and services that are privately operated and funded, such as those provided by dentists, chiropractors, and physiotherapists.

We heard that it is equally important to enhance professional standards of practice for infection control, a task which falls within the responsibility of individual colleges that set standards for the various regulated health professions. As one respondent stated, what is needed is, “inclusion of infection control standards as part of all healthcare education and licensing requirements for professions.”

The Panel endorses efforts at the regulatory college level to strengthen and harmonize existing infection control standards for health professionals and would also encourage the Ministry to actively support efforts to examine qualifications for entry to practice, and requirements for on-going professional development as potential vehicles for strengthening infection control awareness.

**Promoting compliance:** We heard that “facilities also need to more strongly enforce current infection control standards, which are often not followed.” In short, standards that are not enforced are of limited value,

and in order to be enforced they must be understood. Any standard must therefore be broadly disseminated and must have effective oversight mechanisms to ensure compliance. OSSAC has recommended that standards be enacted through regulation, giving them the force of law instead of simply voluntary guidelines. This approach might create a challenge in maintaining relevance as standards evolve over time, and should therefore be considered as one option among others. Another way to promote compliance is to ensure the “inclusion of assessment of infection control practice in performance evaluations, audits and reviews” at regular intervals. This could include a mechanism to set targets or benchmarks and measure against performance, building on existing mechanisms such as the Hospital Report Card.

## Facility Design

### Introduction

SARS clearly illustrates the importance of physical plant design in controlling and managing infectious disease outbreaks. Most healthcare facilities in Ontario are designed to minimize the spread of infection to some degree. Yet SARS clearly demonstrated that current approaches to structural design fall short of what is truly optimal in an infectious disease outbreak. In many instances, facility design posed a barrier to controlling the spread of infection; for example, inadequate numbers of sinks in

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infected patients in a protected environment.

All of these issues suggest that we need to carefully rethink current approaches to healthcare facility design, to ensure that healthcare facilities are prepared to deal not only with future SARS outbreaks, but other infectious diseases that may be transmitted by air, droplet, bodily fluids, or direct contact. The need to ensure that facility design addresses the challenges of potential chemical or biological contamination is equally important.

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In the words of one respondent, "SARS underscored how ill prepared we are to deal with communicable respiratory disease. With pandemic influenza a virtual certainty in our lifetime, the provincial authorities have got to take this situation seriously...After an infectious agent is circulating, there is neither the time nor resources to decide what ought to occur in the planning stages of response."

## **Key Learnings**

**Infection control design standards:** We heard from the submissions that Ontario lacks a cohesive framework of infection control standards for the design and construction of healthcare facilities. Although new facilities are required to meet the standards of the Ontario *Building Code Act* (S.O. 1992, c. 23) and relevant municipal bylaws, there are no specific standards regarding appropriate infection control.

That is not to say that there are no standards to draw from. Beyond provincial and municipal laws, several expert sources provide guidance on appropriate facility design to ensure effective infection control. For example, Health Canada and the Canadian Standards Association have issued several guidelines relating to infection control in healthcare facilities. In addition, architectural firms that are designing healthcare facilities routinely seek guidance from professional and industry standards. Moreover, as a matter of practice, architects work with facility project design teams in the functional planning phase to address issues of infection control. This approach has much merit and should be formalized as a required best practice for all new facility construction.

The SARS experience certainly suggests that a far more comprehensive and consistent approach may be warranted to give infection control due consideration in healthcare facility design, particularly with respect to emergency departments. For example, as one respondent observed, what is needed is "a clear guideline for Emergency Room renovation and design that incorporates a minimum space allocation, a minimum number of negatives air pressure spaces, etc. [which]... would then become the expected template to assist facilities to reach a reasonable design."

We heard that having a more consistent approach to infection control design would ensure that all hospital capital development, functional plans, program plans, design drawings, and specifications are reviewed to ensure that adequate infection control specifications are incorporated. That includes establishing minimum standards; supporting regulatory oversight to ensure compliance; and ensuring the involvement of infection control staff at the functional programming and planning stages of construction projects.

**Negative pressure rooms and dedicated isolation rooms:** The capacity for effective infection control varies widely from institution to institution. Healthcare providers and facilities were almost unanimous in their view of the difficulties that structural design posed in containing the outbreak, protecting staff, and caring for SARS patients. However, the Panel cautions against over-emphasizing the significance of negative pressure rooms and isolation rooms. There may be real disadvantages in certain circumstances in relation to patient care, as evidenced by a recent

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control experience more preventable adverse events, express greater dissatisfaction with their treatment, and have less documented care. Understandably, however, submissions made to the Panel overwhelmingly pointed to the inadequate number of negative pressure rooms and dedicated isolation rooms as a major impediment in managing SARS.

As one submission noted, "Essentially, if a patient has a small likelihood of having, for instance, Tuberculosis or a transmissible pneumonia, including SARS pneumonia, they should automatically be able to find a negative pressure room. This takes the guesswork out of infection control. In the past, our infection control department has been in the position of 'playing God,' trying to decide, based on a limited amount of information as the patient comes to the emergency room, whether that patient should or should not have a negative pressure room. A marked improvement in such capability would remove the need for such decisions." The National Advisory Committee agreed, stating that each province should ensure that hospitals have sufficient negative pressure and isolation rooms. It remains to be determined precisely what that appropriate number is. Regardless of SARS, a sufficient supply and distribution of negative pressure rooms is a wise precaution, which would serve Ontario well in handling potential future airborne infectious diseases.

Organizations also reported that although efforts were made to meet the requirement for negative pressure rooms, many were simply not equipped to provide them. Unlike isolation rooms, negative pressure rooms were not required in the past; therefore, many organizations did not have the internal expertise to set up negative pressure rooms, nor did they know what skill sets were required to establish them – for example, whether engineers were needed, or whether respiratory therapists were more appropriately trained to create the environment.<sup>17</sup>

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As the science surrounding SARS evolves, it appears to become increasingly more evident that it is a droplet-spread disease, not an airborne disease. This reduces the need for negative pressure rooms; however, it does not reduce the need to be prepared for the next infectious disease outbreak. As a result, we are recommending that negative pressure rooms be available, but encourage a cautious and evidence-based approach to determining the number of rooms required.

**Emergency departments:** Another critical physical barrier to managing SARS identified in submissions was the 'open concept' design commonly used in hospitals, particularly in emergency departments. The size of the rooms, the existence of alternate entrances and paths for infected patients, the presence of patients in hallways, the inability to separately triage patients, the resulting co-mingling of potentially infected patients with non-infected patients – all breached basic and necessary infectious disease precautions, and beg re-examination as a result of SARS.

One respondent offered this succinct analysis of the problem: "Most hospital emergency departments are inadequately designed to contain the spread of infectious diseases. Triage rooms should be closed off, with high volumes of air flow (ideally negative pressure). The use of a glass divider to allow triage staff to interview patients without wearing protective equipment would be useful. Waiting rooms tend to be very open – there usually is no provision for patient who require segregation isolation."

**...the long-standing problem of overcrowding in emergency departments posed considerable difficulties, both in terms of capacity and effectiveness of infection control measures.**

It must also be acknowledged that the long-standing problem of overcrowding in emergency departments posed considerable difficulties, both in terms of capacity and effectiveness of infection control measures. While

efforts were made during SARS to free up beds, by rapidly transferring Alternative Level of Care (ALC) patients in hospitals to long-term care facilities, lack of capacity and overcrowding remains a persistent problem for most hospitals. Because the next outbreak might involve mass casualties or a sudden increase in demand for clinical or ward capacity, the Panel recognizes the importance of finding more sustainable solutions.

Recognizing the challenges that were encountered in using the ALC transfer process, we remain interested in improving and formalizing its use, while retaining the right of patient choice, as a mechanism to create additional capacity in the healthcare system in times of critical system need.

Although we recognize the breadth and complexity of this issue and do not

attempt to solve the problem, we will be providing further comment in the final report on measures that could be considered when faced with this need.

**Other physical design impediments:** Similarly, concerns were raised about the risks posed by multiple entrances, and the inability to monitor and control these and other areas that are accessible to the public. Other physical design impediments to managing SARS included poor air control, lack of storage for protective gear, and insufficient handwashing stations. Possible solutions to physical design problems include separating inpatient, outpatient and commercial services where viable, and separating the 'mission-critical' departments and access to them. The Panel was also told that healthcare facilities could reduce the number of entry points into the facility and control access to them. And, ideally, facilities should create adequate individual space per patient and apply occupancy levels for inpatient beds that provide sufficient flexibility to allow emergency patients to be admitted when required.

The Panel heard that it is critical to identify hospital physical plant design barriers to effective infection control, and to develop an implementation plan for their removal within a specified period of time. The Panel also learned that consideration should be given to developing provincial standards for construction and retrofitting healthcare facilities consistent with effective infection control management.

Given what the Panel has heard to date respecting the importance of physical design to infection control, it will continue to examine these issues in some detail, with a view to providing recommendations in the final report.

## Training and Orientation

### Introduction

During SARS, it became apparent that many healthcare workers had limited up-to-date training and background knowledge in the principles of infection control, including the proper use of personal protective equipment. This concern resounded throughout the submissions made to the Panel. Such training, we heard, must be made accessible to *all* frontline workers through a variety of vehicles and on a variety of levels. This includes infection control training as part of workplace orientation, regular continuing education, and formalized training programs for infection control practitioners offered at educational institutions. The reality of the number of hospital-acquired infections clearly demonstrates that healthcare

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is not a risk-free profession, nor has it ever been. Given the potential for infectious disease outbreaks in the future, education and support for healthcare workers in managing infection risks must become a top priority.

### **Key Learnings**

**Universal training:** The Panel heard that infection control training must become a part of workplace orientation for healthcare workers. As one respondent stated, concrete practical steps that could be undertaken right away include

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“mandatory infection control education including specific techniques such as gloving, gowning and masking procedures as part of orientation for all new staff (including physicians) to healthcare facilities.” Providing training in basic principles of infection control in the workplace orientation process would help ensure consistency and universality. As with all aspects of healthcare, knowledge about infectious diseases changes rapidly and therefore needs to be rapidly communicated to healthcare workers. Healthcare facilities and organizations should implement methods to ensure that new and critical information is transmitted in a timely way to healthcare providers as part of a continuing education process, and the Ministry should be supportive of such efforts. Any such educational initiatives should be universally available to and accessible by all personnel, and should be modifiable and customized to different healthcare providers’ roles within the facility or organization.

**Training across all groups and sectors:** Many submissions to the Panel urged that infection control training should reach more than healthcare professionals such as nurses and physicians, and extend to other groups and other sectors. Groups include housekeeping, volunteers, and students; sectors include acute care hospitals, long-term care facilities, emergency medical services, and community agencies. It is particularly important that public health personnel receive training in infection control, in both community and hospital settings depending on the setting where the person works. As one respondent stated, “Education on infection control to all healthcare workers, not just those hospital-based, is warranted.”

In addition, the Panel heard that infection control teams within facilities and organizations should include the expertise of healthcare workers from different disciplines. As one example, respiratory therapists could be

effective members of an infection control team and therefore should be given infection control training according to the role they may play on the team.

**Need for accountability:** Many submissions advocated that an accountability mechanism should be part of any education process. Some suggested that infection control should be a mandatory component of workplace training, similar to that in place for the Workplace Hazardous Materials Information Service (WHMIS). Others suggested annual testing, or incorporating infection control compliance into performance reviews. Still others suggested that infection control training could be tied to professional regulatory colleges and associations, perhaps as part of the licensing process. This could facilitate more consistent infection control education for professionals, such as family physicians and community pharmacists, who are not associated with an institution or facility.

**Set standards for infection control education:** The Panel heard about the need to establish standards in infection control education. Currently, many larger healthcare facilities have established internal standards to educate some or all of their staff. However, there are no mechanisms to integrate these facility-specific standards presently; therefore, there is no method of determining or assuring that the standards adopted by one facility are congruous with those of another. Broader standards must be developed, whether on a regional, provincial or national level. These standards must encompass the core competencies in infection control required by each healthcare profession and specialty or worker group, and those required in each healthcare sector such as acute care, long-term care and community care.

The concept of developing standardized educational platforms was proposed to us, to be used by facilities and organizations to carry out infection control training. These platforms should incorporate and reflect the established educational standards noted above. Possible tools could include standardized manuals, electronic materials, as well as core information sheets on specific infection control principles that could be available on hospital wards or in clinics. These standardized educational materials could be developed as part of the mandate of the Health Protection and Promotion Agency in collaboration with professional associations or regulatory bodies.

**Shortage of human resources:** The critical shortage of infection control practitioners became painfully evident across all sectors of health care

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during SARS. Infection control practitioners are charged with implementing and administering all aspects of an infection control program, including providing training in infection control principles. In 1985, the CDC recommended that there be a minimum of one infection control practitioner for every 250 acute care beds.<sup>18</sup> In 2001, the Canadian Infection

**Recent research has shown that the vast majority of acute care facilities do not meet the 2001 standards [for the ratio of infection control practitioners to acute care beds].**

Prevention and Control Alliance, an initiative of Health Canada, reduced this recommended ratio to one practitioner per 150-175 acute care beds.<sup>19</sup> In 2002, the Association for Professionals in Infection Control and

Epidemiology further reduced the ratio to 1 practitioner per 100 to 120 occupied beds.<sup>20</sup> Recent research has shown that the vast majority of acute care facilities do not meet the 2001 standard<sup>21</sup> and almost half do not even meet the now-obsolete 1985 standard. Part of this deficiency is related to the overall shortage of healthcare workers in Ontario, which is addressed in a subsequent chapter, and part is related to a lack of available educational opportunities for infection control practitioners, as discussed below.

### **Availability and accessibility of formal education programs in**

**infection control:** The Panel heard that formal infection control courses are virtually non-existent in Canada. These must be made accessible to all existing staff acting as infection control practitioners, and must be made more available to those healthcare professionals seeking to upgrade their skills to be able to function as qualified infection control practitioners. This must include persons working in the public health domain. The only recognized courses currently in place are an 80-hour, on-site certificate course held at Centennial College in Toronto, and a 20-week, on-line credit course offered through the University of British Columbia.

The Toronto-based program was developed and is endorsed by the Community and Hospital Infection Control Association (CHICA). It is presently fully booked well into the future, but only runs twice per year primarily due to resource constraints. With minimal additional funding, and additional qualified human resources, the Centennial College program could be run on a more continuous basis. The additional funding should include compensation for facilities, for the time involved by their staff who are seconded to be instructors for an infection control course. The organizers of this course also hope to provide an on-line, self-learning version in the near future, but this too is subject to funding and staffing.

Furthermore, mechanisms should be put in place to reimburse healthcare

workers who attend infection control courses, to cover the costs of tuition, books, and accommodation, to ensure maximum accessibility to these courses. These mechanisms could include grants and bursaries, such as those presently available through the Nursing Education Initiative, a program funded through the Ministry and administered jointly by the Registered Nurses Association of Ontario and the Registered Practical Nurses Association of Ontario.

As the Panel heard, a vehicle to increase the availability of infection control training through distance learning might be the Northern Ontario Remote Telecommunications Health Network (also known as the NORTH Network). This telemedicine project uses live two-way television to diagnose and treat people in more remote parts of Ontario. The technology could be applied to educational initiatives through live videoconferencing, to allow a number of sites in rural and northern Ontario direct access to infection control training.

**Targeted funding:** Many of the suggestions concerning increased infection control educational opportunities – whether through orientation, continuing education, or formal courses – noted the need to provide targeted funding. In the words of one respondent, “Increase the budget for infection control and allocate the funding strictly to infection control, not to the global budget.” Single source initiatives, such as the CHICA/Centennial College course, could be funded through the sponsoring organization. Education programs created within facilities or organizations should receive partial development and support funding from the Ministry, in order to avoid that these programs fall under global budgets and eventually get dropped because perceived ‘higher priority’ areas swallow up funds ostensibly intended for infection control education.

**Lack of educators:** The Panel further heard that the number of experienced infection control practitioners is grossly inadequate to provide for all of the educational requirements in infection control. Clinical practitioners are in a good position to provide frontline training, as they have the requisite background education, as well as intimate knowledge of the needs of frontline workers. One acute care hospital respondent appropriately asked, “Why is Canada not using all experienced ICPs to help out educating nurses to become ICPs?” The Panel agrees that existing infection control practitioners must be used efficiently as an educational resource, both as teachers and mentors. A ‘train the trainer’ mentality should be fostered. In this way, staffs in facilities and organizations that do not have the benefit of experienced practitioners as part of their workforce can themselves become informed educators. In addition, this

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will enhance the ability of facilities and organizations to educate their frontline staff in infection control principles. As an example, infection control practitioners in one acute care hospital trained personnel from each unit and area in the hospital; these persons then act as educators to the frontline staff within their unit or area. This 'train the trainer' approach will require enhanced resources and commitment of time and could fit under the mandate of the infection control component of a new Health Protection and Promotion Agency.

Furthermore, creating higher levels of educational opportunities should also be considered; for example, programs leading to an undergraduate or graduate degree specific to infection control. No such program presently exists in Canada. This would then create a human resource base for research and academic activities.

**Certification:** The Panel heard that a mechanism is needed to ensure a minimum standard of competence for infection control practitioners. In the words of one respondent, "There should be some minimum educational preparation and certification for infection control practitioners." Once this standard has been reached, these professionals should then be paid commensurate with their level of specialty training or experience.

Certification is presently available for infection control practitioners in the form of a comprehensive examination developed by the Certification Board for Infection Control and Epidemiology (CBIC), the independent credentialing arm of the Association for Practitioners in Infection Control (APIC). Infection control practitioners who are certified are authorized and encouraged to use the internationally recognized initials CIC<sup>®</sup> after their names and in their titles. Initial certification is good for five years after which the successful completion of re-certification exams extend certification at five-year intervals.<sup>22</sup> The currently available CHICA/ Centennial College course in infection control provides the requisite knowledge base to proceed toward writing the CBIC examination; however, two years of practical experience in infection control is also required before applying for certification.

**University and college curricula:** Submissions to the Panel noted the lack of standardized infection control training in the curricula of universities and colleges that offer healthcare programs, including post-graduate residency programs and clinical placements. As a result, students and new graduates are entering the healthcare sector unaware of proper infection control practices. Yet instilling infection control principles early on in the education of healthcare workers is key to ensuring that they become part

of the healthcare culture. This could be achieved by integrating infection control training modules into all relevant curricula in academic and clinical programs, and making the successful completion of appropriate examinations necessary for graduation. As one respondent stated “Training programs (nursing, medical school) must include infection control in their curricula, and should make it a requirement of graduation to demonstrate that trainees understand and can follow these practices.”

## Funding

The Panel is aware of the inherent costs in operating infection control programs within facilities and organizations, including the cost of necessary human resources such as infection control practitioners and infectious disease physicians. Targeted funding is required to facilitate the required staffing and appropriate functioning of infection control programs. Examples of such

**Targeted funding is required to facilitate the required staffing and appropriate functioning of infection control programs.**

funding could include the creation of a priority program for hospital infection control services in Ontario or the development of an alternate regional funding model.

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## **Recommendations**

### **Regional Infection Control Networks**

10. The Ministry should establish a process to develop Regional Infection Control networks across Ontario, with a designated hospital and Public Health Unit as joint leads in the development process. The networks should include but not be limited to Public Health Units, hospital infection control practitioners, Emergency Health Services, long-term care, and community-based healthcare providers.

### **Standards, Accreditation and Monitoring**

11. The Ministry should immediately establish a standing Provincial Infection Control Committee that would report to the Chief Medical Officer of Health. The Committee would have the following functions:
  - a. Supervise audits already underway of hospital infection control policies, programs and resources, and undertake additional audits in remaining Ontario healthcare facilities and organizations, to be completed by the summer, 2004.
  - b. Informed by the results of these infection control audits, develop comprehensive provincial infection control standards for all healthcare facilities in Ontario, including acute and non-acute care hospitals, long-term care facilities, and primary care/community settings. Guidelines should be completed by October 31, 2004.
  - c. Develop standards in collaboration with Health Canada.
  - d. Develop appropriate mechanisms to ensure compliance for both existing infection control standards and new comprehensive provincial infection control standards.
12. The Ministry, together with the Provincial Infection Control Committee, and in conjunction with the Ontario Hospital Association, the Institute for Clinical Evaluative Sciences (ICES), and the Community and Hospital Infection Control Association, should develop core indicators for monitoring facility-acquired infections. This data should be reported as part of the annual status report on public health.

### **Facility Design**

13. To ensure the appropriate supply and distribution of negative pressure rooms between and within hospitals, the Ministry should immediately undertake an independent evidence-based needs assessment, reporting back to the Minister by March 1, 2004. Informed by the results of this assessment, the Ministry must ensure that there is a sufficient supply of negative pressure rooms on a regional basis.

14. The Ministry must initiate a collaborative process with the Ontario Hospital Association to identify hospital physical plant barriers to effective infection control and develop a multi-year implementation plan for their removal. Emergency rooms should be examined as a first priority, to be followed by intensive care units and wards.

### **Training and Orientation**

15. The Ministry, in conjunction with the Ministry of Training, Colleges and Universities, should ensure adequate funding for the expansion of existing courses in infection control so that they can be made more widely available and accessible to all health professionals. This funding should encompass the:

- a. development of an online format for the existing course
- b. development of distance education initiatives
- c. provision of adequate reimbursement for the costs of attending or participating in such a course.

Such funding should be in place April 1, 2004.

16. The Ministry must immediately develop strategies to achieve a minimum target of one infection control practitioner per 250 acute care and long-term care beds, and to work toward achieving a target of one infection control practitioner per 120 acute care and long-term care beds within three years. These strategies must include mechanisms for recruitment and retention of infection control practitioners.

17. The Ministry should support the development of 'train the trainer' initiatives by providing adequate funding to allow existing experienced and qualified infection control practitioners to act as educators of other healthcare professionals in infection control principles. The necessary level of such funding should be determined and made available by April 1, 2004.

18. The Ministry should actively engage and support regulatory bodies and professional associations in their review and updating of standards for the infection control education and maintenance of core competencies of all healthcare workers. The Ministry should also work to develop standardized educational programs that reflect these principles. The development of such standards should be complete by June 30, 2004.

19. The Ministry, the Ministry of Training, Colleges and Universities, the Council of Faculties of Medicine, the Canadian Association of Schools of Nursing, and other relevant bodies should work together to define core curricular elements of infection control education for all healthcare

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education programs and begin steps to establish these elements within such programs. The Ministry should establish a working body to accomplish these goals by February 1, 2004, and curricular outlines should be in place by June 30, 2004.

**Funding of Infection Control Programs**

20. The Ministry, in collaboration with the Ontario Hospital Association, the Ontario Long Term Care Association, and the Ontario Association for Non-Profit Homes and Services for Seniors, should develop mechanisms to provide targeted funding for infection control programs within facilities and organizations, such as the development of a hospital Priority Program for infection control. This funding should provide for necessary human resources, such as infection control practitioners and infectious disease specialists. A status report on the development of these mechanisms should be provided to the Minister by June 30, 2004.

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