EM-POWER disaster chapter

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Background

Hurricane Katrina hit New Orleans in 2005 killing over 1,800 people. Many of those deaths occurred well after the hurricane passed and the city flooded. The system in New Orleans failed not because of front line clinical issues, but because of broader infrastructure and organization deficiencies.

If a disaster of similar magnitude happened in Canada today, we would find ourselves in the same situation. The COVID-19 pandemic unmasked to the general public [and made politically undeniable] what front line health care providers have known for many years: our system suffers from an absolute lack of adequate preparedness.

The need for readiness is not limited to Hollywoodesque explosions or earthquakes met with a brief, intense and focused response. Overcrowded emergency departments (EDs) are one symptom of the insidious degradation of health care delivery in Canada that has allowed us to define this as a new normal; but this should not be so.

We're just not ready.

System resilience and critical redundancy are both non-existent, fallen victim to a focus on cost rather than the goals of delivering care. Canadian experts in disaster preparedness have little understanding of health care and, conversely, health care professionals – specifically those on the front lines – have had almost no training in disaster preparedness. Finally, front line organizational infrastructure has been neglected and remains disconnected from overall health system response. If we were faced with our Hurricane Katrina moment, there will be morbidity and mortality that might have been prevented if the system was up to the task.

Our current status qualifies as a disaster by any definition, and within the context of overall system change, the principles of disaster management are well suited to lead us to recovery.[20]

Definitions

The terms disaster, resilience, readiness, and redundancy have colloquial interpretations, however for the purposes of this paper there is a specific definition for each.

A disaster in health care terms is any situation where the demand placed on the system has outstripped its ability to deliver care. There is a normal ebb and flow to patient volumes during the day, but in a disaster situation a threshold will be crossed and care can be expected to degrade. Table 1 provides an example of criteria for declaring crisis standards of care.

It is important to note that this definition of disaster is dependent on available resources: the same clinical load in a major urban centre might be well within system capacity, while a small rural facility might be overwhelmed. In the same vein, a disaster can occur when the load placed on the system is increased, or when given the same clinical load, the resources of the system are decreased. Another corollary to this definition is that while disasters may range in scale from local to global, the disaster response is always local; the system deals with the patient in front of it, and uses the resources immediately available. Ultimately a disaster is a local imbalance between clinical demand and the ability to deliver appropriate care.

Table 1: **Criteria for Declaring Crisis Standards of Care**[21]

Category	Details
ED overcrowding	Emergency department crowding with more than 50% of ED acute capacity with boarders for over 12 hours and expected to continue for over 24 hours.

Care delay	Delays in care where urgent or emergent procedures or surgical cases are delayed.
Nurse/patient ratio	Increase in nurse-to-patient ratio beyond local standard for more than 12 hours, and expected to continue for at least 24 hours.
	Alternatively, when workload is 150% above routine or when personnel are asked to work more than 150% of usual shift duration.
Clinical redeployment	Clinical redeployment when staff are deployed to areas outside of their specialty.
Non-clinical staff deployment	Non-clinical staff deployment where non-clinical staff are deployed to provide critical care.
Non-traditional space use	In the absence of resources, care is delivered in areas with fewer resources [gases, suction, infection control, etc] than would be available in a traditional care setting.
Resource scarcity	Clinically significant limitation on supply of drugs or equipment that alter the ability to maintain a standard of care.
Infrastructure failure	Facility degradation, due to flood, fire, prolonged IT outage etc. Even under the normal clinical load, this can constitute a disaster.

Resilience is the ability of a system to maintain (or rapidly recover) function above a defined threshold despite increased workload. In the context of health care, this would mean the ability to deliver care at or near the expected standard when the demand for health care increases.

Readiness is the preparedness to respond and adapt to disaster situations. It is a function of developed protocols [including a command-and-control structure], trained staff, and resources available in a timely fashion. Readiness is a mitigating factor in disasters, as a prepared system might not find itself as easily overwhelmed. It is also an indicator of overall system function. A health care system that is organized and able to respond to a disaster will generally function better under normal operations.

Redundancy is the duplication of a service or resource that includes cross-training staff to allow flexible redeployment to different areas and tasks. It is important in two situations: first, for the delivery of care when the primary system fails; and second to increase the care delivered when the primary system is overwhelmed. There is a dictum in engineering that “two is one and one

is nothing". It is inadequate to have just the minimum functional structure when designing a system that delivers a critical service. When redundancy is absent, a minimal structure will not be able to survive the impact of an event that either overwhelms or disables part of it. There can be no surge capacity when 100% of resources are consumed at baseline; constant functioning at this level leads to staff exhaustion and leaves no time for downtime maintenance [resulting in preventable infrastructure failures].

Overview

Any discussion about preparing Canada's medical community for a disaster must acknowledge certain facts;

1. Disasters are not rare but happen from time to time without a set or predictable pattern.
2. Disaster onset can be rapid, or gradual and insidious.
3. While the specifics of an individual disaster may be unpredictable, the response to a disaster is not.
4. The tools used in response to disasters can and should be generalized to improve routine operations.
5. Identified populations-at-risk are more likely to be impacted by disaster and the subsequent disruption of health care delivery. These include geriatrics, pediatrics, people with mental health issues, the socially disadvantaged or marginalized, and those with special needs.
6. There is a lack of clarity around who bears the responsibility for ensuring that the health response to disasters takes place in a way that the best care is delivered to the greatest number of people, even in an environment with diverse jurisdictional boundaries.
7. While the initial impact of some disasters may present initially to emergency departments, disaster response must be system-wide. It needs to include the acute care sector, primary and long-term care, as well as allied health care professionals as the situation dictates. While the focus of this report is primarily on the function of emergency departments, this is not to be read as exclusionary: the role of health care allies, specifically primary care, cannot be overstated.
8. In a disaster, coordination and planning across all parts of the health care system are essential.
9. The needs of the medical community in preparing for and responding to a health disaster are varied, not always understood by professional disaster managers or by other non-clinical responders. The opposite is also true. Health care providers are not well enough aware of the disaster response process.
10. Canada faces a specific constitutional (political) challenge. According to the Constitution Act, responsibilities are divided between the Federal and Provincial governments, which

means the federal government does not have direct leadership to create a unified National Health Emergency Management strategy that can be implemented across the country.

Disaster as Disease

Disasters can be considered diseases in the sense that they (a) occur periodically, (b) affect the health of communities and individuals, (c) have a broadly predictable pattern of behaviour and pathology, and (d) can be planned for and mitigated against. That said, disasters are the only disease entity where there is no established standard of care. The argument for this has always been that disasters are very diverse and unpredictable. This flawed argument fails to consider that although the details of a specific disaster may be unpredictable, the details of the health care response is not. What can be predicted is that;

1. Disasters will occur.
2. There will be a surge in demand on the health care system that may be sudden or prolonged or both.
3. Certain patterns of illness and injury will occur over specific time frames.
4. Specific resources of the health care system will be required in specific time frames:
    a. In the initial phase of a disaster – particularly an event that involves a sudden and high patient load such as a mass casualty incident – interdisciplinary groups (EMS, emergency medicine, surgical services, critical care, and other clinical services) will be required to provide complementary, coordinated responses focused on providing the right care to the right patient at the right time and in the right place
    b. In a disaster of longer duration – or where the clinical load increases gradually, such as an infectious outbreak – the interdisciplinary team must expand beyond the walls of acute care facilities to include primary care, long-term care, community outreach etc.
5. The skill set required when responding to a health care disaster is different from the skill required to deliver day-to-day care.
6. At the hospital level, providing optimal clinical care requires properly coordinated and executed clinical support: labs, blood bank, pharmacy, diagnostic imaging, psychological first aid, patient attendants, equipment and processes.
7. Specific predictable problems will obstruct the delivery of health care in a disaster and
8. While all health care disasters will have an impact on the health and well-being of the population, that impact can be minimized by proactively and systematically engaging all professionals, non-professionals and community groups, methodically going through the steps leading to preparedness.

Preparing the Health Care System to Respond

As the threat of natural and man-made disasters continues to grow, health care systems will be increasingly called on to support their constituent populations. While preparedness is system-wide capacity and not just hospital capacity (more on this later), health care institutions are expected to have the capacity and expertise to receive injured, infected, contaminated and psychologically traumatized patients. Further, depending on local factors, this task may be compounded by the need to provide shelter, respond to the specific needs of high-risk or disadvantaged populations, and possibly protect staff from civil unrest. All this requires a disaster plan that includes:

- A hazard and risk assessment
- Mitigation, Planning, Response and Recovery phases
- Incident Management Systems for command and control[8,9]
- The ability to deploy an Emergency Operating Centre in keeping with the scale of the event
- Initial role description checklists (job action sheets)
- A structured planning cycle that assesses the impact of interventions and current needs then plans the next step in response
- Structured and rehearsed plans for hazards that are most common (emergency codes)
- A general all-hazard plan that provides a framework for specific responses beyond the standardized emergency codes
- A process for recovery.

Note that while "disaster plan" implies one document, it would be more correct to consider it one process that can generate plans through a unified and coordinated command.[4,6] At its most basic, the process will create an all hazard plan that can provide the basis for specific responses nuanced to specific events.

All hazard plans are possible because while disasters may be hugely variable, the response to them is not. Any disaster response will require varying degrees of Space, Stuff, Staff and System, known as the four Ss. Space refers to infrastructure where the care delivery takes place, Stuff are the consumables supplied to the Space, Staff are those who deliver the care and System is the Incident Management System [IMS], a formal structured process for disaster management. Any health care organization given a plan that can satisfy these four factors could tailor a response to the immediate event.

SYSTEM Capacity vs. HOSPITAL Capacity

While this report is focused on emergency health care, no part of the health care system exists in a vacuum and – as with emergency care as a whole – disaster response is always system-wide. System capacity is larger than hospital capacity, and system readiness encompasses more than hospital readiness.[23] The immediate corollary to this is that disaster preparedness can only exist within the context of a functioning health care system which could include primary

caregivers, walk-in clinics and other local medical centres, relevant local/regional and provincial agencies, municipal agencies, public health, local first responders (EMS, Fire, Police), rehabilitation facilities, resource suppliers, and transit authorities etc.

Primary Care Providers Need to be Included

In this context, it would be appropriate to emphasize the important role of primary care in disaster response. Research has shown a growing disconnect between primary care providers and the health care system as a whole,[22] despite the fact that patients trust their family physicians (FPs) more than other health care providers. FPs in rural communities, however, are often also emergency physicians. They may (or if not, should) be included in hospital disaster planning for urban communities where these roles do not overlap. The potential role of family physicians in a disaster response is often unrecognized, overlooked and not considered. And yet they are a potentially invaluable and untapped resource. For example, patients with minor or deferrable complaints could be redirected to community clinics, relieving scarce hospital resources. For this reason, family physicians should have a basic understanding of their role in the disaster cycle as a whole, from mitigation, through planning and response to recovery. Similarly, all emergency planners should be educated about the role and value family physicians could play, before, during and after an event. Of course, none of this can happen without an adequately resourced and supported primary care system within the context of a health care system that plans, shares data and coordinates across silos.

Where The System Fails

No Accountability

The lack of clarity and accountability makes it difficult to determine who is responsible for preparing and responding to a health disaster. This impediment (a current theme in this report) exists at the Federal/Provincial/Territorial level in the shape of jurisdictional confusion and inbuilt dysfunction, as well as at the regional/local/hospital level with no lines of accountability for the lack of readiness.

There is discontinuity between the Federal and Provincial authorities. Emergency Management has become, in practice, a provincial responsibility.[1] Health care has always been within the scope of provincial governments; however, the Supreme Court of Canada recognized that (notwithstanding Section 91 and 92 of the Constitution Act) the federal government may infringe on provincial authority, as long as the measures are temporary in nature and have a national scope (Laskin, Judson, Spence, & Dickson, 1976). This has resulted in a cooperative relationship where provincial and federal governments have a shared interest. For example, federal legislation allows the government of Canada to declare a national or geographically-specific (usually multi-jurisdictional) Public Welfare Emergency (Emergencies Act 1988, Section 5 Part 1 - Public Welfare Emergency).

Since SARS and the creation of the Public Health Agency of Canada (PHAC), leadership and clinical guidance are specifically provided for Public Health Emergencies. In particular, the

health care system is familiar with infectious diseases and is better prepared to deal with transmissible illnesses than other disaster types.[2,3,5] This is, however, only one aspect of the scope of disasters, and not the most frequent. Disasters such as wildfires, building fires, evacuations, flooding and other natural hazards or human-induced events happen more often and can involve more people.

As mentioned, the provinces and territories (P/T) have primary responsibility for the actual delivery of health care with individual health care provision structures that vary by jurisdiction. Within each province and territory, responsibility for funding and coordinating acute care delivery is usually further delegated to regional health authorities, districts, or boards, each of which has considerable control over planning and preparedness. As we have clearly seen during the SARS outbreak in 2003, the influenza pandemic in 2009 and most recently COVID, barriers hindered the exchange of critical data and personnel between jurisdictions. These obstacles exist both at the P/T level and federally even during a disaster that affects more than one jurisdiction.

In Canada, overall disaster preparedness and response from a federal government perspective is generally assigned to Public Safety Canada (PSC), an organization that is both knowledgeable and whose culture is focused on disaster readiness. That said, it lacks expertise and experience in health care delivery which limits its ability to direct and support the health care system to prepare for and mitigate disasters.

The converse occurs in the federal health portfolio (Health Canada and PHAC, the Public Health Agency of Canada) where the organization is extremely knowledgeable in health issues but is not imbued with a culture of disaster preparedness.

A consistent national response is vital to minimizing the impact of disasters on the health of Canadians, regardless of where they live, and key to this is coordinated leadership at and between the Federal, Provincial and Territorial (F/P/T) levels.

PHAC and Health Canada along with PSC are uniquely positioned to provide broad standards in health response and cross-jurisdictional cooperation and communication. In light of the Federal government's unique position to fill this role, we strongly believe the delegation of health care delivery to the provinces in no way absolves Ottawa of its responsibility to coordinate a national health disaster response.

Federal involvement in disaster response does not in any way impinge on provincial authority in the health care field. Instead it addresses the paramount issue of consistency among responders, and shares resources across the country at both the health care facility and health care professional level [such as the professional organizations for physicians and nurses etc.].

No Standard of Readiness

Without a defined standard of disaster readiness and resulting metrics, it is impossible to hold to account organizations at the local infrastructure level whose readiness is inadequate.

There has been no health care readiness assessment at any level of government. Front line caregivers have identified deficiencies in multiple peer-reviewed research papers.[13-16] Neither Federal nor Provincial/Territorial authorities have addressed these deficiencies.

Where health care is accredited through a voluntary process (Accreditation Canada) the emergency preparedness standards are rudimentary, and do not reflect the need for an individual facility or agency to connect to the broader health system. In addition, Accreditation Canada has no evidence-based tools to help it assess the disaster preparedness of hospitals, or to provide tools to facilities or agencies so they can develop preparedness programs. As a result, Accreditation Canada approval does not guarantee a functional response and may give a false sense of security that hospitals are actually prepared.

Over the past few years, the Canadian Standards Association and Defence Research and Development Canada – Centre for Security Science (DRDC CSS) have attempted to develop protocols for health care facilities and disasters. Neither of these is a clinical organization and, to date, neither has deployed any evidence-based tools for the task. The CSA is trying to develop these from scratch, while the DRDC paper is based on US documents that are outdated and not always applicable to the unique Canadian context.

No Uniform Planning Process

Health care facilities in Canada are usually mandated by law to have a disaster plan. But they have not been provided practical guidelines or tools that are consistent across the country to prepare one. They lack the ability to create a standardized plan with all the key components that would interface well with other regional authorities and health care facilities. This despite the fact that such guidelines and tools exist and are constantly being improved upon. In addition, there is no ownership for teaching disaster preparedness in the Canadian health care system.

A greater problem is that front line health care organizations have often been excluded at the planning stage from many federal, provincial and municipal preparedness initiatives, leaving them to design a strategy for disasters in isolation. Minimal emergency preparedness standardization has created institutional variability across government and health care organizations, which will make hospital and multi-agency coordination difficult, if not impossible, during a crisis situation.

A plan that has not been practised is likely to fail. Yet to the degree that this can be assessed, the majority of health care facilities have not practiced their disaster plan. This is often deferred in the face of concerns with higher immediacy.

Where training has occurred – for example for CBRN preparedness in Ontario in 2005 and during the Olympics in British Columbia's Lower Mainland in 2010 - there were no resources dedicated to the maintenance of competence. This is a significant issue because of the large turnover of individuals working within the health care system.

The result is a system with a series of gaps and redundancies, incompatible plans, and uncoordinated resources. It is without standards or an effective uniform interface within the broader national disaster response infrastructure.

No Risk Assessment

Disasters have traditionally been conceptualized as having pre-impact, impact, post-impact and recovery phases.[10, 11] The Canadian National Framework for Health Emergency Management similarly uses the terms pre-event, event and post-event.[7] Pre-event activities include risk assessments, mitigation and preparedness.

Formal risk assessment generates a priority list of events, based on the likelihood and impact of a disaster. Not knowing what to prepare for when generating a plan – let alone mitigating a potential impact – is far more difficult. The periodic nature of cyclical risk assessment compels planners to confront easily-anticipated risks. For example, some surges in the pediatric population are predictably likely and impactful based on infectious patterns. Since the risk has already been identified, it should be addressed through mitigation manoeuvers, which are a standard part of disaster planning. **Cities know there will be snow every year and prepare for it; health care systems know there will be patient surges but do not.**

Some tools, such as a Canadian-made Health Care Facility Risk Assessment, has been developed to help facilities conduct their own risk and readiness assessments.[12] But despite this, no standardized risk assessment has been performed for hospitals across the country.

Poor Communications Across Health Care Silos

The lack of unified hospital, facility and primary care electronic health records is a hindrance during normal operations, and is another example of where an obstacle to success is built into the system. In a mass casualty situation, where patient tracking becomes problematic and getting a past medical history more difficult, a unified health record would be an important tool. Standardized Electronic Health Records (EHRs) would allow for more effective delivery of care and also provide systemwide data analysis far beyond current capacities.

The absence of accountability, leadership and guidance at multiple levels of leadership has resulted in a lack of tested plans, no standardized operating procedures unclear expectations,

blurred lines of authority and uncertainty regarding key functional roles and responsibilities. No enforceable standards of care have resulted in unmeasured (but likely deficient) readiness, and endless deferral of front line disaster training at both the clinical and administrative levels.

Where Good Communication is Working

Not everything is dysfunctional. As mentioned earlier, there is leadership and clinical guidance provided for Public Health Emergencies. As a result, the health care system is better prepared to deal with transmissible illness than other disaster types. During the Ebola response, well before COVID, local health authorities received World Health Organization (WHO), Public Health Agency of Canada (PHAC), and provincial situation reports daily until the WHO declared the event over. They also received weekly flu-like/respiratory illness reports from the PHAC and provincial surveillance reports. PHAC is also willing to deploy teams to support a Regional Health Authority or province if outbreak has cross-jurisdictional implications; and a standard process enables information to be shared among the provincial Medical Officers of Health. During COVID, it became clear that despite being woefully under-resourced, the public health system was able to generate local recommendations based on local clinical data.

Outside the realm of infectious disease there are active cross-jurisdictional MOUs on Health care Worker Mutual Aid Agreement. These have been exercised nationally, and activated during the Alberta Fires in 2016.[18] At the physician level, however, there remains no process for rapid cross licensure when mutual aid is needed, nor is there any foreseeable national licensure process. Canadians who deployed to Ukraine were able to get their licences within days; the same does not apply for an Ontario physician who wants to provide aid in Alberta.

Unfortunately, despite repeated calls in the literature, the availability and prominence of health disaster education and training continues to be limited in this country. Critical gaps persist between clinical medicine, public health and emergency management professionals.

Why Emergency Care & Emergency Departments Should Lead in Disaster Preparedness

In any disaster with a sudden surge, the emergency department will be the first to feel the impact. The ED needs to be able to adapt to incoming patients almost immediately, while other areas of the hospital may have more lead time to prepare. The length of that lead time will depend on the ability of first receivers to avoid intake bottlenecks and flow patients to

definitive treatment areas quickly, sharing the clinical load across the entire facility in an efficient manner.

At the very onset of an event the emergency department may be the first part of the hospital to be aware of the need to invoke a disaster plan. The initial incident commander will come from ED staff, most likely the charge nurse, but could also be the physician on duty. The immediate implication is that all physicians, and senior emergency department staff must be able to assume command until such time as the hospital opens its own Emergengy Operations Centre and takes over control.

Conversely, in a time-limited event, with a defined clinical load [the so-called spike surge] the emergency department may be the first able to regain normal function. Returning to normal also requires some planning, and must be coordinated with other parts of the hospital.

Because of its unique skill set, there is no other specialty more appropriate than emergency medicine to own the topic of disaster preparedness. At the micro level, emergency medicine has the broadest range of clinical practice, spanning both acute and non-acute presentations and the ability to rapidly determine acuity and risk. At the macro level, emergency physicians and nurses have developed the skill of adapting to hugely variable and rapidly-changing workloads, sudden and dramatic changes in priorities, and critical resource management. Technical aspects aside, the cognitive skill set required to function in such a variable and uncertain environment exists in no other field of medicine.

Beyond function in the ED, no other hospital-based clinical sector interfaces with multiple components of the health care system. Emergency departments routinely reach out to all aspects of the acute care system and many aspects of the primary care system.

This provides emergency clinicians with a unique insight into the complexity and processes of their local and regional health delivery.

Recommendations

1. All health care facilities (including hospitals, long-term care homes,) and agencies, (including public health, prehospital, patient transport and community health care) must have a minimal degree of competency in disaster, and have their competency tested periodically.
2. All health care facilities need to maintain some level of real (as opposed to virtual) capacity redundancy as mentioned elsewhere in this report. A system that is above 100% occupancy cannot, by definition, cope with surges.

3. Outside of health care facilities and agencies, the primary care system needs to be supported and educated for its role in disaster preparedness.
4. Facility competency must include (but need not be limited to):
    a. Risk assessment
    b. Identification of local populations at risk
    c. Incident command
    d. Triage
    e. Mass casualty events/mass gatherings
    f. Hazardous materials including basic knowledge and procedures related to biological, chemical, radiological and nuclear events
    g. Cyber readiness.
5. Preparedness planning needs to be high concept, and must include an all-hazards approach.
6. Preparedness planning must be integrated at all levels of the health system.
7. At the institutional level, the ideal model for Emergency Management is a dyad model, comprising of an upper-level administrator with formal training and experience in Emergency Management, and a dedicated Physician in the Medical Director role.
8. In addition to the above, institutions and agencies must prepare plans that:
    a. Are uniform in format and structure, allowing for mutual aid between local facilities and agencies as well as across and between regions and provinces/ territories
    b. Are coordinated with Provincial/Territorial/ Federal initiatives and support
    c. Have a defined command and control structure based on IMS principles and supported by an emergency operations centre
    d. Are simple and easy to review rapidly
    e. Include role description checklists (job action sheets) that allow for a quick understanding of the immediate tasks for staff while activating the next level in response
    f. Are based on best practices,
    g. Are tested and exercised annually with a formal review every three years
    h. Follow a standardized format and include key components to allow uniform and interoperable plans that cross Provincial borders. Facilitating this process will require support and guidance from the Federal government within the parameters of the Canada Health Act.
    i. Allow for mutual aid between organizations and across jurisdictions/licensures. This will require a process of national licensure for health care providers.
9. Education and training in disaster preparedness should have dedicated annual funding to both achieve and maintain competency.
10. Competency should be validated though structured cyclical auditing that, where applicable, should be integrated as a critical factor into the existing evaluation processes of the organization.

11. Disaster response must be a Required Organizational Practice (ROP) without which health care facilities cannot be accredited. Specifically, accredited health care facilities and agencies must make disaster preparedness an accreditation requirement which is assessed using specific, measurable, and scientifically driven standards.
12. Facility training must include periodic exercises that involve all components of the disaster response and that are objectively assessed for purposes of quality improvement.
13. Any educational program must promote coordination of services and alignment of disaster plans between the various health care providers and health system components within a community, such as first responders, primary caregivers, fire, police and relevant government and local agencies involved in health emergencies in order to ensure ongoing health care to all citizens.
14. All planning must take into consideration vulnerable segments of the population, such as children, the elderly and patients with special needs.
15. In each jurisdiction all relevant professional colleges must support the development and delivery of standardized professional education in disaster preparedness to any trainees, and to practicing professionals who could be called upon to respond to a health care disaster.
16. All training and education on Disaster Preparedness across Canada – whether delivered by Federal, Provincial or Territorial authorities – should share:
    a. Common resources for risk assessment, readiness assessment, planning and reporting
    b. Common guidelines upon which they can base their planning, with the resultant uniformity in disaster preparedness
    c. Common structure/ education models for maintenance of disaster preparedness competence for all responders/ care providers
    d. Clarification of the division of authority between health care facilities, regional authorities, the Ministries of Health, the Public Health Agency of Canada and other Federal and Provincial/Territorial agencies
    e. Common reporting, command and communications methodology between health care facilities, regional authorities, the Ministries of Health, the Public Health Agency of Canada and other Federal and Provincial/Territorial agencies.
17. In order to ensure interoperability between regions and all levels of health care, the Federal government – in cooperation with the Provinces & Territories – must provide uniform planning tools and resources to achieve the previous point. Ideally, a federal health emergency response plan should include:
    a. A core set of concepts, principles, terminology, and technologies covering the incident command system
    b. Amulti-agency coordination system
    c. A unified command protocol
    d. a training strategy
    e. Identification and management of resources

f. A process for defining qualifications and certification
g. Tactics that support the collection, tracking, and reporting of incident information and incident resources.[19]

18. While the training at the Federal and Provincial/Territorial level should help organizations break down their inter-organizational silos, all training should also emphasize the breaking down of planning and communication silos within health care facilities.
19. A common national database for unidentified patients, ideally with trackable location identifiers, should be created and be available to all health care centres in order to ensure effective identification and reunification of patients and families.

Summary

The insidious degradation of health care delivery in Canada qualifies as a disaster by any definition. There is no question, as stated elsewhere in this report, that the infrastructure and processes of the emergency health care system require urgent repair. Should a sudden surge in demand occur, Canada's capacity to respond remains restricted by gaps that are well-known and avoidable, including deficient national planning, training support, and performance expectations that are limited to absent. Any discussion of surge capacity is pointless if the health care system is already consuming more than 100% of resources.

Disasters are frequent and impactful. To handle them, our health care's culture needs to change. All future design of the health care system, both in terms of organization and infrastructure, must integrate disaster preparedness because it is a proxy for broader system function. The tools used in disaster management can be equally well applied when dealing with day-to-day operations.

Canadian emergency health care needs renewing with a coordinated nationwide program of preparedness to ensure the delivery of timely high-quality health services to citizens when a disaster strikes. This should include ongoing disaster training and skill maintenance of all health care providers in Canada, whether they are at the site of an event, in a community or primary care setting, in transit, at a receiving facility, or at a facility dedicated to long-term care.

Training must include the opportunity for health care providers, disaster responders and administrators across silos to learn and practice together, leading to improved cooperation. Beyond training and education there is a need for accountability to meet enforceable standards. Health care systems must meet a tested national standard for the bare minimum of emergency preparedness. There is no question that some facilities will prove to be well above that standard, whereas others will be found to be deficient. F/P/T resources external to a

facility's usual budget must be specifically earmarked to remedy deficiencies, together with funds specifically dedicated to readiness assessment that is external, validated and replicable.

Other countries have cultivated and supported health champions in disaster management, and we need to do the same. These champions will become invaluable leaders within their professions and provide the necessary linkages to the multiple agencies that comprise community-based and academic disaster management.

Beyond specific health readiness, the F/P/T governments should promote a culture of disaster readiness across the population at large. Not only will this improve public readiness and resilience, a disaster-ready culture might mitigate the need for a response in the first place.

As stated at one of this committee's consultation sessions, **when it comes to disaster preparedness "we need to stop starting and start finishing".**

This paper made specific recommendations to achieve the above. The task is defined, the steps are clear and the will at the front lines is there. In the words of Nike: Just Do It.

Contributors

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Canadian College of Family Physicians (CCFP)
World Association of Disaster & Emergency Medicine (WADEM)
Society of Rural Physicians of Canada
International Association of Emergency Managers (IAEM)

The committee was multidisciplinary (including both health care and non-health care experts), academically and politically independent. Members have, in the past, provided consultation, education, research and resources in both Canada and abroad. None of the committee members has declared a conflict of interest.

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References

1) Nuttall S, Tyler S. The crisis of September 11: the emergency response of Ontario hospitals and other health system partners. Hosp Q 2001;5:42-50.
2) Christian MD, Poutanen SM, Loutfy MR, Muller MP, Low DE. Severe acute respiratory syndrome. Clin Infect Dis 2004;38:1420-7.
3) A Canadian agency for public health: if not now, when? [editorial]. CMAJ 2003;169(8):741.
4) Berman MA, Lazar EJ. Hospital emergency preparedness -- lessons learned since Northridge. N Engl J Med 2003;348:1307-8.
5) Bevan D. SARS 3: Are we ready? [editorial]. Clin Invest Med 2003;26:273-4.
6) Schultz CH, Mothershead JL, Field M. Bioterrorism preparedness. I: The emergency department and hospital. Emerg Med Clin North Am 2002;20:437-55.
7) Federal/Provincial/Territorial Network on Emergency Preparedness and Response. National Framework for Health Emergency Management.
8) Christen H, Maniscalco P, Vickery A, Winslow F. An overview of incident management systems. Perspectives on Preparedness Series. Belfer Center for Science and International Affairs, Harvard University; 2001. Available: www.innovations.harvard.edu/showdoc.html?id=4915 (accessed 2005 Aug 5).
9) US Federal Emergency Management Agency (FEMA). National Incident Management System Training Manual. 2004. Available: www.fema.gov/nims/nims_training.shtm (accessed 2005 Aug 9).
10) Aghababian RV, Teuscher J. Infectious diseases following major disasters. Ann Emerg Med 1992;21:362-7.
11) Binder S, Sanderson LM. The role of the epidemiologist in natural disasters. Ann Emerg Med 1987;16:1081-4.
12) Public Health Preparedness and Response Capacity Inventory. US Centers for Disease Control and Prevention, Public Health Practice Program Office (PHPPO). 2004. Available: www.bt.cdc.gov/planning/ (accessed 2005 Aug 16).
13) "Canadian ED preparedness for a nuclear, biological or chemical event" Kollek D, CJEM, January 2003, Vol 5 No 1 pps 18-26
14) "Chemical, biological, radiological and nuclear preparedness training for emergency medical providers" Kollek D, Welsford M, Wanger K, CJEM July 2009 Vol:11 No:4
15) "Hospital Emergency Readiness Overview (HERO) Study" (abstract) Kollek D, Cwinn A.A. Prehospital & Disaster Medicine 2009;24:2.s50.
16) "Canadian Prehospital Readiness for a Tactical Violence Event" Kollek D, Wanger K. Welsford M. Prehospital & Disaster Medicine 2010;25(2):
17) Dodd, G.A.A. (2010), Master's Dissertation, Master's of Arts, Disaster & Emergency Management, Royal Roads University. "Exploring the Role of Physicians in Disaster and Emergency Management: What the H1N1 Has Taught Us".
18) Personal communications Emergency Management Coordinator - Horizon Health Network, New Brunswick, Canada

19) Sauer, Lauren M., McCarthy, Melissa L., Knebel, Ann, Brewster, Peter, Major "Influences on Hospital Emergency Management and Disaster Preparedness" Disaster Medicine And Public Health Preparedness 2009 3: S68-73
20) The Chronicity of Emergency Department Crowding and Rethinking the Temporal Boundaries of Disaster Medicine, Bryan P. McNeilly, B; Lawner, B; Chizmar, T, Annals of Emergency Medicine, Volume 81, no. 3: March 2023, 282-285
21) Criteria for Declaring Crisis Standards of Care: A Single, Uniform Model, Kelen G, Marcozzi D, Marx J, Kachalia A, NEJM Catalyst Downloaded from catalyst.nejm.org on January 20, 2023. DOI: 10.1056/CAT.22.0269
22) Our role in making the Canadian health care system one of the world's best, Glazier RH, Canadian Family Physician, Vol 69: JANUARY 2023 ppt 11-16
23) mass shootings in America: consensus recommendation for health care response, Goolsby Cet al, J Am Coll Surg, Vol 236, No1, Jan 2023. 168-175