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COVID-19 pandemic guidance for the health care sector

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Introduction

The purpose of this document is to provide planning guidance for the delivery of health care in Canada during the COVID-19 pandemic, which is expected to result in a prolonged period of increased demand on the health care system. The primary audience is the federal/provincial/territorial (FPT) health sector, although the guidance may also be of use to regional and local health authorities, health professional associations, and others involved in the delivery of health care.

The guidance has been adapted from unpublished material developed for the Health Care Services Annex of _Canadian Pandemic Influenza Preparedness: Planning Guidance for the Health Sector_ (CPIP). As it is primarily planning guidance, it is recognized that some of the suggested actions (e.g., stockpiling) may not be feasible until pandemic wave activity subsides. Guidance for health professionals on the clinical management of COVID-19 patients, infection, prevention and control (IPC), and laboratory protocols is not addressed in this document but may be found at: Coronavirus disease (COVID-19): For health professionals.

The objectives of the health care system during the COVID-19 pandemic are:

- To provide optimal care for patients with suspected or confirmed COVID-19 and those with urgent non-COVID-19 conditions;
- To maximize the effectiveness and efficiency of the delivery of health care services with the available resources (e.g., human and material); and
- To prevent the spread of COVID-19 in health care settings.

2.0 Context for Planning

2.1 Role of the Health Care System in the Pandemic Response

All levels and all parts of the health care system are involved in the health care response to the COVID-19 pandemic. The coordination of services between all levels of government, across the continuum of care within a health region, and within and across jurisdictions, is integral to an effective and efficient response. Linkages with public health will help ensure that health care providers stay informed of local surveillance information and relevant public health guidance, activities, and initiatives. Coordination with other components of the pandemic response (e.g., surveillance, laboratory, public health measures) are crucial for optimal health care system functioning.

During the COVID-19 pandemic, the health care system will be responsible for the assessment and management of men, women and gender diverse individuals with suspected or confirmed COVID-19, while continuing to provide services for urgent non-COVID-19 health care needs. Experience in other countries suggests that the COVID-19 pandemic will be very challenging for the Canadian health care system and may even overwhelm it.

The impacts and burden of COVID-19 on health and related health outcomes might differ according to sex/gender and other socio-demographic and economic characteristics, which would require an adapted health care response. For example, preliminary data for COVID-19 demonstrate roughly equal number of cases of the disease between men and women; however emerging evidence suggests that there is higher mortality in men than women [1].

Strategies are required to minimize the stress on the health care system in order to maintain its operations at the best possible level. These strategies include the use of telephone and internet assessment and advice, promotion of self-care and self-isolation where appropriate, and facilitation of appropriate access to primary care services in order to meet diverse needs of populations. Recent innovative approaches and technologies (e.g. virtual assessments and monitoring tools, digital devices) will play a role in diverting patients from health care facilities.

During the COVID-19 pandemic, primary care providers (e.g., family physicians, nurse practitioners, nurses and pharmacists) will provide assessment and treatment for ambulatory COVID-19 patients, either in traditional settings or in COVID-19 assessment centres.

Hospitals will be responsible for providing treatment for more seriously ill patients with COVID-19, as well as patients with urgent non-COVID-19 related illnesses. Emergency departments and intensive care units (ICUs) will be particularly stressed. Patients needing critical care in smaller communities may need to be transferred to larger centres.

Emergency medical/paramedic services will provide prehospital care (i.e., initial assessment and treatment for ill individuals in the community) and transportation to or between health care facilities. These prehospital care providers will face greater demands from an increased volume of infectious patients and the possibility of overwhelmed emergency departments. In remote and isolated communities, many patients may need to be transferred to larger centres, based on initial and secondary assessment, often by air ambulance.

Long term care (LTC) facilities and home care services will be encouraged to care for COVID-19 patients in place and may be asked to take on additional non-COVID-19 patients/clients to help relieve pressure on hospitals.

Mental health, social services and other community support services will also help support the response. Other organizations such as the Canadian Blood Services and Héma Québec will need to continue operations.

Comprehensive infection, prevention, and control (IPC) and occupational health (OH) programs are essential underpinnings for every setting where health care is provided. They will help ensure that effective processes and activities are in place to prevent or minimize transmission of COVID-19 within the organization.

The health care workforce is integral to an effective pandemic response and needs to be trained and competent in their response roles. Strategies to optimize the use of health care workers are needed along with mechanisms to augment human resources and the provision of support for health care workers involved in the response. Health care workforce diversity needs should also be considered in an effective pandemic planning and response, as their sex gender, age, Indigenous identity, ethnicity, rural or urban setting might all play a role in the levels of preparedness and service delivery.

Health professional associations will play a major supporting role in education, advocacy and member support.

2.2 Understanding Canada's Diversity

Canada's geography and diversity of populations can create challenges in delivering health care during a pandemic. Community size and accompanying health care resources vary greatly across the country. Canada is diverse in terms of language, religious beliefs, ethnicity, culture, and lifestyle, all of which can affect health care access and delivery differently.

Vulnerability – It is important to address the needs of individuals with vulnerabilities in each jurisdiction. This includes sex, gender and diversity differences, such as persons who are biologically at risk, along with those whose circumstances might require tailored services relating to information needs (e.g., language, cultural style and methods of dissemination); access to assessment, treatment and convalescence support; and need for support for activities of daily living. FPT planners should allow sufficient local flexibility to address the unique needs of persons with vulnerabilities. Strategies may include alternative options for accessing assessment and treatment, such as offering home visits, reaching persons who are homeless through shelter or community health centre-based clinics, and using multilingual family members or interpreters to help with communication. Careful planning is also

needed for closed settings with a significant number of vulnerable persons, such as LTC facilities and prisons, to minimize risk of exposure and to manage ill residents and staff. FPT governments should also address health care access for persons who do not have health insurance, including illegal migrants.

COVID-19 specific advice for vulnerable populations can be found at: Planning advice for vulnerable populations that was developed for pandemic influenza may also be useful for COVID-19. [2] [3]

Remote and isolated communities – The provision of health care services in remote and isolated communities can be particularly challenging. In many areas, health care services are carried out in nursing stations and health centres. Primary health care is often provided by a small number of health care workers (HCWs), usually nurses working in an expanded role, some of whom visit communities but do not reside in them. There may be limited capacity to provide acute care and a lack of medical equipment, supplies and services (e.g., ventilators, oxygen therapy) to treat critically ill patients. Telemedicine provides useful support to many such communities. Remoteness and inclement weather can affect the feasibility of evacuating ill patients; delivery of food, supplies and medications; and the availability or reliability of telecommunications and technology.

2.3 Guiding Principles and Approaches

The CPIP principles underpinning Canadian pandemic preparedness and response activities also apply to the delivery of health care during the COVID-19 pandemic.

The main guiding principles are:

- Collaboration – All parts of the health care sector need to work together to provide optimal care for the most people.
- Evidence-informed decision-making – Guideline development and decisions, e.g., resource allocation, should be based on the best available evidence to the extent possible. It is recognized that other factors also enter into decision-making, such as legal and institutional constraints, values, costs and availability of resources.
- Proportionality – The response to the pandemic should be appropriate to the level of the threat and tailored to the anticipated pandemic impact and local situation.
- Flexibility – Actions taken should be tailored to the situation and subject to change as new information becomes available. Patterns of spread mean that regional and local jurisdictions will require flexibility in terms of the scale and timing of their response. The response in remote and isolated communities may differ considerably from that in well-resourced urban settings.

In addition to these main guiding principles, Canadian health care planning and response activities are also guided by:

- A precautionary/protective approach – This approach is particularly applicable in the early stages of pandemic when evidence-informed decision-making may not be possible due to lack of data and the uncertainty of the evolving event. As evidence emerges, actions further informed by evidence may supersede those precautionary measures taken at the outset.
- Use of established practices and systems to the extent possible – Well-practised strategies and processes can be rapidly ramped up to manage the pandemic.
- Ethical decision-making – Ethical principles and societal values should be explicit and embedded in all decision-making, including the processes used to make decisions for resource allocation and patient triage if needed.

2.4 Ethical Considerations

Ethical issues will inevitably arise during the COVID-19 response. Ethical analysis helps to identify these ethical issues, determine the most appropriate course of action among various options, and make the process fair, just and transparent. [4] Many of the ethical issues that will be encountered in the provision of health care during the pandemic involve balancing rights, interests and values. Ethical considerations that are particularly relevant include:

- Trust and solidarity – Creating and maintaining relationships based on trust between patients and their health care providers and among health care providers is essential for an effective health care response.
- Reciprocity – Those who face disproportionate burdens in their duty to protect the public such as HCWs and others who are functioning in a health care capacity (e.g., police or fire personnel who are providing medical first response) should be supported by society, and to the extent possible those burdens should be minimized.
- Stewardship – This concept refers to managing health care resources and making decisions responsibly, and acting with integrity and accountability.
- Equity and fairness – Benefits and risks should be fairly distributed across the population as much as possible. Decisions should take health inequities into account and try and minimize them. What constitutes fair and equitable distribution will be context dependent. For example, when health care resources are in extremely short supply, fair distribution may entail a strategy where individuals most likely to survive will be prioritized in order to maximize the benefits.
- Good decision-making processes – Decision-making processes should be open and transparent, accountable, inclusive (e.g., of stakeholder views) and reasonable, resulting in decisions that are rational, proportional, evidence-informed and practical.

Decisions over resource allocation in the provision of care – As our health care system is already strained, the influx of COVID-19 patients may overwhelm health care resources resulting in scarcities of medicines, equipment, supplies, and HCWs. This will require resource allocation decisions including prioritization of patient access to scarce resources including acute care, critical care, oxygen support, ventilator support, and extracorporeal membrane oxygenation (ECMO) support. If patients are not eligible for critical care resources, they should be provided with palliative care and/or pain management. [5]

To manage shortages, the health care system should make prioritization decisions based on ethical principles and clear criteria. Ethical decision-making frameworks should be developed at the systems level and openly communicated so that HCWs and the public know what to expect. Mechanisms for reviewing decisions are needed in order to capture feedback from stakeholders on key decisions and to resolve disputes and challenges. [6] Prioritization guidelines should be developed so that triage decisions will be fairly made and based on more than individual clinical judgement. [7]> The allocation of scarce resources is discussed in more detail in Section 4.5.

Roles and obligations of health care workers and their employers - The duty to care for the sick is a primary ethical obligation for HCWs, as is their duty not to harm others by transmitting disease. In this pandemic, HCWs may face overwhelming demands. They will be forced to weigh their obligations to provide patient care with competing obligations, such as protection of their own health and that of family and friends. Professional codes of ethics (e.g., from regulatory colleges or associations) provide guidance on professional responsibilities during public health emergencies.

If HCWs are to take higher risks by caring for infectious patients during a pandemic, their employers and institutions have a reciprocal obligation to support them. Employers should develop fair and workable human resource plans for emergency situations while taking into consideration gender roles (e.g., women's tendency to take on more caregiving responsibilities in family and home settings). Also, they should also provide for the health

and safety of workers (e.g., through provision of training and appropriate PPE) and provide personal and psychological support. Employers should also consider diverse needs of their employees, such as single parents and provide support for ill employees. HCW support is described in more detail in Section 4.3.4.

2.5 Legal Considerations

Numerous legal issues will arise during the provision of health care.

Federal government – Enabling legislation and agreements should be established, if not already in place, for all actions that the federal government might need to take regarding the provision of health care, including approving new medications and formulations and facilitating rapid access to drugs and medical devices.

Provincial/Territorial (PT) governments – PTs should ensure that any required enabling legislative or policy provisions are in place for any actions they might expect to take regarding the provision of health care during the COVID-19 pandemic. Such areas include:

- ability to obtain the use of buildings/sites for expanded operations;
- access to transportation, materials, administrative staff and other resources;
- human resource issues including safety and protection of workers, fair compensation, liability insurance and workers compensation (including coverage of volunteers), training, provision of clothing and equipment, and job protection for workers who take leave to assist in the crisis;
- ability to adjust fee codes and practice arrangements (e.g., for rostered patients);
- authorization to collect health care information that will be needed to manage the health care system during a pandemic; and
- negotiating with regulatory colleges to expand the scope of practice of certain health professionals to support the pandemic response.

Regulatory authorities – Regulatory colleges govern the practice of most health professionals (doctors, nurse practitioners, nurses, pharmacists etc.) in each PT. They are responsible for establishing requirements to practise, setting practice standards, administering a quality assurance program, and enforcing standards of practice and conduct. Regulatory colleges are encouraged to develop policies for:

- rapid temporary licensure of health professionals already licenced in another PT to allow for transferability between jurisdictions (for mutual aid arrangements);
- rapid temporary licensure of recent retirees or foreign-trained health professionals who are prepared to help in a pandemic;
- arrangements for medical students/residents and nursing students, and other regulated health professionals, to play a larger role in the pandemic response, in cooperation with appropriate faculties;
- delegation of controlled acts and medical directives; and
- expectations of health professionals during a public health emergency, including duty to care, responsibility to stay informed and working outside one's usual scope of practice.

Health care organizations – Health care organizations should review any legal or liability issues that could be associated with their operations during the COVID-19 pandemic, including the following:

- acquisition and use of additional space for expanded operations;
- acquisition of surge capacity staff and volunteers;
- potential adjustments to working arrangements, including those that might be affected by union contracts; and

- policies needed to support expanded operations e.g., medical directives and delegation of controlled acts; and mutual aid arrangements.

2.6 Roles and Responsibilities

The PTs are responsible for organizing and delivering most health care in Canada. The federal government, however, is responsible for delivery and/or support of health care services to key populations which are defined in CPIP as follows:

- First Nations on-reserve, inclusive of First Nations who have assumed responsibility for health services under a transfer agreement;
- active members of Canadian Forces;
- federal offenders or inmates of federal penitentiaries;
- refugee claimants, protected persons, detainees under the *Immigration and Refugee Protection Act,* rejected refugee claimants, and other specified populations; and
- Canada-based staff at missions abroad.

Table 1 sets out the governmental roles and responsibilities for health care services in a pandemic; it has been adapted from the CPIP main body, Section 3.4.2.

Table 1 – FPT Government Roles and Responsibilities for Health Care Services in a Pandemic

Level of government	Roles and responsibilities
Federal government	- Ensuring the provision of health services, medications, supplies and equipment for specified key populations/employees who normally access federally operated health care services; - Facilitating access to surge capacity, including from federal programs, employees and resources, to support PT responses if required; - Mobilizing medical equipment and supplies in the National Emergency Stockpile (NESS) as surge capacity to support FPT responses; - Facilitating the acquisition of extra medical supplies through Public Services and Procurement Canada and other federal agencies as appropriate; and - Approving new medications and devices.
PT governments	- Providing health care services for persons within their jurisdiction, including federal populations while leveraging agreements that are in place; - Developing plans to increase surge capacity in order to care for affected persons in their jurisdiction; - Developing and maintaining memoranda of understanding and protocols as needed, preferably before the pandemic, to facilitate interprovincial/territorial movement of patients and licensed health care professionals during a pandemic and other aspects of mutual aid; - Developing, as necessary, a strategy for collecting and monitoring data on health care service use; - Ensuring the provision of medications, supplies and equipment required for provision of pandemic health care services; - Working collaboratively to establish protocols and guidelines for prioritizing health care services during times of high service demand and staff or supply shortages in the respective jurisdiction; and - Communicating with health care organizations and professionals within their jurisdiction.

Level of government	Roles and responsibilities
FPT governments in collaboration:	• Coordinating and aligning plans and activities for federal populations with PT plans, where relevant; • Facilitating, coordinating, and supporting the development and implementation of multijurisdictional mutual aid agreements, such as the Operational Framework for Mutual Aid Requests (OFMAR); • Ensuring the development and dissemination of clinical care guidance; and • Developing and implementing IPC guidance for health care settings.

3.0 Health Care Delivery

3.1 Introduction

During a pandemic, the health care system will be responsible for the assessment and care of persons with suspected or confirmed COVID-19, as well as maintaining services for urgent non-COVID-19 conditions. Shortages of resources (personnel, supplies, equipment, and space) may limit the ability to respond. Furthermore, the global nature of the crisis means that other PTs or countries will not likely be able to provide assistance. Changes to the standard of care may be required if the demand for services becomes overwhelming and shortages of critical resources necessitate operational adjustment. [8] [9] [10]

Using the Incident Management System (IMS) to organize the health emergency response is recommended for all jurisdictions. Business continuity plans and surge capacity plans should be readied for implementation as needed.

Electronic information management systems are essential tools for monitoring service delivery and resource utilization across the health care system and for transferring information among organizations. Jurisdictions can use newer technologies and digital solutions that can contribute to an effective pandemic response, e.g., social media; virtual approaches to assessment and education; and expanded use of virtual care including telehealth, especially in remote areas.

Situational awareness is critical to keep all parts of the health care sector aware of evolving surveillance information, FPT information and directives, and pandemic guidance as it becomes available. Governments should arrange to monitor and obtain pandemic information from reliable sources and develop a dissemination plan to keep the health sector informed. Appropriate and timely sharing of health care utilization data (e.g., ER volume and wait times, hospital admission rates) with local/regional pandemic response teams can inform the need to implement planned interventions, such as establishing COVID-19 assessment centres or implementing other innovative approaches to assessment and treatment.

3.2 Setting and Provider-specific Planning Considerations

3.2.1 Virtual Assessment and Triage

Telephone, web-based, and other means of telecommunications technology should be used to provide assessment, triage, and advice. These are effective ways to manage and reduce the less urgent demand for health care, while also reducing the risk of unnecessary exposure in a health care setting.

Planning considerations for these services during a pandemic include the following: [11] [12]

• telephone lines might have to operate 24/7;

- toll free lines should be provided along with measures (if possible) to ensure access for persons in rural and remote areas who might have limited internet or telephone service;
- high user volumes can be expected, so business continuity and surge capacity planning for additional equipment and staff are needed to meet demand and prevent staff burnout. A tool for estimating call volume during a pandemic may be useful in planning; [13]
- protocols and standard operating guidelines should be established for call centres and updated regularly, and "just-in-time" training provided for call centre staff;
- apps and on-line tools for self-assessment and self-monitoring in different languages should be developed and widely promoted;
- call data and website visits should be tracked electronically and analyzed on an ongoing basis to improve operations; and
- assessment tools should be validated.

3.2.2 Primary Care Settings

Providers in primary care settings (e.g., clinician offices, clinics, pharmacies) will be responsible for the assessment and treatment of patients with suspected COVID-19. The demand for care may be very high depending on the pandemic scenario so strategies to both reduce and manage this demand are important. If measures to divert services are successful, some primary care practitioners may be able to be utilized in other settings such as COVID-19 assessment centres, hospitals or public health.

PTs can enhance primary care surge capacity by considering the following strategies:

- establishing new fee codes for virtual consultations and telephone prescribing;
- allowing patients with substance use disorder to access medication to prevent withdrawal, and covering these drugs on public plans;
- temporarily allowing practice expansion to patients who are not registered with the practice (when this is not normally permitted);
- expanding the role of other health professionals (e.g., expanding prescribing authority by pharmacists, RNs and nurse practitioners) and non-traditional workers (e.g. allowing personal support workers or retirees to assume additional responsibilities); and
- supporting establishment of alternate assessment and prescribing options, including COVID-19 assessment centres.

Practices should be adjusted to provide the most efficient and timely care, such as:

- triaging medical appointments and where possible, prioritizing visits to those patients for whom acute care hospitalization may be prevented;
- providing virtual care wherever possible;
- implementing a system for prescription renewal without an office or clinic visit;
- being flexible in allowing people to stock up on opioid agonist treatments and medication to manage chronic pain;
- making provisions for rapid assessment and treatment of ill patients, especially those at increased risk of severe disease;
- continuing to provide services that are time sensitive such as contraception, abortion, testing for sexually transmitted infections and selected immunizations; and
- tracking deferred services in order to ensure proper follow-up when appropriate.

3.2.3 Acute Care Settings

The COVID-19 pandemic is expected to have a high impact on acute care settings, based on prior experience in other countries.

Key preparedness points for hospitals

- identify measures to mitigate hospital crowding such as standardizing admission and discharge criteria; [14]
- prepare to cancel or scale back on services of an elective or less urgent nature;
- stockpiling essential equipment and supplies including medications;
- develop plans to increase space and staffing, especially for medical wards and critical care services;
- focus on keeping non-COVID-19 hospital wards and outpatient services COVID-19 free;
- develop plans for the safe participation of support persons in patient care, especially for labour, delivery and postpartum support;
- develop plans for training for HCWs who will be performing unfamiliar roles;
- plan effective communications and staff support; and
- plan for rapid assessment and disposition of HCWs with symptoms compatible with COVID-19.

Emergency departments – Emergency department staff will need considerable support because of heavy workloads, potential ethical decisions around admission, and the need for prolonged use of PPE, which can be challenging.

Key preparedness points for emergency departments

- plan to create extra space, e.g., in areas adjacent to the emergency department or considering other innovative approaches such as free-standing mobile units; [15]
- plan strategies to improve patient flow in the ER while maintaining IPC measures, e.g., by rapidly screening, separating and isolating patients with suspected COVID-19;
- plan measures to enhance capacity including use of standardized admission and discharge criteria, preprinted discharge instructions, development of protocols for non-medical volunteers, and having simple and efficient reporting systems; [16] [17]
- use standard clinical approaches and protocols for screening, treatment and admission decisions. [18] In general clinical decision support systems like triage protocols perform better and more consistently than clinical judgment alone in pandemic situations. [19]

Critical care – A Canadian survey has found considerable variation across Canada in the number of ICU beds, ventilators and the capacity to provide specialized support for respiratory failure. [20] The results highlight the need to strengthen inter-jurisdictional resource sharing and regional approaches during emergencies that increase demand. There is considerable practical guidance on pandemic preparedness for the provision of critical care in the references provided. [21] [22] [23]

Key preparedness points for the ICU

- plan to rapidly expand space and staff. As trained critical care staff may be in short supply, it may be necessary to use HCWs who are not trained in critical care and have them work alongside or be supervised by critical care specialists;

- plan surge capacity for respiratory therapist support and respiratory equipment, e.g., high flow nasal oxygen, continuous positive airways pressure (CPAP), Bilevel non-invasive ventilation (BiPAP), ventilators;
- establish regional arrangements to improve access to critical care support, including transportation infrastructure and arrangements; and
- ensure staff support for specialized centres offering ECMO (e.g., hemoperfusionists and cardiac or vascular surgeons).

Other hospital services – Hospital laboratory services have a direct and central role in supporting patient care and should be prepared for heavy workloads as patient volumes increase. As COVID-19 testing evolves, hospital laboratories will become involved in rapid diagnostics, thus supporting patient and outbreak management.

Services such as radiology, pharmacy, nutrition, central supply, housekeeping, and security will also be directly involved in the pandemic response. Their roles should be clearly defined and departmental staff should be included in educational and training initiatives, including IPC education and training. It will be helpful to cross-train select personnel to take on some of the anticipated workload.

Some departments, for example laboratory and radiology, may have to curtail some functions in order to focus on critical services for pandemic patients.

While some outpatient and elective services will be cancelled or deferred during or after pandemic waves, others (e.g., dialysis, cancer chemotherapy) will have to continue. Every effort should be made to keep these services COVID-19 free through strict compliance with IPC measures.

3.2.4 Long-term Care Settings

LTC facilities and other related settings (e.g., retirement homes) should focus on efforts to keep the facility free of COVID-19 during the pandemic, through implementation of appropriate IPC measures <u>implementation of appropriate IPC measures</u>. LTC facilities may also be asked to provide surge capacity for hospitals through admission of non-COVID-19 hospital patients to non-funded or respite beds. If COVID-19 does develop in LTC facility residents, they should be cared for within the facility if at all possible, to preserve hospital capacity. LTC staffing will be challenging for all categories of employees and may have to be addressed at a regional or PT level.

3.2.5 Pre-hospital Care and Community Health Services

Paramedic services and medical transport – During the pandemic, paramedic and medical transportation services will face an increased volume of infectious patients to be transferred from home to hospital and between hospitals, (e.g., to larger centres for specialty treatment). Surge capacity measures may include measures like working with receiving institutions to streamline transfers, enhancing the role of medical transport services, bringing older vehicles back into service, and enlisting support of other first responders.

Home care - Home care services will experience an increased workload as hospitals implement measures to maximize capacity for COVID-19 patients. In addition, existing home care patients may develop symptoms consistent with COVID-19 and need to be assessed and potentially cared for at home. Home care staff should be prepared to provide instructions to caregivers of home care clients on caring for persons with COVID-19.

Palliative care services and hospice- Providers of palliative care services and hospice care should plan for an increase in demand. If resource allocation becomes necessary, not all patients who might otherwise receive critical care will be able to receive ICU care or ventilator support.

From an ethical point of view, they should, however, be provided with palliative care. Advice on providing pandemic palliative care has been published. [24]

Other health care providers – *Community pharmacists* may be asked to broaden their responsibilities in areas such as authorizing prescription refills or prescribing in some circumstances. Health Canada has recently issued an exemption from the *Controlled Drugs and Substances Act* that enables pharmaciststo extend or transfer prescriptions for controlled substances, allows individuals to deliver medication, and authorizes verbal prescription of narcotics. For more information, follow this link.

Midwives need to be knowledgeable about the clinical presentations of COVID-19 and the need for immediate referral for assessment of pregnant women with symptoms compatible with COVID-19.

Other community practitioners such as *dentists, optometrists, physiotherapists, occupational therapists, chiropractors, and naturopathic doctors* interact regularly with the public. Because they are often seen as an important source of health information, they should be kept up to date on the pandemic response and provided with accurate information about public health measures (e.g., respiratory etiquette, hand hygiene) and IPC. If their offices are closed or practices restricted, they should be redeployed to assist the pandemic response in other ways.

3.2.6 Indigenous, Remote and Isolated Communities

Living in an isolated community may act as a buffer against exposure to COVID-19. Once the virus has been introduced into the community, however, crowded living conditions and population demographics may promote its spread. This can lead to large outbreaks unless control measures are quickly put into place.

During a pandemic, keeping health care facilities open and operating in most communities will depend on the availability of staff and supplies. Planners in remote and isolated communities may need to consider alternative methods for health care delivery, especially when surge demands begin to exhaust current resources.

The following points should be considered for health care delivery in remote and isolated communities.

Coordination of planning – Planning should be coordinated with Indigenous, local, regional, PT and federal partners. In First Nations, Métis and Inuit communities, the delivery of health care is often a shared responsibility so roles must be understood and clarified if necessary. Community leadership should be engaged in the culturally grounded strength-based planning process as leaders hold a very respected role in their community and understand it well. Planners should consider liaising with hospitals that may receive seriously ill patients from remote and isolated communities. They should also liaise with nursing stations and health centres, home care agencies, first responders, laboratory services, medical transportation services, and broader community programs including schools.

Availability of health care workers – There are limited health resources in remote and isolated communities. The capacity to move staff into the community in a timely way may be limited or prevented by the availability of transport, lack of accommodations, inclement weather and/or the lack of available personnel.

Planning for the pandemic response should include identification of all potential resources in the community beyond HCWs who could function as additional support workers (e.g., volunteers, community elders). Essential services and necessary skills to carry them out should be identified so that training can be provided. Existing staff (e.g., Community Health Representatives) can also be provided with additional training and support to fulfill expanded roles such as COVID-19 assessments and basic life support. Virtual care is expected to play a key role in providing videoconferencing with physicians.

Supply issues – Remote and isolated communities are unlikely to have enough supplies to manage a large outbreak if more patients present to the health facility than usual. In addition, the potential for unreliable transportation to resupply stock may leave clinics short of certain supplies. Communities should plan to maintain a minimum of four weeks supply (as a best practice) of clinic supplies including PPE and hand hygiene products. Inventory should be monitored, and triggers established for re-ordering, taking transportation and weather delays into account. They should also consider mutual aid agreements with neighbouring health care authorities for stockpile supplies. Remote and isolated communities should collaborate with FPT governments to ensure appropriate supplies are readily available and accessible during a pandemic.

There may be limited secure storage space in remote and isolated communities. The possibility of using other facilities in the community (e.g., schools, recreation centres or churches) should be investigated. Potential storage areas must be clean and protected from the elements including heat, fire hazards, dampness, and animals. Temperature and humidity controlled areas are desirable. Storage areas should be inspected periodically and secured.

Alternative sites for health care delivery – Alternative sites may be needed for COVID-19 assessment centres, clinics or domiciliary care. Sites such as schools, recreation centres or churches should be assessed for suitability and arrangements made with the community members responsible for the sites. A PT call centre is another means of providing health care advice.

Transportation of patients – Remote and isolated communities are highly dependent on land, water and air transportation to transport ill patients from community to urban hospitals. The challenge of multiple simultaneous medical evacuations during a pandemic could overwhelm the remote community clinical facility. As the numbers could also overwhelm receiving health care facilities, it is essential to coordinate with them regarding medical evacuation of seriously ill patients. When transportation is not available, virtual consultations are a viable option to provide support to the health care staff in the community.

Communications – HCWs in remote areas need adequate communication for situation updates and consultations about patient care. While access may be limited in some communities, various means of technology can support communication in the provision of health care. Potential strategies include satellite phones, videoconferencing, telemedicine/telehealth, internet, cell phones, podcasts, and vodcasts. Communication of health advice to the public can use a variety of methods such as community bulletins, public service announcement, social media, community radio, flyers and local media. In Indigenous communities, communication should be developed in collaboration with community members and modified to respect culture, e.g., language, traditional medicine, interpretation of illness, and holistic approach to health issues. [25] Special communications plans may be needed for camps and mining companies that may not have a formal communication process.

3.3 Alternate Care Facilities

Because of the large number of patients who could require health care services during the COVID-19 pandemic, PT/local governments and health care organizations should prepare for the possibility that traditional health care services and settings could become overwhelmed. The use of alternate care facilities to provide additional clinical assessment and care should be considered.

An alternate care facility is a site that is not currently being used for health care (e.g., school, hotel, community centre, arena), or an established health care site that usually offers a different type or level of care. Alternate care facilities can be used in a variety of ways to relieve pressure on local health care systems, e.g.:

- *to provide ambulatory care services* in COVID-19 assessment centres, mobile health units, or clinics; [26] [27] or

- *to extend hospital services* in alternate care facilities that are used:
  - for the care of patients who are not critically ill;
  - as domiciliary care for individuals unable to care for themselves at home; or
  - as a "step-down" unit for the care of stable patients that have been transferred from acute care hospitals.

See Appendix A for more detailed planning considerations for alternate care facilities.

3.4 Death Care

During the COVID-19 pandemic, local authorities may have to manage additional deaths, over and above the usual numbers for the time of year. Planning considerations for death care include the following:

- PTs should address policies for pronouncement of death and death registration that may delay the transfer of remains.
- Hospitals, LTC and other facilities where care will be provided to patients with COVID-19 should plan for timely processing of remains by having necessary supplies on hand and arranging for rapid completion of documents.
- Facilities that do not normally provide morgue services (e.g., correctional facilities, personal care homes) should establish the capacity to provide this function in a pandemic. Temporary cold storage facilities are needed for the storage of remains until they can be transferred to a funeral home.
- Funeral homes and crematoria should develop surge capacity plans including additional human resources.
- Municipalities should make plans for the establishment of temporary morgues, including resource needs and supply management. The types of temporary cold storage facilities to be considered may include refrigerated trucks, cold storage lockers, arenas or curling rinks. Municipalities should avoid using trucks with markings of a supermarket or other company that might become stigmatized.
- Some religious and ethnic groups have specific directives about how remains are managed after death and some maintain their own facilities run by volunteers. Planning should include consultation with appropriate religious or community leaders, for advice and support with funeral management, bereavement counselling and communications during the pandemic.
- Remote and isolated communities may face challenges in dealing with large numbers of fatalities, including lack of funeral service personnel and difficulties with burials in winter. In remote areas, remains may have to be transported long distances for burial, and funeral directors and supplies will also have to be transported. Lack of road access, scarcity of flights and weather and environmental conditions will all create transportation difficulties.

Detailed COVID-19 guidance will be available for death care services and the handling of remains and for the management of mass fatalities during the COVID-19 pandemic.

4.0 Resource Management

4.1 Introduction

Resource management involves planning for equipment and supplies, human resources and physical space to provide care, which will all be at a premium during a pandemic. Anticipating, mitigating and coping with resource issues will help health care organizations and practitioners meet the significantly increased, or even overwhelming, demand for care.

Resource management strategies include:

- managing/reducing less urgent demand for care;
- maximizing use of existing resources;
- augmenting resources; and
- if necessary, implementing strategies to allocate scarce resources. [28]

4.2 Equipment and Supplies

4.2.1 Supply Chain Issues and Management

The COVID-19 pandemic is generating a sharp increase in the demand for critical medical equipment and supplies to support the delivery of health care and to protect the health and safety of health care personnel. This has resulted in shortages of key equipment and supplies in many countries and can be anticipated in Canada.

Some of the factors directly affecting Canadian supplies are:

- *Lack of inventory and storage space* — In an effort to reduce costs, most health regions have moved to "just-in-time" inventory systems that keep minimal amounts of supplies on hand. This makes it more challenging to acquire and store large quantities of supplies during a pandemic when global demand is high.
- *Altered deliveries* – Deliveries from suppliers to main distribution centres may be less frequent and/or consist of partial orders based on supplier allocations to their customers. Allocations are typically based on a percentage of historical usage and may be a fraction of the need.
- *Interrupted transportation lines* — Canadian supplies often travel long distances by truck, train and aircraft. Supplies are often obtained from the U.S. and other nations. Flight restrictions from other countries and delays or stoppages at border crossings may substantially affect supply lines. In addition, illness of drivers and other transportation staff may affect the delivery of supplies.
- *Embargoes* - The majority of medical supplies are not produced in Canada. In many cases supplies are provided by only one or two manufacturers worldwide, and sometimes the essential ingredients or components come from a single source. In past pandemics and health crises, other nations have banned the export of critical vaccines, medications and supplies.
- *Queuing of orders* – At the time of a pandemic, multiple customers will likely place orders with global manufacturers for additional supplies. The global manufacturers might allocate to domestic markets first, allocate on a percentage of historical usage, or allocate on a first come first served basis.

Approval delays – Lack of clarity on funding approvals or delays in approving contracts while decision-makers are evaluating alternative items could result in loss of procurement opportunities.

Considerations for preventing and managing shortages and supply chain issues

Prevention strategies

- establishing domestic production of equipment and supplies where possible;
- establishing purchase agreements for critical items from at least two suppliers;
- developing advance purchase arrangements for selected critical supplies;
- establishing stockpiles of critical equipment and supplies in all jurisdictions;
- retaining and maintaining older equipment items for potential use in an emergency (e.g., ventilators, hospital beds);
- prepositioning supplies in remote and isolated areas;
- establishing alternative transportation/distribution arrangements; and

- establishing tracking and monitoring systems for critical supplies within each jurisdiction.

Mitigation strategies

- distributing equipment and supplies from government stockpiles;
- sourcing additional supplies if possible;
- producing some equipment and supplies locally;
- substituting supplies if suitable products can be found (e.g., second line antibiotics for pneumonia);
- reusing supplies or using expired supplies as a last resort, if it can be done safely;
- prioritizing use of scarce supplies (see discussion in Section 4.5); and
- considering special access or specialized importation requests via Health Canada for new/emerging products and technologies to meet health care needs.

4.2.2 Stockpiling

Canadian jurisdictions have stockpiles of varying amounts of critical equipment and supplies. Key considerations of stockpile management for the COVID-19 response include: modelling or use of spreadsheet tools to optimize the use of stockpiled resources, transportation capabilities, conditions for release and considerations for use, and what to do when stockpiles are insufficient to adequately meet demands in surge. [29]

National Emergency Strategic Stockpile (NESS) – the NESS is maintained by the Public Health Agency of Canada (PHAC). It contains supplies that PTs and federal departments can request in emergencies in order to supplement their own resources. PHAC continuously assesses the composition of its stockpile and replenishes supplies that have been distributed. NESS facilities consist of a central depot in the National Capital Region and warehouses strategically located across Canada. Supplies can be deployed anywhere in the country, including remote and isolated communities, usually within 24 hours of a request from a PT or federal department.

The NESS includes:

- medical equipment and supplies, such as ventilators, stretchers, x-ray machines, mini-clinics for triage and minor treatment, and PPE including masks, respirators, gloves, and disposable gowns;
- pharmaceuticals, such as vaccine, antibiotics and antivirals, analgesics, anesthetics, and medical countermeasures against chemical, biological and radio-nuclear events; and
- other emergency supplies, such as beds, towels, blankets, and generators.

PT and regional/local stockpiles – PTs also maintain a stockpile of critical equipment and supplies, as do many regional/local organizations. Some jurisdictions have kept some older equipment such as beds, which need little maintenance and have no specific "shelf life". Appropriate assessment should be made of the maintenance and training required to ensure the safety and effectiveness of older equipment and training needed by staff to use unfamiliar equipment. Use of stockpiled ventilators carries special considerations, as their use requires adequate bed space, requisite supplies and trained personnel. [30] [31]

Stockpile composition – There are currently no standards or consensus on exactly what and how much of each item should be placed in a stockpile. Past experience with the 2009 influenza pandemic and other recent emergencies will inform decisions on stockpile contents. Other resources for content include results of an expert panel that identified critical resources for hospital surge capacity for several catastrophic scenarios, including pandemic influenza [32] and the WHO-produced DCP for COVID-19 which provides guidance on critical products. The latter is found at: https://www.who.int/publications-detail/disease-commodity-package---novel-coronavirus-(ncov).

There should also be consideration of stocking antibiotics for treating secondary pneumonia, sedation for persons on ventilators and larger quantities of medications and equipment to manage persons with co-morbidities (e.g., cardiac and respiratory disease, diabetes, renal failure) that may be exacerbated by COVID-19.

Stockpile quantities – Determining how much equipment and supplies to stockpile requires making a series of assumptions about the event (number of people seeking health care, hospital admissions, ICU admissions, length of stay etc.) in order to calculate needs. A number of jurisdictions have published their experience in determining stockpile needs, using FluSurge software [33] or more sophisticated models [34]. Estimates of demand for PPE and mechanical ventilation have also been developed using spreadsheet models based on scenarios. [35] [36] FluSurge software may be found at: https://www.cdc.gov/flu/pandemic-resources/tools/flusurge.htm.

Stockpile storage and maintenance – Best practices and recommendations for stockpile maintenance and sustainment of health care supplies have been published. [37] This literature review provides recommendations on the timing and procedures for assessing, inventorying, storing, tracking, and deploying stockpiled materials.

Organizations with large stockpiles must allocate sufficient funds to provide adequate storage, whether on site or in a warehouse. Environmentally controlled storage areas are necessary for medications, most medical supplies, and some equipment. Location is important for PT or regional stockpiles so that materials can be rapidly deployed to local organizations. Vendor-managed inventory allows safe storage without having to manage the stockpiled supplies, but has limited availability.

> **Important considerations for stockpile management**
>
> - Stockpiles at all levels must be carefully tracked, preferably with a centralized inventory of all stockpiled items and their expiry dates.
> - A stockpile inventory should be conducted, and supply integrity assessed, on an annual basis.
> - Supplies that have expired or have compromised integrity should be removed from the stockpile and destroyed (except at times of imminent threat when they should be retained for potential use). Rotating items out for use before expiry reduces waste. Ordering replacement items should be done far in advance so that the stockpile never contains expired items or is missing important assets.
> - User-managed systems, wherein medications or supplies are integrated into routine stocks, should be considered for materials that are frequently used by the organization, are expensive and have a short shelf life (but long enough that it is likely to be used before expiry). It is important to purchase usual brands for items that require fit-testing or special training before use.
> - The stockpile must be able to be deployed quickly. Prepositioning supplies in early stages of a pandemic is important, especially for remote areas, e.g., the far north. Before deployment, stockpile items should be assessed to ensure their usability and integrity.
> - Standing arrangements should be made with transportation companies (air or ground depending on accessibility, and environmentally controlled as required). Just-in-time transportation may be a challenge for remote and isolated communities due to distance and weather.
> - Drills and exercises that include assessment of the capacity to access and deploy stockpiled supplies should be conducted regularly.

4.3 Human Resources

4.3.1 Introduction

During the COVID-19 pandemic, there will be increased need for human resources within existing settings and in alternate care facilities. Meeting this demand may require relocating HCWs to different settings or different roles within their facility, and the hiring or contracting of additional staff. Trainees, retired HCWs or other non-traditional workers may need to be considered to support the response effort. Volunteers will also be a potentially vital source of human resources.

At the same time as demand is increasing, a significant proportion of the health care workforce may be unable to attend work due to illness or family responsibilities, or concern about personal safety in the workplace.

4.3.2 Planning for Optimal Use of Health Care Workers

Additional human resources will be needed in all health care settings. Organizations should estimate service needs based on the anticipated pandemic impact and the demographics of the region and develop estimates of the number and type of HCWs required to provide these services. In addition to professional staff, support staff such as housekeeping and food service personnel will be needed for surge operations. The need for language skills and interpretation should also be considered.

To make best use of their skills, existing HCWs may be relocated from their usual roles and settings. Some health care tasks may have to be performed by personnel who would not normally perform them. For example, trained health care professionals may be required to supervise volunteers and other staff during a response. All HCWs who are given new responsibilities or will be working in an unfamiliar setting should be provided with training and support for their transition to the new role.

Consideration should be given to reassigning medical and nursing personnel with administrative, research and educational assignments to clinical duties. HCWs who are unable (e.g., for health reasons) or unwilling to be directly involved with COVID-19 patients should be assigned supportive roles. Many HCWs work part-time at more than one facility and may have to choose in which facility to concentrate their time during the pandemic; however, in this process care should be taken to ensure that some settings (e.g., LTC facilities) are not left seriously understaffed.

Review of practice arrangements - Delegation of tasks and authority may change during the pandemic. Staff may be reassigned from their usual roles to make best use of their skills. Students, retired and foreign-trained personnel may be asked to step in. Policies from regulatory colleges that deal with scope of practice, delegation of controlled acts and medical directives will affect the process of reassignment and delegation. Negotiations may be needed with bargaining units to facilitate changing of job descriptions and introduce the use non-traditional workers.

Recruiting additional health care workers for the pandemic response — Organizations may need to obtain additional health care workers and be able to rapidly assess their qualifications and competencies.

Additional sources of health care workers

- nursing agencies (through pre-established agreements for extra staff)
- retired physicians/nurse practitioners/nurses — Note need for current licence to practice; also need for care in deployment due to increased personal risk from COVID-19;
- physicians/nurse practitioners/nurses currently not working in clinical health care (e.g., working in education, administration, research, private industry)
- trainees (e.g., nursing students, medical students and residents)
- certified nursing assistants, patient care assistants and personal support workers;

- other health care providers – midwives, paramedics, pharmacists, therapists (respiratory/occupational/physio), dentists, psychologists
- veterinarians

Insurance and liability coverage — Insurance and liability coverage should be provided for trainees, volunteers, retirees and any other workers that are recruited to provide health care services during a pandemic. The need to expand scopes of practice may also have implications for liability protection/malpractice insurance. PTs should address issues around Workers' Compensation and other liability coverage for staff and volunteers recruited for pandemic services. In some circumstances, volunteers who register with designated agencies may be covered by Workers' Compensation under emergency legislation. Some volunteer agencies have a liability coverage for their volunteers.

Transfer of licensing between jurisdictions - The Operational Framework for Mutual Aid Requests (OFMAR) is a mechanism that can be activated by PTs to identify and share health care professionals and health assets interjurisdictionally during events. Most regulatory colleges have developed a rapid procedure for emergency registration of someone who is already registered in another jurisdiction, to facilitate their movement to where they are most needed and some are developing processes to rapidly relicense recent retirees. Note that there are also requirements for site/regional privileges and liability coverage (e.g., CMPA coverage for physicians).

4.3.3 Education and Training

HCWs will need "just-in-time" training on management of COVID-19 patients; COVID-19-specific IPC measures; selection and use of PPE; care of patients on ventilators; supervision of other HCWs including volunteers; working with grieving families; and personal pandemic preparedness for themselves and their families. More comprehensive training will be needed for persons not currently working in health care such as retirees. Volunteers should be trained in self-care and IPC precautions, with specific training in various support functions depending on their anticipated duties.

Suitable training programs and modules may be available from existing organizations such as:

- St Johns Ambulance Brigade and The Canadian Red Cross Society:
- Infection Prevention and Control Canada (IPAC-Canada) and the Association for Professionals in Infection Control and Epidemiology (APIC);
- Mental Health Commission of Canada – <u>Mental Health First Aid Canada</u>
- nursing colleges' training programs (e.g., basic care programs for health care aides);
- professional associations e.g., Society of Obstetricians and Gynaecologists of Canada (SOGC);
- province and territories; and
- colleges and universities.

4.3.4 Health Care Worker Support

During a pandemic, HCWs will have concerns about personal and family safety, and they may need considerable personal support. The willingness of health care personnel to work during a pandemic has been extensively studied. [38] Perception of value in the response, belief in duty, availability of PPE, and confidence in one's employer are factors that were found to be associated with a willingness to work.

While HCWs have a duty to work unless there is significant risk of serious harm, health care organizations have reciprocal obligations to support their staff and volunteers. [39] These include:

- regular and frequent communication to HCWs on what is expected of them, how to minimize personal risk through IPC measures, and how to access support services;
- adequate personal support to enable HCWs to perform their duties, e.g., food, nap rooms, transportation, family care (for children, seniors, sick family members, pets);
- adequate resources including PPE;
- skills training for expected duties and resilience training; [40]
- a safe environment, including adequate security (e.g., for those working in emergency departments);
- medical advice, e.g., screening when reporting for duty, assessment of ill HCWs;
- counselling and psychological support; and
- job protection for HCWs who move from other jobs during the pandemic.

Advice about providing psychosocial support during a pandemic can be found in the *CPIP Psychosocial Annex* at: Canadian Pandemic Influenza Preparedness: Planning Guidance for the Health Sector.

4.4 Bed Capacity

In any institution, a "bed" includes infrastructure support, including staffing, that is required to care for the patient in that "bed". The requirements for a "bed" in an intensive care unit would, for example, include all the support required for a patient to be cared for at that level.

Options to increase bed capacity during a pandemic

- reduce or cancel elective admissions and surgery to maximize medical and critical care bed capacity;
- discharge as many patients as possible based on revised criteria for discharge;
- increase home care staffing if feasible to support early discharges;
- re-open currently closed wards, hospitals or LTC facilities;
- use reserved critical care capacity;
- use emergency ventilation facilities in recovery and operating rooms; and
- assess associated sites such as clinics, rehab facilities, LTC, retirement homes and psychiatric facilities for use by non-COVID-19 patients.

Centralized programs that track and manage bed capacity such as Criticall Ontario and the BC Bed Registry play a key role in the transfer/placement of critical care patients across the province, thus ensuring that staffed beds are used to maximum advantage. Each PT should create a centralized bed registry, call centre and centralized ambulance dispatch, if not already in place.

4.5 Allocation of Scarce Resources

If demand for health care exceeds available resources despite best surge capacity efforts during the COVID-19 pandemic, resource allocation may be required. Governments, hospitals and other health care agencies should be prepared to make decisions about their resources during a pandemic. Planning helps ensure a fair and transparent process, avoid conflict and ease the burden associated with making difficult decisions.

Resource allocation decisions involve a number of key questions:

- who is entitled to a given resource;
- on what grounds ought one person to have priority over another;
- how should priority setting decisions be made; and

- who should make them? [41]

Resource allocation decisions should be guided by the pandemic goals, principles, values, and ethical considerations that underpin the pandemic response. The development of PT and/or organizational ethical frameworks and decision-making guides, with stakeholder involvement, is important for pandemic decision-making. [42] The public should be informed that allocation decisions will be made and on what basis they are being made, who is responsible for them and whether there exists an avenue for appeal.

Priority setting can take place at population level, regional or organization level, and patient level. [43]

Population level priority setting – Canadian examples includethenational prioritization processes established for vaccine and antivirals in an influenza pandemic (found in the CPIP Vaccine Annex and the CPIP Antiviral Annex). Guidelines for the management of widespread drug shortages have been used by provinces and territories in Canadian shortage situations. [44]

Regional or organizational level priority setting – Priority setting at this level includes decisions about how best to meet community needs in the context of competing system goals, multiple stakeholder interests and limited resources. [45] In the COVID-19 pandemic, regional health authorities should decide how best to organize services to maximize use of resources, such as regional approaches to critical care. Organizations should decide what health care services need to be scaled back or discontinued to create surge capacity for COVID-19 patient care. This decision-making involves balancing resources between COVID-19 treatment and treatment of non-COVID-19 conditions that will need urgent care. Decisions should be adjusted to the pandemic situation as it evolves. A decision-making guide about scarce resources has been prepared for managers and governors. [46]

Patient priority setting – If hospitals are in danger of becoming overwhelmed, they may need to implement systems for fair allocation of scarce resources including admission to hospital, and access to an ICU bed or ventilator. These resource allocation decisions determine who may or may not get life-sustaining treatment. Having these systems in place will help support HCWs as they face extremely difficult situations. Planning considerations for patient priority setting have been addressed in various publications, including one specific to the COVID-19 situation. [47] [48] [49]

Planning considerations for the allocation of scarce medical resources

- all hospitals within a PT or a defined region should implement a uniform resource allocation process and cooperate when critical resources become short;
- prioritization guidelines should be evidence-based and as objective as possible, taking into account the ethical issues and values involved; they should be adjusted quickly as new information becomes available;
- there should be no difference in allocating scarce resources between patients with COVID-19 and those with other medical conditions;
- experienced physicians (or a small team) should function as triage officers to provide optimum allocation of resources. They should not be involved simultaneously in triage and direct care of patients requiring triage;
- triage decision processes should be monitored and an appeals mechanism provided, although appeals should be limited to concerns about procedural mistakes, given time and resource constraints; and
- all patients must be provided as much comfort and dignity as the situation allows.

5.0 Risk Management Approach

Risk management is a systematic approach to setting the best course of action in an uncertain environment by identifying, assessing, acting on and communicating risks. Table 2 provides a detailed outline of risks and events that could affect the delivery of health care services, their implications and potential mitigation/response, if the risk or event occurs. This is not an exhaustive list; PTs should also consider unique risks that could arise in their respective jurisdiction. It is also important to remember that multiple risks may occur at the same time or risks might occur on multiple occasions throughout the pandemic. Note that timely and transparent risk communications to health care providers and the general public should be an integral part of the response to each factor or event.

Table 2 – Risks and Events Affecting Health Care Delivery, their Implications and Potential Mitigation or Resonse

Factor / Event	Implications	Potential Mitigation / Response
Health Care Services		
• Primary care services are faced with overwhelming volume of patients	• Reduced access to primary care services • Long line-ups and wait times • Primary care providers become overwhelmed • Transmission of COVID-19 in primary care settings • Lack of sufficient health supplies and PPE to provide patient care • Patients go directly to emergency departments/urgent care facilities in lieu, overwhelming them too	• Enhance primary care services (e.g., telephone assessments) through changes to billing codes etc. • Provide primary care settings with assessment and treatment guidelines and access to needed supplies, including PPE • Publicize and enhance telephone advice lines and on-line self-care information • Consider on-line self-assessment • Open COVID-19 assessment centres

Factor / Event	Implications	Potential Mitigation / Response
• Hospitals are faced with overwhelming volume of patients	• Emergency services are overwhelmed • Lack of beds for patients needing hospitalization • Inability to provide optimum service to all patients • ICU capacity overwhelmed • Shortage of expert staff, medications, equipment (e.g., ventilators) and supplies to provide critical care	• Introduce measures outlined above to divert patients • Implement surge capacity plans in all health care facilities • Cancel or delay elective admissions and surgery, and other services that can be postponed • Consider earlier patient discharges with community supports • Consider need for expanded/alternate settings for ERs and patient wards • Implement regional critical care plans • Use reserved critical care capacity and emergency ventilation facilities in recovery and operating rooms • Implement triage for ICU admission, ventilator or ECMO support if necessary • Prepare LTC facilities, retirement homes and home care services to care for COVID-19 patients in place
• Hospital or other health care facility can no longer safely provide care	• Facility may have to be closed or patients transferred • Increased morbidity and mortality • Pressures on pre-hospital services and medical transport resources	• Business continuity and surge capacity planning for all facilities • Implement business continuity and surge capacity plans • Transfer resources from other facilities • Consider evacuation of patients to other facilities
• Lack of sufficient medical transportation services	• Delays in transferring seriously ill patients from home to hospital or between hospitals • Delays in medical evacuation from remote areas, or impossibility in some conditions	• Implement surge capacity plan for medical transportation services • Use telemedicine or other novel technologies to support remote areas
• COVID-19 cases develop in residents in LTC or community health care settings	• Need for IPC guidance for LTC and other community facilities, and home care agencies • Staff shortages to care for ill residents	• Reinforce IPC guidance and outbreak control in these settings • Ensure training and PPE supplies for staff • Advise patients/residents and their families of the plans
• Increased need for mental health services	• Increase in distress calls • Increase in domestic violence	• Reinforce services provided by mental health and social service agencies, including outreach to vulnerable persons • Provide psychosocial support to those involved in the pandemic response

Factor / Event	Implications	Potential Mitigation / Response
• Increased demand for palliative and end-of-life services	• Hospitalized palliative care patients face visitor restrictions and risk of COVID-19 exposure • Restricted ability to deliver medical assistance in dying (MAID) in some settings • Increased pressure on hospice services	• Consider palliative care patient discharges with community support when possible • Use telemedicine or other technologies to satisfy MAID requirements for assessments/witnesses
Death Care Services		
• Capacity is exceeded in morgues in hospitals and other health care settings	• Backlog of remains awaiting removal to funeral home • Potential infection control concerns • Family distress	• Plan for temporary morgues and required supplies and staffing • Implement surge capacity plans • Expedite document processing needed for transfer of remains
• Death care services in funeral homes, crematoriums and cemeteries are overwhelmed	• Backlog of remains awaiting burial or cremation • Family distress	• Funeral homes and municipalities should develop surge capacity plans in advance • Implement surge capacity plans • Establish temporary morgues and mortuary services in alternate sites like curling clubs or skating arenas.
Equipment and Supplies		
• Shortages of key equipment and supplies	• Potential for insufficient supplies to meet increased health care demand • Lack of sufficient health supplies and PPE to provide patient care • Hoarding or theft for personal use	• Establish stockpiles of critical equipment and supplies in all jurisdictions • Pre-position supplies in remote and isolated areas • Establish integrated tracking and monitoring systems • Distribute equipment and supplies from the NESS if needed • Source additional supplies as needed • Substitute or reuse supplies (if this can be safely done) • Use expired products if safe to do so

Factor / Event	Implications	Potential Mitigation / Response
• Supply chain issues (transportation delays, embargoes, etc.)	• Long lead times for supply chain recovery due to increased production demands • Inability to obtain critical supplies • May have to substitute items of lesser quality or less suitable for the purpose	• Establish domestic production of supplies where possible • Establish at least two suppliers for critical items • Establish stockpiles of critical items • Establish alternate transportation/ distribution arrangements • Consider special access or specialized importation requests via Health Canada for new/emerging products and technologies to meet health care needs
• Shortages of antibiotics or occurrence of antibiotic resistance	• Inability to treat bacterial complications of COVID-19 in optimal fashion • Need to switch to less effective treatment regimens • Increased numbers of hospitalized patients, ICU admissions and deaths	• Procure additional supplies of alternate antibiotics if possible • Adjust treatment guidelines and disseminate to health care providers • Consider special access requests as above
Health Human Resources		
• Not enough staff to support expanded operations	• Inability to provide needed care • Existing staff are overloaded and at risk of burnout • Risk of medical errors, breaches in IPC protocols etc.	• Activate business continuity plans and discontinue non-essential tasks/procedures. • Maximize time available from existing staff, move part-time to full-time, call back laid-off workers etc. • Consider use of students, recently retired HCWs, alternate health care providers, with delegation of controlled acts and use of medical directives as required • Maximize skill sets of all staff and volunteers • Consider expanding scope of practice, e.g., in remote and isolated settings • Implement mutual aid protocols
• Staff illness/ inability/ unwillingness to work	• Staff shortages resulting in reduced ability to provide care • Remaining staff are overworked and stressed	• Address fears and concerns • Provide education and training • Ensure workplace is as safe as possible and appropriate PPE is provided • Provide gender sensitive supports to workers, such as transportation, lodging, and child/elder/pet support as needed

Factor / Event	Implications	Potential Mitigation / Response
• Staff burnout/ fatigue	• Staff shortages resulting in reduced ability to provide care • Remaining staff are overworked and stressed • Risk of medical errors or other breaches that contribute to unsafe practice • Risk of employees quitting or leaving profession	• Be proactive about staff expectations and support • Provide psychosocial and other wellness support • Redistribute/rotate staff from lesser impacted areas of a health care facility to busier units to share burden • Consider unique needs of women, men and gender-diverse workers in the provision of tailored supports.
IPC		
• COVID-19 transmission is occurring in health care facilities	• COVID-19 outbreaks may occur • Usual outbreak control measures (e.g., closing units) may not be feasible due to overwhelmed system • There may be poor or non-compliance by staff with routine practices (e.g., hand hygiene) and/or additional precautions	• Increase human resources for IPC and OH programs to support clinical care areas, and ensure sufficient PPE supplies • Reinforce staff IPC training, hand hygiene, adherence to additional precautions and environmental cleaning
• Inability to implement recommended engineering and administrative controls	• Capacity to isolate patients properly will be compromised by lack of available single rooms • COVID-19 transmission and outbreaks may occur • Outbreaks of other health care associated infections may occur	• Alter IPC policies to accommodate atypical isolation procedures • Reinforce staff training • Consider cohorting COVID-19 patients, or opening COVID-19 wards • Consider opening alternate care areas, according to hospital surge capacity plans
• Shortage of IPC supplies including PPE, and testing supplies	• Reduced capacity to care for COVID-19 and other infectious patients adequately • Increased risk of COVID-19 transmission to HCWs and others within the facility • Potential staff reluctance to provide care to infectious patients • Nasopharyngeal swab shortages will limit ability to test for COVID-19	• Access pandemic stockpiles • Apply laboratory guidelines for when to take nasopharyngeal swabs to confirm the presence of COVID-19 • Substitute alternate types of swabs • Rely on clinical care algorithms and clinical judgment for COVID-19 diagnoses and isolation decisions • See also Equipment and Supply section above
Population Risk Factors		

Factor / Event	Implications	Potential Mitigation / Response
• New risk factors identified for serious disease	• Could affect clinical care decisions and treatment • At risk patients may not be recognized if new information is not disseminated	• Have protocols in place to update clinical care guidance, and disseminate to health care providers • Advise public so those at risk are aware and can seek rapid medical care if they become ill
• Some settings or parts of country are affected much sooner or more severely than others	• Communities with limited capacity (e.g., indigenous, remote and isolated communities) may be less able to manage • Supplies could be depleted in some parts of the country	• Preposition supplies in Indigenous, remote and isolated areas • Enhance capacity in affected remote areas • Consider activating mutual aid agreements, arrangements for medical evacuations, etc. • Supply/stockpile management so supplies are not disproportionately depleted
Public Opinion and Risk Perception		
• Media coverage and social media (e.g. reports of severe illness, posting of rumours)	• Possible sudden increase in health care provider and emergency department visits by worried well or those with minor illness	• Provide proactive public communication about illness prevention; self-care; when, where and how to seek medical advice • Increase accessibility of telephone advice lines, web-based advice and other innovative assessment and treatment strategies
• Health messages not reaching certain segments of the population	• Some groups may not know how to reduce their risk of acquiring COVID-19 • Ill individuals may not know how to access health care • Younger persons may consider themselves healthy or immune and ignore public health guidance, thus increasing personal and community risk	• Identify possible causes of communication gaps in order to find the most appropriate solution. Work with members of the group/community to identify ways to improve outreach/communication. • Use a variety of strategies for public messaging • Monitor public opinion and adjust strategies as needed • Pay particular attention to disadvantaged and hard to reach individuals and groups
• Public fear associated with risk perception	• Increased demand on primary care and ERs by worried well or those with minor illness • Could affect willingness of HCWs and first responders to report to work	• Provide proactive public communication to anticipate and address fears • Take measures to address safety concerns in workplaces and public places
• Lack of public trust in the health care system	• Failure of public to adopt preventive and treatment measures • Low morale among HCWs	• Open and honest communication by health care stakeholders • Use of trusted spokespersons

Factor / Event	Implications	Potential Mitigation / Response
• Civil unrest in extreme emergency	• Could affect infrastructure support for health care facilities (e.g., transportation and utilities) • Could affect safety of those working in health care facilities	• Business continuity planning for all critical infrastructure • Provide security for health care facilities and workers during response • Access additional support, e.g., police, military

Appendix A - Planning Considerations for Alternate Care Facilities

Planning for an alternate care facility will vary depending on its proposed function, as they may be used in a variety of ways. They may be established:

- to provide ambulatory care services (COVID-19 assessment centres); or
- to extend hospital services, e.g., for the care of patients who are not critically ill, as domiciliary care for those who are unable to care for themselves at home, or as "step-down" units for the care of stable patients transferred from acute care hospitals.

The main planning issues for alternate care facilities are outlined below:

1. Governance structure and administrative options

An alternate care facility may be established as a free-standing site or a satellite of an acute care or other health care facility, e.g., public health-primary care collaborations in operating COVID-19 assessment centres. [50] The satellite site model is advantageous since it does not require establishment of a separate administrative structure and it facilitates support service arrangements and the sharing of expertise and human resources between sites. When it is not possible to set up a satellite site, the establishment of a free-standing site will be necessary. The organization that will be responsible for establishing the alternate care facility ideally should be designated or agreed upon during the interpandemic period, to allow time for planning.

2. Site planning

Site planning may vary somewhat depending on the proposed function of the alternate care facility. A site that will provide inpatient care will have the most demanding requirements. Site planning steps include:

- ***Assessing locations for potential alternate care facilities*** – Potential sites are best reviewed by a team that includes emergency response personnel, IPC personnel, and engineering/maintenance staff in addition to health care personnel. Some facilities may need to be upgraded in order to be used as a clinical site, e.g., by improving power supplies and adding washrooms. The following issues should be considered in assessing the suitability of the site:
  - adequacy of external facilities (access, parking etc.);
  - adequacy of internal space for the services to be provided (layout of rooms, sinks, washrooms, kitchen facilities, secure storage, etc.);
  - adequacy of critical support systems if patient care will be provided (ventilation, power, potable water, sanitation, etc.); and
  - ease of making arrangements to support the provision of clinical care (security, maintenance, housekeeping, food service, laundry, etc.).
- ***Insurance issues*** – Provisions should be made for appropriate insurance (fire, damage, theft and liability). It should not be assumed that the insurance covering the site for its usual use will extend to cover its use as an

emergency clinical site.

3. Service planning

Service planning will vary depending on the proposed purpose of the alternate care facility as outlined above. Planning for service delivery has a number of components:

- **Administrative structure**– An individual or team should be designated to oversee the care provided in each alternate care facility. Depending on the size of the alternate care facility, on-site management may be required on a 24/7 basis. Management responsibilities will include:
  - organizing and setting up the site;
  - scheduling staff;
  - monitoring patient flow;
  - implementing and maintaining record keeping and patient tracking systems;
  - monitoring availability of supplies;
  - maintaining community partnerships with relevant stakeholders;
  - maintaining situational awareness; and
  - ensuring staff have access to updated guidance.
- **Establishment of patient care protocols and algorithms** – Protocols for the assessment and care of patients and draft medical directives should be prepared in advance. They can be adjusted as necessary when national guidance is issued at the time of the pandemic.
- **Plans for critical equipment and supplies** – The services to be offered by each alternate care facility will dictate equipment and supply needs, including PPE. It is unlikely that alternate care facilities will be able to support intubated patients; however, equipment may be needed to provide ventilation support for patients being transferred to hospital. A preliminary list of equipment and supplies needed to provide medical care in the alternate care facility can be found in Table 1.
- **Access to clinical support services** – Arrangements should be established for services such as laboratory, pharmacy and radiology.
- **Referral and transport arrangements** – Agreements should be established between the alternate care facility and the affiliated health care facility or referral hospital.
- **IPC measures**– IPC considerations should be addressed in accordance with COVID-19 precautions.

4. Staffing and organizing the alternate care facility

The site should be arranged to provide streamlined and efficient service. Table 2 provides a checklist of functions and personnel for an alternate care facility that will provide medical care and Table 3 provides suggestions for how an alternate care facility that will function as a COVID-19 assessment centre might be staffed and organized. Further HR planning considerations for an alternate care facility are discussed in Section 4.3.

5. Identifying triggers for implementation

In each locality, the emergency pandemic response team should be prepared to monitor local health care utilization and availability of resources, in order to predict when capacity might be exceeded. This will allow time for the proposed alternate care facility to be set up and for service planning to be finalized.
When it appears likely that an alternate care facility will be needed, the site administrator/manager or team should be appointed to finalize preparations. These steps include preparing the site, coordinating the procurement of equipment and supplies, obtaining and training staff and volunteers, and finalizing arrangements for the functions outlined above.

6. After the pandemic

Post-pandemic tasks include discharging or relocating patients; storing medical records; redistributing, storing or returning supplies; discontinuing insurance coverage; and decommissioning the site.

Table 1 – Medical equipment and supplies needed in an alternate care facility that will provide medical care

The following is a preliminary list of medical equipment and supplies needed to provide medical care in an alternate care facility:

- beds, bedding, privacy screens, overbed tables, side tables, chairs for patients, patient specific storage for clothes
- method for patients to alert HCWs to their needs (like a bell)
- linens – bedding, towels, face cloths, lifters
- patient lifts and slings
- incontinence products, blue pads
- lights and heating
- storage areas for clean supplies
- intravenous (IV) equipment (e.g., needles, IV catheters, fluid and tubing, syringes, tape, tourniquet)
- sharps containers for needles and IV catheter disposal
- sphygmomanometers, stethoscopes, thermometers
- miscellaneous supplies (e.g., antiseptics, dressings, bandages, steristrips, alcohol-based hand sanitizers, alcohol sponges, gauze sponges, arm boards, scissors, tongue blades, flashlights, portable lamps, extra batteries, body bags, tissues, toilet paper, paper towels, liquid hand soap, body soap for patients or bath in a bag
- pulse oximeter
- PPE (e.g., masks, N95 respirators, gloves, gowns, face or eye protection)
- emergency drugs (e.g., epinephrine, diazepam, salbutamol) crash cart
- pharmacy space/medication carts for routine type medications
- airway supplies (e.g., bag-valve mask, oxygen masks, oxygen tubing, oxygen tank, spacer device for aerosolized medication, metered dose inhalers, oral airways, suction machines and catheters)
- environmental cleaning supplies with their own separate storage area (cloths, mops, buckets, disinfectant wipes, hospital grade cleaner/disinfectant with a drug identification number [DIN])
- soiled utility area for waste management
- waste management equipment, e.g., bedpans, urinals or collection systems (absorbent pads/pouches/bags), washer-disinfectors, macerators etc.
- patient identification tools
- communications (telephone, fax, cell, radio or alternatives for remote communities)
- computers and internet access

Table 2 - Checklists of functions and personnel at an alternate care facility that will provide medical care

This is a checklist of functions that may be required at an alternate care facility. Depending on size, number of patients and function of the site, many tasks might be carried out by the same individual. Note that these functions may be required 24/7. Some services may be provided by a central hospital or community.

Function	Activity	Skill sets/personnel
Administration	Site administration/management	Management/administration
	Coordination of patient care – staff scheduling and support, assessing service demands and supply	Medical training knowledge (e.g. in charge nurse), leadership and coordination skills
	Medical management	Physician, nurse practitioner, or nurse with physician or NP backup
	On-site training and orientation of staff, volunteers and family members	Knowledge of basic patient care, patient triage, infection control, occupational health and safety
	Spokesperson	Medical management. If no medical spokesperson refer to hospital or site administrator
	Receptionist	Communication/language skills, public relations
	Health records management	Clerical skills (including computer skills), confidentiality agreement
	Information technology resource	Knowledge of IT systems and problem solving skills
Patient care	Medical triage	Medical training/nurse, ideally with ER training
	Admissions/discharge	Medical training/nurse, ideally with experience in discharge planning
	Patient care – medical	Instructed in nursing care: rehydration, feeding, ambulation, bathing, vital signs monitoring, administering medications
	Physiotherapy	Trained in chest physiotherapy and mobilization
	Respiratory care	Trained in oxygen delivery, patient monitoring, equipment monitoring (oximeters) and inventory
	Pharmacy services	Pharmacists at hospital or in community
	Discharge planning	Refer to community care, self care
Infection control	Cleaning and disinfection of shared patient care equipment between patients	Trained in how to clean and disinfect patient care equipment and infection control
	Housekeeping	Basic infection control knowledge
Food services	Patient nutrition/therapeutic diet	Dietitian at hospital or in community (home care, meals on wheels)
	Food preparation, workers' meals	Basic food safety training

Function	Activity	Skill sets/personnel
Social services	Social service/community care	Counselling, accessing community resources/liaison social worker
	Psychology/pastoral care/grief counselling	Social workers, religious leaders, psychologists, local service clubs/support groups
	Care for children/family members of workers	Training or experience in child care, care for elderly, home care; criminal records check
Morgue	Transportation of corpses	Drivers licence
	Preparation and storage of corpses	Body bagging, shelving corpses
Transportation	Patients, staff	Class 4 licence
	Dangerous goods (e.g., oxygen), medical waste	Appropriate licences and liability insurance
	Supplies, lab tests	Drivers licence, criminal records check
Services	Laboratory testing	Laboratory services at hospital or in community
	Maintenance	Plumbing, electrical etc.
	Laundry	Local commercial laundry business
	Environmental cleaning, waste management	Local commercial cleaning companies
	Communication services and equipment support – phone, cells, cable, computer support	Local businesses
	Interpreters	Qualified interpreters, telephone service or smart phone translation
Security staff	Public order and personal safety	Crowd control, traffic control
	Protection of site – fire safety, theft	Trained in building safety and security

Table 3 - potential organization of a COVID-19 assessment centre

ZONE	Service	Type of staff
Registration zone	Register incoming patients	Trained non-medical workers
Waiting zone	Awaiting primary assessment	Trained non-medical workers

ZONE	Service	Type of staff
Primary assessment zone	Vital signs Chest auscultation and assessment	Health care professionals (physician, nurse practitioner or nurse) Trained non-medical workers
Secondary assessment zone	On-site lab specimen collection Secondary assessment	Physician or nurse practitioner Trained non-medical workers
Advanced first aid and transfer zone	Service to patients who arrive in distress includes oxygen, suction etc. while they await transfer to emergency department	Advanced first aid
Education zone	Education resources and advice	Trained non-medical workers
Discharge zone	Follow up or transfer	Trained non-medical workers

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