Building a Ready and Resilient Health System

Ebola Step-Down and Provincial Baseline Requirements for Infectious Disease Threats

July 18, 2016

Ontario

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Acronym List

Acronym	Acronym spelled out
AIIR	airborne infection isolation room
CMOH	Chief Medical Officer of Health
EVD	Ebola virus disease
HCW	health care worker
HPPA	Health Protection and Promotion Act
IPAC	infection prevention and control
LHIN	Local Health Integration Network
MEOC	Ministry Emergency Operations Centre
MERS-CoV	Middle East respiratory syndrome coronavirus
OHS	occupational health and safety
OHSA	Occupational Health and Safety Act
ORA	organizational risk assessment
PAPR	powered air purifying respirators
PIDAC	Provincial Infectious Disease Advisory Committee
PPE	personal protective equipment
PUI	person under investigation
RRA	regional risk assessment
SARS	Severe Acute Respiratory Syndrome virus

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Letter from the Minister of Health and Long-Term Care

Thirteen years have passed since Ontario's health system experienced the outbreak of the Severe Acute Respiratory Syndrome virus, also known as SARS. Thanks to the dedication and ingenuity of public health and health care workers who went above and beyond the call of duty under immense pressure, we managed this serious crisis. But the episode exposed weaknesses in the system; nothing could have more clearly articulated the need to change the way we handle infectious disease threats.

Thanks to the lessons learned from the 2003 SARS outbreak, Ontario stands better prepared with transformed, world-leading public health and health care systems that can anticipate, prepare for and respond to infectious disease threats. But, as strong as our revitalized health system is, there is always room for improvement. It is vitally important that the health system continues to learn, adapt and evolve in order to be highly proactive, responsive and well-functioning. This was brought home by the transmission of Ebola virus disease (EVD) to two health care workers in Dallas, Texas in October 2014. This transmission was a wake-up call to jurisdictions around the world to the challenges of providing care to a patient with EVD and other infectious disease threats.

Caring for a patient with EVD requires hospitals with staff and physicians who have a strong foundation of knowledge in infection prevention & control and occupational health & safety measures, and the ability to continue to provide the necessary care while maintaining these practices. In October of 2014, Ontario took action to enhance the province's readiness to manage any potential case of EVD in the province. These actions were aimed at protecting the health and safety of all Ontarians, including health care workers. I wish to thank all of the dedicated health care workers across the province who helped ensure these actions were implemented. It is because of their efforts that the health and safety of all Ontarians was protected. We now need to build on our collective planning efforts, and this plan is the next step towards building a resilient health system that is ready and able to manage future infectious disease threats.

The safety of all Ontarians, especially our dedicated health care workers, is my top priority – and I am committed to doing everything necessary to ensure our health system is ready and resilient.

Dr. Eric Hoskins
Minister of Health and Long-Term Care

Executive Summary

Building a Ready and Resilient System

The Ministry of Health and Long-Term Care (ministry) is committed to supporting and enabling the systems, structures, skills and culture needed to maintain readiness and to protect health care workers (HCWs) and all Ontarians from infectious disease threats.

The adoption of the Chief Medical Officer of Health (CMOH) Ebola virus disease (EVD) directives established a new baseline for health system readiness and preparedness. While the outbreak in West Africa has ended, it is important that the lessons learned over the past few years are not forgotten. To that end, this plan sets out requirements for a baseline of health system readiness and will enable HCWs and organizations to prepare for and effectively manage and respond to future infectious disease threats through an integrated and resilient process.

This plan represents the first phase of this process and comprises three key parts:

Baseline Requirements

This baseline of health system readiness for infectious disease threats is based on lessons learned from EVD planning in Ontario and does not replace the need for additional guidance to manage specific infectious disease threats. Elements include:

- annual organizational risk assessments (ORAs) for all health care organizations
- identification and implementation of preventive and protective measures based on the hierarchy of controls
    - elimination
    - engineering controls (i.e., facility design, structural barriers, placement of infection prevention and control measures, etc.)
    - administrative controls (i.e., use of signage, reporting processes, waste management, etc.)
    - personal protective equipment
- HCW education and training
- ongoing evaluation and assessment of preventive and protective measures

Accountability and Performance Monitoring

The Occupational Health and Safety Act (OHSA) provides the legal framework to make Ontario's workplaces safe and healthy. The ministry will work closely with the Ministry of Labour to ensure compliance with the OHSA and its regulations.

The OHSA sets out the rights and duties of all parties in the workplace. It establishes procedures for dealing with workplace hazards and it makes provisions for enforcement of the law where compliance has not been achieved voluntarily by workplace parties.

The ministry encourages employers to ensure compliance with the recommendations outlined in this plan and obligations under the OHSA and its regulations by conducting their own internal inspections and audits in consultation with the Joint Health and Safety Committee and Health and Safety Representative (if any).

As part of Phase 2, the ministry may develop performance indicators for the health system to report on compliance with baseline requirements. This can help improve transparency and accountability in Ontario's health system, as well as improve processes to enhance patient safety.

Response Escalation

During the EVD response, the ministry developed a three-tier hospital framework to ensure that the health care system was prepared to manage patients who may have had EVD in Ontario. Hospitals in Ontario served one of three roles: treatment hospitals, testing hospitals and screening hospitals. In the event that a significant infectious disease threat emerges in Ontario, the ministry will activate the Ministry Emergency Operations Centre to provide provincial-level coordination and support. This may include application of a model such as the three-tiered hospital model to ensure that the health system is prepared to manage suspect patients, patients under investigation and confirmed patients. This approach seeks to limit exposure and risk for the public and health care providers by providing a structure to access specialized facilities and expertise in the most appropriate and effective way possible.

The activation of a tiered hospital model would also impact other health system partners, including paramedic services, public health units, primary care organizations and a variety of other health system partners. When the tiered model is activated, Local Health Integration Networks, in collaboration with other partners, may be asked to lead a regional risk assessment to identify local health system risks and potential gaps in health care worker protection at the regional level. This includes working with all hospitals (including screening hospitals) to assess capacity to manage infectious disease threats and to consider interactions within the health system such as referral algorithms to designated testing and treatment hospitals.

During any infectious disease threat, strategies to manage surge should begin at the local level and include the coordinated use of existing systems and resources. If the ability to manage surge within existing systems and resources is exceeded, the ministry may need to consider other options.

Finally, the decision to deactivate a tiered hospital model is made by the ministry, in consultation with a variety of health system partners.

Conclusion and Next Steps

Ontario has taken great steps to improve our health system readiness for infectious disease threats, and through a phased approach, will continue to work towards achieving a sustainable and resilient health system.

Ontario will strengthen readiness by focusing on selecting designated hospitals and paramedic service units, clarifying baseline roles and responsibilities, enhancing surveillance and alerting structures, and developing tools to support routine passive screening, providing clarity and support for workplace policies for infectious disease threats and completion of ORAs. The ministry will also consider the development of additional performance measures aligned with this plan's baseline requirements to improve transparency and accountability.

Ontario will build resilience by focusing on additional activities that support building a resilient health system. These include opportunities to enhance health system capacity with supporting tools and resources (e.g. guidance documents, education, training, equipment/stockpiling, best practices and communication approaches) in response to infectious disease threats.

Introduction

Over the past few years, Ontario's health system has undertaken preparedness activities for a wide range of infectious disease threats such as Ebola virus disease (EVD), Middle East respiratory syndrome coronavirus (MERS-CoV), influenza A (H7N9) and pandemic influenza.

In particular, the 2014-2016 EVD outbreak in West Africa highlighted how an epidemic can spread rapidly and pose significant challenges in the absence of a strong health system capable of a rapid and integrated response. The outbreak began in Guinea in December 2013, but soon spread into neighbouring Liberia and Sierra Leone, with far fewer cases in Mali, Nigeria and Senegal. In early August 2014, the World Health Organization declared EVD a Public Health Emergency of International Concern.

In a changing and globalized world, factors such as international travel, migration, increased population density, displacement and climate change increase the risk of infectious disease threats. Ontario needs to both maintain and continue to build capacity to manage and adapt to these threats, now and in the future.

The Ministry of Health and Long-Term Care (ministry) has developed this plan, *Building a Ready and Resilient Health System,* to help enable the systems, structures, skills and culture to maintain readiness and to protect health care workers (HCWs) and all Ontarians. This plan is for hospitals, paramedic services, primary care organizations and public health units and identifies baseline requirements for health system readiness for infectious disease threats in Ontario.

What You Need to Know…

The Chief Medical Officer of Health (CMOH) is rescinding the Ebola Virus Disease directives.

This plan reinforces baseline requirements for the health system to ensure overall infectious disease threat readiness in Ontario.

Accountability measures will be in place to ensure compliance with these baseline requirements (these will be developed in Phase 2).

This plan will enable HCWs and organizations to prepare for and effectively respond to infectious disease threats. It also supports opportunities to integrate the knowledge gained through the EVD process to continue to adapt and strengthen our level of preparedness. This plan is a path towards building a resilient health system that is ready and able to manage future or escalating infectious disease threats.

For the purpose of this provincial plan…

An infectious disease threat is defined as an infectious disease of public health importance that may have the potential to:

- **spread in Ontario, nationally or internationally and cause significant illness**
- **significantly impact the provincial health system**

Characteristics include:

- has the potential to cause significant illness
- has the potential to pose a risk to health care workers and impact vulnerable populations
- may be difficult to prevent
- may be difficult to treat

Occupational Health & Safety and Infection Prevention & Control Practices

This plan embraces the importance of ensuring safe workplaces throughout the health system to protect HCWs and clients and/or patients and visitors. During the EVD outbreak, the news that two nurses at a Dallas hospital became exposed to the virus while caring for an EVD patient was a reminder of the importance of maintaining strong infection prevention & control (IPAC) and occupational health & safety (OHS) practices. This news also highlighted potential vulnerabilities in managing infectious disease threats and the need to maintain preparedness to ensure a ready and resilient health system. Health sector employers should consider recommendations in this plan related to OHS in developing reasonable precautions in the application of the Occupational Health and Safety Act (OHSA). Employers should view Joint Health and Safety Committees or Health and Safety Representative (if any) as valuable resources and should consult regularly with them in the development of precautions.

Planning Phases

The path to building a ready and resilient health system will occur in three phases. This plan is the first phase of this process; details outlining the other phases are listed below (see Figure 1):

Figure 1: Planning Phases

Phase 1		Phase 2		Phase 3
• Baseline Requirements	→	• Strengthening Readiness	→	• Building Resilience
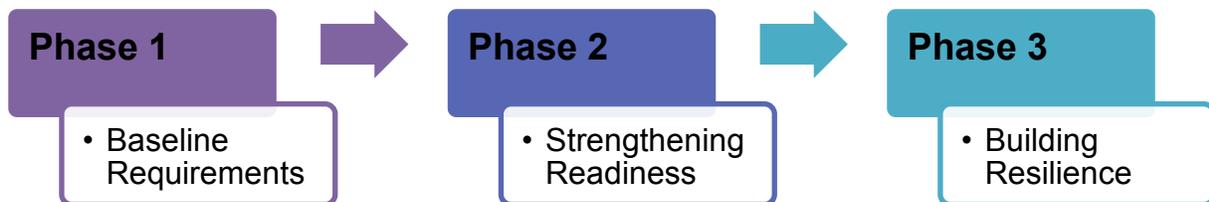
Phase 1 – Baseline Requirements: identifies health system baseline requirements for maintaining an enhanced level of health system readiness for infectious disease threats. The ministry will work with the Ministry of Labour to promote compliance with the OHSA and its regulations.

Phase 2 – Strengthening Readiness: this phase will focus on opportunities to further enhance the structures, capacity and skills to reduce risks and strengthen health system readiness. The ministry may also introduce specific performance measures aligned with this plan's baseline requirements to support a process evaluation, improving consistency, transparency and accountability.

Phase 3 – Building Resilience: this phase will focus on resilience at a health system level, with an emphasis on interdependencies between sectors and opportunities for collaborative planning and coordination to address potential vulnerabilities and reduce risks. Longer term investments in health system resources and capacity building will be addressed to ensure sustainability.

Resilience: An Enhanced State of Health System Readiness

Based on the experience of planning for EVD in Ontario, the ministry is moving towards building a more ready and resilient health system in order to meet the challenges of future infectious disease threats. The adoption of this approach will occur in a number of phases and focus on the following characteristics and health system capacity outcomes (see Figure 2).

Figure 2: System Resilience Theory & Health System Capacity Outcomes

AWARENESS	• Ability to rapidly detect, identify and communicate infectious disease threats • Reporting on system status and impending health threats • Awareness of local health planning • Assessing and addressing vulnerabilities and potential risks
DIVERSITY & SELF-REGULATION	• Capacity across the health system to mount an effective response • Ability to contain and isolate infectious disease threats • Maintaining delivery of high-quality health services
INTEGRATION & ADAPTATION	• Integration of response plans across the health system and occupational health and safety systems • Clear communication and coordination functions • Adaptive capacity to transform, improve function and enhance performance
REVITALIZATION	• Supporting ongoing health system learning • Ability to adapt and grow based on experience

The following section of this report identifies a variety of baseline requirements to support health system readiness for infectious disease threats in Ontario. Many of these activities incorporate aspects of resilience theory. The ministry will further examine additional aspects of resilience within the context of infectious disease threat readiness in subsequent phases of this plan.

Baseline Requirements for Infectious Disease Threat Readiness

This section summarizes (at a high level) a series of important actions for hospitals, paramedic services, primary care organizations and public health units to undertake as a baseline for health system readiness for infectious disease threats in Ontario. This section is further augmented by a series of supplementary baseline readiness checklists

(see appendices A, B, C and D) which are designed to clarify specific actions for each sector.

Employers are also required to comply with applicable provisions of the Occupational Health and Safety Act (OHSA) and its regulations.

To ensure a complete approach to infection prevention & control (IPAC) planning and occupational health & safety (OHS), organizations can also refer to the following resources:

- *Guide to the Occupational Health and Safety Act*

- Ministry of Labour's Infection Prevention and Control webpage

- Ministry of Labour: *A Guide for Joint Health and Safety Committees and Health and Safety Representatives in the Workplace*

- Provincial Infectious Disease Advisory Committee (PIDAC): *Best Practices for Infection Prevention and Control Program in Ontario*

- Canadian Standards Association *CSA Standard Z94.4-11 Selection, Use and Care of Respirators*[1]

These baseline requirements do not replace the need for additional guidance to manage specific infectious disease threats. Organizations should still reference and follow guidance and provincial direction for specific infectious disease threats to enhance activities beyond this baseline if needed.

In the event of a specific infectious disease threat, the ministry may issue additional provincial guidance and/or the Chief Medical Officer of Health may issue directives to health care providers or health care entities to support preparedness and response actions and reinforce important elements specific to the threat.

The key baseline elements for infectious disease threats identified in this plan are:

- organizational risk assessments (ORAs)

- identification and implementation of controls based on the hierarchy of controls
    - elimination
    - engineering controls
    - administrative controls
    - personal protective equipment (PPE)

- HCW education and training

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[1] Please note this plan contains references to third party documents for information purposes only. The Government of Ontario does not exercise control over the content of these documents and is not able to confirm that all information is accurate or current.

- ongoing evaluation and assessment of effectiveness

Organizational Risk Assessment

An ORA is an evaluation done by an organization in order to identify which risks (internal and external) the organization may face, the likelihood of facing those risks and what the impact would be. This process also includes determining whether the level of risk is acceptable or whether controls are required.

Health care organizations must conduct an ORA to assess the risk of infectious disease threat exposure and consider potential transmission for all individuals who use the organization's facilities or vehicles. If applicable, organizations must undertake ORAs in consultation with the Joint Health and Safety Committee, Health and Safety Representatives, OHS team and IPAC team, where these teams exist.

Organizations should conduct an ORA on an annual basis and must re-evaluate it when appropriate, such as for a specific infectious disease threat[2]. This assessment must evaluate the effectiveness of present control measures and the implementation of the hierarchy of controls to prevent the spread of an infectious disease threat.

Hierarchy of Control Measures

The hierarchy of controls is a systematic approach for selecting the most effective preventive and protective measures to eliminate or reduce the risk of workplace hazards, including infectious agents. The controls, in descending level of efficacy and priority include: elimination, engineering controls, administrative controls and PPE. In many cases, a combination of controls will be necessary however the intent is that the highest levels of controls in the hierarchy will be used before lower levels of controls are considered.

The employer is responsible for ensuring that effective controls are optimized.

Elimination

The highest level of control is eliminating the potential source of exposure to a hazard. When elimination of the source is not possible, other controls must be applied.

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[2] For details on specific disease threats please refer to Appendix N in PIDAC's *Routine Practices and Additional Precautions In All Health Settings*

Engineering Controls

Engineering controls focus on design or modification of the work environment and equipment to minimize risk when a hazard cannot be eliminated. These controls either reduce a hazard at its source or provide a barrier between the HCW and the hazard. Based on the results of the ORA, engineering controls may include facility and room design, ventilation systems, room air flow (e.g., airborne infection isolation room (AIIR)), appropriate placement of alcohol-based hand rub dispensers and dedicated hand washing sinks, and physical barriers to separate patients in multi-bed wards or waiting areas.

Physical barriers may protect HCWs in areas such as triage, emergency departments and admitting or outpatient reception areas (e.g., laboratory testing and diagnostic imaging). Health care organizations with reception areas (e.g., clinics and emergency departments) should have suitable structural barriers to protect HCWs doing initial triage as identified by the ORA.

A suitable structural barrier meets the following criteria: impermeable, transparent, easily cleaned and disinfected (including any communication mechanisms, such as a microphone or filter), allows for two-way communication without direct exposure to blood and/or other body fluids, and is of sufficient height and breadth to prevent physical contact and passage of droplets, splash and/or spray. Examples of a suitable structural barrier include a (Plexi) glass or transparent panel or a closed booth with capacity for verbal communication between the HCW and patient.

In some settings, engineering controls may not be available and health sector employers need to focus more on administrative controls and PPE. Selection of needed administrative controls and PPE is considered only once the presence and effectiveness of engineering controls has been evaluated.

The employer is responsible for ensuring that effective controls are implemented and optimized.

Administrative Controls

Administrative controls are those measures that change the way work is done or that introduce new work processes to prevent exposure to and transmission of an infectious agent. Important administrative controls to be considered for infectious disease threats are outlined below. Health organizations must have administrative controls in place based on their ORA and considering the presence and effectiveness of environmental controls.

Written procedures regarding the use of administrative controls are mandated as per s.9 of O. Reg. 67/93 Health Care and Residential Facilities under the OHSA for all

organizations to which the regulation applies. Routinely implemented practices can be enhanced during an infectious disease threat to account for increased risk.

Based on the results of the ORA, administrative controls that may be included in written policies and prevention programs are as follows:

- to report and stay home when a HCW is ill with an infectious disease

- how to complete a point of care risk assessment

- hand hygiene protocol

- cleaning and disinfection

- donning and doffing PPE

- education and training requirements

- respiratory protection program

- waste management and use of biomedical waste containers

- routine passive screening signage in languages appropriate for the organization's demographic, active screening protocols (to be activated based on local or provincial direction, including screening protocols by Ambulance Communication Centres)

- isolation (organizations must be able to isolate patients in an airborne infection isolation room (AIIR), private room or area based on the ORA)

- use of signage to alert and restrict people in the facility from accessing areas of heightened risk (e.g., isolation areas and laboratories handling sensitive specimens)

- reporting (e.g., to meet requirements under the Health Protection and Promotion Act (HPPA) and OHSA)

- managing human remains

- proper use of specialized equipment (e.g., to meet manufacturer specifications)

- planning for routine and specialized laboratory testing in the event of a suspect or confirmed infectious disease threat (this includes collection, transportation and testing of laboratory samples and/or specimens as necessary).

Personal Protective Equipment

PPE that is available within the facility and which staff are trained on and competent to use must be appropriate for use in the circumstances identified by the ORA and selected based on the results of the ORA, the environmental working conditions), and the presence and effectiveness of engineering and administrative controls.

Educational sessions must meet or exceed requirements outlined in the OHSA and O. Reg. 67/93 Health Care and Residential Facilities under the OHSA if applicable.

Health care organizations should maintain a PPE stockpile and ensure it is available at all times in clinical and other areas where it would be reasonably anticipated that specific types of PPE would need to be used. Organizations must also ensure that HCWs have access to sufficient types and quantities of PPE in a variety of sizes. Depending on the organization, this may include the following:

- single-use (disposable) fluid resistant masks

- single-use (disposable) N95 respirators

- single-use (disposable) full face shields (may be supplemented by safety eyewear)

- single-use (disposable) gloves

- full and impermeable body barrier protection

- powered air-purifying respirators (PAPRs), particularly for hospitals that are likely to be testing or treatment hospitals during an escalated response to an infectious disease threat (see Tiered Hospital Model)

When selecting respirators to protect against exposure to aerosolized particles, airborne transmissibility needs to be confirmed and the infectivity of the aerosol needs to be taken into consideration. The use of N95 respirators or PAPRs should be done in accordance with a respiratory protection program that includes training of health workers on the use of the respirator and fit testing prior to wearing the respirator.

Education and Training

Health care organizations must educate, train and re-train HCWs about workplace hazards and the appropriate control measures with regard to infectious disease threats. Education and training are intended to protect the health and safety of all people who use the health care organization's facilities and vehicles especially those HCWs who are likely to be exposed to a suspect case, person under investigation or confirmed case. Educational sessions must meet or exceed requirements outlined in the OHSA and O. Reg. 67/93 Health Care and Residential Facilitates under the OHSA if applicable.

Based on the results of the ORA, organizations should:

- ensure that organizational education and training programs are consistent with established best practices

- ensure that key risks identified in the ORA are addressed in the organizational education and training programs

- identify HCWs at heightened risk of exposure to infectious diseases, prioritize their education and training needs and provide training at regular intervals

- provide hands-on practice tests and drills for HCWs at heightened risk of exposure

- include content on:
    - symptoms and mode of transmission of infectious diseases
    - use of routine practices and additional precautions
    - key components of the organization's plan as it relates to infectious disease threats (if applicable)
    - how to conduct a point of care risk assessment
    - purpose and importance of PPE
    - selection, use and limitations of PPE, including donning and doffing
    - verifying proper fit and inspection for damage of PPE
    - use of trained observers for donning and doffing PPE
    - safe sharps disposal
    - key components of the OHSA
    - isolation practices, including the use of AIIRs, where applicable
    - screening protocols
    - reporting and post-incident requirements
    - cleaning and disinfection requirements
    - waste management
    - managing human remains
    - management of laboratory samples and/or specimens
    - proper use of equipment
    - proper use of engineering controls
    - hand hygiene

- document processes and results of education and training programs, including verifying knowledge and application

- document regular training in the transportation of dangerous goods for laboratory staff

Designated Hospitals and Paramedic Services

Hospitals and paramedic services that are pre-identified as designated facilities to manage infectious diseases will also need to meet the following requirements:

- regular training and hands-on practice tests and drills on a quarterly basis
- regular review of interoperability planning among hospitals, paramedic services and public health units

Ongoing Evaluation and Assessment of Effectiveness

Organizations must undertake evaluations and assessments of the effectiveness of their control measures. Organizations must also document these processes as part of their larger due diligence process.

Detailed Checklists: Baseline Requirements for Infectious Disease Threat Readiness

The ministry has developed a number of detailed checklists to support specific provider groups (i.e., hospitals, paramedic services, primary care organizations and public health units) in maintaining a baseline of infectious disease threat readiness. Please see the following appendices for additional information:

Appendix A - Hospital Checklist: Baseline for Infectious Disease Threat Readiness

Appendix B - Paramedic Services Checklist: Baseline for Infectious Disease Threat Readiness

Appendix C - Primary Care Organizations Checklist: Baseline for Infectious Disease Threat Readiness

Appendix D - Public Health Unit Checklist: Baseline for Infectious Disease Threat Readiness

Accountability Mechanisms and Performance Monitoring of Baseline Readiness

To ensure that the baseline requirements outlined above are implemented and maintained, the ministry will work with healthcare partners to consider additional future accountability mechanisms in Phase 2 of this plan.

Occupational Health and Safety Act

Ministry of Labour (MOL) inspectors enforce the Occupational Health and Safety Act (OHSA), which provides a legal framework for workplace health and safety. They may review documentation that is required under the OHSA. They inspect workplaces to check that both a safe work environment is being maintained and that the workplace is in compliance with the OHSA and its regulations. The OHSA provides inspectors with enforcement tools. Inspectors will take enforcement action, as appropriate, in response to any violations found under the OHSA or its regulations. Enforcement may range from orders being issued to consideration of the laying of charges, as applicable.

Performance Monitoring

The ministry encourages employers to ensure compliance with the recommendations outlined in this plan and obligations under the OHSA and its regulations by conducting their own internal inspections and audits. Employers should regard Joint Health and Safety Committees and Health and Safety Representatives (if any) as valuable resources and fully involve (or consult) them and access their expertise in this process.

As part of Phase 2, the ministry may develop performance indicators for the health system to report on compliance with baseline requirements. These can help improve transparency and accountability in Ontario's health system, as well as inspire improved performance and enhance patient safety.

Response Escalation

Tiered Hospital Model

Situations that have the potential to significantly impact the health system may require provincial level support and coordination. When a significant infectious disease threat emerges in Ontario, consideration needs to be given to the disease type, mode of spread, number of people seeking care, infection prevention and control requirements, and clinical care needs.

Based on this information, the ministry may activate the Ministry Emergency Operations Centre (MEOC) and apply a model such as the three-tiered hospital model[3] to ensure that the health system is prepared to manage suspect patients, persons under investigation (PUIs) and confirmed patients. Depending on the situation, the ministry may need to further modify roles in order to ensure the model functions and performs according to what is needed to manage the infectious disease threat.

Under this type of framework, hospitals in Ontario may be assigned one of three roles:

- **Treatment Hospitals:** Designated to manage confirmed patients, suspect patients and PUIs, including arranging laboratory testing for the infectious disease, as required.

- **Testing Hospitals:** Designated to manage suspect patients and PUIs only, including arranging laboratory testing for the infectious disease, as required.

- **Screening Hospitals:** All other hospitals that are not formally designated as a testing or treatment hospital by the ministry are considered screening hospitals. These hospitals screen ambulatory patients, isolate and assess suspect patients, and arrange for the controlled transfer of PUIs to a testing or treatment hospital via paramedic services so that appropriate testing[4] can be performed.

This approach seeks to limit exposure and risk for the public and health care providers, and provides a structure to access specialized facilities and expertise in the most appropriate and effective way possible. A tiered framework seeks to clarify critical roles and responsibilities to assist with local planning efforts and ensure the health system maintains the ability to provide the right care, at the right time and in the right place.

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[3] Note: This model concerns provincial measures. It does not prohibit local planning through existing mechanisms such as local ambulance bypass protocols or patterns of specialty referrals within the local system that may address exposure to risk and efficient resource use at a local level.

[4] In general, screening hospitals should not conduct laboratory testing on a PUI for other clinical conditions. However, if the screening hospital has procedures in place to provide testing safely, testing for treatable alternative diagnoses may be undertaken in consultation with the public health unit and Public Health Ontario Laboratories (PHOL). This is especially important for conditions in which time to diagnosis is critical.

This model is flexible and provides the ability to modify the number of hospitals designated based on response needs.

Activation of the Tiered Hospital Model

The ministry makes the decision to activate a tiered hospital model in consultation with a variety of health system partners. The ministry may consider activation of the model under the following conditions or circumstances:

- a risk assessment has identified a high level of risk associated with a given disease, potentially including (but not limited to) high infectiousness, high case fatality, difficulty in treating and preventing, or impact to vulnerable populations

- a risk assessment reveals gaps in knowledge and/or information about the disease in question which, based on the precautionary principle[5], require it to be treated as high-risk while further information is sought

- an identified need for facilities or infrastructure with specific capabilities that may not be found in sufficient capacity in all hospitals (e.g., levels of isolation capacity) to support testing for and/or treatment of a given infectious disease

- an identified need for specific knowledge and/or expertise (e.g., infectious disease specialists) that may not be found in sufficient capacity in all hospitals

- a need for a system-level response is identified at the national or provincial level due to a broader infectious disease threat globally or nationally

- the health care system's identification of significant difficulties in responding to an infectious disease due to limitations in capacity, expertise or other factors without extraordinary measures being put in place to support them

- a sufficient level of public concern or public risk perception that health care seeking behaviours are being negatively impacted, such as:

  o care being sought in inappropriate settings (e.g., emergency department level care when primary care would be more appropriate or vice versa) or people avoiding the health care system and not seeking care for health needs when care is needed

  o "worried well' behaviour causing unnecessary strain on capacity of the health care system

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[5] The precautionary principle shall be considered by the Chief Medical Officer of Health where there exists or may exist an outbreak of an infectious or communicable disease and directive relating to worker health and safety in the use of any protective clothing, equipment or device may need to be issued. See section 77.7(2) Health Protection and Promotion Act.

Health System Partners

The activation of a tiered hospital model would also impact other health system partners, including paramedic services, public health units, primary care providers and a variety of other health system partners. Some of these considerations are captured in the below table (see Figure 3):

Figure 3: Other Health Organization Considerations

Paramedic Services	• When the tiered hospital model is established, the ministry will identify specific **designated paramedic services** to transport confirmed patients. This includes inter-facility transfers of confirmed patients from testing to treatment hospitals and transfers of repatriated confirmed patients from an identified international airport to treatment hospitals. Other (non-designated) paramedic services may also play an important role in transporting suspect patients and PUIs.
Public Health	• When the tiered hospital model is established, a variety of **public health activities** may be required. For example, the ministry may ask public health units to monitor returning travellers from affected regions, help arrange transport for symptomatic persons to a treatment or testing hospital, support hospitals in assessing whether a suspect patient requires testing, communicate information within their jurisdiction, etc. The exact nature of these activities would be based on provincial guidance and/or directives.
Primary Care	• When the tiered hospital model is established, the ministry may direct primary care providers to **screen patients for specific infectious diseases** and work with their local public health unit to arrange for the transfer of suspect patients to an appropriate hospital for further assessment by an infectious disease physican.
Other Partners	• When the tiered hospital model is established, it is anticipated that a significant number of other system partners would be **required to support Ontario's response** to an emerging infectious disease threat (e.g., Public Health Ontario, Local Health Integration Networks, Critical Care Services Ontario, Ministry of Labour and law enforcement). These roles and responsibilities will be further examined in subsequent phases of this plan.

Implementation and Adaptation of the Tiered Hospital Model

Once the ministry makes a decision to activate the tiered hospital model, implementation of this model occurs through provincial guidance by the ministry or directives issued by the Chief Medical Officer of Health (CMOH) to health care providers and health care entities. The nature of these provincial directions is based on the specific circumstances of the infectious disease threat and provincial risk assessment. Similarly, the ministry's designation of specific hospitals as treatment or testing facilities is based on a provincial risk assessment, regional risk assessments and consultation with key partners.

After the ministry initially activates the tiered model, the model may need to be further adapted over time to address the evolving needs of the health system in managing an infectious disease threat while ensuring access to medical care. For example, it may be necessary to activate and/or deactivate different hospitals at different times to ensure adequate geographic coverage, access to specialty services, effective use of resources, etc. This may also impact other health system partners (e.g., paramedic services, public health, primary care, etc.).

When the tiered hospital model is not activated, all hospitals are expected to maintain the baseline requirements outlined in this plan.

Deactivation of the Tiered Hospital Model

The ministry makes the decision to deactivate the tiered hospital model in consultation with a variety of health system partners. The ministry may consider deactivation of the model under the following conditions or circumstances:

- the risk ceases to exist (e.g., an outbreak is declared over and/or a disease is contained)
- the risk reduces to the level of sporadic or individual cases with minimal larger concerns
- new information and/or evidence is obtained and a risk assessment indicates that a lower level of precautions is needed than those previously based on the precautionary principle in the absence of confirmed information
- a successful intervention is identified or developed (e.g., vaccine or treatment)
- the health care system indicates that the activities required to manage the disease in question are able to be absorbed into the ongoing operational capacity and special measures are no longer required

- the ministry has assessed that the activities required to deal with the disease in question are no longer considered special or emergency and are able to be absorbed into the ongoing operational capacity

- a disease has established itself as endemic in Ontario and the health system must establish a new level of normal designed to deal with it on a regular basis; in this event, some patterns of specialty referral may still remain active

Regional Risk Assessment

When the tiered model is activated, the ministry will ask Local Health Integration Networks (LHINs), in collaboration with other partners, to lead a regional risk assessment (RRA) to identify local health system risks and potential gaps in health care worker (HCW) protection at the regional level. This includes working with all hospitals (including screening hospitals) to assess the capacity to manage infectious disease threats as well as considering interactions within the health system (such as referral algorithms to designated testing and treatment hospitals). LHINs must give consideration to the distance and risk of transport when considering interactions within the health system, especially for hospitals that are geographically remote.

Regional Risk Assessment in Action

LHINs must consider (at a minimum) the following when conducting an RRA:

- hospital capacity to manage infectious diseases

- transport assumptions and potential risk to hospitals in geographically distant locations and vulnerable locations

- duration of transport and risk to paramedic services and partner services (e.g., receiving facilities)

- availability of air or land transport

- diagnostic and transportation capacity

- need for additional actions, equipment or resources to reduce risk to HCWs in extenuating circumstances

- contingency plan to ensure adaptive capacity of local system if assumptions are incorrect

The risks identified in the RRA will help determine additional planning considerations based on those risks. These additional planning considerations may include enhanced protection for HCWs when the transfer of suspect patients is delayed or when a community is vulnerable to frequent travel from affected regions. Health care facilities will need to take measures to manage the risks identified. The ministry will identify when a RRA is required based on the provincial risk assessment.

Provincial Level Coordination and Support

In circumstances where the ministry initially activates a tiered hospital model in response to an infectious disease threat, the ministry will also activate the Ministry Emergency Operations Centre (MEOC) to provide provincial-level coordination and support. The MEOC will collaborate and share information across levels of government and with health sector partners, including guidance and CMOH directives as appropriate.

In the event of a significant infectious disease threat, the MEOC will support partners in accessing provincial and/or federal resources through existing decision-making structures. The following provincial and federal resources may be made available to support response efforts based on the risk profile and potential needs within the health system to manage the situation or disruption (see Figure 4):

Figure 4: Provincial and Federal Support Resources

Provincial
- Emergency Medical Assistance Team
- Public Health Ontario
- Provincial Emergency Stockpile
- Ontario Government Pharmaceutical and Medical Supply Service
- Other provincial resources

Federal
- National Emergency Stockpile System
- National Microbiology Laboratory
- Other federal resources
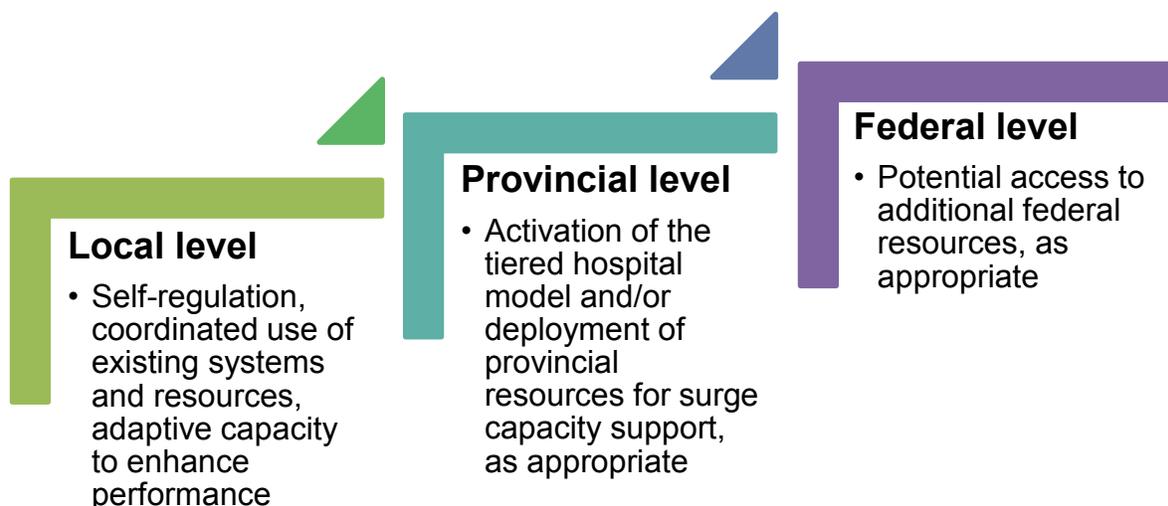
Increasing Surge Capacity

One potential impact of an infectious disease threat is the demand for health services that may place a strain on existing health system capacity. This could be due to a number of factors and may require the health system to increase surge capacity.

Strategies to manage surge begin at the local level. Local level strategies include the coordinated use of existing systems and resources such as:

- hospital emergency department surge capacity strategies deployed to manage the initial situation or disruption

- paramedic services tools to support management of emergency department surge

- full utilization of all regulated health professionals and expanded utilization where appropriate (Health care entities could consider using students in an appropriate manner (e.g. under supervision of a regulated health professional) during periods of expressive demand)

- the role of the LHINs in assessing local health system capacity and sustainability, supporting critical care surge, and local emergency management coordination

- Critical Care Services Ontario's Surge Capacity Management Plan expectations of hospitals and LHINs for critical care capacity and other relevant policies

If the ability to manage surge within existing systems and resources is exceeded, the ministry may need to consider other options such as the tiered response model, provincial resources (e.g., supplies and equipment) and the Emergency Medical Assistance Team (EMAT). If the ability to manage surge with the help of provincial resources is exceeded, accessing options at the federal level may need to be considered (see Figure 5).

Figure 5: Surge Capacity Escalation

Local level
- Self-regulation, coordinated use of existing systems and resources, adaptive capacity to enhance performance

Provincial level
- Activation of the tiered hospital model and/or deployment of provincial resources for surge capacity support, as appropriate

Federal level
- Potential access to additional federal resources, as appropriate

Conclusion and Next Steps

Developing a ready and resilient system

The Ebola virus disease outbreak in West Africa proved to be an unprecedented challenge in its scope, scale and complexity. It left little doubt about the need for a strong health care system capable of a rapid and integrated response. Ontario has taken great steps to improve our health system readiness for infectious disease threats and, through a phased approach, will continue to work towards achieving a sustainable and resilient health system.

KEY POINTS

1. The ministry has identified baseline requirements to support readiness for infectious disease threats in this plan.
2. A key objective of this plan is to develop a resilient health system to respond to infectious disease threats and adapt to changing circumstances.
3. This plan will be implemented using a phased approach.
4. The ministry will cooperate with the Ministry of Labour to assist employers in complying with their obligations for infectious disease threats under the Occupational Health and Safety Act.

Appendix A – Hospital Checklist: Baseline Requirements for Infectious Disease Threat Readiness

The information below identifies the baseline requirement actions to support infectious disease threat readiness:

Organizational Risk Assessment (ORA)

- ☐ ORA conducted in consultation with the Joint Health and Safety Committee, Health and Safety Representatives (if any), occupational health & safety team, and the infection prevention & control team to assess the risk of infectious disease threat exposure
- ☐ ORA conducted on an annual basis and re-evaluated with an action plan when appropriate

Elimination

- ☐ risks eliminated where possible

Engineering Controls

- ☐ suitable structural barriers to protect HCWs doing triage in reception areas (e.g. clinics and emergency departments)
- ☐ airborne infection isolation rooms (AIIRs) where applicable

Administrative Controls

- ☐ education and training (see below for further baseline actions)
- ☐ how to complete a point-of-care risk assessment
- ☐ cleaning and disinfection
- ☐ donning and doffing personal protective equipment (PPE)
- ☐ waste management and use of biomedical containers
- ☐ passive screening signage (languages appropriate for the organization)
- ☐ active screening (to be activated based on local or provincial direction)
- ☐ isolation (must be able to isolate a patient in an AIIR, private room or area based on the ORA)

- ☐ use of signage to restrict people in the facility from accessing areas of heightened risk (e.g., isolation areas and laboratories handling sensitive specimens)
- ☐ reporting (e.g., to meet requirements under the Health Protection and Promotion Act (HPPA) and Occupational Health and Safety Act (OHSA)
- ☐ managing human remains
- ☐ proper use of specialized equipment (e.g., to meet manufacturer specifications)
- ☐ laboratory collection, transportation and testing processes and training in transportation of dangerous goods as necessary
- ☐ respiratory protection program

PPE

- ☐ PPE selected based on the results of the ORA, the environmental working conditions, considering the presence/effectiveness of engineering and administrative controls
- ☐ a PPE stockpile maintained and availability of PPE ensured at the point-of-care at all times
- ☐ access to sufficient types and quantities of PPE in a variety of sizes

Education and Training

- ☐ based on the outcomes of the ORA
- ☐ HCWs at heightened risk of exposure to infectious disease threats identified, their education and training needs prioritized, and training provided at regular intervals
- ☐ hands-on practice tests and drills for HCWs at heightened risk of exposure
- ☐ training on:
    - ☐ symptoms and mode of transmission for infectious diseases
    - ☐ use of routine practices and additional precautions
    - ☐ key components of the organization's plan as it relates to infectious disease threats (if applicable)
    - ☐ how to conduct a point of care risk assessment
    - ☐ selection, use and limitations of PPE, including donning and doffing
    - ☐ purpose and importance of PPE
    - ☐ verifying proper fit and inspection for damage of PPE
    - ☐ use of trained observers for donning and doffing PPE, based on results of ORA
    - ☐ safe sharps disposal (if applicable)

- ☐ key components of the OHSA
- ☐ isolation practices, including the use of AIIRs, where applicable
- ☐ screening protocols
- ☐ reporting requirements
- ☐ cleaning and disinfection requirements and waste management
- ☐ managing human remains
- ☐ management of laboratory samples/specimens
- ☐ proper use of equipment
- ☐ proper use of engineering controls
- ☐ hand hygiene
- ☐ other measures and procedures
- ☐ processes and results of education and training programs documented
- ☐ Laboratory Training in specimen handling and transportation of dangerous goods

Evaluation

- ☐ undertake evaluations and assessments of effectiveness of control measures and document these processes

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Appendix B – Paramedic Services Checklist: Baseline Requirements for Infectious Disease Threat Readiness

The information below identifies the baseline requirement actions to support infectious disease threat readiness:

Organizational Risk Assessment (ORA)

- ☐ ORA conducted in consultation with the Joint Health and Safety Committee, Health and Safety Representatives (if any), occupational health & safety team, and the infection prevention & control team to assess the risk of infectious disease threat exposure
- ☐ ORA conducted on an annual basis and re-evaluated with an action plan when appropriate

Elimination

- ☐ risks eliminated where possible

Engineering Controls

- ☐ suitable structural barriers to protect paramedics based on the ORA

Administrative Controls

- ☐ education and training (see below for further baseline actions)
- ☐ how to complete a point-of-care risk assessment
- ☐ cleaning and disinfection
- ☐ donning and doffing personal protective equipment (PPE)
- ☐ waste management and use of biomedical containers
- ☐ active screening (to be activated based on local or provincial direction, includes screening protocols by the Ambulance Communication Centres)
- ☐ isolation (must be able to isolate a patient based on the ORA)
- ☐ reporting (e.g., to meet requirements under the Health Protection and Promotion Act and Occupational Health and Safety Act (OHSA))
- ☐ managing human remains

☐ proper use of specialized equipment (e.g., to meet manufacturer specifications)

☐ respiratory protection program

PPE

☐ PPE for the organization selected based on the results of the ORA, the environmental working conditions, and the presence/effectiveness of engineering and administrative controls

☐ a PPE stockpile maintained and availability of PPE ensured at the point-of-care at all times

Education and Training

☐ based on the outcomes of the ORA

☐ HCWs at heightened risk of exposure to infectious disease threats identified, their education and training needs prioritized and training provided at regular intervals

☐ hands-on practice tests and drills for HCWs at heightened risk of exposure

☐ training on:

    ☐ symptoms and mode of transmission for infectious diseases

    ☐ use of routine practices and additional precautions

    ☐ key components of the organization's plan as it relates to infectious disease threats (if applicable)

    ☐ how to conduct a point of care risk assessment

    ☐ selection, use and limitations of PPE, including donning and doffing

    ☐ purpose and importance of PPE

    ☐ verifying proper fit and inspection for damage of PPE

    ☐ use of trained observers for donning and doffing PPE, based on results of ORA

    ☐ safe sharps disposal (if applicable)

    ☐ key components of the OHSA

    ☐ isolation practices, including the use of negative pressure isolation vessels, where applicable

    ☐ measures and procedures

    ☐ screening protocols

    ☐ reporting requirements

    ☐ cleaning and disinfection requirements and waste management

    ☐ managing human remains

- □ management of laboratory samples/specimens
- □ proper use of equipment
- □ proper use of engineering controls
- □ hand hygiene
- □ processes and results of education and training programs documented

Evaluation

- □ evaluations and assessments of effectiveness of control measures and documented processes

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Appendix C – Primary Care Organizations Checklist: Baseline Requirements for Infectious Disease Threat Readiness

The information below identifies the baseline requirement actions to support infectious disease threat readiness:

Organizational Risk Assessment (ORA)

☐ ORA conducted in consultation with the Joint Health and Safety Committee, Health and Safety Representatives (if any), occupational health & safety team, and the infection prevention & control team to assess the risk of infectious disease threat exposure

☐ ORA conducted on an annual basis and re-evaluated with an action plan when appropriate

Elimination

☐ Risks eliminated where possible

Engineering Controls

☐ Suitable structural barriers to protect HCWs (e.g., clinical settings) (if applicable)

Administrative Controls

☐ education and training (see below for further baseline actions)

☐ how to complete a point-of-care risk assessment

☐ cleaning and disinfection

☐ donning and doffing personal protective equipment (PPE)

☐ waste management and use of biomedical containers

☐ passive screening signage (languages appropriate for the organization)

☐ active screening (to be activated based on local or provincial direction)

☐ isolation (must be able to isolate a patient in a private room or area based on the ORA)

☐ reporting (e.g., to meet requirements under the Health Protection and Promotion Act and Occupational Health and Safety Act (OHSA))

PPE

☐ PPE for the primary care setting selected based on the results of the ORA, the environmental working conditions, and the presence/effectiveness of engineering and administrative controls

☐ a PPE stockpile maintained and availability of PPE ensured at the point-of-care at all times

Education and Training

☐ based on the outcomes of the ORA

☐ HCWs at heightened risk of exposure to infectious disease threats identified, their education and training needs prioritized and training provided at regular intervals

☐ training on:

    ☐ symptoms and mode of transmission for infectious diseases

    ☐ use of routine practices and additional precautions (RPAP)

    ☐ process to screen patients

☐ processes and results of education and training programs documented

Appendix D – Public Health Unit Checklist: Baseline Requirements for Infectious Disease Threat Readiness

The information below identifies the baseline requirement actions to support infectious disease threat readiness:

Organizational Risk Assessment (ORA)

☐ ORA conducted in consultation with the Joint Health and Safety Committee, Health and Safety Representatives (if any), occupational health & safety team, and the infection prevention & control team to assess the risk of infectious disease threat exposure

☐ ORA conducted on an annual basis and re-evaluated with an action plan when appropriate

Elimination

☐ risks eliminated where possible

Engineering Controls

☐ suitable structural barriers to protect public health workers (if applicable)

Administrative Controls

☐ education and training (see below for further baseline actions)

☐ how to complete a point-of-care risk assessment

☐ cleaning and disinfection

☐ donning and doffing personal protective equipment (PPE)

☐ waste management and use of biomedical containers

☐ reporting (e.g., to meet requirements under the Health Protection and Promotion Act and Occupational Health and Safety Act (OHSA))

☐ processes to monitor returning travellers from affected regions (based on provincial direction), help arrange transport for symptomatic persons to a treatment or testing hospital, and assess whether a suspect patient requires testing

PPE

- ☐ PPE for the organization selected based on the results of the ORA, the environmental working conditions, and the presence/effectiveness of engineering and administrative controls
- ☐ a PPE stockpile maintained and availability of PPE ensured at the point-of-care at all times

Education and Training

- ☐ based on the outcomes of the ORA
- ☐ HCWs at heightened risk of exposure to infectious disease threats identified, their education and training needs prioritized and training provided at regular intervals
- ☐ training on:
  - ☐ symptoms and mode of transmission for infectious diseases
  - ☐ use of routine practices and additional precautions
- ☐ processes and results of education and training programs documented

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