

EM:POWER

The Future of Emergency Care



CAEP | ACMU



**TASK FORCE
FINAL REPORT**

MARCH 2024

About CAEP and the EM:POWER Task Force

Founded in 1978, the Canadian Association of Emergency Physicians (CAEP) is the national voice of emergency medicine across the country.

EM:POWER stands for **E**mergency **M**edicine: **P**atient care – **O**rganizational – **W**orkforce - **E**cosystem **R**edesign. Challenges in Canada’s health system are all too often manifested in its emergency departments (EDs). CAEP commissioned the EM:POWER Task Force to probe the system and its many stakeholders, identify underlying problems and propose a framework for system redesign. Their work took over two years and forms the basis of this report.

Goals of the EM:POWER Report

- to propose a redesigned, integrated framework for emergency care in which *form follows function*
- to optimize emergency care delivery within the broader healthcare system, to help achieve the Quintuple Aim.
- to catalyze change, by empowering from above (system leaders) and below (health workforce)

Target Audience

The EM:POWER Report will be relevant to a wide range of policy/decision-makers and emergency care providers across Canada, in other healthcare systems and, of course, to our patients.

Cover Art by Jeffery Smith



The content of this report was developed independently without external private sector input or influence. Our thanks to MD Financial for their financial contribution which covered the editing and design costs of this project.

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Special thanks also to Drs. Tania Principi, Elyse Berger-Pelletier and Shelley McLeod for their contributions



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The Task Force engaged in consultations with over 50 individuals and organizations across the country and internationally. A full list of those who took part in the consultations is available [here](#).

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EXECUTIVE SUMMARY



As we prepare for a post-pandemic world, it is clear that we cannot simply return to old models and expect different results. Governments, health leaders and the medical community require a redesigned, more integrated approach to emergency care.



Canada’s emergency care system is on the verge of collapse. Nurses and physicians show extreme levels of burnout and are quitting in alarming numbers; ambulance offload delays are soaring, and patients are leaving emergency departments without care and with limited recourse.

All of us, patients, and caregivers alike, are tired of enduring long wait times and their potentially dire consequences. In trauma care, the concept of the golden hour connotes how important it is to treat critically-ill patients expeditiously. In neurology and cardiology, phrases such as “time is brain” and “door-to-balloon time” reflect a similar sense urgency for strokes and heart attacks, respectively. And yet, every day in Canadian emergency departments (EDs), thousands of patients wait far too long for care, some with time-sensitive conditions, obscured from view amidst the chaos.

This has recently been described as a hidden pandemic of ED crowding and excess mortality.¹

In addition to their vital role in the delivery of care to acutely ill and injured patients, our EDs increasingly act as a safety net for a broad swath of the population who cannot get the timely

¹ Editorial CJEM 2023 Sep;25(9):722-723. doi: 10.1007/s43678-023-00571-6. Epub 2023 Aug 15. Waiting to die: the hidden pandemic of ED crowding and excess mortality [James Worrall 1](#), [Paul Atkinson 2](#)



medical attention they need. As overall system dysfunction has increased, emergency departments have been disproportionately impacted, making it difficult or impossible to provide the essential services for which they were designed.

“

Where is the structural reform? At some point, we have to commit to massive, bold reform instead of just fiddling around at the edges of our problem.

**- André Picard, Health Reporter and Columnist,
The Globe and Mail**

”

COVID-19 further exposed and exacerbated longstanding problems, which extend throughout the entirety of the healthcare system. All too often, a dischargeable inpatient is waiting for a test or community care, while another patient with an as-yet undiagnosed heart attack languishes in an ED hallway.

In response to these challenges, CAEP commissioned the EM:POWER Task Force, with an ambitious mission to propose a new framework for the future of emergency care within a redesigned healthcare ecosystem. An 18-month consultation process followed that included national and international medical and allied health specialists and organizations, health policy experts, and emergency care leaders.

The urgent need for fundamental healthcare system redesign emerged as a consensus, but this can only happen by creating conditions where innovative solutions can emerge. The core assumptions and behaviours that perpetuate our deteriorating system must also be challenged.

As we prepare for a post-pandemic world, it's clear that worsening access block and a crisis of confidence in the ability of the healthcare system to fulfill its mission means we cannot simply

return to old models and expect different results. Governments, health leaders and the medical community require a more integrated and collaborative approach to future planning.

This project is a prime example of emergency medicine’s role in health policy and public affairs. The metaphor of the ED as the passive canary in the coal mine of health system dysfunction is challenged, and replaced with a more empowered construct, in which emergency medicine is a leading agent of change.

Keeping emergency medicine (EM) at the forefront, this report and its acronym refer to three distinct groups: Patients, Organizations, and the Workforce—all critical to healthcare Ecosystem Redesign.

There’s no silver bullet or easy solution to fix emergency care; leading large-scale change is different, a continuous cycle of consultation, engagement, and improvement. It builds slowly and iteratively at first, as core issues are framed and reframed after repeatedly engaging with others. Over time—and if successful—it gathers size and momentum from multiple sources, like a snowball rolling downhill, eventually becoming an irresistible force.

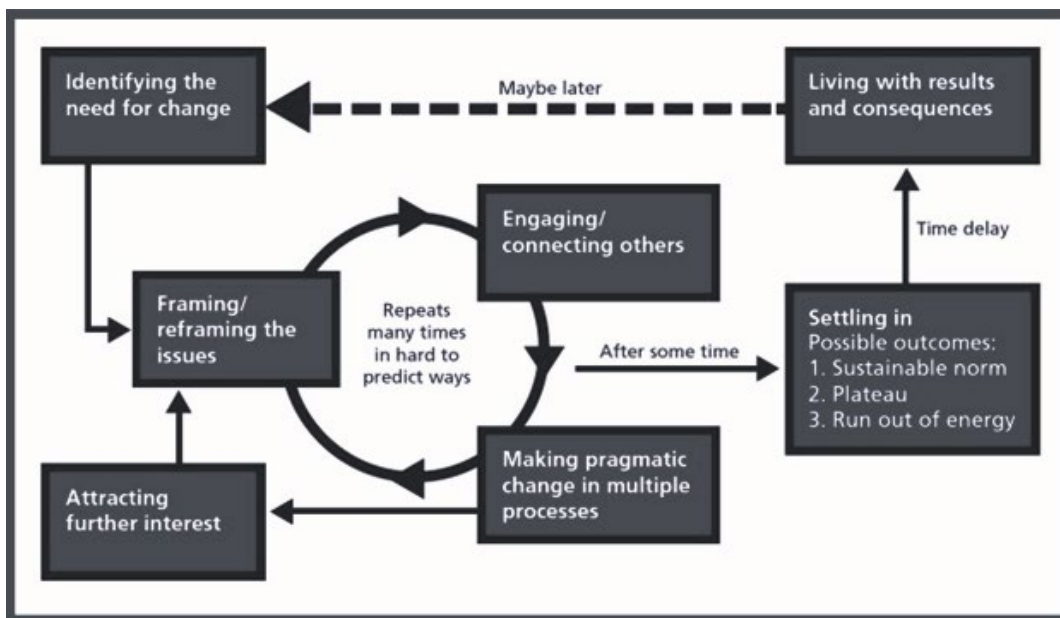


Figure 1. The Leading Large Scale Change model that has guided our work, and should influence future strategies, both locally and at scale. (NHS England Sustainable Improvement Team, 2017.)

The report that follows is only the beginning of the change process, a fistful of snow in our hands at the top of the hill. Let’s seize the moment to imagine, and then harness, the vast potential energy in the hands of emergency medicine.

Guiding Principle: The Quintuple Aim

EM:POWER’s recommendations are guided by the Quintuple Aim which states that the purpose of a healthcare system is to improve the experience and outcomes of patients and populations in an equitable, cost-effective manner, while supporting and sustaining its workforce. All aspects of a redesigned system should be built, measured, and continually improved based upon this overarching purpose.



Figure 2. The Quintuple Aim, Institute for Healthcare Improvement

Four major challenges to achieving the Quintuple Aim are addressed in dedicated sections of this report. They are unplanned ED closures, ED crowding, acute and chronic disasters, and disruptive forces in a rapidly changing world.



How this Report is Designed

This Executive Summary outlines the five sections and fifteen chapters in this report, and includes roadmaps to address the problems our health system is facing and 30 key recommendations for system improvement. Each chapter concludes with its own recommendations, with a consolidated list of chapter recommendations at the end of the report.

Section One (Chapters 1 and 2) is a broad overview of the healthcare system—past, present, and future—from an EM perspective. It provides context for the subsequent sections, which focus on essential elements of system redesign in more detail.

Chapter 1: Where Are We Now? How Did We Get Here? What Must We Remedy? What Will Guide Us?

This chapter looks at what is happening in our EDs now, the root causes of these challenges, and the necessary steps to create a better future. The key concepts of system-wide access block and accountability frameworks are introduced, then discussed in detail in subsequent sections. Finally, core values and guiding principles for a redesigned system are established.

Chapter 2: What Have Emergency Departments Become and What Should They Be?

Many Canadians cannot get timely access to primary, specialty or diagnostic services. As a result, EDs increasingly provide services for which they were not designed. What types of non-emergency care are contributing the dire state of our emergency departments, and why is the ED the wrong place for many patients? We outline a better way, where patients and populations are properly aligned with the services they need.

Section Two (Chapters 3-6) addresses unplanned ED closures in the context of clinical services planning, which is all too often oriented around siloed services, rather than patient needs. It proposes a needs-based approach to the number, distribution, capabilities, connections, and staffing of emergency care access points within emergency care systems.

Chapter 3: ED Categorization, Quality, and Standards is about defining and categorizing EDs and urgent care (UC) centres within a network and geographic area. Better planning decisions can be made once ED and UC services are classified in relation to their geography and the demographics they serve. The chapter also discusses the potential for peer-to-peer virtual care



to impact clinical services planning. We strongly advocate for EDs to meet minimum quality standards around equipment, staffing, and transition-of-care pathways. Without standards, a system with extreme capacity, staffing or fiscal pressures may be tempted to blur quality lines in the name of ED access.

Chapter 4: Competencies, Certification, and Teamwork explores staffing, the importance of competencies, the role of certification, and how we can optimize scopes of practice to improve care. There are several pathways in emergency medicine to ensure physicians and other care providers have the required knowledge and skills in a rapidly evolving discipline. An approach to fostering high-performance multi-disciplinary teams is discussed, with an emphasis on clear goals and roles, core values, leadership, and simulated practice. Finally, this chapter expands on the concept of communities of practice, and how they can advance quality, recruitment, retention and morale.

Chapter 5: System Integration emphasizes the key principles to successfully integrate and coordinate our health system. The focus is on the relationships between three levels of care in system redesign: primary, urgent, and emergency. The concept of multi-option EMS is developed, and the essential role that pre-hospital care and expanded-scope paramedicine can play in the future. Having on-call specialists and integrated systems for trauma and stroke care (among others) is also emphasized, which is especially true for large rural expanses of Canada.

Chapter 6: Emergency Physician Resource Planning pulls together recommendations from the preceding three chapters into a practical and immediately relevant emergency physician resource planning framework, which could be implemented at a national level. The approach emphasizes a demand-based (what do our populations need?), behaviour-informed (how do physician career decisions impact the workforce?) approach to health human resource planning for the future.

Section Three (Chapter 7) focuses on ED crowding and system-wide access block as the main problem for Canadians seeking emergency care and the primary symptom of health system dysfunction. It discusses ED role definition, the importance of patient care accountability frameworks, and strategies for improving access and flow at a whole-of-system level.

**Chapter 7: Access Block and Accountability Failure.**

We have the highest rate of emergency department use, compared with 11 other affluent countries. Why do patients wait—sometimes for days—on stretchers in hospital hallways? This chapter addresses root causes, which include the absence of patient care accountability and lack of planning to address care gaps in our healthcare system.

Section Four (Chapter 8) addresses disaster management, emergency preparedness, and system resilience, as well as the necessary integration, education, and training to assure disaster readiness. It outlines how disaster preparedness is applicable to our current state, re-emphasizes lessons learned from COVID-19, and makes pragmatic recommendations to improve our response to similar scenarios in the future.

Chapter 8: Disaster Preparedness.

If Hurricane Katrina happened in Canada, how would we cope? The truth is, we are not ready and our system suffers from an absolute lack of adequate preparedness. Many Canadian emergency departments are effectively in disaster status all the time, but lack the tools to cope. This chapter provides a roadmap to equip our front lines to deal with their current overburdened situation and keep them ready to face an eventual catastrophe.

Section Five (chapters 9-15) covers a spectrum of global trends and disruptive forces that will reshape and reorient emergency care, research, and education in the decades to come. This includes digital health and advanced technologies, JEDI (justice, equity, diversity, and inclusion), climate change, and lessons from other (higher performing) healthcare systems.

Chapter 9: Coevolving in the Research and Quality Ecosystem

Just as we've done for clinical care, we begin with an exploration of integrating EM research into a broader system. This underlines the importance of tailoring research efforts to the biggest threats to our patients, populations, and planetary health.

Chapter 10: The Future of Digital Health (DH) in Emergency Medicine

DH will transform medicine in a future not too far from now. The question isn't whether DH will be adopted, but rather how technology can help forge a path to achieve the Quintuple Aim of improved patient experience, better population outcomes, lower costs, an empowered workforce, and health equity for all Canadians.



Chapter 11: Managing Intergroup Relations

Collaboration across silos is notoriously difficult to achieve, and efforts to spread better practices or change outmoded structures often screech to a halt at intergroup boundaries. The problem of intergroup conflict is so glaring, and so pivotal to ED–system relations, that it seemed essential to devote a chapter to this topic. Counterintuitive as it may seem, change can take place by working through social identities, not against them.

Chapter 12: Emergency Medicine’s Future Role in Health Policy and Public Affairs

It will take more than words—however well-intentioned and informed—to produce meaningful change. That’s where engagement in policy, public affairs and advocacy begins. Emergency physicians work at a critical healthcare intersection, the junction between community, prehospital, primary, and acute care. We can be powerful agents of change, observing, anticipating, and responding to the health issues of the day, with a voice that resonates across the entire medical system. Strategies arising from this report must be based on a clear, depoliticized, long-term vision, with short, medium, and long-term objectives. This avoids the one-problem/one-solution trap that ultimately fails and reverts to emergency backlogs.

Chapter 13: Emergency Medicine in the Era of Climate Change

Climate emergencies are already increasing in frequency and severity. Emergency programs must understand local climate risks, along with the need to adapt their operational plans. ED directors must be aware of the temperature and precipitation projections for their region, plan for the consequent operational impacts, and work with climate-savvy architects and engineers to design infrastructure for a changing environment. CAEP and its members also have an important role in education and advocacy for a healthy planet.

Chapter 14: Building on Values: Justice, Equity, Diversity, and Inclusion (JEDI) in Emergency Medicine

Many diverse and marginalized populations do not feel safe accessing care in the ED, often sensing that they are not heard and their needs not addressed. As respected members of society, physicians can and should be powerful advocates for social justice to ensure healthy living conditions for all. This chapter will outline some of the ways we can do so, with a focus on ED staffing, leadership, and care of marginalized populations. Also addressed is the importance



of representation; it has profound impacts on how people view and use the system, trust providers, and adhere to healthcare recommendations that affect patient outcomes.

Chapter 15: Lessons from Other Healthcare Systems

ED closures, crowding, patient morbidity, mortality, dissatisfaction, and healthcare worker burnout are not unique to Canada; other countries with better-performing healthcare systems are similarly challenged. Using case studies, this chapter compares health policy approaches from several OECD countries, and identifies potential best practices, covering workforce planning, system capacity, and long-term care. Private vs. public care is also examined.

On the following pages are EM:POWER Roadmaps, depicting solutions to four major challenges to achieving Quintuple Aim-level emergency care. Each of these is explored in detail in a dedicated section of this report.

PROBLEM

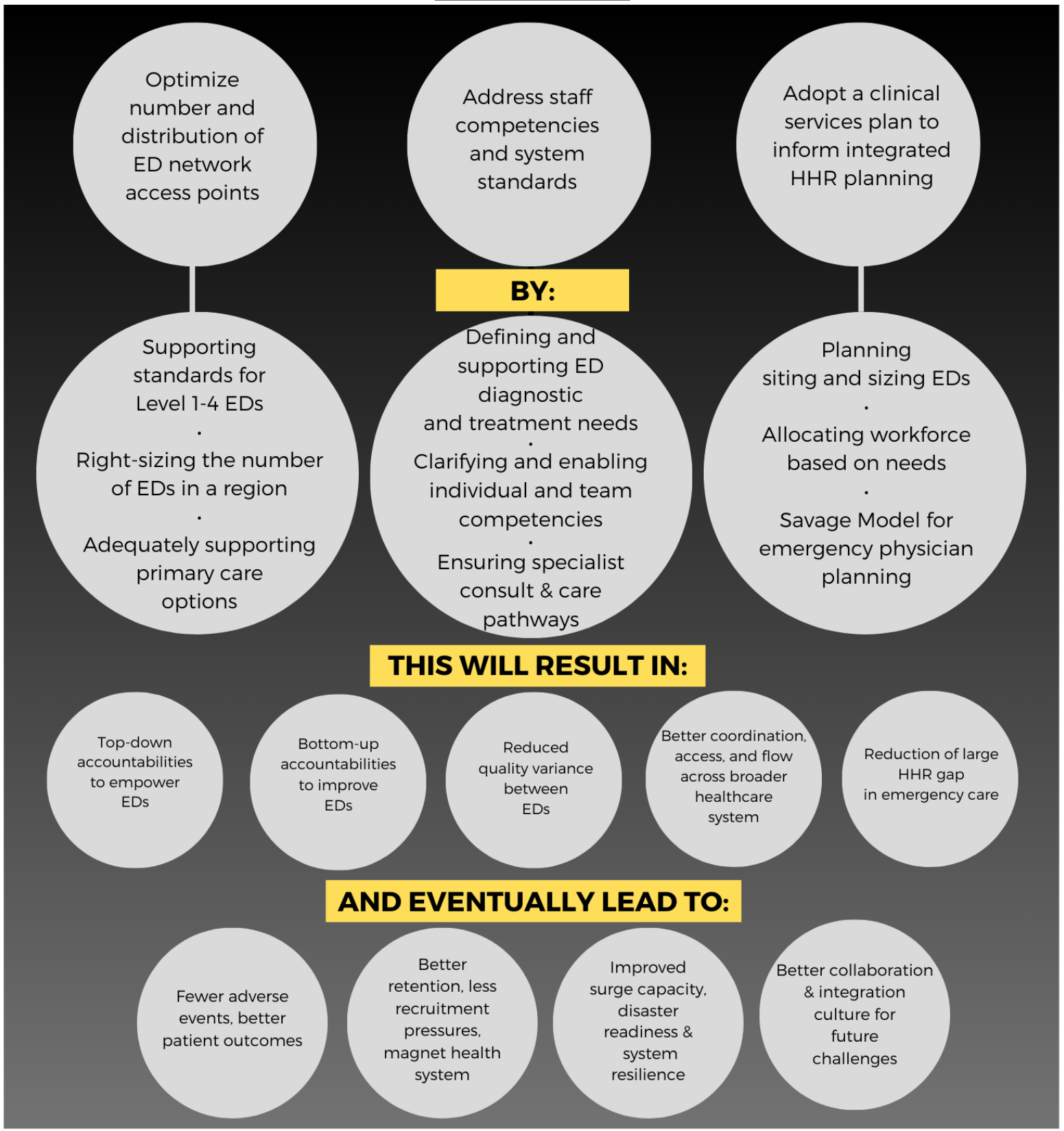
Unplanned ED Closures
Limited Access

ROADMAP

IF WE:

OPPORTUNITY

Align access to population needs and decrease variance in quality



Contributing to a goal of:
QUINTUPLE AIM EMERGENCY CARE



ROADMAP

PROBLEM

Emergency Department
Overcrowding

IF WE:

OPPORTUNITY

Reduce patient harm; reduce costs;
improve recruitment & retention

Run acute care occupancy at 85% on average

Have an accountability framework to monitor & manage performance

Create options for avoidable ED visits (e.g. primary & complex continuing care)

BY:

Right-sizing the # of acute care beds
Using home, community & transitional options on discharge
Safely & efficiently reducing inpatient length of stay

Creating accountability zones, performance targets & management
Monitor & mitigate against gaming, unintended consequences

Creating rapid access to primary care health home
Med/Surg/Mental Health & Addiction day clinics
Out-of-hospital navigation & coordination centres

THIS WILL RESULT IN:

Less boarding, shorter ED wait times, & length of stay

Reduced ambulance offload delay, better response times

Less moral injury/burnout in MDs, nurses, paramedics

Less patient and family frustration and violence in ED

Better coordination, access & flow across healthcare system

AND EVENTUALLY LEAD TO:

Fewer adverse events, better patient outcomes

Better retention, less recruitment pressures, magnet health system

Improved surge capacity, disaster readiness & system resilience

Better collaboration & integration culture for future challenges

Contributing to a goal of:
QUINTUPLE AIM EMERGENCY CARE



ROADMAP

PROBLEM

Limited Disaster Preparedness & Response

OPPORTUNITY

Reduce strain on healthcare systems in acute & chronic disasters

IF WE:

Address ED crowding & ED closures through a disaster response lens

Have a tested plan, including for populations at risk

Have standards, uniformity & disaster skills maintenance

BY:

Reducing unexpected ED closures, optimizing ED access & mitigating ED crowding (see Sections 2 & 3)

Creating surge capacity, with real redundancy

Having a formally-tested and practised all-hazard plan as accreditation requirement

Being accountable for vulnerable populations

Integrating planning to allow for mutual aid from local to national & across jurisdictions

Sufficient funding to achieve & maintain competency in disaster preparedness

THIS WILL RESULT IN:

Sufficient system capacity to accommodate normal surges

Faster and broader response during "disaster" events

Less backlog & unsafe delays in care during & after a disaster response

Reassurance to the public of an equitable approach to readiness

More clarity, comfort and confidence for providers in their roles & responsiveness

AND EVENTUALLY LEAD TO:

Fewer adverse events, better patient outcomes

Better retention, less recruitment pressures, magnet health system

Improved surge capacity, disaster readiness & system resilience

Better collaboration & integration culture for future challenges

Contributing to a goal of:
QUINTUPLE AIM EMERGENCY CARE



PROBLEM

Rapidly Changing Contexts & Challenges

ROADMAP

IF WE:

OPPORTUNITY

Create a discipline that adapts and innovates in response to a volatile environment

Create & contribute to Learning Health Systems

Improve our readiness and agility in face of rapid change

Understand differing professional identities and break down silos

BY:

Strengthening our EM research network
·
Implementing a Health Systems Science curriculum
·
Learning from within & other health systems

Understanding health impacts of climate change on EM
·
Influence digital health applications so they address important challenges (not solutions looking for a problem)

Emphasizing role of identity development in training
·
Creating shared purpose in team development
·
Fostering a culture of respect for diversity /diverse perspectives

THIS WILL RESULT IN:

More evidence-based care & decreased variance in quality

More evidence-informed system delivery (structures and processes)

Faster and more effective response to emerging health threats and cascading risks

Challenge led and purpose-driven technology innovation (not the other way round)

Greater sense of meaning, shared purpose, fulfillment in work and career

AND EVENTUALLY LEAD TO:

Fewer adverse events, better patient outcomes

Better retention, less recruitment pressures, magnet health system

Improved surge capacity, disaster readiness & system resilience

Better collaboration & integration culture for future challenges

Contributing to a goal of:
QUINTUPLE AIM EMERGENCY CARE



Now What?

The EM:POWER Report articulates a shared purpose and foundational strategies to catalyse change from above (decision-makers) and below (care providers). For emergency medicine to optimize its role in achieving the Quintuple Aim, the entire system must be better integrated and aligned to the needs of our patients and populations.

Obviously, a single report in isolation will not change the trajectory of health care in Canada; it starts—but must not end—here. So, now what?

Our preliminary recommendations were shared at the 2023 CAEP Conference and the final EM:POWER Report approved by the CAEP Board in October 2023. Its fundamental findings have also been shared with all Provincial and Territorial Ministers and Deputy Ministers of Health at their respective fall meetings.

CAEP subsequently proposed that the Provincial and Territorial Ministers support a national forum, which would allow for health leaders, stakeholders, and policymakers to build on the momentum of the EM:POWER project and use its evidenced-based recommendations as a framework for change. We look forward to working with them to improve a system which not only provides an essential service to Canadians but helps define us and reflects our values.

Key Recommendations

The 30 key EM:POWER Recommendations below are distilled from the corresponding sections of the report:

Section One: Shared Purpose, Coordinated Mission

Establish a shared purpose, guiding principles and unifying framework to coordinate our mission.

1. Canadian healthcare leaders, providers, and organizations should adopt the Quintuple Aim framework as the overarching goal of health system redesign.
2. Health system planners should understand population needs, determine which services best meet those needs, and resource them appropriately.
3. Provincial Ministries of Health should implement patient care accountability frameworks that incorporate accountability zones, program expectations and performance targets.
4. Health planning and design should be entrusted to an independent public entity at arm's length from government, to reduce the impact of election cycles on health system decisions.
5. Canadian policymakers should learn from international health systems, while upholding publicly-funded healthcare and the Quintuple Aim.
6. Ministries of Health and Health Authorities should assure all Canadians access to primary care, prioritizing those in greatest need. Reliable access to primary care will help emergency systems focus on their core mission.
7. Governments must support unified digital health integration to facilitate data access and information-sharing among patients, care providers, researchers, and communities.
8. Principles of Justice, Equity, Diversity, and Inclusion (JEDI) should be embedded in healthcare planning, delivery, and evaluation at all levels.
9. Provincial health ministries should catalyze system redesign by creating adaptive, integrated care clinical networks that prioritize patient and population needs.

10. When system factors compromise care, EM must engage with healthcare leaders to avoid simplistic responses to complex problems and to encourage system innovation.

Section Two: One Network, Many Access Points

Optimize the number, distribution, capability, connections, coordination and workforce of emergency departments and other access points.

1. Provincial Health Ministries should establish Emergency Care Clinical Networks (ECCNs) to coordinate clinical service and HR planning, operational guidance, and quality improvement initiatives.
2. ECCNs should oversee categorization, standardization (facilities, equipment, required competencies) and integration of EDs and other emergency care access points.
3. ECCNs should establish and support team-based care, creating complementary roles and responsibilities to serve patient needs. Health Ministries and authorities should provide the necessary funding for team building, including regional simulation programs.
4. Emergency care systems should work with EMS agencies to implement and evaluate pre-hospital coordination centres and “expanded scope” EMS concepts.
5. Provincial governments should implement a needs-based, behaviourally-influenced, iteratively-updated physician resource planning model (e.g., the Savage Model).

Section Three: Access Block and Accountability

Implement accountability frameworks, defining accountability zones, program expectations and performance targets.

1. Healthcare leaders should use defined performance measures to monitor care gaps and determine whether these are best addressed through new capacity, enhanced efficiency, or reallocation of existing resources. Where the gap/root cause is capacity, they must advocate for new resources; where it is inefficiency or misallocation, they must facilitate change.

2. The Minister of Health must hold all hospital/health authority CEOs accountable to on-average bed occupancy levels of 85% to reduce emergency departments being used units to hold admitted patients.
3. Facilities should implement demand-driven overcapacity protocols to be activated when pull systems are failing and access block is compromising care delivery. Overcapacity protocols should also bridge the hospital-to-community transition.
4. Provincial governments should immediately invest in aging-at-home options and Alternate Level of Care (ALC) transition capacity to expedite hospital outflow, mitigate acute-care access block, and improve quality outcomes.
5. Hospitals must publicly report ED performance in relation to CAEP ED access and flow targets, as articulated in its 2013 position statement on overcrowding and access block.

Section Four: Disaster Preparedness

Integrate and fund disaster preparedness throughout the system.

1. All healthcare facilities must have a formally tested plan for surge capacity. A system that is near or at 100% occupancy cannot, by definition, cope with surges. The plan must include a constant level of bed redundancy which must consist of real beds—staffed but unoccupied—as opposed to theoretical bed expansion above the existing census.
2. Competency in disaster response must be validated through structured cyclical auditing, established as a requirement for healthcare facility accreditation and integrated into routine evaluation.
3. Preparedness planning must be integrated and uniform across all levels of the health system and allow for mutual aid across all levels and jurisdictions.
4. Education and training in disaster preparedness should have dedicated annual funding to achieve and maintain competency.
5. All disaster planning must consider vulnerable segments of the population including those with special needs and challenges.

Section Five: Adaptation and Evolution

Adapt to a changing world, within and beyond medicine, by becoming a learning health system (LHS).

1. CAEP, in conjunction with university departments and divisions of emergency medicine, should develop a pan-Canadian EM research network, to coordinate researchers and facilitate interdisciplinary collaborations that prioritize the most urgent and impactful patient and population needs.
2. Emergency physicians should embrace leadership and stewardship roles in digital health, to ensure that the best innovations are promulgated and that precious public resources are not diverted to non-value-added activities.
3. Emergency physicians, through their national and provincial organizations, must be knowledgeable in the population health effects and health system impacts of climate change events (e.g., wildfires, floods), and participate in public and professional education, and advocacy.
4. EM training programs should include public affairs, policy and advocacy in their teaching, as part of a health systems science (HSS) curriculum, to advance understanding of the broader context in which EM operates and nurture the next generation of systems change leaders.
5. EM training programs should address the impact of social identity in the healthcare setting and foster opportunities for productive interaction among specialties, to establish teamwork and shared goals as integral parts of professional identity development.



SECTION ONE

A Systems Approach to the Future of Emergency Care

Editors: Alecs Chochinov, Grant Innes, Daniel Kollek, Sara Kreindler, David Petrie



Healthcare is at a watershed moment. The COVID pandemic and growing care shortfalls since, have underscored the urgent need to embark on fundamental healthcare redesign. We cannot wait passively for the future to evolve while our patients suffer harm. We hope this project will empower emergency providers and catalyze others, within and beyond healthcare, to help us plan a better future.



Chapter 1

Introduction to EM:POWER

Where Are We Now?

Despite being a wealthy nation with a highly trained workforce, Canadian hospitals provide substandard access to emergency care. Too often our patients face treatment delays that cause frustration and adverse outcomes. Triage lineups, packed waiting rooms, ambulances unable to offload, waiting room disasters, physician shortages, rising stress levels, ED closures, and dispirited nurses leaving for more sustainable careers—it’s a vicious cycle of demand, dysfunction and distress that threatens emergency care on a national basis. [1–4] Some blame COVID for our current predicament, but although it may have been the last straw, it wasn’t the root cause. Instead, COVID exposed our system’s lack of resiliency and inability to respond to demand surges, anything from expected daily inflow fluctuations to unexpected ice storms and pandemics. After decades of progressive dysfunction, why are emergency departments (EDs) still getting worse? Some of the major causes are summarized below:

The Decline and Fall of the Primary Care Health Home

Many Canadians cannot get a family physician, and few can access same-day, next-day, or after-hours appointments. As a result, EDs increasingly provide primary care services. [6,7] A regionally rostered, multi-disciplinary, same or next-day accessible primary care (medical) home is the foundation of a functional healthcare system, required by all Canadians. Accessible primary care could address many low acuity, time-sensitive complaints. More importantly, it would address prevention, early identification, and provide follow-up for complex continuing care over time—for which emergency departments are not designed.

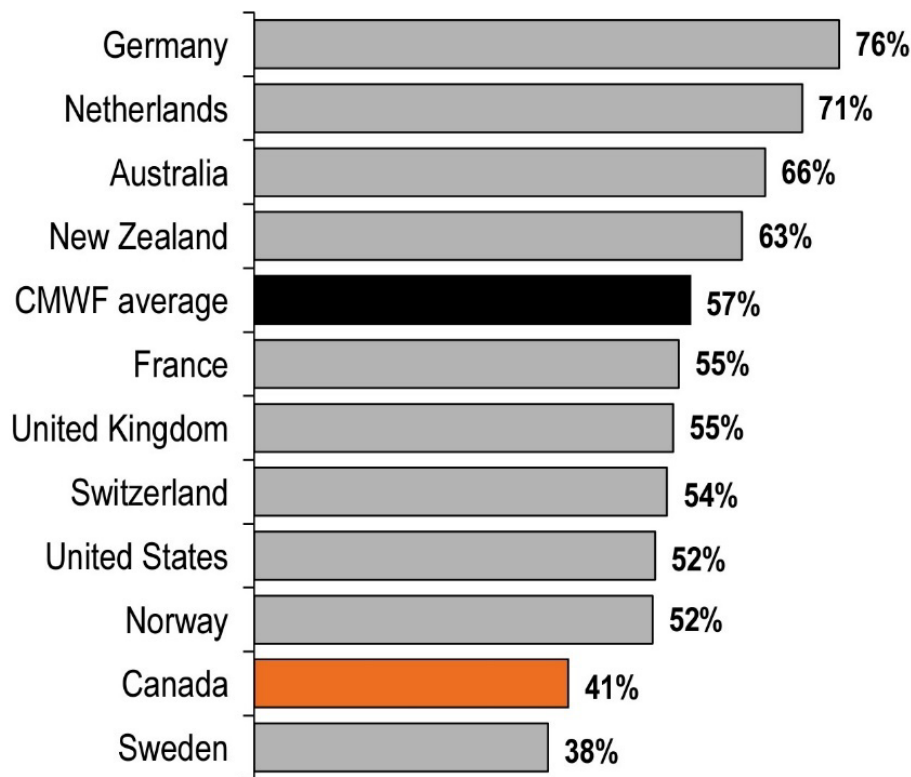


Figure 3. Percentage of survey respondents who said they had access to same-day or next-day appointment with their family doctor. All 38 countries in the OECD (Organisation for Economic Co-operation and Development), including Canada, have private delivery of publicly-funded health services. (Canadian Institute for Health Information. How Canada Compares: Results From the Commonwealth Fund’s 2020 International Health Policy Survey of the General Population in 11 Countries. Ottawa, ON: CIHI; 2021.)

System-Wide Access Failure

Illnesses and injuries happen 24/7, but Canada compares poorly to other OECD countries when it comes to providing access to primary care, specialists, elective surgery, and advanced imaging. [6,7] Healthcare services operate primarily on scheduled appointments between 8:30



and 5:00, Monday to Friday, with prolonged waits for almost everything. [6,7] Accessibility is a core principle of the Canada Health Act, yet there's usually only one door open for Canadians who have unexpected health problems. [5]

Growing dependence on hospital-based technology and unacceptable waits for consultation and outpatient testing drive many patients to emergency departments with expectations of an immediate CT scan or specialist assessment. Such reliance places pressure on ED staff and resources, which drives up wait times, lengths of stay, as well as compromising ED efficiency and effectiveness. [1,2]

GROUNDHOG DAY FOR PATIENTS

An 88-year-old man with bladder inflammation from radiation therapy develops bloody urine and goes to the ED. There, they irrigate his bladder through a catheter, but the bleeding continues, so they consult a urologist. The urologist will not come to the ED, but provides advice over the phone: daily home care bladder irrigation and return to the ED if he has problems.

At home, the nurses cannot control the bleeding, and tell him to return to the ED. At his second ED visit, staff again irrigate his bladder repeatedly and give him a transfusion because he has lost so much blood. They again consult the urologist, who after reiterating the earlier phone advice, states that the urology ward is full, so the nurse arranges a clinic appointment in 6 weeks to decide whether he needs a more definitive bladder cauterization procedure.

At home, blood clots clog his catheter, causing overflow bleeding into his clothing, sheets, and carpet. Painful episodes of bladder distention prevent him from sleeping, and blood loss makes him weaker. He learns to flush his own catheter at night when home care is not available. His Primary Care Physician is away, with a phone message advising patients to go to emergency for any urgent medical concerns. The patient himself knows the limits of that approach.

His son visits from out of province, watches a YouTube video describing bladder irrigation, buys his own supplies and flushes his father's bladder 3 times daily, but the bleeding continues. They reluctantly return to the ED, where emergency staff again flush his bladder and consult a different urologist.

The patient has now had three ED visits totalling 36 hours, and likens his experience to the movie 'Groundhog Day.' Prior to the bleeding, he was golfing and gardening. Now he is sleep-deprived, anemic, weak, and expressing a wish to die. His son does not think his dad is safe to go home, but doesn't know what his options are.

Emergency departments become the default destination when patients are unable to receive care from the right providers in the right place, whether or not emergency providers have the necessary expertise or resources.

When patients who face long delays for specialist appointments or imaging studies become frustrated, or their condition deteriorates, they land in emergency departments. Surgical patients are told to go to an ED if they develop post-op problems. [7] Community providers direct patients to the ED for a second opinion, diagnostic testing, or simply out-of-hours care. When long-term care facilities cannot manage elderly residents, they transport them to emergency departments, not because EDs have geriatric expertise, but because no one else is available to see the patient. Family physicians who need urgent surgical or specialist advice instead send their patients to an ED because there are no urgent specialty referral pathways. Marginalized patients who cannot access care elsewhere depend heavily on EDs, and half of their visits are for non-urgent concerns. [7]

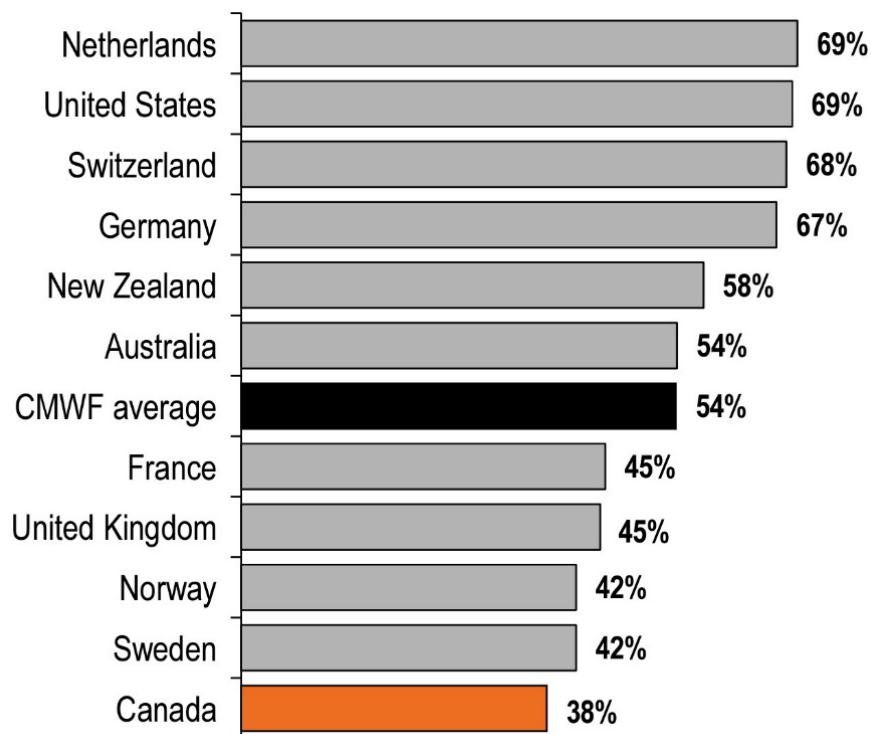


Figure 4. Percentage of survey respondents who said they waited less than 4 weeks for a specialist appointment. (Canadian Institute for Health Information. *How Canada Compares: Results From the Commonwealth Fund’s 2020 International Health Policy Survey of the General Population in 11 Countries.* Ottawa, ON: CIHI; 2021.)



Patient Complexity

Our aging population has a high prevalence of chronic disease and multiple comorbidities that require complex specialty care. While in the past, ED patients had acute problems like heart attacks or trauma, today they are often elderly with chronic multi-organ disease, and subacute or long-term deterioration. They are frequently unable to access appropriate care in the community and fail to cope in their home setting because of weakness, alterations in their mental state or lack of basic supports. They often require prolonged investigation and care processes that consume many hours or days, and their management is likely to require skill, knowledge and resources that are not part of the ED tools or resources. This might range from stabilizing complex chronic disease, to negotiating accelerated procedural access or navigating placement and follow-up care for older adults in crisis.

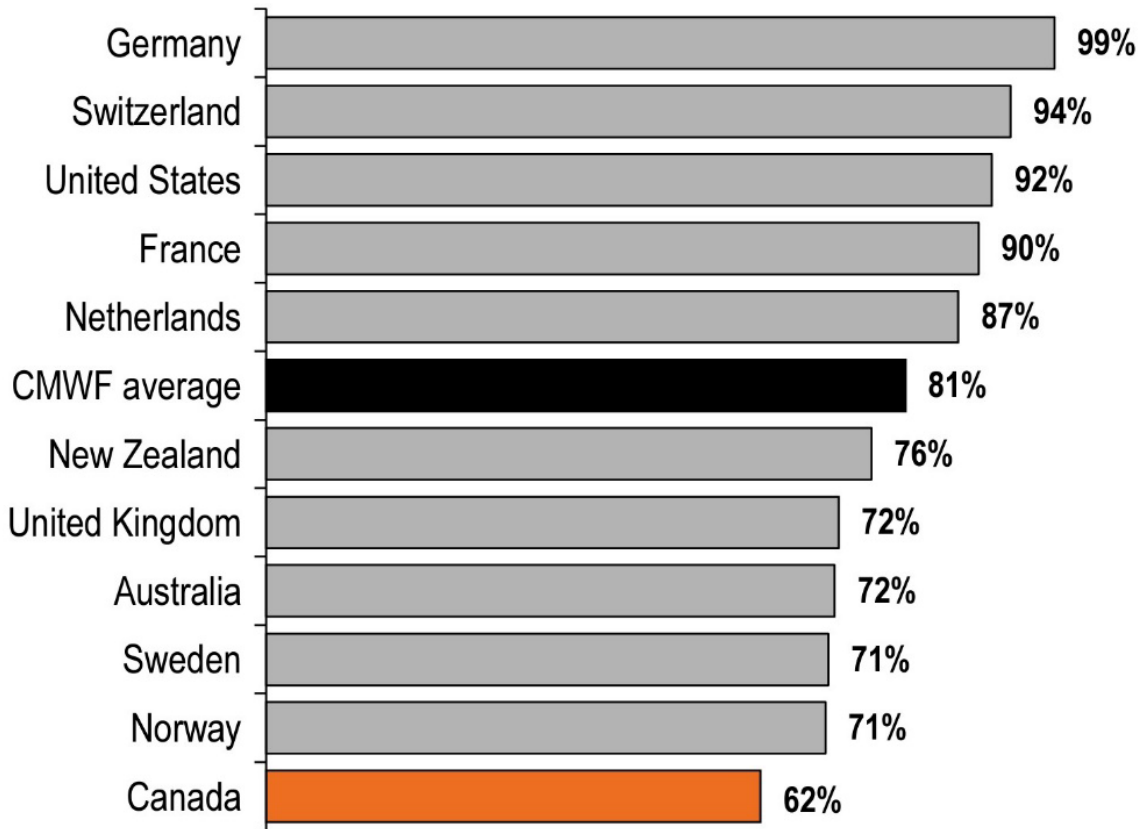


Figure 5. Percentage of survey respondents who said they waited less than 4 months for elective surgery. (Canadian Institute for Health Information. How Canada Compares: Results From the Commonwealth Fund’s 2020 International Health Policy Survey of the General Population in 11 Countries. Ottawa, ON: CIHI; 2021.)

System Complexity

Many leaders have failed to grasp that in today’s medical environment, traditional, top-down command and control initiatives are likely to fail or produce undesired effects. Healthcare has become a complex adaptive system that behaves more like an ecosystem, with multiple loci of influence, and no single chain of command. Interactions between constituent parts (especially human parts) are unpredictable and constantly changing. Effective leaders learn to work with uncertainty and enable innovation from all parts of the system, while making sure that when trying to improve one aspect, the overall system is not accidentally made worse.

Long-Term Care Shortfalls

Long-term care and community care are stretched to capacity. They’re often unable to accept patients with complex needs. As a result, ~15% of hospital beds are blocked by Alternate Level of Care (ALC) patients who no longer require hospitalization but aren’t able to manage in the community and have no viable discharge destination. The resulting loss of hospital capacity compromises the inflow of sick patients from emergency departments and is a major cause of acute care and emergency access block. Access block pervades the system at all levels. Patients in rural and underserved areas face additional barriers to access (see Appendix 1, which can be found at the end of this report). Many who require specialized investigation and treatment are temporarily kept in small facilities with none of the necessary resources. This is because overstressed regional and tertiary centers have declined care, or transport capability is inadequate.

Hospital Access Block

Hospital Access Block is the greatest threat to emergency care. When inpatient programs cannot manage their patients, large numbers of those who are admitted and who should be in hospital beds are left on ED stretchers. These “boarding” inpatients endure long waits, sometimes for days, on hard narrow gurneys in crowded EDs without privacy, sleep, or bathroom access. They occupy many or most ED nurses and care spaces, decimating the ability to provide emergency care. In domino fashion, this forces acutely ill and injured patients to languish in waiting rooms, prevents ambulances from offloading, and compromises emergency responses for patients in the community calling 911.

To prevent delay-related disasters, many ED physicians now try to assess patients in waiting rooms and ambulance hallways. But with an overwhelming number of undifferentiated, unmanaged, chronically unwell, and frustrated patients at the front door, ED attention is increasingly diverted from the diminishing proportion of those who are high-risk and become hidden in the crowd. As a result, patients with life-threatening conditions are left in waiting rooms with unrecognized heart attacks, surgical emergencies, or brain hemorrhages. Too often, this leads to disastrous outcomes and media headlines that highlight apparent ED failures, when in reality, they are system failures.

Two decades of research have demonstrated that emergency access block compromises care quality, causes patient suffering and dissatisfaction, infectious disease exposure, violence towards hospital staff, decreased physician and nursing productivity, prolonged care delays, medical errors, toxic work environments, provider burnout, negative effects on teaching and research and—most importantly—increased patient morbidity and mortality.

How Did We Get Here?

In the 1970s, it became apparent that while many aspects of healthcare were growing and evolving, care for the acutely ill and injured was falling behind. The specialty of emergency medicine arose because North American and international experts identified the need for better emergency training and advanced skills. Beginning in the 1970s, EM pioneers defined a unique body of knowledge, developed training programs, established clinical standards, and a professional identity. In 1980, these efforts led to the recognition of EM as a Royal College specialty, and a College of Family Physicians area of special competence, which gave rise to Canada's dual EM certification pathways. In 2007, Pediatric EM became a Royal College subspecialty.

Advances in emergency knowledge and training, coupled with the concurrent evolution of poison centres, trauma systems, pre-hospital care, regionalized stroke centres, and advanced cardiac intervention pushed emergency care to the forefront. EM became a sought-after career and EM residency directors had their pick of applicants. By the 1990s, emergency care was in ascendency, but something happened on the way to the future.



Hospital Capacity Shortfalls

First, it was hospital closures. Policymakers believed care could be provided more effectively in the community, reducing the need for hospital beds (i.e., deinstitutionalization), and with health costs consuming the majority of provincial spending, the temptation to cut hospital funding was hard to resist. Governments cut the number of hospital beds by almost 40%, from 6.6 per 1,000 population to 4.1 in the 1990s. This partly reflected the move to day surgery, but also the closure of rural hospitals, psychiatric hospitals, extended-care facilities (exacerbating our current ALC problem), and general medical beds.

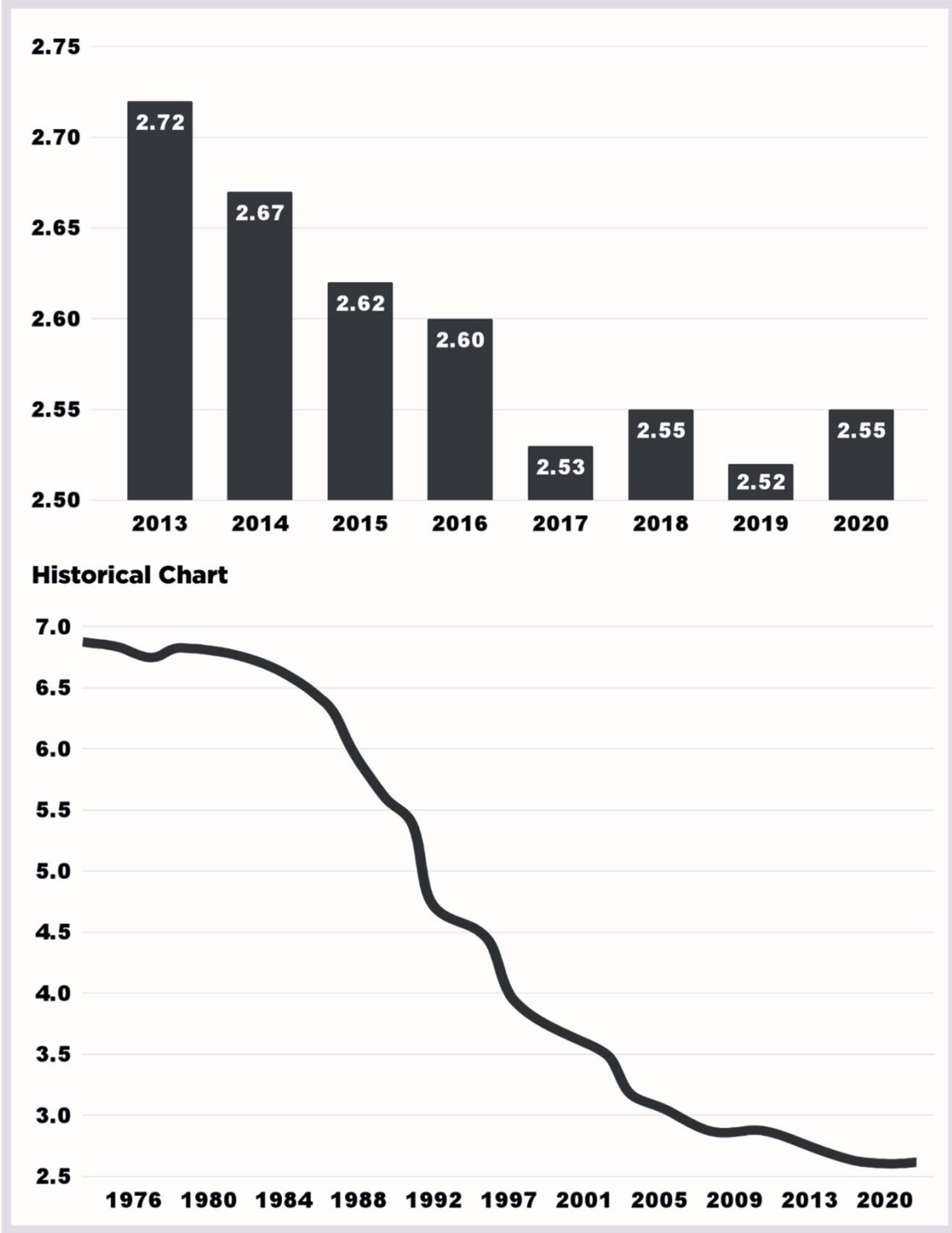


Figure 6. Number of Hospital Beds in Canada per 1000 population, 1976-2020



Unfortunately, cuts to facilities greatly exceeded new community resources, and the 1990s brought unmet needs in community and hospital care. ALC rates swelled, hospital occupancy rose, ED overcrowding appeared, and growing numbers of people with untreated mental health problems migrated to inner cities. Instead of responding to growing shortfalls with large-scale impactful system change which would require investment and long-term vision, governments too often followed election cycle timeframes to announce countless short-term fixes with transient, even illusory gains.

The funding cuts of the 1990s were reversed in the early 2000s; however, hospital beds per capita continued to fall, reaching 2.5 in 2020. [3] It remains unclear how many beds Canada would need if all care were provided in the most appropriate setting and organized efficiently. In the system as we know it, however, hospital occupancy rates have risen from under 80% in the 1980s to over 100% in many facilities today, leaving the system with no surge capacity and little or no resiliency.

Shortages of Health Human Resources

In the 1960s-1980s, physician supply rose steadily throughout the developed world, reflecting societal demand for medical services. This trend continued in many countries; however, Canada's physician-to-population ratio dipped in the early 1990s due to policy decisions and unrelated factors. It did not rise again until a decade later, never catching up to the OECD average. Although today the number of Canadian physicians per capita has never been higher, changing practice patterns (partly reflecting the shifting demographics and priorities of the workforce) have brought a decline in the number of physician hours, while patient needs have increased. Physician supply is also geographically maldistributed, with acute shortages in rural areas.

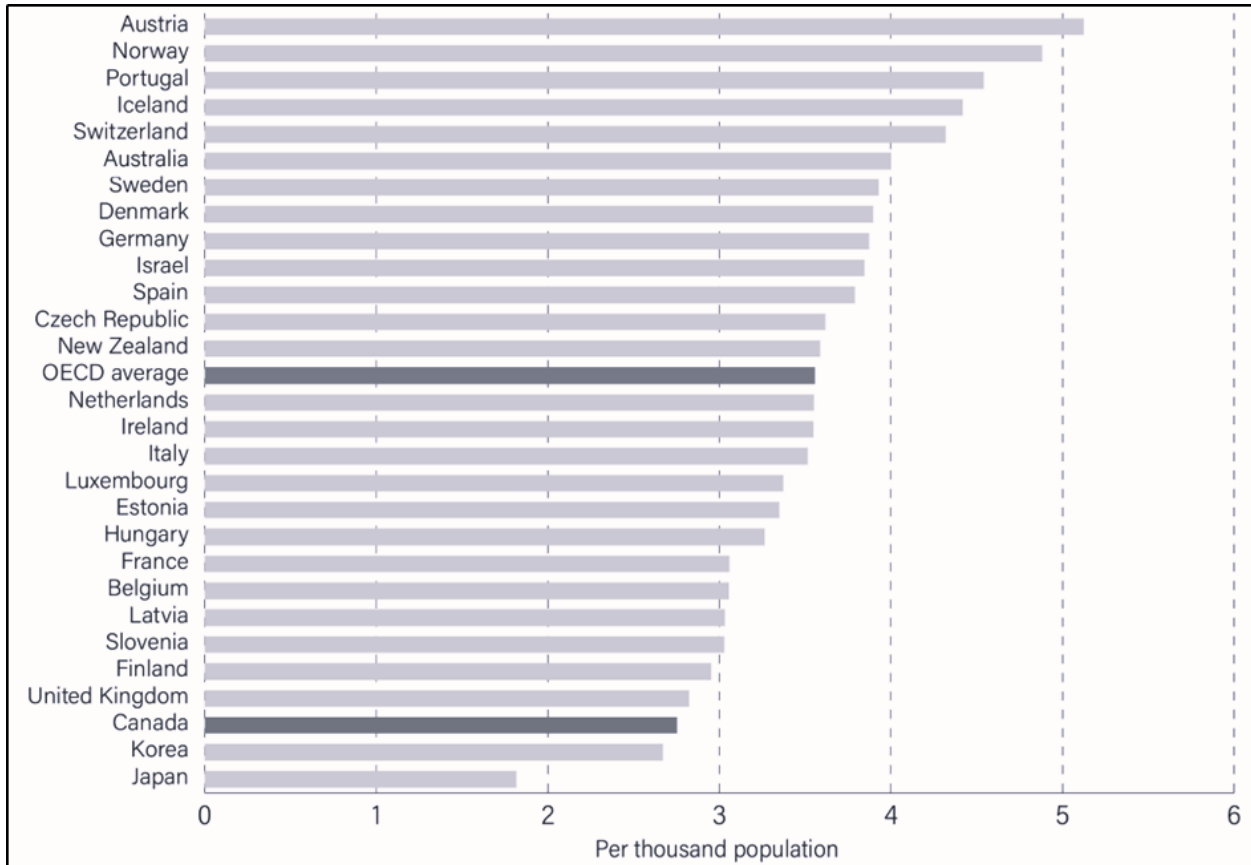


Figure 7. Physicians per 1000 Population—Age Adjusted. OECD 2020

There is also a well-established nursing shortage across Canada and worldwide. While demand has grown, our supply of nurses has stagnated over the past decade. Ever-increasing work stress and overload, exacerbated by COVID-19, is now driving even more emergency (and other) nurses out of the field.

Inadequate Supports for a Complex, Aging Population

On top of the baby-boomer demographic bulge, medical advances have allowed many more people to survive to old age with complex comorbidities that require specialized care. However, that care—acute capacity, rehabilitation, long-term care, home care, specialists, and primary care—has not expanded proportionately. In addition, the nature and availability of publicly-funded services vary substantially by province and region. Most provinces lack a fully-resourced continuum of facility and community-based services, and therefore depend heavily on the most

intensive form of long-term care, the nursing home. Canada's per-population rate of long-term care beds is 54.3 per 1,000 (above the OECD average of 45.6). Even this supply falls far short of projected demand. Long-term care facilities are chronically overstretched and understaffed, a crisis that was tragically laid bare during the COVID-19 pandemic. Inadequate community support for our aging population increases demand on emergency departments and reduces the supply of inpatient beds for admitted patients.

Mental Health Challenges

The pandemic also drew attention to the inadequacy of current levels of publicly-funded mental healthcare. The hospital, community and long-term care sectors are struggling to cope with ever-escalating mental health demands. At the same time, exponential rises in substance-induced mental health disorders and addictions have placed a growing strain on ED resources, and contributed to escalating ED violence, with its attendant impacts on the ED workforce and provider burnout. [4]

Public Health Challenges

A population's health is a product of nutrition, shelter, education, disease prevention and surveillance, hygiene, and safety from man-made or natural crises. Strong public health infrastructure minimizes the need for emergency treatment and shortens the duration of hospital care. Unfortunately, investments in public health and the social determinants of health are highly vulnerable to the political axe because the benefits of these investments are often delayed or invisible.

Over the last two decades, efforts to solve emergency crowding and access block have failed, generally because the root causes have not been addressed. Ironically—and contrary to conventional wisdom—our emergency care crisis was not caused by rising emergency visits, COVID, or too many low acuity patients attending emergency departments. The underlying problems are a lack of hospital beds for admitted patients, poor access to long-term, community and complex primary care, and rising levels of unmanaged mental health and addiction, all of which contribute to unmanageable demand on emergency departments.

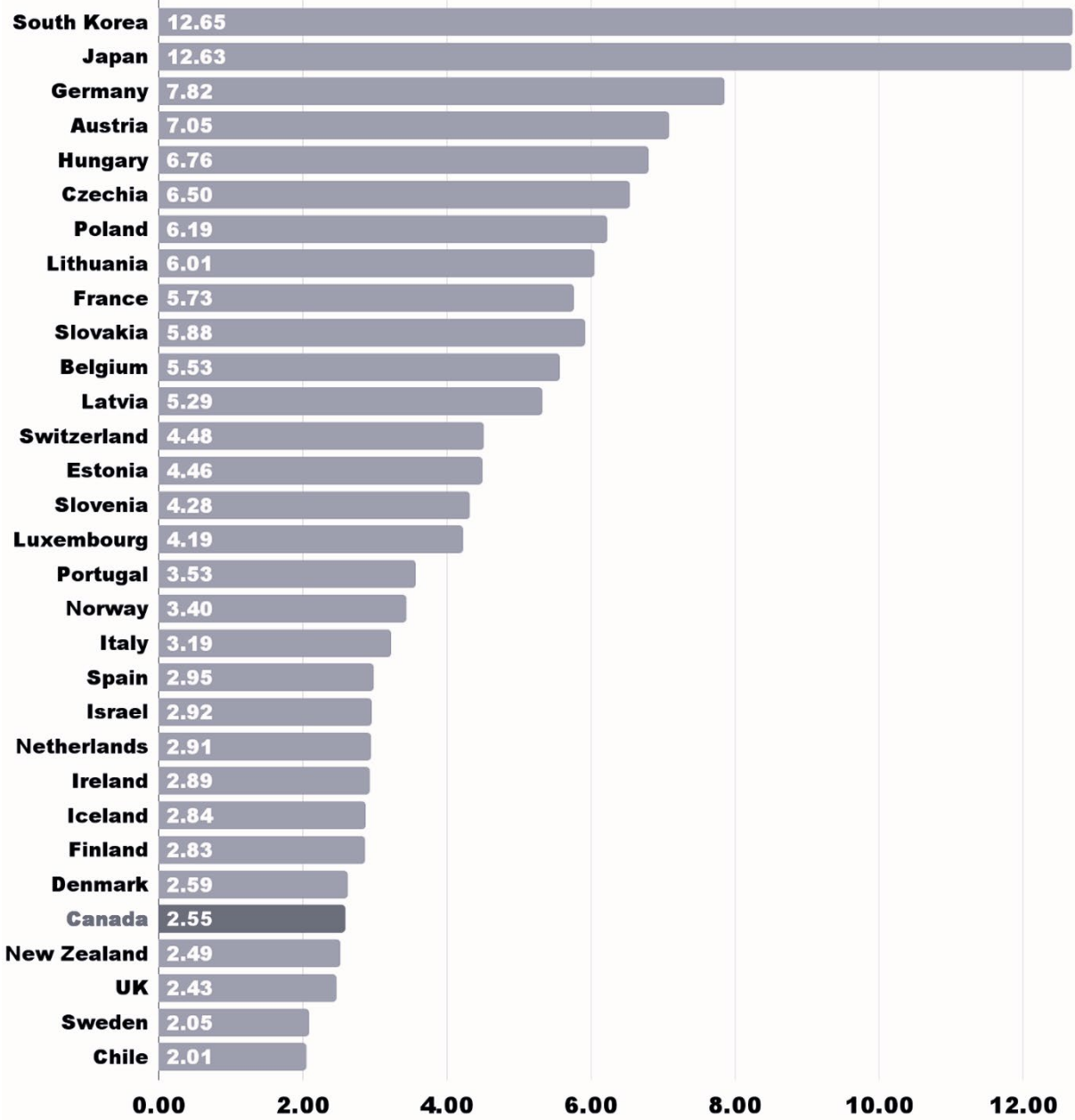


Figure 8. Hospital Beds per 1000 Population: Source OECD 2020

The growing challenges over recent years have been trying to fill gaps in primary and hospital care, addictions and mental healthcare, and the consequent inability to provide timely high-quality emergency care. As a result, many ED nurses and physicians have been driven away, creating a secondary and now critical provider shortfall.

What Must We Remedy?

This history reveals three key pathologies: population-capacity misalignment, lack of readiness and accountability failure.

Population-Capacity Misalignment

The Canadian healthcare system is plagued by a fundamental mismatch between the needs of the population and the services available. [5] Such misalignment reflects the fact that our delivery system was never deliberately designed in the first place. We face an ongoing shift in population needs from acute and episodic to chronic and complex, coupled with a tendency towards reactive and piecemeal policymaking. As the system's universal contingency plan and last-resort provider for a myriad of needs (many of which it is ill-suited to manage) the ED bears the brunt of this misalignment. However, the problem pervades the health system: many patients are in the wrong place, and some lack a right place (i.e., their needs fall in the gaps between services).

For emergency departments to refocus on their core mission, it's necessary to comprehensively assess population needs, determine what services are most suitable, and resource them appropriately. This process should follow the principles of population-based service design. [5] Without this rational approach, a random assortment of right and wrong patients will rapidly occupy any new capacity, leaving the system in the same quagmire as before. This already happened when supposedly short-stay and transitional overflow units for older adults were implemented without performance accountability. [6,7] No amount of planning can yield a perfect match between services and needs; there will always be gaps, exceptions, and local variations. However, we can aspire to a more nimble, integrated system, with fewer exceptions, narrower gaps, and less unwarranted variation than the non-system we now have.

Lack of Readiness

Our system is currently unable to address day-to-day demand fluctuations, let alone disasters, which are defined as unexpected demand that outstrips the usual ability to provide care. But disasters are inevitable; the only question is when and how often. To complicate matters, some disasters are local and sudden (e.g., the Humboldt Broncos bus crash) while others are widespread and escalate slowly (pandemics). Readiness, defined as the system's ability to adapt to changes in the volume and nature of demand, generates resilience. This is required to

address the inevitable surges that occur during normal times, and to meet the uncertain risks of the future. As COVID-19 showed us, a system without readiness is unstable and prone to failure, leading to avoidable morbidity and mortality, poor patient experience, negative population outcomes and increased system costs.

Accountability Failure

Accountability can and should be the evolutionary stressor required to drive beneficial system change. Its absence is a recipe for failure. Health programs and providers typically believe they're accountable to patients already in their care, but not to patients in the queue, even if they have greater need. When demand outstrips apparent capacity, the obvious solution is to block inflow and create a wait line. This default is a primary coping mechanism for most programs, including emergency departments. It's the opposite of a solution, but protects the program from evolutionary stressors, and effectively makes shortfalls in care delivery "someone else's problem." If closing doors is acceptable as a management response, then whoever is willing to see the patient (usually the ED) becomes accountable by default.

New system capacity is necessary, as discussed above, but it's unlikely to solve existing access gaps without attached accountability. Developing a framework that clarifies accountability is a critical first step that must be established across the entire system. This includes primary and community-long-term-care, because failures in any program will have a domino effect that compromises other components of an interdependent system. Contingency plans for managing surges and queues must be incorporated into these accountability frameworks. The purpose isn't to push frontline staff to work harder and harder, and to cope with a perpetual state of surge. Instead, the goals are to ensure:

- Patients can access care
- Programs are motivated to understand their accountability zone
- Care resources are aligned with population need
- Bottlenecks are managed
- Staffing models are optimized
- Flow processes are improved
- Surge contingencies are developed
- Queue management strategies are in place, and



- Effective demand-driven overcapacity protocols are activated when usual “pull” systems are failing.

These and other related processes are discussed in more detail in Section Three.

What Will Guide Us?

Canadians hold steadfastly to the notion of a just society, in which quality healthcare is a right of citizenship, available to all. Over 20 years ago, the Commission on the Future of Health Care in Canada published the Romanow Report, entitled Building on Values. [8] It supported the five principles of the Canada Health Act, most notably universality and accessibility, and recommended a sixth accountability.

In 2007, the Institute of Healthcare Improvement (IHI) introduced the Triple Aim, which established the triad of optimizing patient care, with improving population health, and lowering per capita costs as keys to healthcare transformation. [9] Over time, the concept evolved to a Quadruple Aim to include clinician well-being, based on research establishing clinician burnout as an impediment to achieving the original goals. More recently, the concept has expanded to become the Quintuple Aim, which incorporates health equity. Without addressing equity and social determinants of health (the biggest drivers of costs and population health outcomes) it is impossible to achieve the other aims, or a just society. (See Appendix 2.)



Figure 9. Value-based Care

Value-based Care synthesizes the five components of the Quadruple Aim into one concept: improving population health, patient experience, provider wellness and equity in a cost-effective way. [10] These values and principles have guided our deliberations on system redesign, and are the lens through which our recommendations are best viewed. There will inevitably be trade-offs and controversies: what if improving the experience of individual patients interferes with outcomes for the population? What if favouring cost expenditures in the present compromises the future? Large-scale change is never clear or easy, but without guiding principles we will continue to default to ad hoc decision-making, election-cycle planning, and the pressing needs of the day. [11] None of us wants that as our future state, nor should we accept it.

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Chapter 2

What Have Emergency Departments Become and What Should They Be?

Watch the news and you'll see that emergency departments (EDs) are failing. They're often closed because of physician or nursing shortages, and when open, they're overwhelmed with packed waiting rooms, ambulances that can't unload, interminable delays to care, and waiting room disasters.

Appropriate care means the right care in the right place, but the ED is the wrong place for most patients. EDs are designed for 1–6-hour encounters; emergency teams are trained and equipped for acute problems and life-limb threats. We don't provide quality inpatient care, intensive care, mental health intervention, chronic disease management, rehabilitation services, or primary/preventive healthcare, but these roles consume substantial ED resources.

Even when emergency care is complete, unfortunate patients who need hospitalization will face many more hours—sometimes days—in the ED before an inpatient bed becomes available. It's unacceptable and detrimental to patient outcomes to leave frail or acutely ill patients on hard narrow stretchers in noisy crowded rooms where the lights never go out, without privacy, sleep, or bathroom access while they wait hours or days for a hospital bed. Providing the wrong care in the wrong place increases system cost, decreases care quality, and creates chaotic work environments that burn out ED staff. [7] Worse, it compromises the ability of EDs to provide the care they were intended to provide. [4]

Emergency leaders will tell you that EDs have been getting worse for 25 years, and that none of the solutions have worked. Governments have spent hundreds of millions on urgent care centres for low acuity patients, primary care diversion strategies, telephone support lines, public campaigns to discourage ED visits, and even expanded emergency departments. But ED congestion just keeps getting worse.

Why? Because these solutions don't address the actual causes.

Research shows that the unbridled demand facing EDs is not from too many non-urgent patients, but because of poor access to primary and specialty care, [5] a rising burden of unmanaged chronic disease and—most importantly—a lack of hospital beds for admitted patients. [6-8]

Canada's Universal Contingency Plan

Canada performs poorly relative to other OECD countries in providing access to primary care, specialists, surgical procedures, and imaging. [6,7] When patients can not find a GP, see a specialist, or have an imaging study, they head for an ED. An Alberta Health Quality Council survey reported that 58% of patients attending the ED did so because it was the only place they could get care when they needed it. With poor access elsewhere, EDs are often the only option; consequently, Canada has the highest rate of ED use among wealthy countries with universal healthcare. [9] A Canadian Foundation for Healthcare Innovation report showed that ED visits are rising much faster than population growth, and without fundamental system change, they will grow an additional 40% in the next two decades. [10]

The emergency medicine credo is that every patient's concern is important, and that patients cannot be turned away, regardless of their condition. The scope of practice in EDs has expanded well beyond emergent and urgent care. However, attempts to provide unconditional service to nearly everyone have left EDs failing to fulfill their core mission.

EDs are the first or only health access point for many people; [5] they are increasingly a destination for patients with complex and specialty health problems, [4,5] and a referral destination for difficult or marginalized patients who need integrated longitudinal care that should be available in the community. [5] They have become a primary staging area for acutely ill patients, for access to diagnostics, and for hospitalization decisions; all of these make ED practice increasingly complex. [5,11] With the shortage of hospital beds, diagnostic workups that used to require hospitalization are often conducted during an ED visit, and many EDs have developed observation units or long-stay pathways to prevent avoidable admissions.

Inpatient care has become the greatest challenge for emergency departments. Based on the number of admitted patients blocked in ED stretchers and the amount of inpatient care provided by ED nurses, the primary role of most urban EDs now isn't to provide emergency care, but to serve as holding areas for inpatients awaiting a hospital bed. All these factors have aggravated the crowded conditions that compromise ED patient safety and outcomes. [11,12]

Public Health

ED expectations have expanded in many directions, which are all intuitively good. But they compete for care resources and provider time when emergency care capacity is already



overwhelmed, and when EDs are often unable to provide timely emergent care for seriously ill patients. In addition to growing clinical care demands, many believe EDs should provide public health services. [13] The US Public Health Task Force has recommended that EDs conduct alcohol screening and intervention, HIV screening and referral, hypertension screening, pneumococcal vaccination, and smoking cessation counselling. [14]

EDs have a potentially important role as an early/sustained warning system for public health emergencies, including infectious disease outbreaks. Many or most EDs already screen for intimate partner violence, injury risk behaviour, influenza-like illnesses, safe drug use practices, and suicide risk. They frequently provide drug or alcohol counselling, initiate treatment for opioid addiction (opioid agonist therapy), disburse naloxone kits and clean needles, and connect patients to detox programs or targeted therapy. [15] They help patients who are struggling with homelessness and develop programs for frequent ED users. Emergency medicine advocates are now developing sub-specialty training in Social Emergency Medicine (SEM). These programs will develop better ED processes to systematically screen for health-related social needs, connect patients with external agencies, and initiate important community services. They will also develop strategies to reduce social inequity and provide resources that address the social determinants of health.

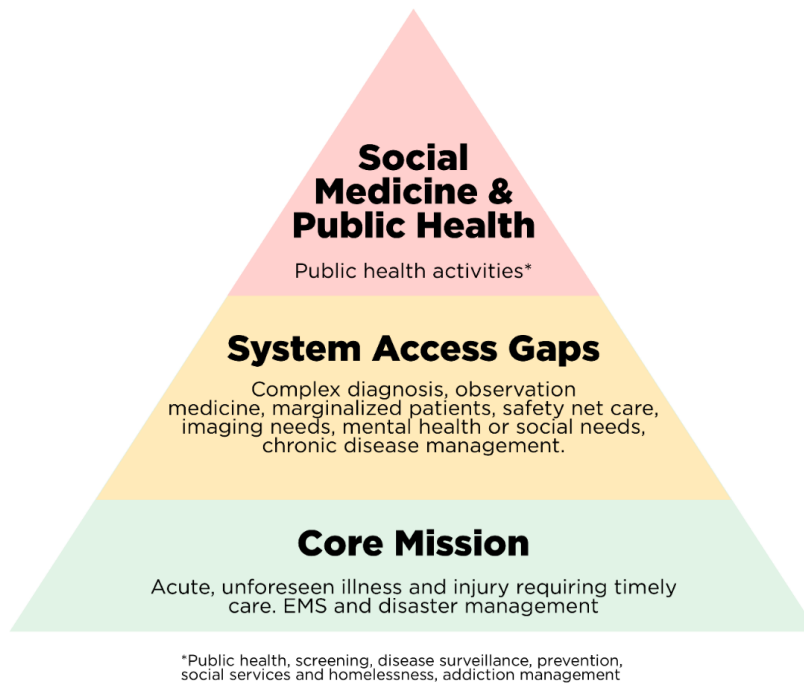


Figure 1. A Hierarchy of Emergency Care

Is Less More?

ED efforts to provide unlimited care have decreased the need for other programs to solve many of the access problems described above. This has enabled other providers to eschew care for unplanned illness and injury, limit off-hours work, avoid inconvenient disruptions in always busy days, and address countless patient needs with an almost magical directive: “Go to the emergency department.” [4] But can EDs fill the care gaps left by other programs and still provide timely, high-quality emergency care? The state of today’s EDs makes the answer a painfully obvious NO. [5]

“

Why, after two decades of deterioration, are emergency departments increasingly overwhelmed?

Perhaps they’re doing too much.

”

The concept of the ED as healthcare’s universal contingency plan is flawed and dangerous. [4] Ever-increasing volumes, complexity, stress levels, and demands to deliver inpatient care, primary care, non-emergent care, and public health services have become unmanageable. In an ideal world, EDs would continue providing as much care as possible; but if they’re unable to accomplish their primary mission, it may be time to rethink “emergency,” [4] refocus on the core mission in keeping with the specialty’s original intent (Figure 1) and determine how to provide timely high-quality care for patients with acute unforeseen illness and injury.

However, if EDs must cut back, which populations and services should be downprioritized? Re-engineering ED services would require a rational approach that does not put patients at risk, moves care to the most appropriate location, and has some chance of success.

What is Emergency Medicine (EM)?

The Canadian Association of Emergency Physicians (CAEP) has defined EM as a unique set of competencies required for the timely evaluation, diagnosis, treatment, and disposition of patients with injury, illness and behavioural disorders that require expeditious care. [16] The International Federation for Emergency Medicine (IFEM) defines emergency medicine as a practice based on the knowledge and skills required for the prevention, diagnosis, and management of acute and urgent aspects of illness and injury with a full spectrum of undifferentiated physical and behavioural disorders. [17]

The American College of Emergency Physicians (ACEP) defines EM as a specialty dedicated to the diagnosis and treatment of unforeseen illness or injury that includes the initial evaluation, diagnosis, treatment, and disposition patients requiring expeditious medical, surgical, or psychiatric care. [18] These organizations also state that EM incorporates an understanding of hospital and pre-hospital emergency care systems, and provides readiness for large-scale health emergencies, ranging from local multiple casualty incidents to large-scale pandemics and disasters. All these definitions emphasize acute, unforeseen illness and injury, and this focus has determined the content of EM training programs (to be discussed later in this document).

What About Acute, Less Urgent Care?

Many policymakers believe emergency departments should deprioritize or eliminate less urgent patients who fall into Canadian Triage and Acuity Scale (CTAS) levels 4-5. This belief has led to diversion initiatives to offload EDs, like telephone advice lines and urgent care centres (UCCs). Both provide patients with an alternate care option, but neither have reduced ED volumes or improved emergency care access. [19] Instead, they've resulted in an unintended consequence and present a rarely-discussed potential downside: telephone advice lines have provided thousands of nurses the opportunity to move out of direct patient care during a time of profound staffing shortages. And while UCCs do not decompress EDs, they do draw patients and physicians away from primary care. This raises the possibility that these innovations may, in fact, reduce access to the most important and threatened type of care in the system.

The Theory of Constraints

In EDs, emergent care trumps less urgent care, but if the goal is to improve emergency access, low-acuity patients are the wrong population to eliminate. All EM organizational definitions

specify that unforeseen low-acuity conditions—particularly injuries—are EM core competencies, and these less urgent patients often require hospital-based diagnostics and expertise. [20,21] Contrary to popular belief, less urgent patients aren't a significant cause of emergency access block; [21] the reason for this is logical but rarely understood.

The ED's functional unit and critical resource is the nurse-staffed-stretcher, which is also the primary emergency department constraint (bottleneck). Operations management theory tells us that to maintain flow and reduce care delays, we must increase bottleneck resources (e.g., nurse-staffed stretchers) or unload bottleneck servers (decrease the number of patients placed on stretchers). Diverting low acuity patients away from EDs accomplishes neither, because these patients do not occupy nurse-staffed stretchers. Sadly, ignoring the bottleneck and spending time and money fixing unrelated issues like low acuity patients has not succeeded, and will not succeed in the future. [22]

Less urgent patients also serve an essential function in most emergency departments. Truly emergent cases, our *raison d'être*, comprise only a fraction of ED inflow; but EDs must be staffed 24x365 to assure care is available when critical patients do arrive. Less acute patients are a queueable source of work, revenue, and clinical experience for physicians. They fill the gaps between emergencies and make ED staffing economically feasible. In addition, less-urgent care provides return on investment for the high fixed-costs of the department and offers valuable service to the community. Because less urgent patients do not need nurse-staffed stretchers, they do not compete for bottleneck care.

Physicians are a secondary bottleneck, and if the crisis of stretcher availability is solved, they will become the primary bottleneck and main cause of care delays. However, at least in urban settings, physicians are a less constrained resource because it is easier to add physicians than nurse-staffed stretchers. In addition, available physicians can be diverted from treating less-urgent patients when necessary. If we agree that physicians are an important ED bottleneck, the theory of constraints tells us to increase the number of physicians or reduce their workload as much as possible. [22] Less urgent patients who can be processed quickly aren't a major problem, but complex patients who consume substantial physician time will make the bottleneck worse, and therefore become a priority for diversion to more appropriate care destinations, as illustrated in Table 1.

A decision matrix to identify patients who should or should not be prioritized for ED care might incorporate several factors. First, is the emergency department the right (most appropriate) place for the care in question, and was the ED designed and staffed for this type of care?

Second, does the care in question substantially strain ED bottleneck resources (nurse-staffed stretchers and ED physician time)? Finally, are there unique circumstances that make the ED the only place that can deliver this care? If so, then additional funding, redesign and staff training are probably necessary.

	Right Place? (Appropriate)*	ED Stretcher Time (Primary Bottleneck)	ED MD Time (Secondary Bottleneck)
Care for admitted patients in the ED	No	+++++++	++++
Frail elderly failure to thrive	No	++++++	++++
Complex chronic disease management	No	++++	++++
Exacerbation of chronic mental health problem	No	++++	+++
Suicidal ideation	Yes	++++	+++
Emergent Care	Yes	+++	+++
Acute minor injuries	Yes	0	+
Acute unforeseen low-acuity conditions	Yes	0	+
Unable to access primary care	No	0	+

Table 1. Decision Matrix: Impact of ED Case Mix Groups on Bottleneck Resources

*The most appropriate ED activities include diagnosis and treatment of acute unforeseen illness or injury, initial evaluation, diagnosis, treatment, and disposition of patients with medical, surgical injury, illness and/or behavioural disorders that require expeditious care.

What Should an Emergency Department Be?

EDs and the services they offer will differ by location, based on community resources and needs. Rural departments differ from urban departments, and inner-city departments differ from community departments. Deprioritizing a non-emergent service does not mean the service should no longer be provided, but rather that external resources, funding, and expertise might be necessary so that the core mission is not compromised. An inner-city ED might, for example, add an adjacent, independently funded mental health addictions (MHA) unit with appropriate expertise, while a community ED might add a similarly-resourced unit focused on the optimal management of elderly patients in their region who are failing.

Recommendations: What Have Emergency Departments Become and What Should They Be?

1. EDs should prioritize emergent and urgent care based on the definitions above.
2. To do so, they should review their usage and identify non-emergent populations that have the greatest impact on their bottleneck resources, then negotiate or develop more appropriate alternative care options and pathways for these patients. Based on Table 1, top priority populations will include admitted patients waiting for inpatient beds, frail elderly patients (especially those requiring housing, placement, or complex chronic disease management), and patients with chronic mental health and addiction concerns.

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SECTION TWO

One System, With Many Access Points

Section Editor: David Petrie

Overview

This section is defined by the orienting question: how do we optimize the number, distribution, capabilities, connections, and staffing of emergency departments (and other access points) to turn it into an integrated system and network of emergency care? It could also be more informally titled: “ED Closures, and What to do About Them.” Four chapters follow: ED Categorization, Quality, and Standards (Chapter 3): Competencies, Certification, and Teamwork (Chapter 4): System Integration (Chapter 5); and Emergency Physician Resource Planning (Chapter 6).

Chapter 3: ED Categorization, Quality, and Standards is about the categorization of EDs (and urgent care centres) within a network and geographic area. A plain-language, four-level nomenclature for EDs in Canada is recommended, based on population-weighted distances, and other system level goals. It discusses the potential for peer-to-peer virtual care to impact clinical services planning—the siting, sizing, and synergizing of EDs. We strongly advocate for EDs to meet minimum quality standards around equipment, staffing, and transition-of-care pathways. Without standards, a system with extreme capacity and fiscal pressures may be tempted to blur some quality lines in the name of access.

Chapter 4: Competencies, Certification, and Teamwork explores the issue of staffing, the importance of competencies, the role of certification, and how we can optimize scopes of practice to improve care. There are several pathways in emergency medicine to ensure physicians have the requisite (relative to the level of ED categorization) competencies in a rapidly evolving discipline; likewise for nurses, paramedics, and advanced care providers, such as nurse practitioners and physician assistants. The art and science of fostering high-performance teams is also discussed, with an emphasis on clear goals and roles, core values, leadership, and simulated practice. Finally, this chapter expands on the concept of communities of practice, and what they can do to advance quality, recruitment, retention, and morale.

Chapter 5: System Integration emphasizes the key principles for successful health system integration and coordination. The focus is placed on the relationships between three levels of care in system redesign: primary, urgent, and emergency. This chapter develops the concept of



multi-option EMS, and the essential role that pre-hospital care and expanded-scope paramedicine can play in the future. The availability of on-call specialists in an integrated network of emergency care is also emphasized, which is especially true for large rural expanses of Canada. Also highlighted are the importance of systems that deal with trauma, poison-care, myocardial infarction/stroke, etc. in improving patient and population outcomes.

Chapter 6: Emergency Physician Resource Planning synthesizes the recommendations of the preceding three chapters into a practical and immediately relevant emergency physician resource planning framework (the Savage Model) that can, and should, be implemented at a national level. This approach builds on previous work that emphasizes a more demand-based (i.e., what do our populations need?), behaviour-informed (e.g., how do MD career decisions impact the workforce?), iteratively implemented and adjusted approach to HHR (Health Human Resources) planning for the future.



Chapter 3

ED Categorization, Quality, and Standards

“

System design saves lives.

”

Introduction

Reliable, accountable, and coordinated Emergency Departments (EDs) are essential nodes in a high-performance network of emergency care. More importantly, emergency care systems (ECSs) are an essential part of Quintuple Aim (value-based) healthcare systems. This is the future Canadians deserve and expect, and proper system design contributes towards that goal.

Across the world, this has not always been the case. In 1966, the American College of Surgeons Committee on Trauma published an important document titled *Regional Trauma Systems: Optimal Elements, Integration and Assessment Guide*. (1) In it, the authors wrote: “the human suffering and loss from preventable accidental death constitute a public health problem second only to the ravages of plagues and world wars” and that the public was “largely insensitive to the magnitude of the problem.”

They went on to say that the development of a mechanism for categorization, inspection, and accreditation of emergency departments on a continuing basis must become a minimum standard in modern healthcare systems. Similar recommendations followed in the service of

better cardiac, medical/critical, and pediatric care. These reports helped drive the emergence of a new specialty—emergency medicine.

The Case for Categorization (2)



Categorization is a process for inventorying, assessing, and cataloguing the emergency care resources, services, capabilities, and capacities of medical care facilities in a community or region, using a criteria-based classification system over a range of emergency care conditions.

This process is used to assist physicians, hospitals, health departments, and emergency medical services (EMS) agencies in making informed decisions on how to develop, organize, and appropriately utilize health care resources for the emergency care system". [2]



Why should EDs be categorized? The staffing, training, and services available in small rural EDs are clearly very different from those in a downtown urban emergency department, but from the public's point of view, they both have the same name. The potential benefits of a national ED categorization scheme include:

- Informing public knowledge, expectations, and use of the system
- Standardizing a health authority or ministry's responsibility to support the required equipment, medication, and personnel readiness
- Benchmarking quality and performance targets across similar EDs in Canada, and
- Informing a more intentional approach to emergency physician resource planning (covered in more detail in Chapter 6).

A call for categorization was also issued by the US Institutes of Medicine Future of Emergency Care 2006 series, (3,4) and the Society of Academic Emergency Medicine's 2010 Consensus Conference, Beyond Regionalization: Integrated Networks of Emergency Care. (5) Initial

approaches to regionalization improved care in some disease-specific areas, such as trauma. (6) However, regionalization isn't the same as integration, (7,8) and doesn't always mean one-way movement of patients to centralized resources. (9) Geographically-organized governance and financial structures in Canada should not be conflated with coordinated, accountable, and responsive care at a population-based, system level.

How far have we come with categorization? And are we starting to slip backwards? Despite the calls for a categorization and designation scheme, or a Regionalism 2.0 approach, (9) little has been done in this country around a common national framework for emergency departments. Different provinces have used different classification schemes, and some provinces have used none. Emergency care systems have evolved organically, and mostly follow population-weighted distances as a guide when building and resourcing EDs, although political expediency has played a role. Do we have too many EDs? Do we have too few? Are they optimally distributed? Can the public be sure that what's called an ED can fulfill its mission? (10)

To be fair, when categorization has been attempted, most provincial approaches have been broadly similar. While there will always be some variation due to local and/or province-specific contexts, a plain-language and common-sense national framework to guide ED categorization is a critical step in moving towards integrated networks of emergency care in the future. (9)

Canadians expect to understand and trust what they are getting when terms like emergency department are used. Moving forward—if they don't already exist—emergency care clinical networks (ECCN) (11) or the equivalent should be established in every province/region to lead and coordinate clinical services and HHR planning, as well as to oversee operational decision-making, and quality improvement/patient safety (QIPS) initiatives.

ED Categorization

The International Federation of Emergency Medicine (IFEM) terminology project defines an ED as: “The area of a medical facility devoted to provision of an organized system of emergency medical care that's staffed by emergency medicine specialist physicians and/or emergency physicians, and has the basic resources to resuscitate, diagnose and treat patients with medical emergencies.” (12)

It is not feasible—nor is it fiscally reasonable—to maintain a tertiary care hospital in every community in Canada. As the medical ethicist Norman Daniels has said, “The social goods we



often must provide including... healthcare...aren't sufficiently divisible to avoid unequal or lumpy distributions—allocation decisions are necessarily messy.” (13) That said, optimizing the number, distribution, and capability of EDs must be made as non-lumpy as possible. A layered, balanced, and integrated approach is important in the clinical services planning of any region or province.

Categorizing EDs is an essential part of that strategy. One model that should be used as a starting point is a simple four-level approach to EDs: Comprehensive, Advanced, Full, and Basic (14) (see *Figure 11*). Reasonable subdivisions of categories may also be useful, such as a Level 1 Pediatric ED, or a Level 3 Freestanding ED. (14)

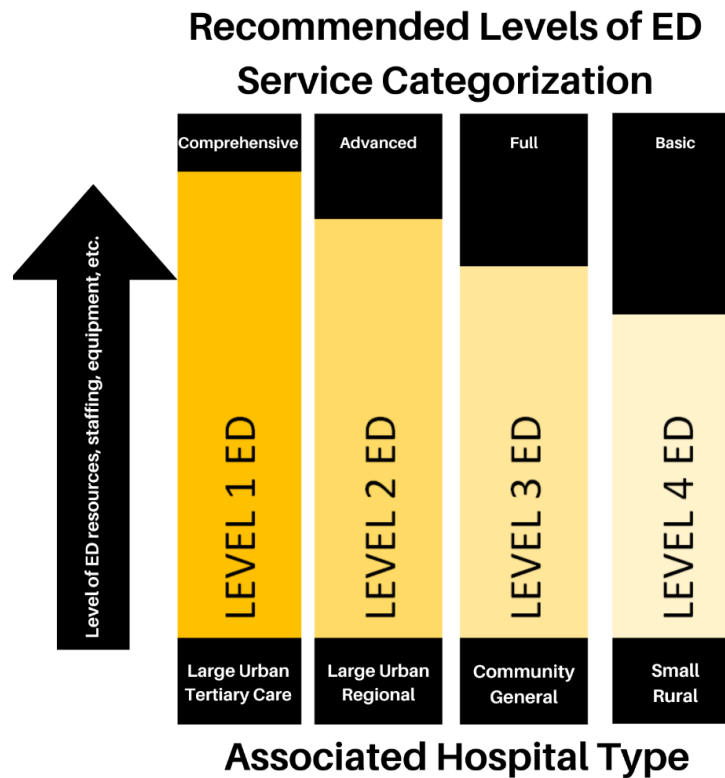


Figure 11. Recommended Levels of Emergency Department (ED) Service Categorization
Clinical Services Planning and integrated Health Human resource planning, as well as the EMS system status plan (SSP) and broader system integration issues, requires a rational and intentional approach to ED categorization and standards, as recommended here. To be clear, in this context a Basic level 4 ED still must meet the baseline standards of in-person teams/physician-led resuscitation and stabilization of the acutely ill and injured, they must stay on the EMS SSP, and they must be capable of the initial assessment and treatment of the broad spectrum of unexpected illness and injury in all age groups. If these standards are not met, they should no longer be referred to as an Emergency Department.

A plain language four-level categorization taxonomy should be used (see *Figure 11* and specific recommendations below) to help guide clinical services planning. These levels should be Figure

10 determined/assigned by population-weighted distance calculations and be guided by the function they are expected to fulfill in the system. Specific details about the standards expected at each level could vary slightly by province, but general principles need to be set at the national level. Once assigned, the Ministry of Health (MoH) and Health Authority (HA) must adequately fund and support the ED site to meet this function.

EDs must meet the standards consistent with their level of designation. If a hospital posts signage using the term “Emergency Department,” the public expectation, at a minimum, is that the ED—no matter its level—is capable of the assessment and treatment of unexpected, undifferentiated, and time-sensitive illness and injury. The additional assumption is that its staff have the competencies for the resuscitation, stabilization, and transfer out, if necessary, of any patient that arrives, either by ambulance or as a direct walk-in.

Network-Integrated Urgent Care Centres

The role of Urgent Care Centres (UCCs) is expanding rapidly across Canada. (15) Like EDs, the capabilities of UCCs span a wide spectrum, and their clinical services may potentially overlap. Over the last 20 years, these centres have become integral to several urban acute care systems. In metropolitan Calgary, for example, five urban and suburban UCCs annually service approximately 180,000 patient visits, in addition to the approximately 440,000 visits seen by the five adult and children’s hospitals. Similar high-volume UCCs operate in Vancouver, Hamilton, Kingston, and London, and more are developing in many other locations, including Saskatoon, Halifax, Toronto, Montreal, and Ottawa.

While there are currently no nationally-established standards, UCCs typically have the following characteristics: in urban areas they are located outside of hospitals, provide unscheduled care, do not necessarily operate 24/7, and offer a spectrum of services focusing on acute/unscheduled illness and injury of urgent but not emergent need. In most cases UCCs come off the EMS system status plan, and do not receive ambulances. They do provide on-site labs and imaging, medications, and multidisciplinary care. (16,17)

Urgent Care Centres can also be established in rural areas, physically located within hospitals. Again, they are geared towards unexpected/time-dependent illness and injury in the CTAS (Canadian Triage and Acuity Scale) 3-5 range, but not for the more severe CTAS 1,2 patients.

To be clear, the recommendations for UCCs in this categorization framework include:

1. They must be operated by hospital corporations or regional health authorities, and therefore have some formal relationship to a nearby hospital and ED.
2. They must also be integrated with regional clinical services plans and Continuous Quality Improvement (CQI) programs.
3. This integration is to differentiate them from privately-owned and operated transactional retail clinics that exist on the spectrum which range from walk-in clinics to direct-to-patient virtual ERs.

While “Urgent Care” from a public perception allows it to remain distinct from EDs, the Canadian experience demonstrates that their utility and impact on the delivery of acute care here is complementary. Because of this, we believe that clear standards must exist for the structure, processes, equipment, and provider competencies for Network-integrated Urgent Care Centres, just as they must when we categorize emergency departments.

Peer-To-Peer Virtual Care

Peer-to-peer virtual care will play an increasingly important role in the evolving design of emergency care systems. In the context of categorization definitions, peer-to-peer programs, like RUDi (Rural Urgent Doctors in-aid) (18) in BC and TRON (19) (the critical care rural support program in Ontario), can fulfill a crucial function for a site to maintain its designation as an ED. They could also strategically become a Network-integrated Urgent Care Centre, local out-patients department, or nursing station.

Designation and categorization of EDs in an integrated network of Emergency Care is only the first step. Concurrently, ED standards must be associated with each level. Chapter 5 addresses the even more important issue of integration, examining how the various network nodes and access points to the Emergency Care system interface, connect, and transition patients through their journey across the broader healthcare system.

Pediatric and Geriatric Considerations

The ethos of emergency medicine is its readiness to care for anybody from 0 to 100+ years of age. However, two cohorts that require special consideration are the care of children, and the care of elders within our system. Some of this readiness is embedded in the general system design and integration principles discussed further in this section, and some are specific to pediatrics and geriatrics (see Appendices 3 and 4 at the end of this report).

More children in Canada receive their emergency care in EDs associated with general hospitals than in urban tertiary care pediatric emergency departments. Pediatric emergency care systems have been early adopters in creating integrated networks of care through EMS transport connections, and peer-to-peer telemedicine supports. TREKK (20) is a freely-available collection of online resources for front line providers who are caring for ill and injured children. The network demonstrates the power of national projects to effectively support the real-time, clinical decision-making that takes place across the country. These approaches should be funded and strengthened in the future. Additionally, emphasis should be given to provide more and better pediatric emergency care training experiences for learners, as well as the maintenance of competence opportunities to improve the proficiencies of all types of emergency care providers (paramedics, nurses, physicians, etc.).

The evolving demographics of our Canadian population are well known. We are now on the leading edge of a significant rise in the number of elderly patients who will need medical and emergency care services. This increases the necessity to develop and support multi-disciplinary healthcare homes that are closely integrated with home and community care options and have mobile and virtual connections if needed (see System Integration, Chapter 5). Improved access to better quality long-term care is part of the equation, but only after all home and community care options have been exhausted. Emergency care systems will need to improve their approach to elder-friendly care spaces and options. In addition, geriatric competencies for all providers must be increased, with specific geriatrics clinical pathways and access to geriatricians when required.

ED Consolidation and Distribution: A Polarity Management Approach

Once categorized, where should EDs and Network-integrated Urgent Care Centres be placed to optimize care? Planning and implementing the number, distribution, capabilities, connections, and workforce in an integrated network of care will require an approach that balances issues viewed to conflict with each other. Polarity management is used to solve unsolvable problems when solutions on each end of the spectrum have trade-offs. Closing or relocating EDs are examples of this type of tension; potential trade-offs are ever-present, and there will always be some degree of tension around these network system decisions.

illustrates these pressures and the various trade-offs in access, quality, and costs when the optimal geographic distribution of emergency care access points is under consideration. Using

this framework to evaluate an existing system can fuel the creative energy for change. It's essential for provincial emergency care clinical networks (ECCNs) to monitor, evaluate, and modify these trade-off decisions over time to evaluate whether they're ultimately improving patient outcomes in a cost-effective manner — i.e., are they consistent with a value-based healthcare system? (10,21)

ED Access And Quality: A Polarity Management Approach

Media coverage on delays in access to emergency care has dominated the news headlines for over a decade and highlights a major problem. Demand for care in Canadian emergency departments has far outpaced the growth in population, leading to stress in the system and societal expectations that cannot be met. The immense public and political interest are often singularly focused on wait times. This relentless focus on a single dimension of quality may force decision-makers, individual healthcare providers, and payers to ignore other important elements of safe care. Over time it additionally has the potential to degrade the quality of treatment provided in the ED.

In their updated position paper on quality and safety in emergency medicine, (12) IFEM wrote that on arriving in an ED, patients should expect that their care will be provided by the right personnel, making the right decisions, following the right processes and approaches, in the right environment, in the right place, in the right system, with the right support. They go on to say that in countries like Canada, where emergency medicine is established, patients should also expect early and reliable access, as well as support from specialist in-patient, out-patient services, and critical care expertise. Appropriate durations of stay in the ED should be expected, together with the development of related EM services, such as short stay/observation pathways, social and mental health services, and options for outpatient follow-up.

IFEM also describes five enablers and barriers to quality care in the ED:

1. ED staff: are they trained, qualified, and motivated to deliver effective and efficient care in keeping with national guidelines?
2. Physical structures: is there the appropriate size and numbers of treatment rooms/areas, and triage, and waiting space? Are there fail-proof equipment, well-stocked consumables, and IT systems (with back-up)?



3. ED processes; are there validated triage systems, access to clinical practice guidelines, and appropriate policies and procedures?
4. Systems approach; are there coordinated and accountable pathways prior to, during, and after their ED care, and are they seamlessly integrated and appropriately resourced?
5. Monitoring outcomes; is there an appropriate gathering of, synthesizing, and interpreting of data, especially patient-oriented outcome data? And how is that data feeding back into the iterative improvement of value in a Learning Health System?
(12)

Six Dimensions of Quality in Healthcare

The Institute of Medicine states that the quality of care is the “degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.” The Institute goes on to define the dimensions of quality as being safe, effective, patient-centred, timely, efficient, and equitable. Hansen et al (12) suggest several potential quality indicators for the ED system, mapped to each

dimension in *Table 2*.

Domain	Structure	Process	Outcome
Safe	<ul style="list-style-type: none"> • Clinicians with the right skill mix • Adequate and appropriate assessment spaces • Adequate security 	<ul style="list-style-type: none"> • Reporting system for safety concerns (without fear of reprisal) • Ability to share and learn from adverse incidents • Administration acts on staff concerns 	<ul style="list-style-type: none"> • Analysis of incident reports (there should be many non-serious incidents and a few serious incidents) • Incidence of hospital-acquired infection, medication errors, violent incidents
Effective	<ul style="list-style-type: none"> • Adequate assessment spaces • Sufficient equipment • Adequate and effective monitoring • Disaster/major incident plan 	<ul style="list-style-type: none"> • Care standards or evidence-based guidelines for common and important presentations available • Quality improvement activity being conducted 	<ul style="list-style-type: none"> • Audit performance against international, national or local standards for common presentations, such as sepsis or multiple injuries • Morbidity/Mortality (general or specified conditions) • Hospitalised Standard Mortality Ratio • Diagnostic and procedural errors
Patient-centred	<ul style="list-style-type: none"> • Structural environment allows for privacy and dignity • Dedicated areas for vulnerable groups (eg, children, mentally ill, elderly) 	<ul style="list-style-type: none"> • Patient complaint system (with follow-up actions) • Left without being seen rate 	<ul style="list-style-type: none"> • Patient experience • Patients' ability to participate in own care • Collection & use of patient-reported outcomes • Time to analgesia audit
Timely	<ul style="list-style-type: none"> • Ambulance notification system • Adequate clinicians to initially assess a patient promptly 	<ul style="list-style-type: none"> • Patients seen initially by a clinician trained in triage • Time to consultation by doctor • Time to be seen by decision maker • Patients needing admission moved swiftly out of the ED 	<ul style="list-style-type: none"> • Total length of stay in the ED (from arrival to departure) • Percentage of patients who leave the ED without being seen
Efficient	<ul style="list-style-type: none"> • Emergency clinicians available who can assess and provide initial treatment for all emergency presentations, regardless of age or pathology 	<ul style="list-style-type: none"> • Patients investigated and treated according to evidence-based guidelines • Appropriate use of investigations • Appropriate & timely support from other specialities 	<ul style="list-style-type: none"> • Number of admissions from the ED • Avoidable patient re-presentations to the ED • Good communication with other healthcare providers
Equitable	<ul style="list-style-type: none"> • ED available to all patients who need it, 24/7, regardless of age, disease or finances 	<ul style="list-style-type: none"> • Patients seen in order of clinical priority 	<p>Comparable access & clinical outcomes despite:</p> <ul style="list-style-type: none"> • Gender • Race • Religion • Other Minorities • Ability to Pay

Table 2. From Hansen et al. (12) suggested indicators for EDs, grouped within structure, process, and outcome to address the six Institute of Medicine domains of high-quality care. Canadian citizens deserve and expect emergency care that's successful in all the dimensions of quality.

Data and Quality Care Indicators

It is common to use data to determine improved outcomes, cost effectiveness, accountability, safety or even satisfaction in the care provided. Information is collected in a variety of ways throughout the system. This includes reviews of patient medical charts, use of large databases, findings from local quality or patient safety meetings, patient feedback files, safety event reporting, accreditation surveys and patient registries. (22) These metrics provide a window into the quality of healthcare delivery and must be chosen carefully.

Alarming, most provinces in Canada monitor only markers of timely care, with reports expressed as averages or percentiles. Metrics such as “Initial Time to Physician Assessment”, “Overall ED Length of Stay” and “Ambulance Offload Time” dominate reports. Although these time markers give some information about patient movement through the system, they do not provide any insight into other aspects of quality. There are some audits on outcomes or adherence to guidelines at the individual hospital or regional levels, but no national repository of data or benchmarks for much of it. This is a major problem in planning and evaluating emergency care in Canada.

Standards

Standards are essential to maintain public trust, and to guide future policy direction and resource allocation decisions. In business, standards can refer to goods, services, and systems; they ensure safety, quality, and consistency which are fundamental to trade. In healthcare they play the same role and are fundamental to quality care. Without standards and definitions, rules become fuzzy, health system redesign becomes sketchy, and public trust can be undermined. Innovation and creativity can push the resistance of a conservative or stuck system, but there must be an ongoing commitment to do no harm, and to improve value in the system where $\text{value} = \text{quality}/\text{cost}$.⁽²³⁾

Standards establish minimum levels of performance and consistency across multiple individuals and/or organizations. Minimum standards for hospitals and health authorities are the jurisdiction of Accreditation Canada, but the specific standards around EDs—and more broadly emergency care systems—are not well defined.

Other countries, such as the UK, have invested in creating baseline standards in emergency and urgent care, though many are still narrowly focused on time-based measures. ^(24,25) The Australasian College of Emergency Medicine has defined national minimum standards on cultural safety, clinical care pathways, administration, professionalism, education/training, and quality improvement. ⁽²⁶⁾ CAEP’s essential next step is to lead a uniform approach to EM standards for emergency departments and emergency care systems across Canada.

Availability of Curated Standards for Good Practice

The publication of evidence-based tools is commonplace across the country, which may be in the form of clinical practice guidelines (CPGs) or standardized order sets. In British Columbia

and Alberta, this work is coordinated on a provincial basis through their ECCNs, (11) where clinical guidelines are available in an easily accessible website. (27) Many other Canadian provinces have created similar repositories or toolkits that are available on local IT infrastructure throughout their region. CAEP also has several guidelines to help direct care. The Translating Knowledge for Kids (TREKK) resource regularly publishes best practice guidelines in emergency care for children, and this is used from one end of the country to the other.

Conclusion

The discipline of emergency medicine is now seriously challenged by the stressors of a supply/demand mismatch in the rest of the healthcare system. The creation of national standards that define acceptable benchmarks for access to and quality of care is an essential next step in ensuring accountability for everyone, from front-line providers to executive-level decision-makers.

Optimizing the number, distribution, capabilities, connections, and workforce in an integrated network of care will require an intentional approach to categorizing EDs, as well as other potential access points to the emergency care system, such as Network-integrated Urgent Care Centres and virtual care.

Access is just one side of the coin; quality and standards are the other. The ethos of quality improvement is embedded in the core values of emergency medicine. (28) It is time to develop and implement a better systems approach (4,29) to emergency care in Canada that balances the best aspects of consolidation and distribution, with additional assurances that quality is not compromised in the quest for access.

Recommendations for ED Categorization, Quality, and Standards

1. Provincial health ministries should establish Emergency Care Clinical Networks (ECCNs) to coordinate clinical service and HR planning, operational guidance, and quality improvement-patient safety initiatives.
 - a. A National Emergency Clinical Care Council (NECCC) should be created; endorsed by CAEP, supported by the federal government (secretariate, administration, travel, integration with CIHR etc.), and given a mandate by the Council of Provincial Deputy Ministers of Health to support the EM:POWER

- recommendations at the provincial level through national collaborations, benchmarking, and sharing of successes, innovations, and lessons learned.
- b. Provincial ministries of health and/or health authorities should fund and enable these provincial ECCNs and integrate them with the broader healthcare system governance structure.
 - c. Emergency physicians, ideally in a co-lead dyad, should provide leadership to these ECCNs and be given a seat at the appropriate decision-making tables.
2. ECCNs should oversee categorization, standardization (facilities, equipment, required competencies) and integration of EDs and other emergency care access points.
- a. A plain-language four-level categorization taxonomy should be used to help guide clinical services planning:
 - Level 1 ED = comprehensive services associated with large tertiary care hospital
 - Level 2 ED = advanced services associated with other large urban or regional hospitals
 - Level 3 ED = full services associated with community general hospital
 - Level 4 ED = basic services associated with small rural hospital.
 - b. These levels should be determined/assigned by population weighted distance calculations, annual volumes, and be modified by the function the ED is expected to fulfill in the system. Once assigned, the MoH/HA must adequately fund and support each ED site to meet this required function. EDs must meet the standards consistent with their level of designation.
 - c. Network-integrated Urgent Care Centres and Network-integrated peer-to-peer Virtual Care (P2PVC) in this context means that these access points to the Emergency Care system must be designed, integrated, and held to the same quality improvement patient safety standards as EDs (one network, many access points).
 - d. CAEP/NECCC should create a national template and example standards for provinces to adopt in the domains of physical space, safety, equipment, DI/lab

availability, medication availability, staffing numbers, competencies, professionalism, and transitions of care pathways.

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Chapter 4

Competencies, Certification and Teamwork (1)



In a value-based health system, patient value becomes what evolutionary biologists call the ‘selection principle’ against which the contribution and performance of all institutions in the system, as well as the effectiveness of health-system reform initiatives, are assessed and evaluated. [1]



Introduction

Emergency medicine emerged as a specialty to improve outcomes for patients with acute illnesses and injuries. Over the past 50 years, emergency care systems have evolved to provide timely access to quality care. This is the overarching context in which we consider the future of competencies, certification, and teamwork in emergency care.

The Relationship Between Competencies and Clinical Services Planning

The breadth, depth, and maintenance of competencies for team members to provide care can be relative to the category of an ED (see Chapter 3). But the care provided by all staff, including physicians, should not fall below a minimum standard, otherwise it cannot be called an emergency department anymore.

Before we elaborate, it is important to understand power and responsibility in healthcare before we can improve or change the system. Who is responsible for assuring EM competencies are met? Who is recognized as having the legitimacy to certify those competencies, and make changes under the current governance structures? In Canada, provincial governments and their ministries establish and regulate EDs. This includes the governance and implementation of

standards, competencies, and certification. In the current era of competence-based education, knowledge and expertise is currently determined by someone's initial education and the competencies they've acquired.

Emergency medicine competencies for physicians are defined and certified by national colleges, including the Certificate of Added Competence (CAC) for EM conferred by the College of Family Physicians; and the Royal College of Physicians' EM and Pediatric Emergency Medicine (PEM) fellowships. These colleges additionally support and accredit both educational and physician maintenance of proficiency programs. Health authorities and hospitals operationalise ED standards and professional behaviour through the process of granting and renewing individual physician privileges. Provincial Colleges of Physicians and Surgeons are mandated to protect the public and hold individual physicians accountable to minimum competencies and professional standards. Finally, though not a certifying or accrediting body, CAEP advocates for physicians working in EDs across Canada, and for the patients/populations they serve.

EM:POWER, and its proposed emergency physician resource planning model (Chapter 6), supports the 2016 Collaborative Working Group (CWG) report and recommendations that showed a large and growing shortfall of emergency physicians working in Canada's EDs. (2) Based on a national survey, Figure 1 below shows the shortfall estimates that were calculated before the impacts of COVID-19. The pandemic resulted in greater burnout, increased retirement rates, reduced clinical shift loads for many who remained, and the reduction or elimination of ED coverage from the comprehensive practices of many family physicians. The coverage gaps in rural and remote settings were under-represented in this data, as was the population growth, so the current and projected gaps are likely substantially larger than those presented here.

National emergency physician shortfall estimate and future projection
(excludes remote settings)

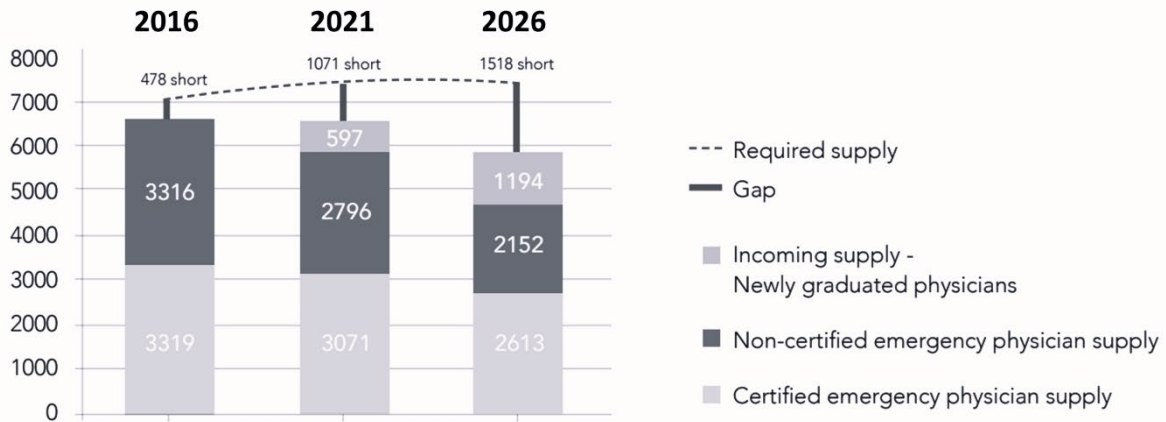


Figure 102. shows the estimated mix, demand, and supply of physicians providing ED coverage in Canada from a base year in 2016, and then projected to 2021 and 2026. At the time, the finding was that the FTE (Full Time Equivalent) shortfall would rise from approximately 500 to 1000 and to 1500 by 2026. (2) This data counts physician numbers not full-time equivalents (FTEs), so if two doctors are only working a half-time shift, they only make up one FTE. The data does not adequately capture the potential for more part-time emergency physicians post-pandemic.

Another key recommendation of the CWG report was for better alignment between the two main certification programs, with increased specific and meaningful collaboration needed between the CFPC and FRCP. Notably, the report did not recommend reducing the pathways to EM certification by eliminating one or merging the two programs together. The transition to competence-based education has allowed the two colleges to come together to clarify purpose, scope, and to work out how each can complement the other.

Through a systems lens there are benefits to having three pathways to EM certification in Canada (CFPC-EM, FRCP-EM, and FRCP-Peds EM): this makes the healthcare system more resilient though optionality. It also creates an element of safe redundancy and educational surge capacity in the EM training system. The three programs also offer a multitude of options for learners in terms of timing of entry, as well as intensity and duration of training, which additionally capitalizes on changing career plans.

Finally, the CFPC does certify that comprehensively-trained family physicians are qualified to work in small rural EDs without a certificate of added competence in EM. Instead, emergency competencies are attained during the Family Medicine residency. These are often supplemented by continuing medical education courses like Advanced Trauma Life Support

(ATLS), Advanced Cardiac Life Support (ACLS), Pediatric Advanced Life Support (PALS), Point-of-Care Ultrasound (POCUS), and advanced airway management courses. Two other programs that increase the breadth and depth of EM competencies for family physicians who regularly work in an ED are the Supplementary Emergency Medicine Experience (SEME) program, developed at Mt Sinai in Toronto, (3) and the Nanaimo Emergency Education Program. (4) Both the Northern Ontario School of Medicine and Queen’s University School of Medicine also offer additional training for comprehensive rural generalists. Interestingly, one of the stated reasons for the previously proposed increase in the length (from two to three years) of the Family Medicine residency was to further supplement the growing body of knowledge, as well as the increasing number of competencies required for many aspects of a comprehensive family physician (FP) practice, including ED coverage. (5)

The Relationship Between Certification and Physician Resource Planning

Mathematical and modelling questions exist to plan future ED staffing both regionally and nationally. One question arises at a systems level when the goal is to provide optimal care and coverage for patients seeking care in Canada’s EDs: what is the ideal recommended mix/range of the variously certified emergency physicians, and comprehensively-trained family doctors with CFPC certification?

If we cannot differentiate practically, then we cannot count how many we have now and make intelligent recommendations about how many of each we need in the future to improve our system. Other questions include how do we optimize the scope of practice of other professionals? How do we improve our team approach to care? These are key considerations for a needs-based Health Human Resources model (see Chapter 6). Pragmatically, they are key considerations for system payors/planners and Post Graduate Medical Education Deans to consider when they appropriately adjust the number of residency positions required to meet the Canada’s future emergency care needs.

Forward-looking integrated health human resources (HHR) planning will focus on services planning at the system level AND optimizing teams at the site level, applying role clarity, team design, and collaborative practice. Certification (including practice eligibility routes) is essential at the system level for the future of EM care in Canada, but this does not minimize the importance of non-EM certified physicians who have contributed so much to the history and

development of the emergency medicine field in the past. Many have been, and continue to be, key contributors in clinical practice, education, and leadership across the country.

EM:POWER endorses both the CAEP Definitions paper, (6) and the vision and mandate of the CAEP Rural, Remote, and Small Urban section, (7) both of which are relevant to these issues. These two documents are complementary rather than mutually exclusive as outlined below:

Emergency Medicine: is a field of medical practice (care of unexpected time-dependent illness and injury) defined by a unique body of knowledge. This means EM is not defined by the location of practice, but rather by a scope of competencies, as are other fields of medical practice. For instance, Family Medicine is also a field of medical practice defined by a unique body of knowledge. There is some overlap in competencies between these two fields of medical practice which makes the system more resilient.

Emergency Physician (when used as a noun): is a physician certified (or deemed practice-eligible by their respective colleges) in the practice of emergency medicine. Residency trained and certified FPs without CAC-EM certification in Canada also provide emergency care and may be particularly well-suited (but not limited) to practice in rural settings, as per the CFPC.

Emergency Department: taking the IFEM definition above one step further, the stratification and standards of Level 1,2,3,4 EDs are clarified in Chapter 3. At its core, an Emergency Department is structured and defined by its ability to provide acute care to all patients with unexpected and time-dependent illness and injury.

Canadians expect that an ED, by definition, can safely respond to the sickest patient that will arrive at its door, by ambulance, or by any other means. If it cannot, it should not be called an emergency department.

Certification in Emergency Medicine (either through the FRCP-EM, FRCP-Peds/EM or through the CFPC-CAC) strengthens the discipline of emergency medicine overall, and more importantly, improves the healthcare system's pursuit of the Quintuple Aim. (8) CAEP/EM:POWER also supports the current situation that the CFPC has the jurisdiction to train and certify graduates to provide emergency care in rural and remote settings and recognizes that this is essential for the sustainability of the emergency care system in Canada.

Local and regional networks of emergency care must support physicians working in these locations through educational and competency maintenance opportunities (digital and

experiential), shared/exchange workplace opportunities, and real-time peer-to-peer telemedicine connections as needed.

Provincial Emergency Care systems should be working towards requiring certified emergency physicians (or practice-eligible as defined by the respective colleges) to work in Level 1, 2, and 3 EDs. A comprehensively-trained family physician with emergency competencies is also certified by the CFPC to work in the ED and continues to play an essential role in staffing Level 4 emergency departments. Further discussion about developing and supporting this role, and the integration of all EDs into a single system with multiple access points are described in Chapter 6.

HHR Planning Must Follow Clinical Services Planning

Beyond physicians, providing effective emergency care at the bedside has always depended on interdisciplinary teams. Solutions to the current HHR gaps include training more emergency physicians, together with expansion of the team membership and evolution of the members' scope of practice. Registered nurses, paramedics, social workers, discharge planning nurses, pharmacists, and many others can all play a vital role in the more-than-the-sum-of-its-parts ED unit. Specific emergency competencies for each should be clearly established, attained, certified (where appropriate) and maintained. All providers should work to the limits of their scope of practice.

When following good practice around adult learning and educational accreditation standards, scopes of practice can be specialized or expanded. An example of specialization is the emergence of geriatric emergency medicine (GEM) nurses to improve geriatric care in the ED. (9) An example of scope expansion is the use of paramedics within the ED who have been trained beyond their traditional scope of practice to suture, cast, splint, and assist with airway management, procedural sedation, and analgesia. (10)

Three questions should be asked with the addition of any new team member, or proposed expansion of a skillset in the ED, bearing in mind that the issue isn't should we add a new member to the team; the question should be what unmet patient needs are there, and how do we best address them?

1. What unmet role/function on the team is being addressed?
2. How does this new/expanded skill contribute to improving patient outcomes?

3. What are the potential positive and negative unintended consequences?

Nurse practitioners (NPs) and physician assistants (PAs) are part of ED teams in some locations and fill different roles across the country. NPs are considered independent practitioners under most provincial legislation. In contrast, PAs are not independent practitioners, but rather are considered ‘physician extenders.’ In Canada, currently all NP programs are based on a 1–2-year primary care competencies curriculum following RN training. Some graduates receive additional disease-specific training after completing the NP program.

Currently, there are no NP programs in Canada designed specifically around emergency care skills and procedures. Most PAs are certified in some emergency care competencies. (Many were originally trained rigorously through the military although this is no longer our primary source). A more detailed description of the required skills, strengths/weaknesses, and potential roles in the ED for Canadian settings has been published by the Centre for Health Services and Policy Research at the University of British Columbia. (11)(12)

The evidence around the utility and benefits of NPs and PAs in the ED paints a mixed picture. An early systematic review suggested that the addition of NPs may result in the reduction of the wait times for low acuity patients, and in some cases, improved patient satisfaction. (13,14) However, a more recent three-year study in the US by the Federal Bureau of Economics comparing NPs to EPs practicing in the emergency department showed that the NPs ordered more tests, had worse outcomes, and incurred increased costs to the system overall. (15)(16) Clearly, the potential roles PAs or NPs could fill should be complementary to the ED’s team function—rather than in parallel or even as a replacement for an emergency physician. Optimizing ED care provided by NPs and PAs will require an intentional approach to roles, responsibilities, and team-building in site-specific contexts.

In a more rural setting, co-locating some primary care capacity provided by NPs may make sense if better access to primary care is unavailable elsewhere outside the ED, though again, the evidence is mixed on this. (17) On the other hand, busy urban EDs may benefit from the skills and procedures that a physician extender or PA could provide by maintaining the flow of CTAS 3,4 and 5 patients (where expanded scope RNs or paramedics can’t be trained to fill similar roles).

Regardless, different team members in different contexts can all bring value when the focus is on high-functioning teams in service of patient outcomes. Attaining, and maintaining individual

and team competencies are essential to improve the future of emergency care in Canada. But effective teams are more than a sum of their competencies, or certifications; their performance depends on much more than that. Teams work best when they have a shared purpose, coordinated roles/contributions, and common core values.

Core Values

Emergency medicine values and principles drive behaviour in professional practice, leading to a sense of purpose and fulfillment. (18) Finding meaning in our work, otherwise known as being internally motivated, influences our actions more than external motivators, the proverbial sticks and carrots. (19) We are committed to the patients and populations we serve. Explicitly expressing, resolving, and refining these core values are important for developing our professional identity; doing so builds coherent and collaborative teams who work together effectively as we create the future of emergency care.

Unfortunately, a mismatch or incongruence of values can also be a source of moral injury and burnout. System leaders and policymakers must understand how their decisions (or non-decisions) indirectly impact patient care. Competencies define our education in emergency medicine, and professional identity development starts with core values (see Figure 2) that evolve with practice and experience.

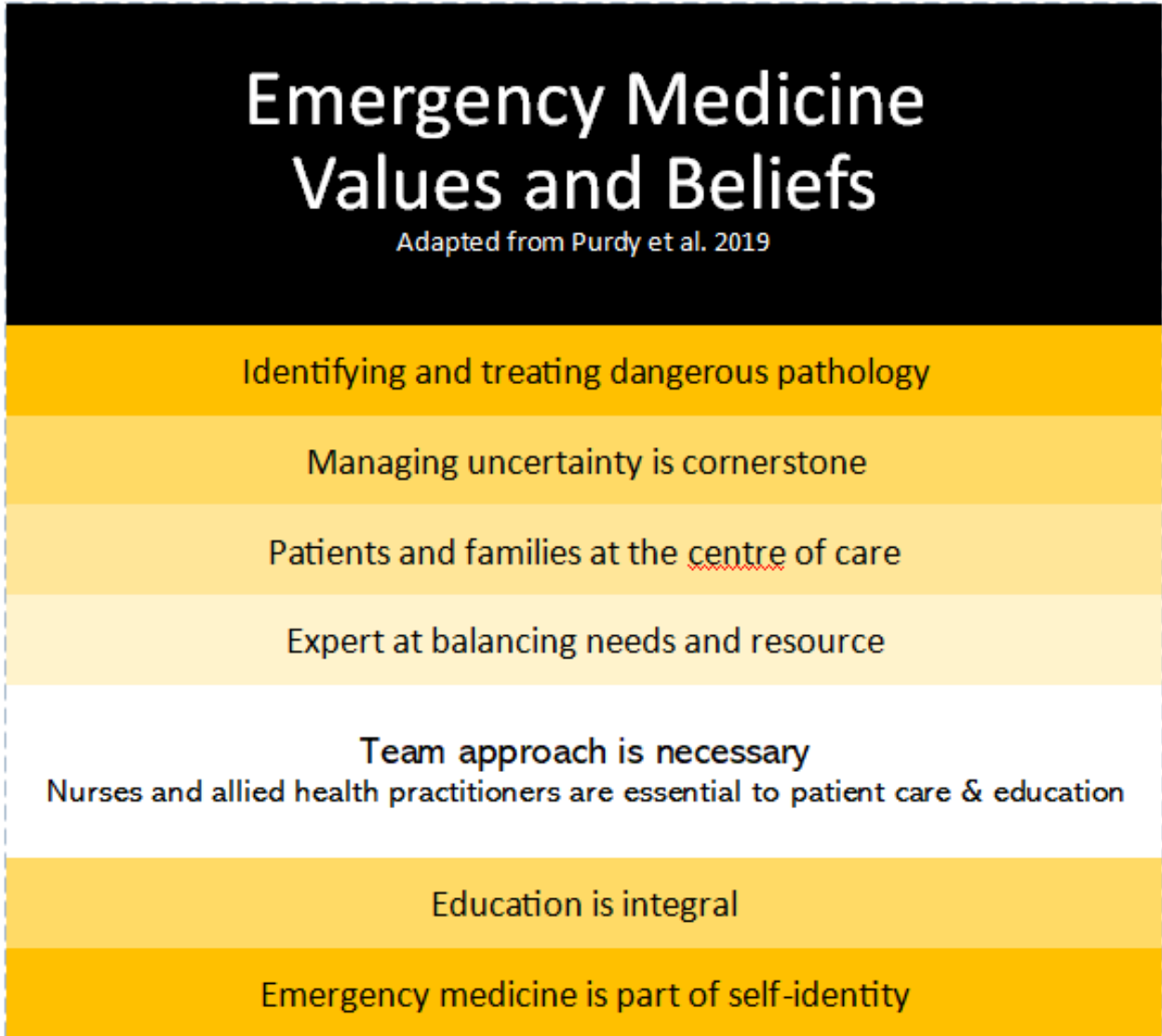


Figure 11. Refined Emergency Medicine Value framework adapted from Purdy et al (18)

Two other concepts that are implicit in the values identified in *Figure 13* are situational awareness and system savviness. These concepts are embodied in provider actions that address patient and family needs, balance a rational approach to resource stewardship, and help ED teams provide complicated and time-pressured clinical care—as well as transitions of care—to other services or hospitals.



Teams (and Teams of Teams)

“

Rigid, top-down, command and control hierarchies are not a good fit for our increasingly turbulent and uncertain world.

These old approaches lead to fragmentation and dis-integration, something that has been painfully obvious in healthcare.

”

Emergency care is a team sport, and emergency teams are inherently dynamic. No two shifts are the same. No two hours are the same. The team must act immediately in response to unscheduled and often unanticipated events; it must learn to read, react, respond, recover, and get ready again, together.

In his recent book “The Power of Teamwork: How we can all Work Better Together,” veteran emergency physician, Brian Goldman (20) speaks to the critical difference between a group and a team. Individuals with different skills and backgrounds can exist together in a group; but “to be a team, these individuals must be interdependent in terms of knowledge, abilities, and the materials they work with. And they must work together to achieve a shared goal.” (20) It is the shared goal, or shared purpose, and shared mental models that bring coherence and effectiveness to a team. (21,22)

Crisis Resource Management is a concept from aviation safety that has been modified for use in the healthcare setting and has been shown to significantly reduce error. (23) It is often taught to medical learners in simulation/resuscitation training, but the principles can be applied in broader contexts.

These principles include:

- Knowing your environment

- Knowing your goal
- Knowing your role, shared workloads
- Anticipate and share information, and
- Have shared mental models, leadership and followership, and clear communication loops.

The Toyota Flow System (24) has three pillars: complex thinking, distributed governance, and team science. These pillars show that creating and nurturing teams is an essential part of any organization—and these lessons have relevance in emergency care. Some of these principles are like those found in crisis resource management, and include:

- Goal/purpose identification
- Training and learning together
- Situational awareness, and
- Human-centred design.

Human-centred design is a particularly important principle that stresses the importance of involving all stakeholders in the design of teams that are best able to improve value-based care in healthcare systems. In this context, patients, communities, providers, administrators, and payors should be part of the design process.

It is not just care in the ED; all healthcare is now (or should be) provided by multi-disciplinary teams. The future of emergency care will be improved in a Team of Teams environment. (25) The concept of organizing complex endeavours with a Team of Teams approach stems from the observation that rigid, top-down, command and control hierarchies are not a good fit for our increasingly turbulent and uncertain world. These old approaches lead to fragmentation and dis-integration, something that has been painfully obvious in healthcare.

Team adaptation and effectiveness must be valued more (or at least balanced with) efficiency. To that end, the principles of a Team of Teams approach include shared consciousness and empowered execution, following the idea that neurons that fire together, wire together. Shared consciousness in this context means there is trust amongst and between teams because of a shared purpose (value in healthcare), and radical transparency around information flows and resource allocation decisions. Once shared consciousness is achieved, decisive action with a sense of agency can be implemented, which means empowering front-line teams to do the right thing in service of the shared goal. This drives bottom-up innovation and system change.

Creating High Functioning Teams (Not Just Expanding Groups)

Team function within the emergency department can have a significant impact on provider wellness (or burnout), provider performance, patient flow, and ultimately patient outcomes. It is essential for achieving the Quintuple Aim. Emergency care team function is impacted by factors at various levels: system, organization, department, team, and individual. A recent response to the access block in some Canadian provinces has been to reactively alter care delivery models to include and/or expand the scope of other medical providers in the delivery of “emergency care,” often with politically-expedient timelines, rather than value-based considerations. (1) This might expand emergency department groups, but is it creating high-functioning emergency department teams? Every so-called innovation in care delivery models must be evaluated for its impact on team function and patient outcomes. This is key.

While the drive to maximize the scope of practice of medical providers can make intuitive sense in a resource-limited environment, it is critical to be intentional around our strategies. Appropriateness and effectiveness in the emergency department must be carefully considered. Nurses, NPs, paramedics, and physician assistants have inter-profession and intra-profession variations in clinical scope and practice independence. Emergency physicians have a breadth and depth of knowledge, training, skills, and system savviness, which makes them ideally suited to lead teams of emergency care providers. We must not equate independence (or lack thereof) with having the competencies to practice in the ED, or with being an ideal fit for team development. Rather, we need to consider the context (ED category, department size, remoteness index, resource deficiencies/metrics) and plan explicitly around whether additional members are simply enlarging the group or improving the team.

- What is the problem we’re solving?
- How does this improve the Quintuple Aim?
- What are the alternatives?
- What are the likely/potential unintended consequences?

Bottom line: emergency department function and quality of care is much more complex than access alone, and access without integration and teamwork can negatively impact performance and outcomes. Improving EDs with more and different providers needs to be intentional; it needs to be about expanding our team and not simply enlarging our group. (26,27) The

implications of how optimizing the size and makeup of teams in the ED can impact HHR planning will be discussed in Chapter 6.

Community of Practice (CoP)

At a broader regional, provincial, and even national level, the concept of communities of practice is also important to the future of EM Canada. “A community of practice . . . is a group of people who share a common concern, a set of problems, or an interest in a topic and who come together to fulfill both individual and group goals.” (28) In other words, the CoP concept helps us to emphasize developing relationships in service of a shared purpose, (29) which is vital to improving emergency care in Canada.

This provides another mental model for breaking down silos and untangling turf wars. It keeps the eyes on the prize, which in this case is population outcomes, patient experience, provider wellness, equity, and cost-effectiveness.

In practical terms, a Community of Practice can be created with a larger, more academically-oriented ED, adopting a smaller sister site(s) with shared recruiting and scheduling. It can also manifest as mentoring relationships through hub-and-spoke related EDs, and/or practice support programs, regional interprofessional simulation programs, multi-disciplinary journal clubs, provincial emergency care clinical networks, and even national grand rounds.

Conclusion

Emergency Medicine is defined by a unique and growing body of knowledge which comes with a unique and growing spectrum of competencies. The future of Canada’s emergency care will be optimized by improving, strengthening and maintaining the competence-based education and ecosystem that serves our country well. The patients and populations we serve will also benefit from the intentional development of teams, and empowering communities of practice around shared goals.

Recommendations for Competencies, Certification and Teamwork

1. ECCNs should ensure that to work in an ED, attaining and maintaining individual and team emergency care competencies is required. The resources and opportunities necessary to meet this expectation should be funded and/or supported by the MoH/HA.

- a. The CAEP 2020 vision statement should be updated, nuanced, and re-endorsed to reflect distinctions between Level 1-4 EDs in Canadian urban and rural centres. All emergency physicians entering practice in Level 1 and Level 2 EDs should be certified in emergency medicine. Coverage in Level 4 EDs can be provided by comprehensively-trained family physicians with the necessary EM competencies. Level 3 EDs should work towards coverage by certified emergency physicians over the next decade. Given the shortage of emergency physicians in Canada, concerted efforts to increase EM residency training positions and prepare practice-eligible certification candidates will be crucial in attaining this goal.
2. CAEP and emergency care leaders in nursing and paramedicine should advocate for the funding/support necessary for nurses and paramedics to attain and maintain emergency care competencies. They should also encourage all providers to work to their full scope of practice and enable expanded scopes where needed (e.g., geriatric critical care, etc.).
3. ECCNs should establish and support team-based care, creating complementary roles and responsibilities in the service of patient needs.
 - a. Team science should be used in the design and evaluation of team performance in the ED.
 - b. Mid-level providers such as NPs, PAs, Doctors of Pharmacy (Pharm Ds) etc. should attain/maintain emergency care competencies and be added to the ED staff when and where they complement the team approach to improving patient care.
 - c. Inter-disciplinary simulation should be used extensively in the training and maintenance of competence of ED teams. Simulation resources and programs should be funded and supported by ministries of health and health authorities.
 - d. Emergency physicians should provide a leadership role in a team approach to care in an ED.
 - e. A Community of Practice (multi-disciplinary, shared goal, common interests) approach to improving emergency care across silos, sectors, and systems should be intentionally developed and supported.

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Chapter 5

System Integration

Introduction



Healthcare remains disjointed, with poor coordination and alignment within and across the various professions, acute and chronic care institutions and community care. Lack of integration is partly understandable where there is a multitude of payers (e.g., public insurance, private insurance, out-of-pocket spending). That services that are solely publicly funded are still arranged in stovepipes has been harder for the Panel to comprehend.

- Unleashing Innovation, Report of the Federal Advisory Panel on Healthcare Innovation. [1]



Integration has been identified as part of the solution to the current siloing and unsustainability of our fragmented healthcare delivery system in Canada. (1,2) An integrated model of care can be defined as “interprofessional teams of providers collaborating to provide a coordinated continuum of services to an individual supported by information technologies that link providers and settings.” (3)

In its report, the Canadian Institutes of Health Research (CHIR) identified 10 core principles for the successful integration of health systems. (3) They are:

1. Comprehensive services across the core continuum
2. Patient focus (value-based decision making)
3. Geographic coverage and rostering
4. Standardized care delivery through interprofessional teams
5. Performance management (accountability)

6. Shared information systems
7. Physician integration
8. Organizational culture and leadership (that support all the above)
9. Governance structures (that support all the above)
10. Financial management (that supports all the above).

The federal report on innovation in healthcare (Unleashing Innovation: Excellent Healthcare for Canada) suggests that integration itself should be seen as an innovation in systems (4). While recommendations on how to achieve this at the broader system level are discussed there, our focus emphasizes the potential opportunities of emergency care-related integration.

Emergency medicine sits at the interface of many aspects of healthcare: out-of-hospital/in-hospital, primary care/secondary and tertiary care, acute care/chronic care, and hospital care/home care, etc. As a result, it has the power to catalyze change towards a more integrated and better-functioning future.

Networks are defined not by their nodes, but by their connections. How patients transition through their care journey is one example. Links exist between primary care (including home and continuing care), emergency departments (including network-integrated urgent treatment centres and virtual emergency care), and public health. Emergency medical services (EMS) play a coordinating role through its dispatch centre, and a connective and supportive role through its 911 transportation service, together with the integration potential of its mobile health services. (5–7)

Integration with Primary Care and Public Health

For many years there have been multiple calls and attempts to reform primary care in Canada. (8) Our colleagues in Family Medicine currently share our concerns and motivations for change in the crisis we face (9). Perhaps a one-size-fits-all approach to primary care reform is neither feasible nor wise, but there seems to be a growing consensus around the importance of the healthcare home, having a multi-disciplinary, regionally rostered, family health team (10)(11)(12) for everybody. Specific governance, policy, accountability, and physician funding obstacles to implementing such a network are discussed elsewhere, and we endorse those recommendations. (4)(13)(14)



The healthcare home model, combined with improved operational linkages with EDs, means transitions of clinical care become more coordinated and accountable, with more adaptive and dependable mechanisms for dealing with new challenges that arise. Standardized communications methods and tools can be implemented when patients are referred to the ED for an assessment or specific treatment. Universal Electronic Patient Care Records (ePCR) allow for shared knowledge on past medical history, recent tests and investigations, current medications, alerts and allergies, and goals of care. Likewise, improved transitions should be developed for the ED to communicate clinical follow-up with a patient’s own healthcare home team.

Finally, public health is being recognized as essential for a safe and effective healthcare system. (15) Its three core objectives are:

1. Health promotion and chronic disease mitigation
2. Infection disease prevention and control, and
3. Health Security, including emergency preparedness and response as well as biosafety and biosecurity.

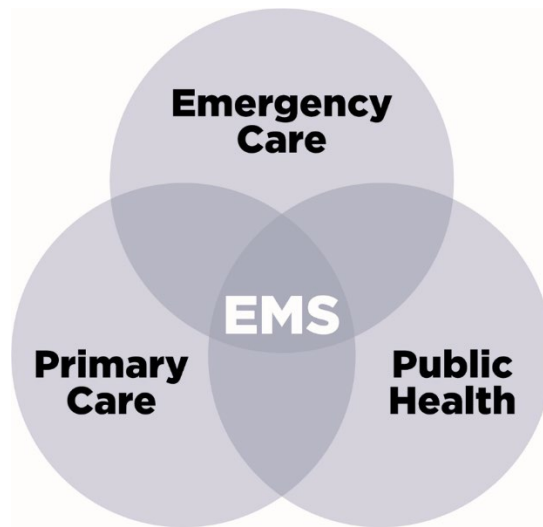


Figure 12. The overlap of Emergency Care, Primary Care, and Public Health services, Emergency Medical Services (EMS) can play an important role in coordinating and connecting care across all three areas.

Integration With Emergency Medical Services (EMS)

Emergency medical services are now recognized as a subspecialty in the US, and an Area of Focused Competence by Canada’s Royal College. In 2006 the EMS Chiefs of Canada articulated an important vision for the future which moved the service from a “you call, we haul, that’s all”

model, to a collaborative, integrated mobile health service partner. (16) Many jurisdictions have gone forward with those plans, and with Canadian healthcare systems in such crisis, EMS can play a major integrating role between out-of-hospital and in-hospital care. (17)

For example, the EMS central dispatch can become a Care Coordination Centre. In an integrated healthcare system, virtual care is not an end unto itself, but rather a means to an end. A functional model can be established that improves access, quality, coordination, and continuity of care, with virtual triage (risk stratification) and coordination (pathway navigation). (18)

However, there must be optionality in the care pathways for this care delivery model to work, so that “the right patients, can receive the right care, in the right place and/or through the right medium.” The ED should not be used as the sorting mechanism for non-emergent hospital-based services. (19) Alternative pathways other than the ED must be developed with easy and consistent access for potentially avoidable ED visits such as urgent, but not emergent diagnostic imaging and lab tests; specialist consultation; schedulable procedures (transfusion, pleurocentesis, feeding tube placements, etc.); and non-emergent post-operative concerns.

The concept of emergency physician as the “availabilist” (20) and the potential synergies with EMS-mobile integrated health solutions is gaining traction. To be clear however, any program development in this area should only occur after appropriate staffing is assured for the physical EDs in the system, and when primary care and specialist care services are accountable for their obligations to meet their own patient’s needs. Emergency care systems cannot be seen as the universal contingency plan for unmet needs in the rest of the system. Definitions and standards will also become even more important to assure integration and value, in addition to avoiding the exploitation of low-value retail medicine clinics, (21) or more fragmentation with unconnected, transactional, and low-quality virtual care options.

Multi-option EMS (22) is an idea that has been around for a while, and perhaps its time has come. An evidence-based (or at least rational consensus-based) approach to ambulance trip destination alternatives for some low-acuity patients could be thought of as Choosing Wisely EMS. Over 25 years ago the concept of multi-option EMS described three triage decision points for unique pathways to be developed:

- First, the 911 call taker (is an ambulance even needed or would a family physician appointment be better?)

- Second, when the paramedics arrive (is transport necessary, if so, by what crew/vehicle type and where to?) and
- Third, on arrival at the destination (with more time and information, is the ED still the best destination? (Would an urgent treatment centre or same day/next day appointment at the patient’s primary care home be a better alternative?))

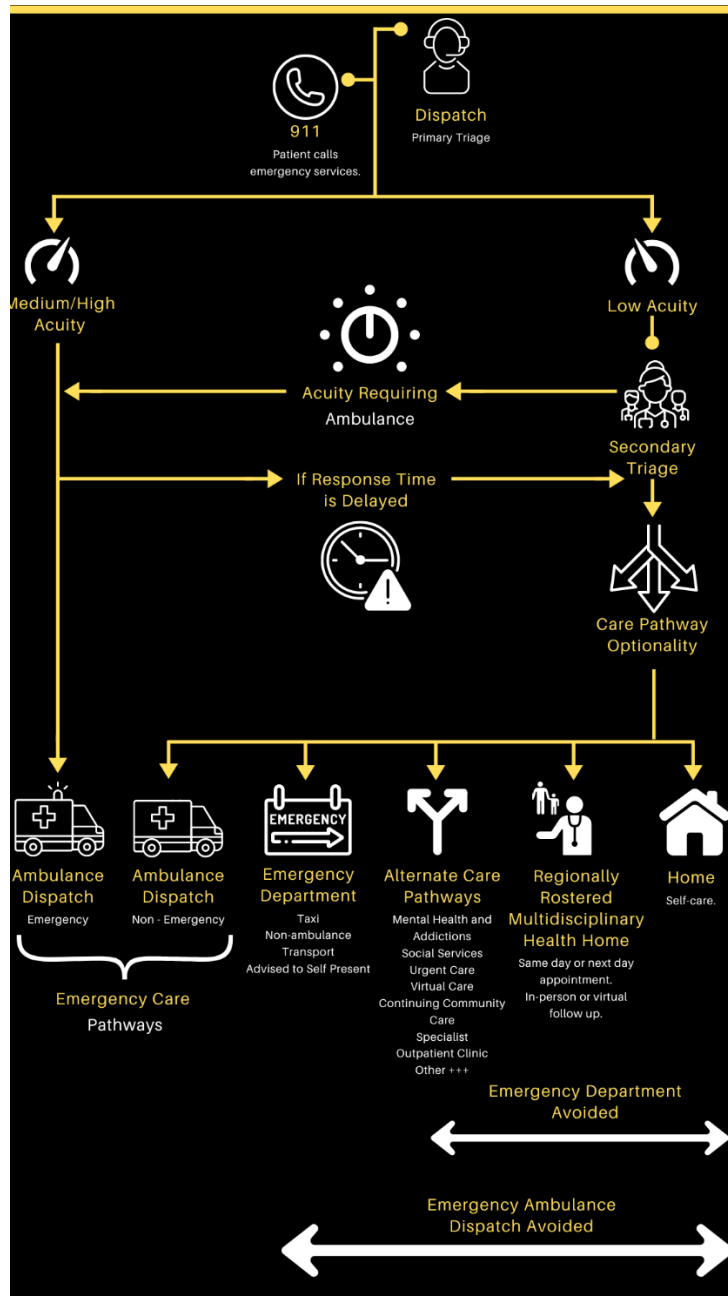


Figure 13. How the central dispatch can play a coordinating role in multi-option EMS.

Reducing the number of low-acuity ambulance arrivals—or low-acuity walk-ins for that matter—will have minimal impact on hospital access block. It will not make a difference to the ED’s fixed costs (staffing, equipment, overhead, etc.) and may only have a minimal impact on the very low marginal costs. (23) It should, however, reduce the transport and off-load unavailability time of ambulances, and free up more units to be ready for the next 911 call; the impact of that alone could justify multi-option EMS. It may also improve patient experience and reduce paramedic burnout.

This report strongly recommends validated prospective field triage and risk stratification tools for a paramedic crew on-scene, with backup from an experienced online emergency physician, to decide in real time where they should transport their patient. For example, if ten 58-year-old men with cardiac risk factors all call an ambulance for their chest pain and mild shortness of breath, and after their ED visit, five of them turn out to be diagnosed with an FPSC (family practice sensitive condition), (24) does that mean that the ambulance service should transport half of their chest pain patients to a walk-in clinic? Of course not! Prospective decision-making and risk stratification in uncertainty cannot be evaluated retrospectively by outcomes; (25) they must be judged by the decisions made with the information available at the time.

Emergency physicians have long known that over-triage is a resource use issue, and under-triage is a patient outcome issue. No field or virtual care triage can ever be perfect; (26) sensitivity varies inversely with specificity. As we develop these trip destination options and pathways, the following questions arise:

- What level of risk is acceptable for the patients and populations we serve?
- How do we mitigate the inevitable under-triage?
- And who bears the medicolegal burden of that risk in such a system?

Such issues cannot be ignored, but they should not block the development and evaluation of these alternative courses of action.

The Patient Care Journey Starts Anywhere, Anytime

A second type of integration can be thought of as being from the home, public space, roadside or clinic to the ED, and then on through to surgery, or admission and ongoing in-hospital care if necessary. This type of vertical integration is essential, even though only 10-25% of

presentations, depending on the level of ED categorization, require admission or transfer to another hospital for consultation.

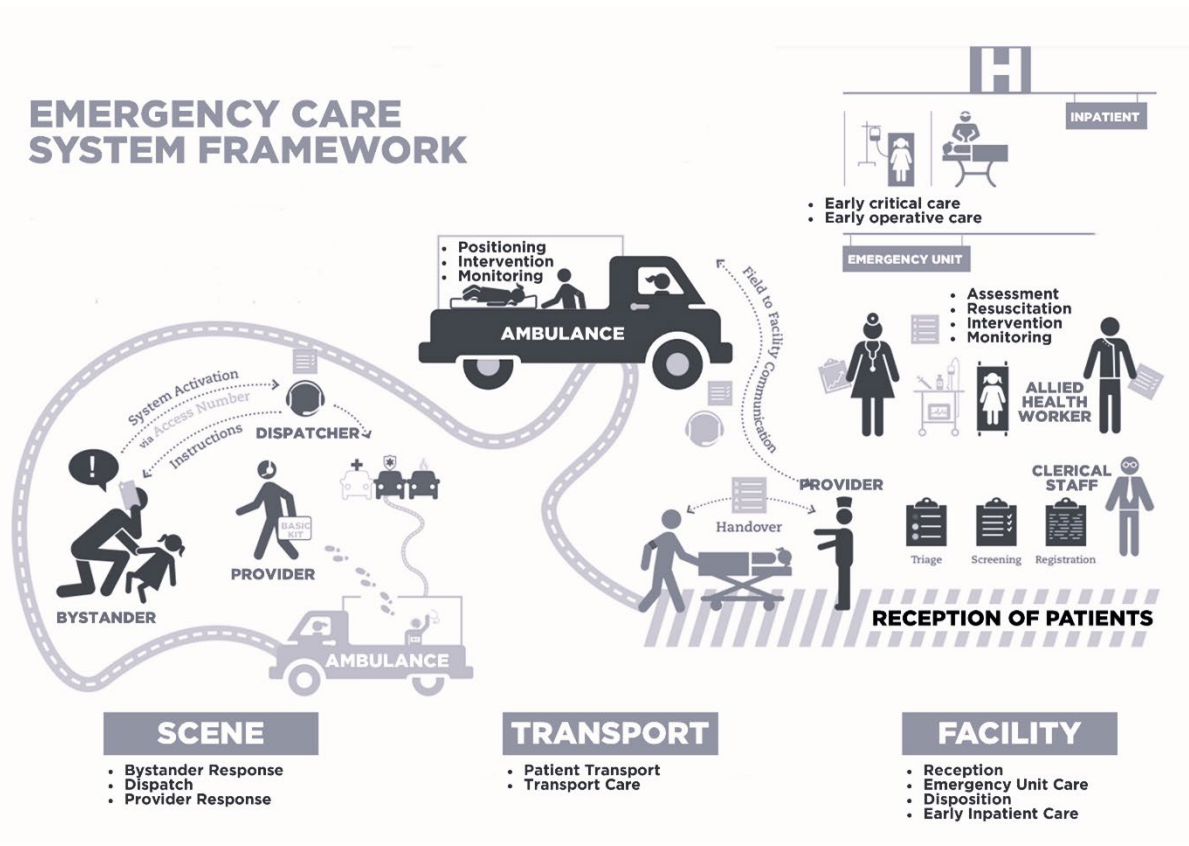


Figure 14. The necessary flow and transition points in an Integrated Network of Emergency Care. Adapted from WHO Emergency care system framework (2018)

After walking in, being sent, or brought by ambulance, patients correctly assume they will receive comprehensive ED care and subsequent in-hospital (+/- transfer) care if necessary. This journey will involve assessment with triage, an examination and interview, and possible investigations in the ED, including laboratory and imaging testing where necessary. Access to these investigational resources depends on their availability, ED configuration, and staff expertise. Patient also trust that further care, consultation, and other definitive care, and/or outpatient follow-up will occur depending on their needs. System coordination is essential for this to happen.

Emergency care success is dependent on the vertical integration of a patient’s healthcare in a timely, outcomes-focused, evidence-informed, resource-savvy, and data-driven system. Weak



links involve point-of-care issues, such as whether there are sufficient ED human resources with trained physicians and nurses available, and key immediate downstream issues, such as admission beds, consultant availability, out-patient follow-up options.

Integrated Networks of Emergency Care at a Provincial Level

Rural and remote locations must have well-defined, supported, and responsive avenues of referral and transport to more resource intensive care sites, when necessary, (27) although reliability of these systems currently varies by region and province. More recently, real-time peer-to-peer virtual support systems are evolving and have become essential to preserve rural and remote emergency care and physician/nurse support. (28) Since the onset of the COVID-19 pandemic in 2020, the provision of virtual care, whether in primary care or in emergency care or consultancy services, has evolved considerably. (29)

In a modern-day healthcare system, the assumption is a high level of care integration with a smoothly-functioning comprehensive and well-trained emergency care team to meet patient needs, 24/7/365. Overall, it is assumed that an open, staffed ED can and will take care of the sickest members of that community, region, or province. An essential part of this taking care is the stabilization and transfer on to other disease-appropriate programs, specialists, and sub-specialists if necessary. This vertical integration assumption is often neglected, as EDs become the repository of admitted patients (30) with no inpatient beds available in the receiving hospital. As a result, the ED's primary mandate of resuscitation and other acute care obligations becomes compromised.

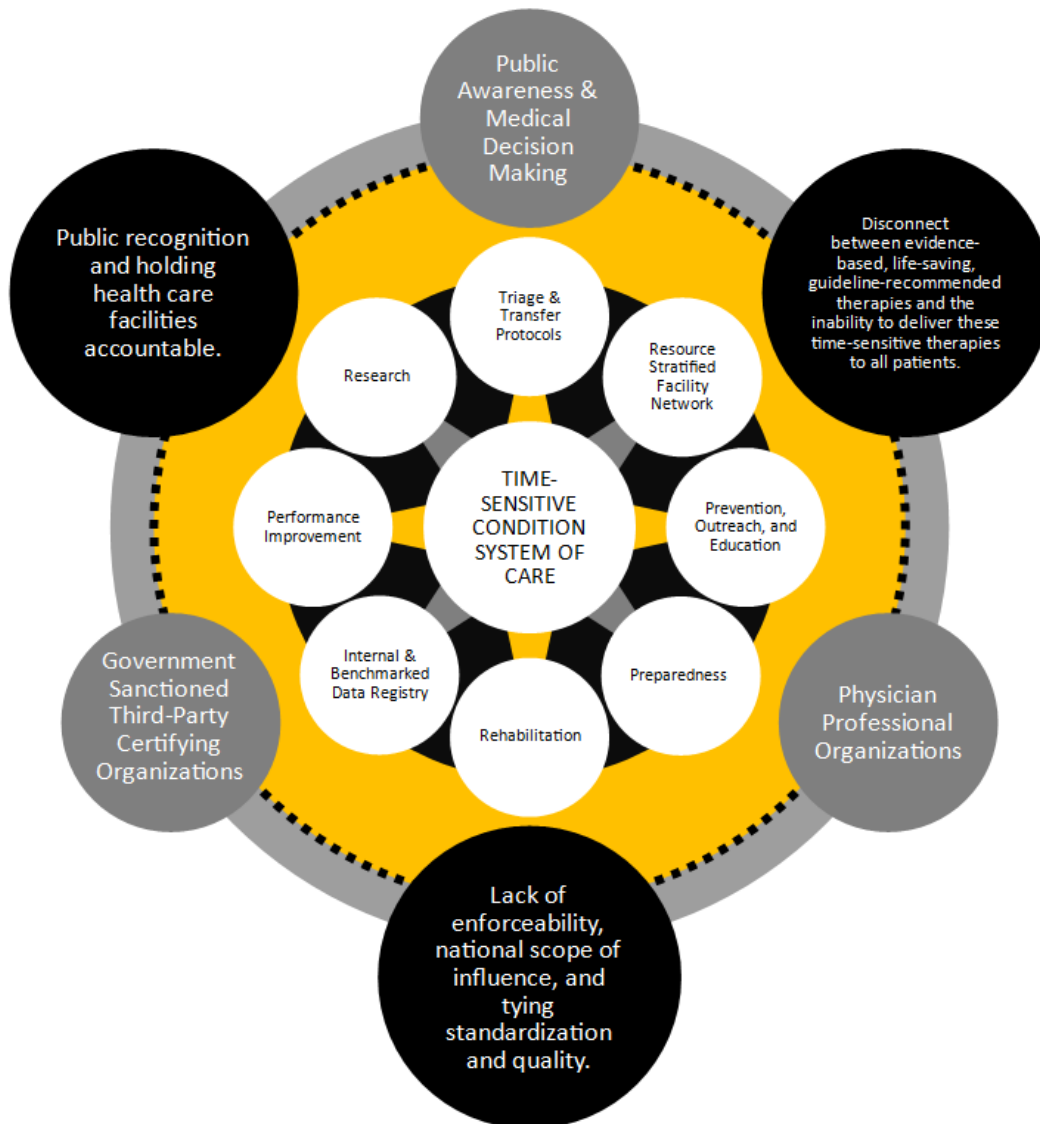


Figure 15. Schematic representation of a regionalized system of acute care. The inner circle illustrates eight core elements working synergistically. The small gray circles on the perimeter represent the necessary supporting structures/processes. The large black circles on the perimeter represent the potential obstacles to a high- performing system. (31)

Patient Transfers for Rural and Remote Communities

The accepting physician/service, timely transfer and timely ambulance offload at the receiving hospital axis is particularly important for patients presenting to rural EDs with time-dependent illness and injury. (27) Unfortunately, problems at all three components of this patient journey significantly impact outcomes. In addition, negative feedback loops are created when paramedics get stuck in hallways at regional EDs while waiting to hand over their patients, reducing their availability for the next rural transfer.

The Rural Road Map for Action Report (27) which proposed an approach to patient transfers for those living in rural and remote communities is endorsed by CAEP, and all recommendations should become standards in integrated networks of emergency care. That doesn't mean all patients should flow through one-way funnels to tertiary care centres; in fact, the integrated web model is advised with real-time access to peer-to-peer virtual care, destination options, and safe redundancy built into the system, including an adequately-resourced EMS system that's responsive to air and ground transfers, as needed.

Integrated systems of care that contribute to ED function and response include care mandates such as:

- Trauma systems
- Poison centres
- Regionalized acute cardiac care
- Regionalized stroke systems
- Tertiary acute neonatal care, and
- Other services (transplant, major burns, mental health, etc.).

To function effectively, these require a demonstrable vertical integration of care. A network of emergency departments, critical care transport systems, and the availability of timely secondary and tertiary care hospital interventions for the specified acute pathology identified must be in place.

Trauma Systems Example: Integrated Health System

We pay a high price for trauma. Beyond the human injury and potential years of life lost, it is also the highest healthcare expenditure—not just in Canada but around the world. Acute injuries remain a top public health issue, especially for people under 44 years of age, where injuries are the leading cause of preventable deaths. Trauma systems have been established across North America to provide comprehensive injury care and to lead injury control efforts. To reduce this burden, many regions in North America, Europe and Australia have introduced integrated trauma systems. These organized, regional, and multidisciplinary structures create a dedicated network of healthcare professionals who work closely together, with the goal of ensuring excellent care for patients with serious injuries.

Serial observational studies have shown that these comprehensive, regionwide and inclusive trauma systems have reduced mortality and disability. (32,33) This integrated networked model of care has been used in other medical systems with a regional or provincial mandate, including stroke services and cardiac care. Indeed, in terms of their implementation and evaluation, the Canadian healthcare system overall—especially emergency care systems—can base its success on lessons from trauma system models.

Accreditation Canada is a non-profit organization that sets benchmarks for accountability in healthcare. It has a separate Trauma Distinction Process which recognizes trauma systems or networks that demonstrate clinical excellence and an outstanding commitment to leadership in trauma care. Its program promotes a coordinated, systemic approach to trauma, beginning with pre-hospital care and continuing through hospital care and rehabilitation. It consists of specialized standards, protocols, and performance indicators that support excellence and innovation. These are key elements for any component of a modern integrated responsive healthcare system.

Poison Centres Example: Integrated Health System

A Poison Centre (PC) is an interdisciplinary, front-line, 24/7 telephone-based clinical toxicology service that provides patient care directly to the public, prehospital paramedics, emergency department clinicians, and inpatient clinicians. Canada has five that cover large geographic areas, providing services to all provinces and territories (except New Brunswick). Registered nurses and pharmacists with special toxicology training answer the phones and are supported by physicians with fellowship training in medical toxicology. Poison centres embody the concept of horizontal and vertical integration of systems through real-time interaction with patients, paramedics, hospital clinicians, office-based clinicians, and community pharmacists. Expert recommendations are provided at every level of care, and throughout the continuum of care for any given patient. PCs can advise EMS systems on the necessity of transport after a possible toxic exposure, give treatment guidance for anticipated toxicity on the way to a hospital, and real-time advice to the EDs caring for the patient.

Involving PCs and medical toxicologists in the care of poisoned patients has been shown to avoid unnecessary ED visits by keeping exposed patients safely at home approximately 80% of the time, (34) decreasing the number of EMS transports, (35) reducing length of stay in EDs and

ICUs, (36,37) improving the use of resources and patient outcomes, (38,39) and creating cost-effective and patient-centred antidote systems. (40)

The patient safety and cost-saving improvements that toxicology expertise delivers could save significant amounts of healthcare resources. Unfortunately, accessing poison centre expertise is often an afterthought for most clinicians, public health officials, and government agencies; the very nature of telephone-based care—as opposed to consultation of visible entities at the bedside—creates a barrier to effective communication and confidence in recommendations. The credibility of the advice PCs provide could be significantly increased with better system integration.

Some progress is being made in establishing and implementing a national surveillance system (Toxicovigilance Canada) as a collaboration between the Canadian Association of Poison Centres and Clinical Toxicology, Health Canada, and the Public Health Agency of Canada. This aims to establish and improve surveillance mechanisms, public awareness, and regulatory action. However, much more remains to be done at a clinical and health system level to optimize the usefulness of poison centres and to harness their potential.

Conclusion

The 10 principles of healthcare system integration should be emphasized as we move towards improving the Canadian medical system in general, and emergency care systems in particular. There are practical opportunities to improve the connections and coordination of care at the nexus of primary care, public health, and emergency care. Reimagining the role of the central dispatch centre, integrating virtual care, mobile healthcare, and multi-option EMS can play important roles here.

Integration must also occur in a vertical direction, from the home or roadside to the ED to definitive care when necessary, and back to the community. This will not happen by itself and requires an all-of-system commitment to the essential elements of a high-performance regionalized approach to care. This is especially important in a vast and rural country like Canada.

Integrated networks of care must be realized provincially and nationally to optimize patient care experience, economic stewardship, system resilience and population outcomes. We must also guard against the risk of transactional, but not integrated, access points to healthcare

causing more fragmentation as an unintended consequence. Continuity of care over the longer term, (41) and coordination of care over the shorter term are essential in a Quintuple Aim-based healthcare system.

Recommendations for System Integration

1. ECCNs should endorse the 10 principles of healthcare system integration [4] and develop and implement projects that follow those principles.
2. Emergency care systems should experiment with, evaluate, and accordingly adapt, adopt, or eliminate integrated Urgent Care Centre access points and peer-to-peer virtual care support among EDs.
3. Emergency care systems should work with EMS agencies to implement and evaluate pre-hospital coordination centres and expanded scope EMS concepts.
4. Emergency Departments must have 24/7/365 access to single call, no-refusal support by specialists, and operational clarity and consistency around transfers and admitting services.

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Chapter 6

Emergency Physician Resource Planning

Introduction

“

Physician resource planning must follow clinical services planning, which must follow patient/population needs. Form must follow function.

”

Current health workforce planning is siloed, focused on one profession in a single region. This patchwork also tends to ignore changing professional lifespans, demographics, and population health needs. We need a planning framework that reflects the reality of complex, interdependent health care labour markets. We need to create environments where people want to work and where workloads are manageable. (1)

Canada’s future emergency care systems will need a workforce that is competent, reliable, and adaptive. Integrated health human resource planning (HHRP) is about having the right healthcare providers and teams, in the right place/medium, at the right time, with the right training.

Resource modelling is one of several aspects of this planning that involves calculating how many physicians are needed now and into the future, to meet population needs. The key concept here is to meet population needs. Physician resource planning must follow clinical services planning, which must follow patient/population needs. Again, form must follow function. Chapters 3, 4 and 5 in this section are about just that: how do we set up the system to meet the emergency care needs of the population now, and into the future?

Deciding how many emergency physicians we need as part of the broader health workforce will depend on optimizing the number, distribution, and standards of EDs, matched with the best make up of their teams. Additionally important is how the various emergency departments are connected through transportation, and/or peer-to-peer virtual support.

A cautionary tale recently played out south of the border. (2)(3) Several dynamics in the American healthcare system (or at least in some parts of what is many different systems) have led to an erosion in timely and quality care. For example, many physician groups have been taken over by venture capitalists or profit-oriented management firms. (4) This has resulted in cost-cutting and profits for owners (over value-based care for patients) as the ultimate driver, potentially at the expense of quality. Mid-level providers are hired where emergency physicians used to tread, sometimes with the blurring of lines so the public is left unaware. (4) And rural care deserts have been created without an overarching strategy to maintain and improve emergency care at a regional/systems level. (5)(6)

We cannot allow this to happen in Canada. If our national association does not advocate strongly for timely access to quality emergency care, system decisions around the number, distribution and staffing of EDs will be made for us and may not be in the interests of the patients and populations we serve.

Background and Rationale of Modelling

There are several examples in the literature of Canadian physician resource modelling for specialties such as cardiac surgery, gynecologic oncology, emergency medicine and rural generalists. (7–10) The studies provide the current and forecasted need for these specialties at the national (7,10) and provincial levels. (8,9)

Although this is not meant to be an exhaustive review of physician resource modelling across Canada, many provinces have tried to perform more comprehensive analyses of physician resource modelling that encompass several, and in some cases all, of their medical and surgical disciplines. (11)(12)(13)(14)(15)(16) A variety of modelling approaches were used, with different underlying assumptions and data sources. Most of these past exercises concluded that more emergency physicians would be needed in the future to meet population demand.

Ontario, however, was an outlier. The modelling conducted in 2010 (12) showed there would be enough emergency physicians by 2011, and the surplus would grow to almost 500 physicians

by 2022. (12) These projections were clearly incorrect, especially as EDs are now struggling to stay open under current staffing shortages. Why was the projection so flawed? Despite applying a standard modelling approach, the assumptions used to determine and depict the current and future needs, from both supply and demand perspectives, failed to reflect the system's actual dynamics.

The description of this model provides little data to support health human resource planning (HHRP) but demonstrates that a “one size fits all” approach to different medical specialties does not work. Should we be using the same methods to plan our emergency medicine, primary care, medical and surgical workforces when the practices are so different in terms of population demand, infrastructure, and resource needs? In addition, making sound predictions of future HHR needs must be based on a reasonably precise grasp of the present and anticipated clinical services plan. This needs to be combined with the ability to adjust assumptions in response to known, evolving, and potential challenges in a specific care area of delivering clinical services.

Training Programs and the Challenge of Increasing the Number of Physicians

Up to this point, the discussion has focused on developing a physician resource model for emergency medicine to improve decision-making about the number of physicians necessary to meet the clinical care needs, and their geographical distribution. Within this lies an underlying assumption that if a greater number of emergency physicians are needed, then a mechanism is in place to achieve this goal. Currently, our resident training programs may not be able to adjust their enrollments dynamically based on the forecasted shortfall; instead, they produce a similar number of physicians within each specialty each year. More robust modelling makes a case for more adaptable residency training programs that can turn up or down various specialty outputs, based on more accurate predictions.

The Logic of the Savage Model

One challenge in using any model is the capacity to understand whether the actual system is appropriately represented. The overall goal of physician resource modelling is to find the right balance between physician supply and patient or population demand. (17) The difference between supply and demand is often termed the gap, or variance. In our healthcare system, the supply or number of practicing physicians is a dynamic process of inflow and outflow. The inflow of physicians in a particular region is related to the number of residents finishing their

training and staying to practice. It is also dependent on the transfer or migration of physicians from other regions, both nationally and internationally.

Physician outflow is more complex; physicians in a region can reduce their full-time equivalency (FTE) for several reasons including:

1. Retirement or death
2. To focus on academics, administration, other clinical (medical) disciplines, or changes in lifestyle; and
3. Outmigration to other regions.

Understanding the complexity of the inflow and outflow of physicians at a collective level can be challenging as it can vary by years in practice, the number of opportunities (both clinically and non-clinically) and may be regionally dependent.

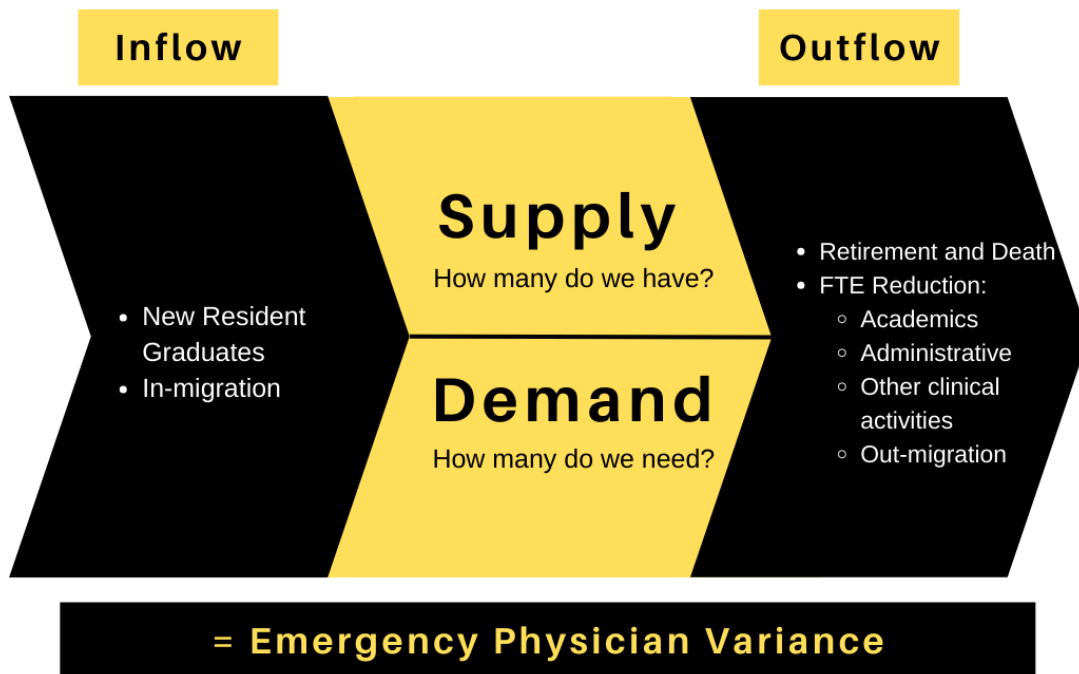


Figure 16. The dynamic modelling of Emergency Physicians in a system (at the departmental, regional, or provincial level) where the supply of EPs minus the demand equals the variance.

The demand side of the equation reflects the population's need for emergency department services. Forecasting this can be as simple as looking at historic trends: how many EDs does a region have, and how many total hours have to be covered? These predictions can also be more sophisticated by looking at population needs through changing demographics, population

health status and the availability of healthcare resources (e.g., primary care). It can also include anticipated changes in clinical services planning for a region: how many EDs are needed, and how will their hours of coverage be determined? As with the supply aspect of the problem, a change in demand due to policy, funding, or more recently a pandemic, requires a re-examination of the underlying assumptions, model structure and available data.

The assumptions and potential variables around inflow, outflow, current supply, and demand for services can be seen in *Figure 19*. There will always be a trade-off in the number of variables proposed, and the administrative feasibility of their use. Following the Pareto Principle, (18) 80% of the predictive value may come from 20% of the variables. In addition, from a statistical perspective, these parameters are estimated and may have some degree of uncertainty. But the enemy of good enough is perfect.

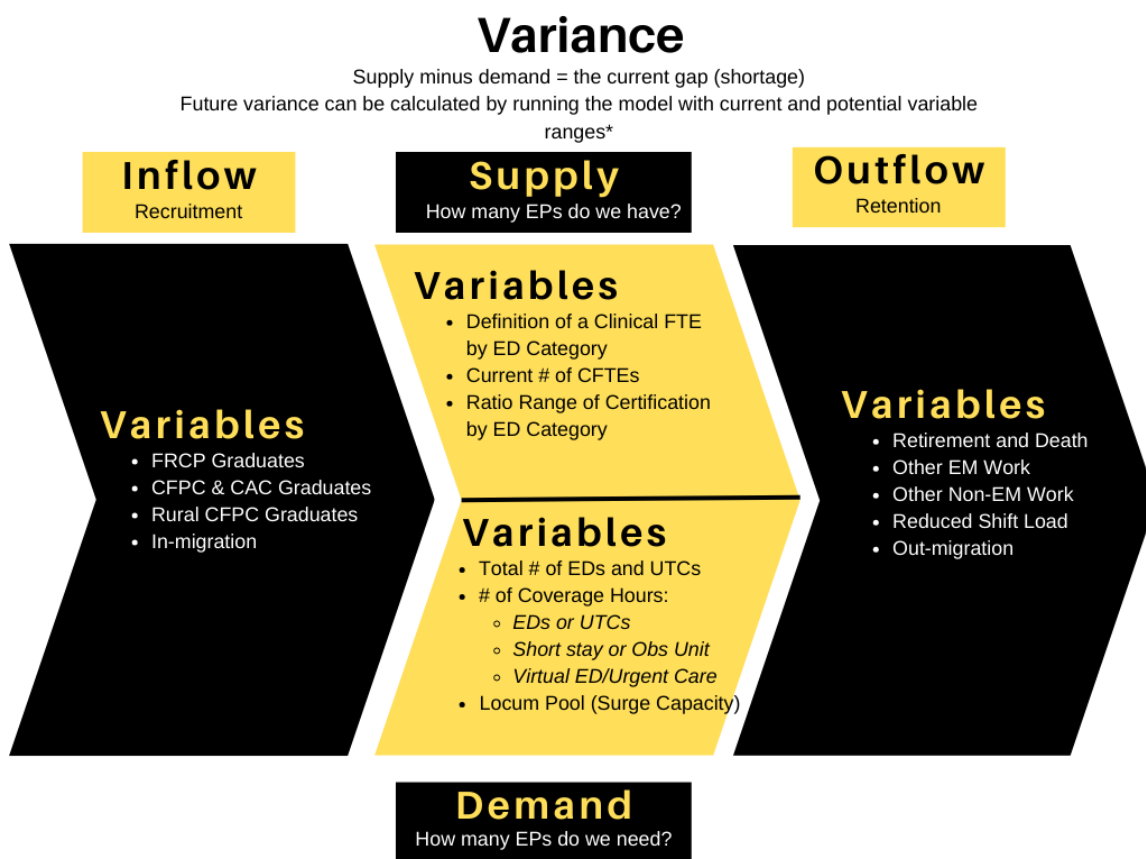


Figure 17. The important variables aligning with the four components of the model: Supply, Demand, Inflow and Outflow.

Using sensitivity analysis to systematically set the model's parameter variables allows the modeller to identify which variables may have the greatest effect on the results and determine

how much confidence can be placed in them. This process is especially important when parameter values are unknown or estimated from little data (as demonstrated in *Figure 18*).

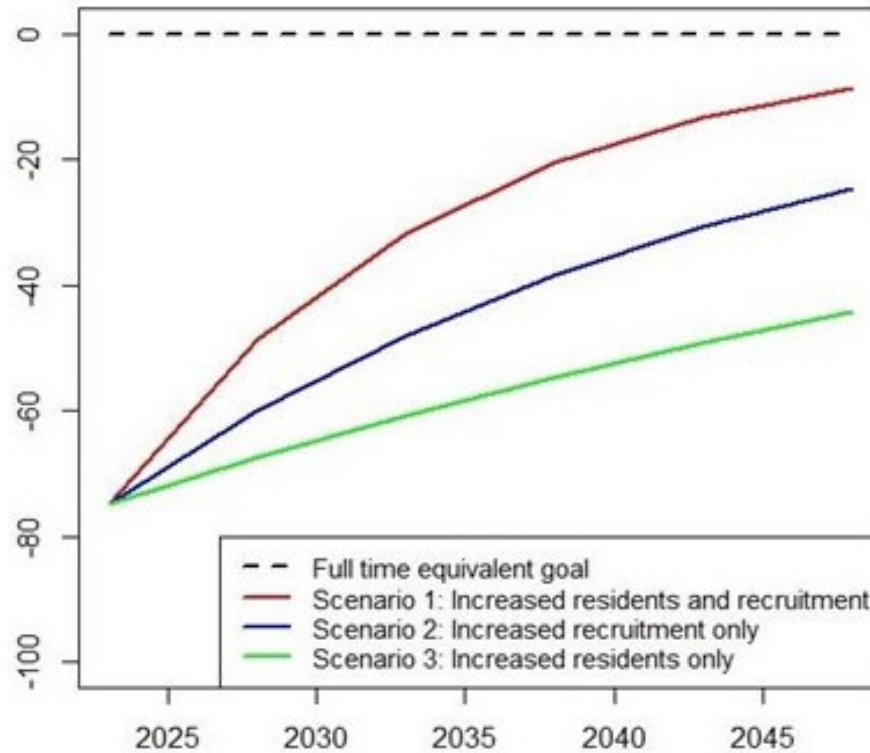


Figure 18. In this example region the gap between the broken black line(# of FTEs required) and the starting point of the 3 coloured lines (actual # of FTEs under different scenarios) is the shortage of EPs at year zero, which are then projected forward.

Policy Implications of the Savage Model

Multiple data sources need to be incorporated to create a model for physician resource allocation. This serves multiple and equally important roles. The modelling not only estimates current and future physician needs, but also identifies data gaps. It helps planners and policy makers better understand system dynamics, the current workforce, their practice patterns, the demand for services, and the future workforce required. Various policy interventions can also be tested in a low-risk virtual environment.

Forecasting allows decision-makers to identify the effect of maintaining the status quo but can also provide significant information about the effect of implementing different policy interventions. These models should also include some level of geographic integration to ensure regions that need more attention with regards to hiring and retaining physicians are identified. Developing a model, parameterizing it (expressed in terms of parameters), and planning for the

next decade's physician workforce is not a static process. As George Box famously said: "All models are wrong, but some are more useful than others". We believe that a population needs-based (12), behaviourally-informed, (19) continually revised and updated model proposed by Savage will be far more useful than those previously based on supply or fee billing models.

Mechanics of the Savage Model

Physician resource models can be formulated in several ways, but one of the most popular would be a systems-dynamics framework. (7) All models must be based on variables that use current information for the specific system being studied. Getting data can be challenging which means relying on assumptions and expert opinion instead.

From a health system planning perspective, the COVID-19 pandemic taught decision-makers that planning needs to be flexible, dynamic, and responsive to an ever-changing environment. For this reason, physician resource models should not be run once and put on the shelf; instead, they need to be updated with new emerging data and shifts in the healthcare environment with repeated, iterative analysis performed at least every 2-4 years to account for evolving changes.

Future Directions

As mentioned, one of the greatest challenges facing physician resource modelling is the lack of necessary data to drive it. This is an issue for both physician supply and demand. To start, many physicians, administrators, and policy leaders would suggest we do not have a robust approach to estimate the existing shortfall in physicians. We also do not have a firm understanding about how their careers progress over time. At what rate do they reduce or increase their clinical full-time equivalent (FTE) (working in the emergency department)?

Each physician will have a personalized ratio of clinical FTE (ED +/- other clinical work), academic FTE, and an administrative FTE, which varies by region, hospital type, and stage of career. At what rate are these physicians migrating from one region to another? When do they retire? From the demand side of the equation, what is the best method for predicting future need? Do population health or demographics affect the number of ED visits? All these questions can be handled if we can agree on some common approaches, definitions, governance structures, and data-collecting accountabilities across the country.

In fact, once we know what baseline data/variables are required, attaining and maintaining up-to-date rosters and shift commitments for example should become an important expectation of ED site chiefs, and emergency care clinical network administrative responsibilities.

Conclusion

Before the pandemic, the media regularly highlighted the challenges in finding full-time work that many new surgeons across several disciplines faced. (20) These surgeons are often under-employed and not working to their full potential or scope of practice. Meanwhile, our emergency departments, primary care system, and addictions and mental health systems have suffered because of a lack of physicians. (21) If we truly want to meet Canada's healthcare needs, our system of health human resources planning (HHRP) must be dynamic and responsive to the changing requirements of our population and workforce over time. (22,23)

Recommendations for Emergency Physician Resource Planning

Emergency Physician Resource Planning should adopt a needs-based, behaviourally-influenced, iteratively-updated approach (the Savage Model).

1. ED directors at the site level should understand the logic and variables of the Savage Model so that they can keep the current data points necessary for the model to be accurate.
2. Provincial ED leaders should understand the logic and variables of the Savage Model so they can influence ministerial and university policy makers around potential leverage points. This will reduce the current and projected FTE gap in ED coverage in Canada.
3. Health ministry and authority leaders must understand the link between clinical services planning and HHR planning (including impacts provider burnout) in emergency care systems.
4. Health ministry and authority leaders must be prepared to adequately fund and support a system that meets the current, future, and surge needs of its population.

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SECTION THREE

Chapter 7

Access Block and Accountability Failure

Section Editor: Grant Innes

Overview

Canada performs poorly relative to other wealthy countries in terms of access to primary care, specialists, elective surgery, and imaging. Canadians also face excessive delays to hospital and long-term care (LTC). Queues are ubiquitous, and these create significant health system dysfunction. Our country has the highest rate of ED use in the First World, and ED visits are rising rapidly, usually because the emergency department is the only place patients can get care when they need it.

When patient demand on a health program outstrips apparent care supply, the obvious solution is to block inflow and create a queue. Blocking access is a default response and primary coping mechanism for most programs; it is the opposite of a solution but delivers substantial rewards. Workload is controlled; waiting patients are out of sight and out of mind; staff stress is relieved and budgetary challenges are mitigated. Care shortfalls become someone else's problem, and programs are protected from evolutionary stressors that would otherwise mandate innovation and improvement.

Care delays in any program have a domino effect, compromising other components of an interdependent system. Alternate Level of Care patients (ALC) who are blocked in hospitals compromise acute care access. Inpatients blocked in emergency departments (EDs) compromise emergency access. ED congestion causes ambulance offload delays that compromise community prehospital care response. The wrong patient in the wrong place on a large scale generates inefficiency, system cost, and adverse patient outcomes.

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An accountability framework will not by itself improve access, but its absence is a recipe for failure.

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A primary root cause of widespread healthcare dysfunction is unclear accountability, the system-level failure to define patient care expectations and a lack of planning to address care gaps. Without an accountability framework, any performance is acceptable. If no person or program is expected to solve specific access blocks, no one solves them. A critical priority for health system improvement is the development of an accountability framework. This would define accountability, clarify accountability zones (i.e., what program is responsible for what patients) and specify relevant performance targets. Core program accountabilities are to provide timely access to care; budget, space and nursing care for program patients; and contingency plans for managing surges and queues.

An accountability framework will not by itself improve access, but its absence is a recipe for failure. Clarifying program expectations will focus people on problems they have not yet had to address. Accountability is the evolutionary stressor required to drive beneficial system change. Key accountability themes include the importance of queue management plans, the concept of ethically allocating limited care resources based on patient need and likely benefit, together with limiting the tendency of programs to manage demand challenges by blocking access.

Access Block and Accountability Failure

Accessibility is a core tenet of the Canada Health Act, but our system performs poorly. [1-3] Canadians have the highest rate of emergency department (ED) use when compared with 11 other affluent countries. [4] Visits are rising rapidly, usually because the emergency department



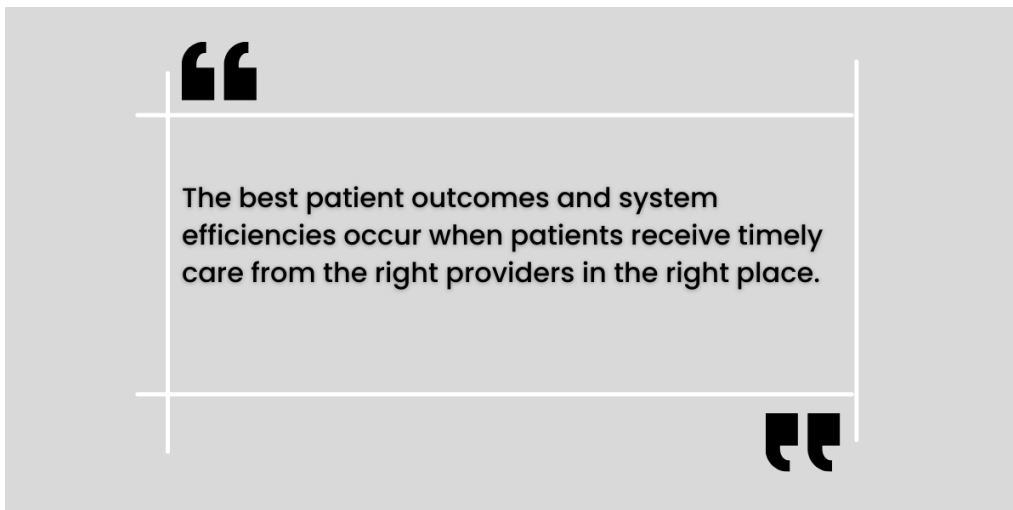
is the only place patients can get care when they need it. [5,6] Our country is next to last among OECD countries for access to primary care. Many Canadians cannot get a family doctor, and those who have one can rarely get same day, next-day, or after-hours appointments. Canada also performs poorly in terms of waits for specialists, elective surgery, and advanced imaging, which results in delayed diagnosis and care.

Poor system integration, [7,8] capacity shortfalls, staffing crisis, process inefficiency, population-capacity misalignment, and care maldistribution are contributing factors, [9] but critical root causes that must be addressed include the absence of a patient care accountability framework and a related lack of planning to address care gaps. [10-12]

Program Care

Programs are functional units in the healthcare system [10,11]. The term program usually refers to population level programs like primary, acute, or long-term care, but it can also refer to facility-level departments like pediatrics or critical care. Programs are staffed, equipped, and structured for the work they do. EDs are designed and staffed to diagnose and treat acute injury or illness over minutes to hours; surgical programs manage surgical conditions over days to weeks, and rehabilitation programs optimize long-term functional recovery. Acute care hospital wards do not provide excellent rehabilitation services, and EDs do not offer high-quality preventative healthcare. The best patient outcomes and system efficiencies occur when patients receive timely care from the right providers in the right place. This appropriateness is a core goal for all health systems. [9,12]

Wrong Care in the Wrong Place Hurts Patients and Systems



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The best patient outcomes and system efficiencies occur when patients receive timely care from the right providers in the right place.

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Care delays cause morbidity and mortality. [9,13-25] Older patients blocked in acute hospital wards do not receive necessary rehabilitation, with the risk of cognitive decline and deconditioning that lead to institutionalization rather than independence. [26,27]

Hospital inpatients deteriorate if held for hours or days on hard narrow ED stretchers in crowded noisy rooms without privacy, bathroom access, or sleep, and where the lights never go out. [22,23] Acutely ill arrivals with strokes and miscarriages languish or deteriorate in ED waiting rooms when stretchers are blocked by inpatients. [26] Queuing, care delays and wait times all reflect access block, which is the biggest problem for Canadians seeking care. [1,2,28]

Wrong care in the wrong place also causes widespread system dysfunction. [11,28-31] Failure in any program has a domino effect, compromising other components of an interdependent system. [11,17,32] Delays to long-term care mean patients who should be in the community block hospital beds, instead compromise acute care access. [33] Blocked hospital beds lead to blocked ED stretchers, compromising emergency care. Ambulance crews unable to offload patients at congested EDs cannot respond to emergencies in the community. [32] At every level, access block compromises upstream programs, patient outcomes, system efficiency and costs. [34]

Access Block: Problem or Solution?

When demand outstrips supply and programs are unable to provide care to waiting patients, the obvious solution is to block inflow and create a queue. This is a default coping mechanism for most programs, including emergency departments. [28,33, 35,36] It is the opposite of a solution, but delivers huge rewards. Workload is controlled, waiting patients are out of sight and out of mind, staff stress is relieved, and budgetary challenges mitigated. Care shortfalls become someone else's problem, and the program is protected from evolutionary stressors that would otherwise mandate innovation and improvement. [11]



WHEN ACCOUNTABILITY FAILS . . .

EMERGENCY ACCESS BLOCK

A 70-year-old woman with post-op abdominal pain is triaged to the ED waiting room because all emergency care spaces are full. After 3 hours she collapses. Resuscitation is initiated and she is rushed to the operating room, but she dies in surgery with an abdominal compartment syndrome. Her husband asks, "Why did this happen?"

HOSPITAL ACCESS BLOCK

A 22-year-old is admitted because of suicidal ideation, but only one psychiatric bed is available, and it is being held in case a patient on the unit requires seclusion. The suicidal patient is held in the ED with a care aide providing observation. The next morning, on rounds, a nurse notices that the curtain around the stretcher has been closed. Upon pulling it back she finds the patient dead, hanging from the curtain rail.

LONG-TERM CARE ACCESS BLOCK

An elderly woman hospitalized with a pubic fracture develops urosepsis after catheterization. Ten days later, her sepsis has resolved, but she is increasingly confused and deconditioned, no longer capable of going home. Two weeks later, with no rehab spaces available, she is still waiting in hospital, physically and cognitively deteriorating.

Blocking access prevents patients from getting the care they need, shifts care demands away from programs able to provide a service to programs that can't, and displaces the consequences of access failure to other parts of the system. If management by blocking access is acceptable, and underlying causes are disconnected from consequences, leaders who are able to correct root problems are protected from doing so, while affected leaders are incapable of solving them, even if they're the most motivated. [11] This is a recipe for ongoing system failure.

Accountability Frameworks

It is often unclear who is expected to come up with a solution when patients cannot access necessary care. If accountability is undefined and no one is expected to solve access blocks, no one solves them. Accountability is the evolutionary stressor needed to drive necessary system change. [11] An accountability framework links programs to expectations, clarifying that all programs are accountable for their target populations. [12,31,37] The framework includes:

- A definition of accountability
- Conceptual accountability zones, and
- Access-related performance targets.

It forces people and programs to ask: How would you change your care systems if blocking access were not an option?

Accountability Zones

Accountability zones clarify who is responsible for which patients, and where we look for access solutions (*Table 3*). [11,12] Logically, the service best able to address patient needs should provide care. If patients face surgical delays, accountability falls to the surgical program. Surgery has operating rooms and surgeons, and no other program can reduce surgical waits. Primary care programs are accountable for patients who need primary care. Emergency Medical Services (EMS) are accountable for patients requiring prehospital care, and EDs are accountable for all patients who arrive at their department. Hospital-based medical programs are accountable for patients who have been referred for inpatient care, and community long-term care (LTC) programs are accountable for patients who do not require hospitalization but cannot function independently in the community. The right program is usually obvious, but accountability is sometimes shared.

Health ministries also have accountability (see discussion below), and patients should be accountable for how they use the system, but the latter is a complex issue that depends, among other things, on the availability of non-ED care options, and definitions of appropriate ED use.

Program	Accountability	Program Boundaries
Primary care	Patients who need primary and preventive care.	Encompasses most of the population, although the need is not immediate.
EMS (Emergency Medical Services)	Patients requiring prehospital care.	Begins with 9-1-1 activation and ends at the time of ED arrival.
ED	Patients who arrive at an ED (referrals, walk-ins, EMS arrivals).	Begins with patient arrival and ends with an admission order. Patients on EMS stretchers are an ED accountability.
Inpatient	Medical: Patients referred for inpatient care. Surgical: Patients referred to determine the need for a surgical procedure.	Begins at the time of referral and ends with discharge or referral to community. Admitted patients in the ED fall into the inpatient accountability zone.
Community	Patients who do not require hospitalization but cannot function independently in the community.*	Begins with patient referral from the hospital or community. ALC (Alternate Level of Care) patients on inpatient units fall within the community accountability zone.

Table 3. Program Accountability Zones (High-Level)

*Community programs include community care, continuing care, rehabilitation, mental health, palliative care, homecare help, assisted living or long-term residential care.

Accountability also shifts as patients flow through the system (Figure 19). It is obvious in the case of a patient requiring fracture fixation, a woman in labour, or a patient requiring mechanical ventilation, but it may be unclear at the margins. Program boundaries differ by hospital and may be dynamic, but accountability is always identifiable and can be clarified by facility-specific policies. If accountability is in dispute (e.g., the septic patient who is too sick for a medical unit but not sick enough for an intensive care unit), services at the relevant interface must resolve the disposition because these services best understand the clinical and operational factors in play.[11] (A detailed description of recommended referral and transition processes is available in Appendix 5, the Facility-Level Accountability Framework.)

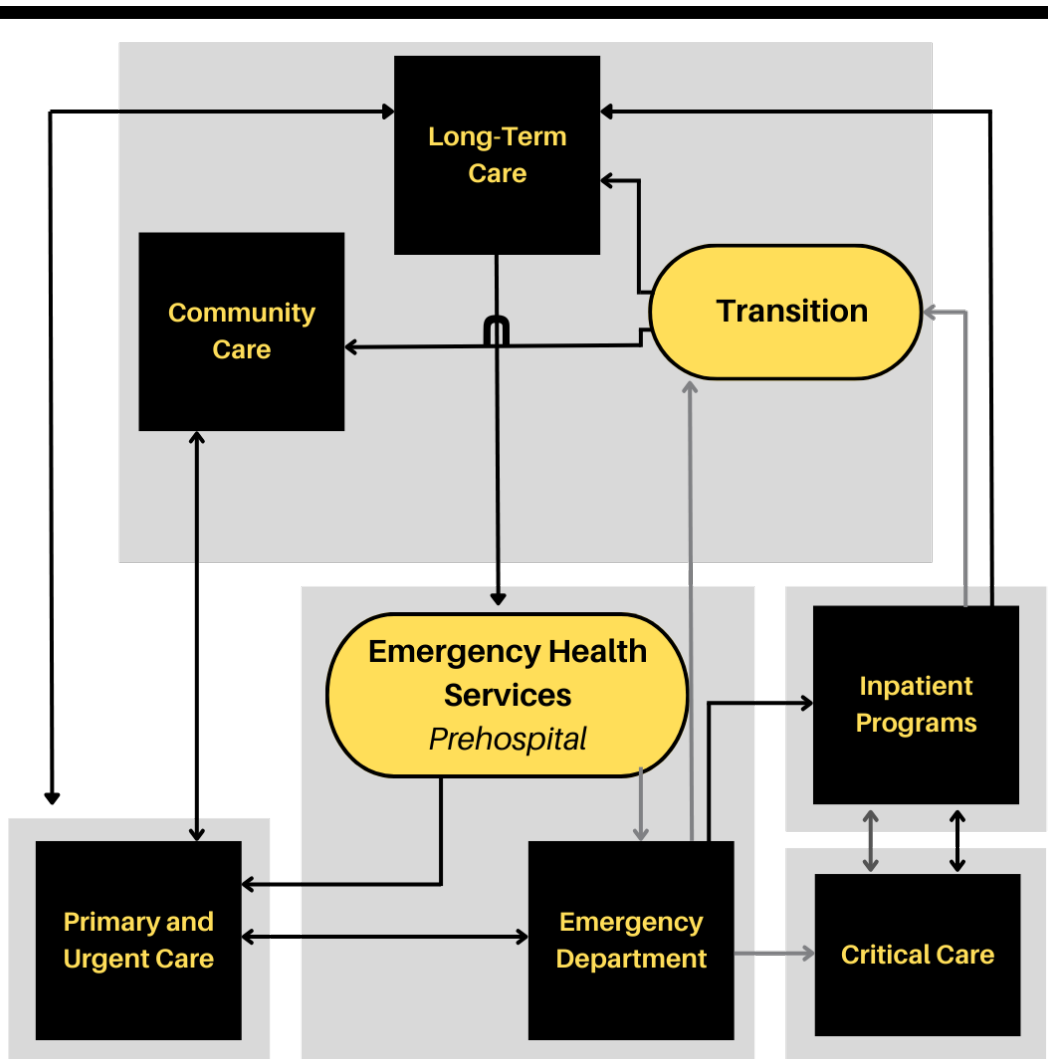


Figure 19. Programs and Accountability Zones: Black boxes denote programs. Yellow ovals are inflow transitions to programs. Grey shaded areas are accountability zones: the ED is accountable for all arriving patients; inpatient programs are accountable for referred patients; community programs are accountable for patients designated appropriate for community- or alternate-level care.

Program Accountabilities include timely patient assessment and disposition; budget, space, and nursing care for program patients; and contingency plans for managing surges and queues.

[11,12] Accountability is defined conceptually, as above, and quantitatively based on performance and time targets (See Table 4).

Ministries of Health must drive accountability planning and provide systems for measurement and reporting. They are accountable to assure population-capacity alignment, so that programs have the clinical infrastructure and resources required for patient care, assuming a high level of



efficiency and appropriateness. They also establish the legislative and labour environment that make it possible for CEOs, boards, and regional leaders to be effective. Regional, facility and program leaders should implement care accountability frameworks that define conceptual accountability zones and access-related performance targets (*Table 4*).

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Program Accountability = Timely patient assessment and disposition; budget, space, and nursing care for program patients, and contingency plans for managing surges and queues.

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Performance Measurement

Progress toward accountability time targets should be reported as mean (average) values because these provide a measure of utilization. For example, the number of ALC patients multiplied by their mean ALC time = total hospital ALC utilization days. Percentile targets do not do this, and the latter may lead to unintended consequences where patients who are beyond a percentile wait time target (e.g., 90%) are left to wait even longer, because they have already “missed the target.” Time targets suggested here are optimal and not currently realistic in many settings. Programs and facilities should adopt a graded approach to meet these rather than lowering the bar. For example, begin with an ambulance offload target of 60 minutes for 6 months, then reduce to 45 minutes for 6 months, then to 30 minutes.

Program	Process	Target
ED	Ambulance offload time in the ED	30 minutes
ED	Time to ED triage	10 minutes
ED	Time to ED physician, stratified by CTAS levels 1-5	0-120 minutes
ED	ED length of stay (LOS) for discharged patients	4 hours
Inpatient	Consultation interval (referral to disposition decision)	2 hours
Inpatient	Inpatient transfer time (admission order to unit transfer)	2 hours
Inpatient	Mean hospital discharge time (with scheduled departures)	11:00 am
Inpatient	Actual LOS/Expected LOS	96%
LTC	Hospital beds occupied by ALC patients	<4%
LTC	Time from long-term care referral to transfer (ALC time)	7 days
Hospital	Average hospital bed occupancy rate	85-90%

Table 4. Critical Access and Flow Targets by Accountable Program

Achieving Accountability

Most leaders and providers agree with the concept of accountability. It is logical that someone is accountable to ensure patients can access care. Despite conceptual agreement, accountability is difficult when capacity is limited (an argument for efficiency and thoughtful allocation); when demand surges (an argument for demand management); or when program beds and staff are blocked by patients awaiting care from a downstream program (an argument for queue management expectations). In spite of challenges, accountability must extend into the real world where surges occur, and systems are stressed. Accountability requires collaboration and innovation; when access failures occur and patients accumulate in the wrong places, leaders must be able to consult an accountability framework and identify which most responsible program will step up with a solution. All programs will face overwhelming resource and capacity challenges. Those that can lend capacity or temporarily support an adjacent stressed program should do so, knowing the favour will be returned.

Accountability Strategies

Accountability frameworks clarify patient care expectations, but strategies, especially surge contingencies and queue management plans, are necessary to move the responsibility beyond the conceptual stage. Programs should introduce many or most of the proactive access strategies described below.

Planning for ALL the Patients (Accountability for the Queue)

Most programs have queues. They highlight demand-capacity mismatches, situations where there are more patients requiring care than resources to provide care. There are many ways to address demand-capacity mismatches, with solutions differing by setting and program.

[9,26,30,32-35,39] To better meet care needs, programs should develop service delivery plans that rationally allocate their people and resources to their target population, including patients who are waiting. [31,38,43] Without queue management expectations, access failures in one program create widespread dysfunction. To avoid compromising care elsewhere in the system, contingency plans must involve more than blocking access and deferring care elsewhere. In an accountable system, the program responsible for the wait would provide the waiting room. To address care gaps, some programs need more money, beds, or providers; others may need to re-examine care allocation, eliminate low-value activities, improve flow processes, increase efficiency, or develop surge strategies and queue management plans.

Program leaders generally have system perspective and recognize the need to care for target populations like people experiencing mental health challenges, emergency, or surgical patients. Front-line providers typically see accountability extending only to those they are actively caring for. Busy GPs in community practice rarely feel accountable for orphaned patients who cannot access primary care. Emergency providers are likely to think patients blocked on ambulance stretchers are an EMS problem, and inpatient providers may believe that admitted medical patients blocked in ED stretchers are a problem the ED should solve. [7] In fact, EMS leaders cannot solve ED care delays, EDs cannot solve inpatient delays, and inpatient programs cannot solve ALC (Alternate Level of Care) delays. Programs and providers must consider patients in their queue as a program concern; their staff can then view access and flow initiatives as positive solutions to internal problems, rather than unwanted changes imposed on them to solve someone else's problem. [7,31,37,38,40]



If accountability extends only to patients already in care, several failure mechanisms arise. The program will not develop effective queue management policies, and providers will often resist or sabotage access initiatives because they believe waiting patients are not their responsibility. [7] Without queue management expectations, closing the front door and blocking access becomes the obvious default approach to demand-capacity mismatches. And even if the program could do better, people rarely strive to achieve expectations that they are unaware of.

Prioritizing Care Allocation: Matching Care Delivered to Care Required

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If a patient is deteriorating in the hallway, while a stable patient is waiting for test results in a monitored ED stretcher, this is a bad care allocation decision.

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Caring for some patients while leaving others in a queue is called rationing. Most programs are therefore in continuous rationing mode. Ethicists believe that if limiting resources is necessary, priority goes to patients with the greatest need and treatments with the greatest benefit. [31,39,41,42] In this context, need refers to a suboptimal health state, and benefit to an outcome improvement. Thoughtful care allocation decisions might therefore prioritize in the following order: [43]

- Lifesaving resuscitation
- Rapid recognition of critical illness
- Pain control
- Definitive acute care
- Ongoing convalescent care, and
- Comfort.



PARADOXICAL CARE ALLOCATION

A retiree calls 9-1-1 when he is unable to awaken his 77-year-old wife at 08:30. They golfed the previous day, and he last saw her reading in bed at 04:00 when he was up to the bathroom. Paramedics find her semi-conscious (GCS 11) with decreased pain response on the left side.

They transport her to a tertiary care hospital, but all ED stretchers are full, so she is triaged to the “EMS hallway” outside. After 3 hours, one of the paramedics texts her medical director, who phones the ED department head, who leaves a meeting and examines the woman in the hallway. He suspects a stroke and notifies the stroke team.

Thirty minutes later she is in the intervention suite having a clot extracted from her middle cerebral artery.

She dies 8 days later with profound stroke-related deficits.

Standard hospital operating procedures illustrate that we do not always use rational frameworks to allocate care. [40] Undiagnosed and unstabilized patients with serious illnesses who are among the sickest in the hospital when they arrive, are often left in hallways without being assessed or stabilized because all beds are occupied (mostly by patients who are less ill). Once diagnosed, treated, and stabilized, they graduate to a room, a nurse, a bed, and a toilet. The best care locations are occupied by stable, treated patients no longer at risk of death or disability, and those convalescing or awaiting discharge—even those who no longer need to be

in hospital. [43] Leaving suffering or acutely ill patients in the waiting room while assuring comfort and privacy for convalescing patients (who are accruing minimal health benefit) is a misallocation of care.

If a patient is deteriorating in the hallway, while a stable patient is waiting for test results in a monitored ED stretcher, this is a bad care allocation decision. If a dischargeable inpatient remains in a hospital bed waiting for a test or a ride home, while another patient with an acute stroke languishes in a waiting room, this is bad care allocation.

Triage and Reverse Triage

Triage means rapidly identifying high-needs patients and directing care resources to them. [44] Reverse triage means redirecting resources away from patients whose need and benefit have diminished. Reverse triage can free up substantial care resources, improve the balance of care delivery, and reduce delays for many sick patients. [45-48]

Optimizing Inflow

Patients with the greatest need arrive at a program's front door. Whether the diagnosis is myocardial infarction (heart attack), hemothorax (the accumulation of blood in the space between the lungs and the chest wall) or dehydration, the patient's need and benefit are front-loaded. [43] Optimizing inflow is an important strategy to match care delivery. At the front door, where time is measured in minutes or hours, high-need patients receive high benefit care. Emergency arrivals are resuscitated, diagnosed, and stabilized. Medical and surgical patients receive advanced expertise and aggressive or interventional care. Later, during the inpatient stay, patient transformation to wellness continues, but illness severity (need) and treatment intensity (benefit) diminish. [11] At the back end, where time is measured in days or weeks, stable convalescing patients consume many more bed and nursing hours, while accruing less health benefit. For older patients with frailty who achieve ALC status, additional hospital days have a greater likelihood of causing more harm than good because wasting and cognitive decline manifest. [25,27,49] Despite this, ALC patients are given higher priority for scarce inpatient beds than incoming acutely ill patients who would actually benefit from hospital care.



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To assure care for priority patients, all programs require triage, reverse triage, and expedited inflow processes.

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Adding Resources at Bottlenecks

Managing bottlenecks is the most effective way to reduce queues. [9,50,51] By definition, the bottleneck (location of the queue) is at the program’s inflow point, where clinicians, the critical resource, make diagnoses and determine dispositions. Decision-makers at the front door reduce delays for the sickest patients, expedite early high-benefit treatments, and avert disasters by detecting unrecognized serious illness. [43,52-55] They make patient-level risk assessments and rapid-care allocation decisions, triaging needy patients to expedited care (e.g., a resuscitation room) when required. They also preserve scarce resources by removing lower priority patients from the queue or diverting them to more appropriate care elsewhere.

Surge strategies may include transfers, service agreements, capacity enhancement, discharge lounges, accelerated discharges, overcapacity care spaces, and protocols for the expedited transfer of ALC patients to transition units or community overcapacity care locations.

It’s a Small Problem

A recent study of 1.8 million ED visits in 12 Canadian cities estimated the high acuity access gap at 25 hospitals by multiplying the number of arriving CTAS (Canadian Triage and Acuity Scale) 1-3 patients by their average delay to reach an ED care space. [56] For each hospital, this access gap represents the number of stretcher or bed hours required to provide timely care for all arriving high acuity patients. The study also reported each hospital’s inpatient bed base (care



capacity), excluding specialty areas like maternity. The median (middle value) inpatient bed base (total number of beds available) for the study hospitals was 462, which equates to over 4 million bed hours per hospital per year. The average emergency access gap which reflects the amount of time high-acuity patients were collectively blocked outside EDs, was 46,000 hours per site per year.

This is a sizeable gap during which many patients will suffer adverse events; but it represented only 1.14% of inpatient capacity at the corresponding hospitals, a gap that could be eliminated by a 90-minute reduction in average inpatient length of stay (LOS) for a hospital with 30,000 separations per year. This suggests that if access block is viewed as a whole hospital problem—rather than concentrated in the ED—it could be substantially mitigated by modest efficiency improvements, with or without new capacity. [56]

OPTIMIZING FLOW

At 2pm, an ED director is called to address a crisis. Thirty of the ED's 42 stretchers are blocked by admitted patients waiting for an inpatient bed. There are 15 patients in the ED waiting room, 6 ambulance crews blocked in the hallway, and no available ED care spaces. In the waiting room, people are moaning, someone is vomiting into a wastebasket, and a patient is lying on the floor, unable to get up. It looks like a war zone, she thinks, but it is often like this.

Twelve hours later, while working the night shift, she notices that the waiting room is empty and there are no EMS crews waiting. The number of hospital beds has not increased, but most of the admitted patients have been transferred to inpatient units, and all patients are in care spaces, just like every other night at 2am.

She has an epiphany. Emergency access block is as much about flow as it is about capacity. Patients flow rapidly into the ED, but it takes 12 hours for an admitted patient to flow from the ED to a hospital bed. Rapid ED inflow plus slow ED outflow equals ED care delays and bad outcomes. Even if there are enough hospital beds, slow inflow processes mean the hospital does not catch up with waiting patients until after midnight.

She resolves to discuss a rapid flow protocol or medical admission (buffer) unit with the CEO.

Pull Systems

Programs typically do not take over care immediately when patients are admitted or when the need for care is apparent. Rather, care units control inflow by “pulling” when unit capacity is available, and they are “ready.” Readiness is based on perceived ability to provide care under usual operating conditions. Unfortunately, during patient surges when demand exceeds apparent capacity, usual procedures may be insufficient to address patient need. Many programs have contingencies to free up capacity during surges, but in a “pull” system where patient inflow can be stopped at any time (by not pulling), it might not seem necessary to activate stressful contingencies or deviate from normal processes. Pull systems are provider-driven and tend to protect operational norms, even during periods of high patient demand.

Push Systems and Overcapacity Protocols

In a push system, patients requiring care would flow rapidly by default to the right (most accountable) program. At times when pull systems are failing and when access block compromises care, a push contingency may be necessary. Overcapacity protocols (OCP) are such a contingency. [57] Under conditions of severe access block, OCP temporarily removes the ability to block inflow, and pushes patients more rapidly than usual to the most accountable program, forcing it to activate its surge contingencies. [19,58,59] OCPs prioritize patient need over system norms, and are patient-focused. But the receiving programs are stressed because their control over inflow is temporarily removed.

Some are uneasy with the concept. Their understandable response is, “You can’t just push patients into a full hospital (or emergency department).” This is intuitive. But the alternative, blocking sick patients outside without care, is even less acceptable. Nor is it feasible to have an open ED with a closed hospital, particularly when ED capacity is a fraction of hospital capacity and when challenges an institution could manage would overwhelm a single unit.

If we agree that high acuity patients need timely care—and if there are too many medical, surgical, pediatric, mental health or geriatric patients in the hospital—it’s more appropriate to distribute small numbers to the most accountable medical, surgical, pediatric, mental health and geriatric units than it is to contain them all in one emergency department that’s already overcrowded and doesn’t have the resources or expertise to care for them. [59]

Expedited inflow for acutely ill patients will sometimes push convalescing patients into less optimal situations or trigger earlier discharges (reverse triage). While not perfect, this is the most ethical approach when care resources are finite, and it may even benefit ALC patients who are pushed to less acute settings. [60,61,62] Overcapacity protocols have proven safe, with low rates of ICU transfer and mortality. [19,59,60,63] They reduce ambulance offload delays, as well as delays to emergency and inpatient care. They also liberate care spaces for sick patients and improve patient outcomes. [57,59,64,65,66] Supply-driven OCPs are common and generally fail, but demand-driven (patient-focused) protocols will usually succeed. A more detailed discussion of demand-driven overcapacity protocols can be found in Appendix 6.

Recommendations for Access Block and Accountability Failure

1. Ministries of Health should initiate the introduction of accountability frameworks like those described here, which incorporate accountability zones, expectations, and performance targets.
2. Ministries of Health should drive system accountability planning, assure population-capacity-alignment, and establish a legislative and labour environment (including financing) that allow hospital CEOs, boards, and regional authorities to be effective.
3. Facility and program leaders should acknowledge the concept of accountability zones and develop real-time policies to clarify care accountability in unclear or disputed cases (see Accountability Zones).
4. Facility and program leaders should implement accountability performance measures specifying timely patient access and flow targets for all programs (Table 4).
5. Program leaders should develop effective queue management strategies and surge contingency plans that do not involve blocking access and deferring care to other programs.
6. To improve patient access to care and achieve program accountability, program leaders should drive the implementation of many or most of the accountability strategies described in this document.
7. Facilities should implement demand-driven overcapacity protocols that will be activated when pull systems are failing and access block is compromising care delivery. Overcapacity protocols should also bridge the hospital-to-community transition.

8. Regional, facility and program leaders should implement accountability measurement and reporting systems. They should monitor care gaps and use defined performance measures to determine whether gaps are best addressed through new capacity, enhanced efficiency, or reallocation of existing resources. Where the root cause is capacity, they must advocate for new resources; where it is inefficiency or misallocation, they must demand change. [8]

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SECTION FOUR

Chapter 8

Disaster Preparedness

Section Editor: Daniel Kollek

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Healthcare facilities in Canada have not been provided practical disaster planning guidelines or tools.

Where disaster plans do exist, the majority of healthcare facilities have not practised them.

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Overview

The COVID-19 pandemic unmasked what had been known to frontline healthcare providers for many years: the Canadian healthcare system is not ready for disaster. **What has been left unsaid, however, is that many Canadian Emergency Departments are in a disaster status all the time.**

This section provides a series of recommendations to achieve disaster readiness.

The definition of a disaster in healthcare is when the demand placed on the system outstrips the ability to deliver care. In Canada this has been the case from well before 2020. Not only is preparedness inadequate, but the current healthcare system in Canada is functioning at overcapacity with no redundancy, a recipe for collapse when stressed.

Disaster preparedness can only exist within the context of a functioning healthcare system. Even ignoring jurisdictional boundaries, there is a lack of clarity around who is accountable for

the health response to disasters. A consistent national disaster response is critical to minimize the impact of disasters on the health of Canadians regardless of where they live. Key to this is coordinated leadership at the federal as well as provincial, territorial, regional and local levels; we strongly believe that the delegation of healthcare delivery to the provinces in no way absolves Ottawa of its responsibility to coordinate a national health disaster response.

Even if there were true lines of accountability, the absence of a defined standard of disaster readiness makes it impossible to hold organizations to account if their readiness is inadequate. Healthcare facilities in Canada have not been provided practical guidelines or tools to prepare—even though such guidelines and tools exist—and there is no ownership for the teaching of disaster preparedness in the Canadian healthcare system.

To the degree that this can be assessed, there has been no standardized risk assessment performed for hospitals across the country.

Where disaster plans do exist, the majority of healthcare facilities have not practised them. A plan that has not been practiced is likely to fail. Where training has occurred, there were no resources dedicated to the maintenance of competence.

There must be a recognition that disasters are frequent and impactful. It must further be recognized that disaster preparedness is a proxy for broader system function, and that the tools used in disaster management can be equally well applied in dealing with day-to-day operations.

What if Katrina Happened Here?

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 public—and made politically undeniable—what front line healthcare 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 healthcare 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 healthcare; at the same time, healthcare 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 would be deaths and diseases 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 healthcare terms is any situation where the demand placed on the system has outstripped its ability to deliver care. There is 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 5 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 of 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.

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 clinical 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.

Table 5. Criteria for Declaring Crisis Standards of Care [21]

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

Readiness is the preparedness to respond and adapt to disaster situations. It’s 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

healthcare 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 there is no redundancy, 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 which results in preventable infrastructure failures.

Responding to Disasters

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 healthcare 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. Although the initial impact of some disasters may first present 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 healthcare 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 healthcare allies—specifically primary care—cannot be overstated. In a disaster, coordination, and planning across all parts of the healthcare system is essential.
8. The needs of the medical community in preparing for and responding to a health disaster are varied, and not always understood by professional disaster managers, or by other non-clinical responders.
9. The opposite is also true. Healthcare 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. This 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 event may be unpredictable, the details of the healthcare response is not.

What can be predicted is that:

1. Disasters will occur.
2. There will be a surge in demand on the healthcare 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 healthcare system will be required in specific time frames.
5. 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.
6. 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.
7. The skillset required when responding to a healthcare disaster is different from that required to deliver day-to-day care.
8. At the hospital level, providing optimal clinical care requires properly coordinated and executed clinical support including but not limited to labs, blood bank, pharmacy, diagnostic imaging, psychological first aid, patient attendants, equipment, and processes.
9. Specific predictable problems will obstruct the delivery of healthcare in a disaster.
10. While all healthcare 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 Healthcare System to Respond

As the threat of natural and man-made disasters continues to grow, healthcare systems will increasingly be called upon to support their constituent populations. While preparedness is system-wide and not just hospital capacity (more on this later), healthcare institutions are expected to have the ability and expertise to receive injured, infected, contaminated and psychologically traumatized patients.

Depending on local factors, this task may additionally 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, identified by standardized emergency codes across the country so everyone knows what Code Blue, Code Orange, Code Silver, etc. mean.
- 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. [6,8] At its most basic, the procedure will create an all-hazard strategy 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 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 healthcare 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 healthcare, no part of this 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. [24] The immediate corollary to this is that disaster preparedness can only exist within the context of a functioning healthcare system. This 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 healthcare system as a whole, [23] despite the fact that patients trust their family physicians (FPs) more than other healthcare 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 currently 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, 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 healthcare 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 (F/P/T) 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] Healthcare has always been within the scope of provincial governments; however, notwithstanding Section 91 and 92 of the Constitution Act, in a judgment back in 1976, the Supreme Court of Canada recognized that the federal government may infringe on provincial authority, if the measures are temporary in nature and have a national scope (Laskin, Judson, Spence, and Dickson, 1976). [2] This 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 under the Emergencies Act 1985, 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. Our healthcare system is familiar with infectious diseases and better prepared to deal with transmissible illnesses than other disaster types. [3,4,6] 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 healthcare, with individual provision structures that vary by jurisdiction.

Responsibility for funding and coordinating acute care delivery within each province and territory is usually further delegated to regional health authorities, districts, or boards; each of these 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 these jurisdictions. These obstacles exist both federally and at the P/T level even during a disaster that affects more than one authority.

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

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

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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.

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PHAC and Health Canada, along with PSC, are uniquely positioned to provide broad standards in health response, together with cross-jurisdictional cooperation and communication.

Considering the Federal government’s unique position to fill this role, we strongly believe the delegation of healthcare 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 healthcare field. Instead, it addresses the paramount issue of consistency among responders, and shares resources across the country at both the healthcare facility and healthcare 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 healthcare readiness assessment at any level of government. Frontline caregivers have identified deficiencies in multiple peer-reviewed research papers. [14-17] Neither Federal nor Provincial/Territorial authorities have addressed these deficiencies.

Where healthcare is accredited through a voluntary process, such as 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 support 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 prepared.

Over the past few years, the Canadian Standards Association (CSA) and Defence Research and Development Canada – Centre for Security Science (DRDC CSS) have attempted to develop protocols for healthcare 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 outdated US documents that are not always applicable to the unique Canadian context.

No Uniform Planning Process



Healthcare facilities in Canada are usually mandated by law to have a disaster plan. But they haven't been provided with practical guidelines or tools that are consistent across the country to prepare one.



Our facilities lack the ability to create a standardized plan with all the key components that would interface well with other regional authorities and healthcare facilities. This is even though such guidelines and tools exist and are constantly being improved upon. There is also no ownership for teaching disaster preparedness in the Canadian healthcare system.

A greater problem is that frontline healthcare 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 variability across government and healthcare institutions and organizations; this will make hospital and multi-agency coordination difficult, if not impossible, in a crisis.

A plan that has not been practised is likely to fail. Yet as far as this can be assessed, most healthcare facilities have not practiced their disaster plan. These exercises are often deferred in the face of more immediate concerns.

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 staff working in healthcare.

The result is a system with a series of gaps and redundancies, incompatible plans, and uncoordinated resources, all 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. [11, 12] The Canadian National Framework for Health Emergency Management similarly uses the terms pre-event, event, and post-event, [8] with pre-event activities that 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 manoeuvres that are a standard part of disaster planning.

“

Cities know there will be snow every year and prepare for it; healthcare systems know there will be patient surges but do not.

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Some tools, such as a Canadian-made Healthcare Facility Risk Assessment, have been developed to help facilities conduct their own risk and readiness assessments. [13] But despite this, no standardized risk assessment has been performed for hospitals across the country.

Poor Communications Across Healthcare 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 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 provide systemwide data analysis far beyond current capacities.

To summarize where the system is failing to prepare for disaster, 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 frontline 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 healthcare system is better prepared to deal with transmissible illness than other disaster types. During the Ebola response, and 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 the 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 Memoranda of Understanding on Healthcare Worker Mutual Aid Agreement. These have been exercised nationally and were activated during the Alberta Fires in 2016. [19] 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 in this country continues to be limited. Critical gaps persist between clinical medicine, public health, and emergency management professionals.

Why Emergency Care and 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 ED 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 the department 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 Emergency 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 skillset, 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, plus 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 skillset required to function in such a variable and uncertain environment exists in no other field of medicine.

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

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

Summary

Disasters are frequent and impactful. By any definition, the insidious degradation of healthcare delivery in Canada itself qualifies as a disaster. There's no question, as stated elsewhere in this report, that the infrastructure and processes of the emergency healthcare 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. These include deficient national planning, training support, and performance expectations that are limited to absent. Any discussion of surge

capacity is pointless if the healthcare system is already consuming more than 100% of resources.

Preparedness

All future design of the healthcare system, both in terms of organization and infrastructure, must integrate disaster preparedness because it's 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 healthcare 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 healthcare 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

Training must include the opportunity for healthcare providers, disaster responders and administrators across silos to learn and practice together, leading to improved cooperation.

Accountability

Beyond training and education accountability is needed to meet enforceable standards. Healthcare 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.

A “Just in Case,” not “Just in Time” Culture

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 present. In the words of Nike: Just Do It.

Recommendations for Disaster Preparedness

1. At all levels of the healthcare system there must be a clear and consistent understanding of what defines a disaster: when the demand placed on the system has outstripped its ability to deliver care.
2. All healthcare facilities (including hospitals, long-term care homes,) and agencies, (including public health, prehospital, patient transport, and community healthcare) must have a minimal degree of competency in disaster, and have their competency tested periodically.
3. All healthcare facilities must have a plan for surge capacity. Because a system that is near or above 100% occupancy cannot, by definition, cope with surges, the plan must include a constant level of actual bed redundancy. This redundancy must consist of real beds—staffed, but unoccupied—as opposed to theoretical bed expansion above the existing census.
4. Outside of healthcare facilities and agencies, the primary care system needs to be supported and educated for its role in disaster preparedness.
5. 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.

6. Preparedness planning needs to be high concept and must include an all-hazards approach.
7. Preparedness planning must be integrated at all levels of the health system.
8. 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.
9. 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 Federal/Provincial/Territorial initiatives and support.
 - c. Have a defined command and control structure based on IMS principles and supported by an emergency operation 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 and licensures. This will require a process of national licensure for healthcare providers.
10. Education and training in disaster preparedness should have dedicated annual funding to both achieve and maintain competency.

11. Competency should be validated through structured cyclical auditing that, where applicable, should be integrated as a critical factor into the existing evaluation processes of the organization.
12. Disaster response must be a Required Organizational Practice (ROP) without which healthcare facilities cannot be accredited. Specifically, accredited healthcare facilities and agencies must make disaster preparedness an accreditation requirement which is assessed using specific, measurable, and scientifically-driven standards.
13. Facility training must include periodic exercises that involve all components of the disaster response and that are objectively assessed for purposes of quality improvement.
14. Any educational program must promote coordination of services and alignment of disaster plans between the various healthcare 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 to ensure ongoing healthcare for all citizens.
15. All planning must take into consideration vulnerable segments of the population, such as children, the elderly, and patients with special needs.
16. 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 healthcare disaster.
17. 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 and care providers.

- d. Clarification of the division of authority between healthcare 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 healthcare facilities, regional authorities, the Ministries of Health, the Public Health Agency of Canada, and other Federal and Provincial/Territorial agencies.
18. To ensure interoperability between regions and all levels of healthcare, the Federal government—in cooperation with the Provinces and 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. A multi-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. [20]
19. 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 healthcare facilities.
20. Create a common national database for unidentified patients, ideally with trackable location identifiers, which would be available to all healthcare centres to ensure effective identification and reunification of patients and families.

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SECTION FIVE

Adapting and Evolving in a Changing World

Section Editors: Ivy Cheng, Aleks Chochinov

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To adapt to a changing world, emergency care systems must continually improve their approach to creating, implementing, and integrating knowledge, within and beyond medicine.

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The final section of the EM:POWER report looks at major disruptive forces and trends in the global ecosystem that will reshape our work world in the decades to come. The chapters that comprise this section are derived from the biomedical, natural, and social sciences and cover a broad range of subjects, ranging from digital health to climate change.

Chapter 9: Just as we have made recommendations for clinical care, we begin with an exploration of integrating EM research into a broader system. This underlines the importance of tailoring research efforts to the biggest threats to our patients, populations, and planetary health.

Chapter 10: This chapter examines digital health (DH), addressing the potential of new technologies to transform how we communicate with each other, and care for patients virtually. The challenge for us is one of leadership and stewardship, to ensure that DH’s vast potential is realized in a cost-effective way that puts meaningful patient outcomes first and doesn’t drain valuable human resources from our EDs.

Chapter 11: Conflict and differing perspectives are major barriers to collaboration in service of the Quintuple Aim, especially in the ED. Sometimes differing perspectives appear inexplicable, leaving ED care providers frustrated and morally distressed. This chapter, entitled Managing

Intergroup Relations, explains that understanding group dynamics and social identity are keys to moving out of our siloed past and collectively achieving better outcomes for patients.

Chapter 12: The EM:POWER project is a prime example of emergency medicine’s potential role in health policy and public affairs. In this chapter, the metaphor of the ED as the passive canary in the coal mine of health system dysfunction is challenged, and replaced with a more empowered construct, in which EM is a leading agent of change.

Chapter 13: Climate change is arguably the biggest health threat of the 21st century; yet many of us have an inadequate understanding of its impact on our patients and health system. This chapter includes a series of recommendations on how as physicians with expert knowledge and global responsibilities, we can prepare ourselves and our EDs for the impact of climate instability, mitigate the effects on our patients, and educate others.

Chapter 14: Boasting the acronym JEDI (not the Star Wars version) this chapter takes us full circle to the core values and principles that must guide us through an uncertain future. It outlines the challenges facing marginalized populations in the ED, with recommendations that focus on achieving a broader understanding of our diverse populations and equitable emergency care for all patients.

Chapter 15: This section ends with an exploration of healthcare strategies and lessons from other countries with liberal democratic values but different health systems. In an increasingly integrated world—and with the health of our patients at stake—it promotes the goal of becoming a true Learning Health System in which we use global knowledge and experience to continually improve.

Chapter 9

Coevolving in the Research and Quality Ecosystem

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We have a nascent pan-Canadian research network that is among the largest in the world. It is something to nurture as we look to the future.

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Over 20 years ago, Bégin et al criticized Canada’s fragmented healthcare system, [1] and described it as “a country of pilot projects.”. Proven innovations were rarely implemented, funded, or sustained, resulting in wasted investment, time, and effort. Unfortunately, the same can be said about Canada’s health research infrastructure, as revealed during the COVID-19 pandemic. At the time, many Canadian researchers looked on enviously as the UK’s National Institute for Health and Care Research (NIHR), among others, rapidly pivoted to launch pragmatic trials among Britain’s hospitalized COVID-19 patients. [2]

Within four months of the World Health Organization declaring a pandemic, the NIHR had completed and was reporting preliminary results from the RECOVERY Trial. [3] It determined that dexamethasone reduced 28-day mortality in patients with severe COVID-19. [4] Enabling and funding multicentre trials of the highest calibre rapidly changed practice and recommendations, with an immediate effect on clinical practice in Canada.

RECOVERY’s success was due to a pre-existing research network, the NIHR. In 2006, the UK government created the institute with a mission to support the National Health Service by enabling researchers to conduct cutting-edge research that focused on patient and population needs. [2] The NIHR can pivot its network quickly to focus on a single research question once it passes peer review. When COVID-19 was declared a pandemic, the NIHR simultaneously and rapidly provided funding, data sharing, privacy agreements, national harmonized ethics

approval, clinical care and consent for its 176 members to begin the mammoth task of mounting this large-scale trial. [5]

More research networks are being established internationally. For example, the International Severe Acute Respiratory and Emerging Infection Consortium (ISARIC) facilitates clinical trial operations, such as adaptive platform trials, and creates generic protocols like the WHO Clinical Characterisation Protocol. ISARIC's goal is to create an international infrastructure that can efficiently keep up with the volume of knowledge required during a pandemic of a novel pathogen. This consortium produced the SOLIDARITY trial that globally evaluated interventions to treat COVID-19. [6]

These large multi-national networks likely saved hundreds of thousands of lives during the pandemic. By comparison, Canada lacked sustained research relationships, funding, infrastructure; [7] an efficient nationally harmonized ethics review process; uniform institutional privacy; and legal reviews. There were no flexible, pre-existing data-sharing agreements between the provinces or across the country. If this infrastructure had been available pre-pandemic, we could have rapidly accessed the real-time provincial data needed to accelerate pandemic research that would have provided comprehensive clinical or vaccine coverage information. [8] Further exacerbating our challenges was the emergency medicine workforce shortfall; in addition, the low numbers of Canadian researchers disproportionately impacted research.

Canada simply lacked the efficient processes or infrastructure to fund, launch and rapidly conduct multi-centre observational studies or trials. As a result, many researchers were unable to collect data at the speed necessary for timely clinical and policy decisions. Nor could they easily embed randomized control trials into routine clinical care, the way the NIHR could. [5] Consequently, Canada's COVID-19 research output was frustratingly slow and lacked impact.

The 2021 commentary by Lamontagne et al. in the Canadian Medical Association Journal echoed the same problems as Bégin et al. had outlined two decades earlier: Canadian research infrastructure is still inefficient, culturally separate from clinical medicine, and fragmented. [9]

This needs to change.

As mentioned in other sections of this report, more investment and mentorship are required to increase the physician per capita ratio. This includes researchers. To avoid the fragmentation of

a myriad of small, local topic-based research groups with limited capacity and sustainability, we must develop a pan-Canadian EM network with highly connected provincial (or geographic) nodes. Each should have the resources necessary to coordinate researchers across the EM spectrum, and facilitate inter-specialty, interdisciplinary and interprovincial collaborations. A fully-integrated research network would incorporate all stakeholders, including patients, knowledge users and government, so we can become a community of practice and learning health system.

The pandemic gave us pause for reflection. Shojania asked: “What problems in healthcare quality should we target as the world burns around us?” [10] Although the COVID-19 pandemic was the most widely recognized and urgent healthcare crisis, climate change, [11] the toxic drug crisis, [12] inequality, and systemic racism also require urgent attention through high-quality research and quality improvement. However, as Shojania points out, investment and effort continue to be spent on quality improvement projects and practice guidelines that have minimal outcome. [13][14] He consequently calls for change, and asks that efforts and funding be focused on the most urgent and impactful healthcare issues.

Emergency medicine faces many of the same questions: how can quality improvement and emergency medicine research evolve in our changing healthcare system to address the most urgent needs?

There is growing concern that traditional randomized controlled trials use exclusion criteria that are not applicable to the real-life, complex, and heterogeneous populations that are seen in our Emergency Departments. [15] Trials in Canadian emergency medicine have often limited recruitment to academic sites in urban areas, including those where researchers have personal connections. [16] This may have led to short-changing patients who have waited many years for the delayed results to become available, and in the meantime their well-being was impacted, with lives possibly lost.

Canadian emergency medicine research does, however, have a strong track record in conducting multi-centre cohort studies, [17][18][16][19][20] and the recent development of a pan-Canadian research network in Emergency Medicine, the Canadian COVID-19 Emergency Department Rapid Response Network (CCEDRRN), [21] (set up by NCER, the Network of Canadian Emergency Researchers) [22] builds on this. CCEDRRN has the potential to enable

rapid and more efficient implementation of studies across the country, including adaptive trials that offer the potential for us to identify the best treatment for a given health problem.

According to Lamontagne et al., improving Canadian research will require small steps, avoiding traps by using thoughtful design, performing baseline evaluations with benchmarking, evaluating the return on investment, and conducting dialogue with political stakeholders. [9] The CIHR-IHPSR (Canadian Institutes of Health Research - Institute of Health Services and Policy Research) is incorporating these changes by introducing the learning health system (LHS) framework with a community of practice. [23] The LHS connects researchers, healthcare providers, patients, and communities to improve the most relevant healthcare issue. By adopting quality improvement methods, it uses Plan-Do-Study-Act (PDSA) cycles, baseline evaluations and benchmarks to foster continual improvement. [24] British Columbia's emergency medicine community is re-organizing to become Emergency Care BC (ECBC), an LHS with a knowledge translation network that aims to implement new insights from research and quality improvement. [25]

Canada is developing big data platforms, an essential LHS building block [15] linked to digital health records, which includes external sources outside the healthcare system. In 2020, the Health Data Research Network Canada (HDRN) was created with the mission to use Canadian data to drive improvements in health and health equity. [26] HDRN is made up of 20 Canadian members who represent provincial, territorial, and national organizations with health data holdings. These are comprised of patient-orientated research unit data platforms [27] that can be used by researchers, policymakers and decision-makers. The barriers to rapidly and efficiently accessing multi-jurisdictional data are diminishing but will take time to overcome; yet HDRN is a critical piece of the much-needed pan-Canadian research infrastructure.

Researchers have historically worked in silos, but emergency medicine culture is changing rapidly. Canada's pandemic-driven research networks include CCEDRRN, NCER, the Long COVID Web, and the Emerging and Pandemic Infections Consortium [28] (one of five national hubs awarded through the Canada Biomedical Research Fund by the Government of Canada), [29][30] Aligned with the Quintuple Aim, [31] emergency medicine research is emphasizing patient-orientated outcomes. [32] In addition to patients, these research collaborations extend across multiple disciplines, methods, and stakeholders, knowledge users, and government. Inspired by the achievements in the UK, resources need extending to expedited, nationally-harmonized ethics review, together with simplified privacy and legal approvals of research

studies that include trials. This will require long-term government investment, and further development is needed to ensure sustainable funding.

Emergency medicine research is well-poised to contribute to learning health systems.

Recommendations: Coevolving in the Research & Quality Ecosystem

1. Increase funding, training, infrastructure, and planning to support and expand the emergency medicine research workforce.
2. Develop a pan-Canadian EM research network with highly connected nodes. Each node should have the resources necessary to coordinate researchers across the EM spectrum and facilitate inter-specialty, interdisciplinary and interprovincial collaborations. This network should incorporate all relevant stakeholders, so we can become an integrated community of practice and learning health system with a focus on achieving the Quintuple Aim.
3. Facilitate data-sharing across jurisdictions. Develop a simplified and harmonized national approach to funding, data-sharing, privacy and legal agreements, ethics approval and research consent. Eliminate the need for redundant data, ethics, and privacy processes for multicentre and multi-jurisdictional research.
4. Link clinical care, quality improvement, knowledge transfer and knowledge translation using models to move research rapidly to the bedside.
5. Emergency medicine research efforts and funding should focus on the most urgent and impactful patient and population healthcare needs.

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Chapter 10

The Future of Digital Health in Emergency Medicine

Preamble: The Lost Tourist

There are no quick solutions to fixing Canada’s emergency care systems. The reality is that pre-pandemic, our EDs were already overcrowded, patients waited too long, and staff suffered from work stress. [1] Our efforts should not be directed towards turning the clock back to pre-pandemic conditions; rather, we should be focused on developing and implementing a blueprint for our ideal vision of Canada’s future emergency care.

The challenge of getting to that state from where we are is reminiscent of the lost tourist driving through rural Ireland who, when he comes across a farmer in a field, stops and asks him how to get to Dublin. The farmer thinks for a moment and replies, “Going to Dublin, are ya? I would not start from here.” Like the traveller, our starting place may not be the one we choose but is where we are.

There are a few key attributes of a better emergency care system we can work towards. One is meaningful horizontal integration with the rest of the healthcare system, especially primary care and community-based services. Too often in the ED we fly blind, with limited access to a patient’s medical history, care providers and prior investigations. Lacking the information to choose wisely, we choose safely, often ordering tests that would not otherwise be necessary. Similarly, our ability to connect patients for needed care or follow-up after ED discharge is often limited to ‘hope-and-a-prayer’ faxes, transmitted to clinics that may or may not agree to see the patient at some uncertain time in the future.

It is critical to ensure primary care and hospital records are available as part of a shared provincial electronic health record (EHR). [2] Better information sharing could also enable more cost-effective virtual emergency care. In some provinces today, the EHR—if it exists at all—consists only of a viewer with a somewhat random and incomplete collection of records in non-standard formats and timeliness. Accountability to populate EHR systems is also lacking: why not make payment for any publicly-funded healthcare service conditional on the real-time uploading of the clinical record to the EHR in a standard format?

A more integrated digital emergency care system will allow an actual appointment, with a date and time to be booked before the patient leaves the ED. Better yet why not have the patient

book it themselves, at a time of their choosing? Such certainty gives both ED provider and patient peace of mind. It can also enable the physician to be more circumspect in ED investigations, knowing there will be a timely follow-up.

Giving patients access to their own health data (which increasingly patients are considered to own) will empower them, give them more control, the ability to manage their care, and help improve outcomes. [2] Access does not need to be one way; patients could also enter their own health data (such as biophysical measurements from wearables), [3] report their symptoms, [4], and outcome measures, [5], which are critical to understanding the important results of ED care.

Finally, we must consider whether those we think of as ‘lost ED tourists’ do not see themselves that way. While some patients would almost certainly seek care elsewhere if alternatives were available and accessible, many others decide to go to the emergency department simply because they believe they need care there. [6] The ED provides a one-stop shop for medical assessment, labs tests, imaging, treatment, and consultation with specialists if needed.[10] Many patients know through personal experience that if they look for care elsewhere, they will likely be sent to the ER anyway. Efforts to focus on ‘real’ emergencies by limiting ED access for so-called inappropriate patients may be destined to fail. [7] Societal expectations may be partly at play; many patients today are used to getting what they need when they need it in the most convenient way (think Amazon, Uber Eats or online banking). The ED as a one-stop-shop may be the health system’s version to this phenomenon. Rather than devising strategies to reverse these trends, like generals planning to fight the last war, perhaps we need to embrace the fact that today’s patients are voting with their feet, and plan accordingly.

This requires re-imagining EDs and building the necessary digital integration with primary and community care. The answer lies in an integrated care network with:

- Improved supports for older persons with frailty.
- Better mental health, addiction, and social services.
- Enhanced access to 24/7 diagnostic testing.
- A full suite of follow-up clinic and services accessible in the ED.

Although this may seem overly optimistic, the truth is innovative examples are increasingly found in our system but remain a patchwork. These range from EDs designed with specific supports for geriatric care, [8][9] pathways for rapid low-barrier access to addiction services, [10] and homeless shelter services integrated with EMS. [11] They must be scaled up and properly funded, with adequately trained members of a diverse healthcare team.

In this journey of health system transformation, all of us—patients and providers alike—are lost travelers, and it’s a long way to Dublin. If we are ever to find our way, we must envision and then build an innovative and integrated future state for emergency care together, using all the tools at our disposal.

Introduction

This chapter aims to map out the current landscape of Digital Health (DH) and Virtual Care (VC) in emergency medicine, identify opportunities and areas of concern, and propose a roadmap where these tools can be effectively embraced as integral parts of our discipline. We take it as self-evident that Canada should continue to advance the meaningful use and adoption of interoperable electronic health records. They enable healthcare providers to access and exchange patient data easily, even between different EHR platforms. For example, computerized provider order entry, where patient data is recorded electronically, allows doctors and healthcare providers to manage care orders such as prescriptions, tests, or treatments.

Below, we focus on VC as well as some emerging technologies that could make a valuable contribution to emergency care.

The Pros and Cons of Digital Health and Virtual Care

Digital Health (DH) encompasses a rapidly advancing collection of technology-enabled tools to improve access to healthcare services and information. The Health Information and Management Systems Society (HIMSS) states that, “Digital health connects and empowers people and populations to manage health and wellness, augmented by accessible and supportive provider teams working within . . . digitally-enabled care environments that strategically leverage digital tools, technologies and services to transform care delivery.” [12]

The World Health Organization (WHO) identifies three key objectives in adopting and scaling up DH to “accelerate global attainment of health and wellbeing”: [13]

1. Translating the latest data, research, and evidence into action.
2. Enhancing knowledge through scientific communities of practice.
3. Systematically assessing and linking country needs with supply of innovations.

Emergency medicine can capably contribute to all three objectives through health services research and implementation in urgent and emergency care domains.

While the potential for DH to transform healthcare has been recognized for several decades, the pandemic precipitated its rapid and massive clinical adoption through Virtual Care services and remote patient monitoring. [14] These practices facilitated the delivery of services, while maintaining social isolation to avoid viral transmission, in compliance with public health policies. The rapidity of DH adoption led to both opportunities [15] and challenges [16] for emergency medicine.

On the one hand, appropriate use of DH and VC can potentially reduce emergency department surges, overcrowding and long wait times. It can provide support and knowledge exchange with colleagues practicing in rural communities, as well as supporting safe discharge and patient self-management through remote monitoring.

On the other hand, flawed design and implementation can result in paradoxical overcrowding of EDs through poor VC case management by health professionals who unnecessarily send patients to the emergency for care. Additionally, VC's attractive practice and compensation models can draw emergency physicians away from the ED where they are most needed.

It's essential to purposefully integrate these approaches with traditional emergency medicine service delivery; they can maximize patient safety and convenience, and provide value to the healthcare system. Working towards a future of hybrid care [17] that fulfills the Quintuple Aim will preclude the need to choose between VC or in-person care, but rather encourage the thoughtful combination of both to optimize emergency health service delivery and transform our specialty. [18]

How Can Digital Health Creatively Support EM?

VC is the best-known and most widely used type of digital health in emergency medicine. COVID-19 provided the impetus for many hospital-led VC programs across the country. Their adoption aimed to preserve the healthcare system's scarce in-person resources, while

increasing access to care. Some EDs in Ontario began offering a virtual ED for patients with urgent, but non-life-threatening concerns.

Prior to the pandemic, other emergency VC services included telemedicine to support prehospital care. [19] Patients in BC and Alberta who contacted 811 were triaged by a nurse to attend an ED, and instead were assessed virtually by an emergency physician. The preliminary results were promising, with such physicians safely and cost-effectively diverting a significant number of patients away from the emergency department. [20][21]

Post-pandemic, EDs face overcrowding and long wait times. [22][23] VC can mitigate this, as evidenced by British Columbia's HEiDi project, which resulted in high patient satisfaction and ED avoidance in lower acuity cases. [20] DH is especially beneficial for healthcare providers if VC is accessed with provincial health records; this offers seamless communication with primary care, along with more transparent and efficient prescribing of diagnostics and therapies.

Patients who need emergency care can benefit from home monitoring and wearable technologies which can be divided into out-of-hospital and in-hospital devices. In the community, these can be paired with smartphone apps that can detect chronic deteriorating health conditions, such as rhythm changes in patients with atrial fibrillation, track changes in spirometry (breathing capacity) in those with lung disease, [24][25] and measure adherence to oral medications. [24] Monitoring medications after discharge from an ED can help patients recovering from acute injury, tracking opioid use for example. [26] Other wearables are specifically designed to act as an overall health safety net, capable of tracking and automatically alerting family and/or healthcare providers about changes in vital signs, and potential falls. [27] In hospital, wearables can monitor patient vital signs, and remote telemetry can gather real-time information on patients who are not in a physical space with monitors. [28] Given worsening crowding problems in Canada's EDs, this could be particularly beneficial.

In the future, machine learning (ML) and artificial intelligence (AI) will play important roles in the ED. While the black box of AI functionality, privacy and medical liability need to be addressed, there is no doubt it can lessen cognitive load and stress by adding a level of predictive modelling to medical decision-making for physicians. [29-31] AI has demonstrated promise in helping to interpret diagnostic imaging and predicting fatal infections like sepsis. It has also been able to assess patients who may suffer a lack of blood flow to the brain and might be at risk of a future cardiac event. Recent leaps in large language processing, such as ChatGPT,

suggest AI's added potential to help provide detailed medical records based on short instructions, without providers having to create a template.

The Challenges of Incorporating DH and VC into Emergency Medicine

“

Precious resources must be focused on safe public delivery of emergency department care - and not on digital health privatization.

”

VC in medicine is well over a century old, [32] and remote communities in Canada have used it to help treat emergency patients well before the COVID-19 pandemic. Nevertheless, there are ongoing challenges that must be addressed, including:

- Data security concerns and privacy.
- Limited physical exam options.
- Health equity concerns, for example the risk of alienating vulnerable groups due to technology and access issues. The homeless, older persons and new immigrant populations are prime examples.
- The perception among many emergency physicians that virtual visits have increased ED visits. A recent study by Kiran et al demonstrated that physicians with a high proportion of VC did not have higher ED visits for their patients than those who provided the lowest levels of virtual care. [33] Further study, addressing the full spectrum of ED-UC VC, is needed.
- Workforce issues, including those in which the limited resource of emergency physicians is drawn to less onerous, but less essential work in certain VC settings

- The loss of in-person care, which could adversely affect the culture of emergency medicine and the benefits accrued from face-to-face care contact between doctor and patient.

The Canadian Medical Protective Association (CMPA) has set out the following additional challenges that must be considered when providing VC: [34]

- Risk of exacerbating the fragmented approach to healthcare across Canada.
- Inconsistency in standards and guidelines regarding when it is reasonable to use virtual care.
- Lack of proper infrastructure and training on the various modalities of virtual care.
- Lack of access to secure virtual care platforms.

A major concern is the private involvement in DH development. While innovation is welcome and fuelled by entrepreneurship, careful guardrails are needed to ensure that private interest does not influence the processes or privacy of care. [35,36] Precious resources must be focused on safe public delivery of ED care—and not on DH privatization.

Visioning the Future with Digital Emergency Medicine

The need for emergency medical services continues to rise, resulting in a shortage of resources and an overwhelming workload for EM practitioners. The situation has been extensively described elsewhere in this report overcrowded EDs, long wait times, and limited availability of essential supplies and equipment. DH includes a set of invaluable tools to help emergency care systems scale up services, improve patient outcomes, reduce mortality and morbidity, and better manage data to deliver healthcare. [37] DH must not replace in-person care, with its attendant tangible and intangible benefits, but can augment and complement its overall provision.

DH should also be considered an adjunct to human resources. ED staff can actively participate to integrate and implement DH into the clinical workflow by identifying the “why, what, how” of DH projects and prioritize them in specific purposes. ED leaders are encouraged to participate in DH research and implementation in an integrated manner within the community healthcare system (hospital, primary care, mental health program, etc.) as well as within provincial, national, and international networks.

Conclusion

Digital and technological innovations are scaling rapidly, and medicine continues to adopt and implement the best of them into every specialty. In a future not too far from now, DH will transform medicine. Metabolomic (the study of small molecules in a cell or tissue) and genomic (gene-related) findings mean treatments can be customized to a person's genetic makeup. This will change the way we treat patients, choose and tailor pain medications, antibiotics, or antidepressants for instance. AI will accelerate notetaking and prescribing, [38] as well as helping to monitor patients, and detect diseases in early stages. These areas of research will open doors to personalized diagnostics and treatment. Emergency medicine leaders must be proactive by integrating these technologies to enable the best possible patient outcomes.

DH is an inevitability in emergency care. The question is not whether DH will be adopted, but rather how technology can help forge a path to achieve the Quintuple Aim of improved patient experience, better population outcomes, lower costs, an empowered workforce, and health equity for all Canadians. The latter two are worth reiterating: if DH proves a burden to providers, and inaccessible to our most vulnerable, this technological revolution will be met with resistance rather than acceptance. It's therefore imperative to understand both the vast potential and the pitfalls of DH, so we can choose future applications and resource allocations wisely.

Recommendations for Digital Health in the EM

1. EM leaders in Canada must work together with all stakeholders to build a DH record system which allows access for both patients and direct healthcare providers.
2. To achieve this, health information systems should be integrated at regional, as well as F/P/T levels.
3. Emergency physicians must embrace leadership and stewardship roles in DH, to ensure that the most effective initiatives are supported and that precious public resources are not diverted to frivolous ventures or privatization of DH.
4. EM specialists should assume key roles in the regulation of DH applications in healthcare by way of legislation and government policies.

5. Departments of EM and EM professional societies should collaborate in national and global translational (practically-oriented) research to best apply digital health's strengths to EM's needs.
6. EM training and professional development should be reviewed to ensure core competencies related to the use of DH are taught.
7. Digital health should be a focus of quality improvement initiatives at hospital EDs and academic ED departments.
8. Appropriate consideration should be given to the varying levels of digital literacy, access, and education in Canada's populations to help prevent barriers to the equitable and fair implementation of digital ED health. [39,40]

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Chapter 11

Managing Intergroup Relations

Throughout our discussion of how to design, run, adapt, and improve our system, an inescapable theme is the importance of intergroup collaboration. Collaboration across silos is notoriously difficult to achieve, and efforts to spread better practices or change outmoded structures often screech to a halt at intergroup boundaries. While a full exploration of change management and implementation science is beyond the scope of this report, the problem of intergroup conflict is so glaring and so pivotal to ED–system relations, that it seemed essential to devote a section to this topic.

Conflict among the programs, sites, professions, and specialties that provide care impairs how systems function, and prevents a shared vision for change from developing. Unfortunately, such conflict is pervasive in healthcare. [1] It certainly appears in the emergency department (ED), where a diffuse patient population and complex interconnections with other departments create prime conditions for strife about who “owns” which patient.

A classic study documented how ED patient charts—supposedly repositories of objective information—were battlegrounds of inter-specialty competition and sniping, with potentially devastating consequences for patients caught in the crossfire. [2] The picture is hardly prettier at the system level, with its ubiquitous silos among professions, programs, sites, and sectors, not to mention between clinicians and management. [3]

Why, then, are intergroup relations so problematic, and what can we do about it?

Getting to the Root Cause

To start with, this isn’t an interpersonal issue that can be solved by sending everyone for training in communication skills: the problem doesn’t reflect lack of skill, but rather the active expression of strongly-held social identities. [2] These are the parts of people’s identity that come from being a member of a group or category, such as one’s nationality, gender, profession, or department. While there are many formal and folk theories of how groups operate, social identity theory [4,5] outperforms with its comprehensiveness, theoretical coherence, and robust evidence base. [6] It provides a broad, multifaceted approach to understanding how people interact with others within and between groups.

Decades of research have illustrated the powerful force of social identity; even meaningless groups assigned in a lab can influence the way people treat in-group vs. out-group members. [4-6] In reality, of course, social identities are not empty labels, but include meaningful identity content (such as group-defining characteristics, norms, and values) which makes them all the more powerful. [7]

Why do we categorize ourselves and others? Doing so serves two deep needs: the cognitive need to simplify the social world, and the emotional need to identify with something greater than ourselves. [4,5] In other words, social identity isn't going away. Nor should it. Although negative outcomes, such as prejudice, discrimination, and conflict come to mind, shared identity can also be the wellspring of collaboration, altruism, and solidarity. [8] The question is not how to get rid of social identities (we can't) but how to manage them so that their effects are positive instead of negative.

The most obvious solution is to urge everyone to abandon narrow distinctions and transfer their identification to one all-encompassing group. After all, aren't we all here for the patient? We see how when a crisis strikes, say, after a natural disaster, or at the height of the pandemic, everyone unites behind a common cause, putting aside intergroup rivalries—only to take them up again when the crisis abates. Why can't we all simply identify as healthcare providers, or indeed, as members of humanity?

It's not that simple. For one thing, we are wired to pay attention to intergroup contrast. [5] Under most circumstances, an abstract, all-inclusive category provides very little information about the social world. It also tends to have limited emotional resonance; it is hard to get excited about who we are if nothing distinguishes us from anyone else. All things being equal, groups with high distinctiveness (owing to their small size, unique identity content, and/or alignment with meaningful physical boundaries) are most likely to be significant to us, as observed both within and outside healthcare. [3,5] So although a crisis can temporarily override intergroup distinctions, we should not be surprised when they surface again.

Additionally, people react unfavourably to the prospect of a valued identity being removed or altered. [8] Unfortunately, identity threat, as it is called, can easily be triggered by well-meaning appeals to put aside intergroup differences in favour of the common good, [1.9] especially if they come from an outgroup. This is even more likely if the subtext is “we'd all get along if only you people would be more like us,” an appeal for unity that appears more often than you'd

think. [10] But the problem cannot be remedied merely by crafting better messages: any perceived challenge to a valued group's existence, status, distinctiveness, or norms—essentially any attempt to get people to work together differently—can trigger identity threat, and spark resistance.

So how can change ever succeed?

Strategies that Work

Change can take place by working through social identities, not against them. [1,6] A diverse body of literature has uncovered a sequence dubbed reinforce-redefine-replace. [10] Counterintuitive as it may seem, agents of change must start by reinforcing existing identities, reassuring members that the groups and group-defining values they cherish will not disappear. Once these identities are secure and not under threat, members may entertain ideas that somewhat redefine the group and/or its relationship to others, so long as a strong link to the past is retained. Eventually, a new conception of group identity, or of an intergroup relationship, may come to replace the old.

The literature offers diverse examples of reinforce-redefine-replace sequences, such as the following:

Building a Mosaic Identity

Several organizations struggling to improve staff engagement have found the ASPIRe (Actualizing Social and Personal Identity Resources) model [9] helpful. After a phase of discovering what sub-groups (e.g., profession, department) are locally meaningful, employees meet in identity-based subgroups (reinforce) before coming together to identify commonalities (redefine) and finally set shared goals (replace).

This process seeks to build a mosaic identity that recognizes each subgroup's uniqueness as well as its contribution to a larger whole. Separate from tests of the ASPIRe model, the theme of mosaic identity has emerged strongly from case studies of organizations that have achieved a high degree of interprofessional collaboration, such as the Dana Farber Cancer Institute. [10]

Reinforcing Another Group's Identity

Conflict between managers and physicians is common in healthcare, and many hospitals have tried to repair strained relationships. Leaders' efforts often begin with overtures to reopen

communication with physicians and build one-on-one relationships, but then what? The most effective next steps are typically those that reinforce physician identity, for instance by supporting their ability to act as a group. This might include encouraging the formation of a physician advisory board and compensating members for their time; upholding physician norms such as keeping meetings brisk and action-oriented; and using language that belongs in a clinical setting rather than a corporate boardroom. [12,13] Such actions can help advance the intergroup relationship to a point that allows cooperation around specific objectives (redefine), and eventually, the development of shared goals and structures (replace). However, this process cannot be forced or rushed. One hospital CEO, emboldened by the success of early efforts to de-escalate tension, decided to leapfrog over stages, and moved quickly to ask everyone to create a common agreement for working together. Conflict immediately flared again, and the CEO was back on the phone with the social identity consultant, who backed away slowly. [12] Even a smaller leap from interpersonal strategies to the redefine phase has shown evidence of backfiring. [11]

Honouring the Past

Back in the 1950s, nursing textbooks would praise Florence Nightingale as the physician's loyal helper, a subservient role considered part of nursing identity. As the decades advanced, gender roles changed and nursing roles along with them, but the textbooks could not very well abandon their pioneer. So, they did not. They just let the idea of subservience quietly slip away, while focusing on aspects of nursing identity that did not change, such as being nurturing. The authors also began to introduce new aspects that were more consistent with equal status, such as patient advocacy, a commitment to holism, and eventually, the possession of a distinct body of scientific knowledge. And who did they position as the scientific, holistic patient advocate? You guessed it: Florence Nightingale. [14]

At no point did the textbooks explicitly break with the past; rather, they emphasized a sense of continuity with history to legitimize new features of this identity. A similar process over a shorter time frame is seen in studies of physicians who participate in new models of primary care. In this case, their identity shifts from autonomous expert to head of team by gradually incorporating new elements that are perceived as congruent with the old. [15]

Putting it Together

The literature also suggests that identity mobilization works in alternation with practical, concrete changes to the working environment. [1] The purpose of reinforcing and redefining identities is to build enough support to implement practical changes; once implemented, such change can stimulate further identity reshaping, enabling a more extensive shift in the next cycle.

Education and training are particularly important settings for social identity management. Interprofessional education programs have demonstrated positive impacts on both learners and patients and should continue to be expanded and refined. [16] It's also crucial that residency programs include opportunities for productive interaction among specialties, for instance, by ensuring that internal medicine residents rotate through the ED. Collaborative experiences during the process of forming a person's identity can promote identification with a group beyond one's own profession or specialty, and at the same time establish teamwork as part of one's professional identity.

This chapter has focused on managing the internal dynamics of the healthcare system. Of course, social identity theory has much broader applications. Better understanding of identity processes could enhance our efforts to combat racism in healthcare, and to promote EDI more generally. Social identity thinking may also help the health community engage more effectively with the public on health policy and public health issues.

Conclusion

There is no magic bullet when it comes to implementing system change: no matter how carefully social-identity-management strategies are selected and calibrated, the process remains difficult, and the outcome uncertain. Nonetheless, it can be helpful to block off time to examine potential strategies through this lens. Understanding how social identities work—in particular, the problem of identity threat and the promise of reinforce-redefine-replace sequences—can help change agents increase the chance of success.

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Chapter 12

Emergency Medicine’s Future Role in Health Policy and Advocacy

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Robust policies will avoid responding to the media’s flavour of the day, to the strongest pressure group, or to electoral shifts.

”

Background

Emergency department closures and crowding, with their potential lethal consequences, are garnering media attention across the country. [2] Building on shared national goals, it makes sense to have a coordinated effort to address these issues, and that is the purpose of this report, clearly articulated in our overarching recommendations.

But it will take more than words—however well-intentioned and informed—to produce meaningful change. That is where engagement in policy, public affairs and advocacy begins.

Healthcare in Canada is largely under provincial jurisdiction. The Canada Health Act provides conditions for federal health transfers to the provinces for hospital and medical care, but each province organizes and operates its own system within the very broad parameters of the Act. [1] Despite regional differences, however, healthcare shortfalls are widespread across Canada and similar in nature from province to province.

The Role of the Emergency Department in a Dysfunctional Health System

EDs fulfill a unique but increasingly difficult role in the health system. Through the patients they see, emergency physicians are witness to a host of social and health system ills that give them unique insights into the system and its failings.

The oft-used metaphor of the ED as the canary in the coal mine [3] is unfortunate, as it paints a picture of emergency staff as passive and reactive. The EM:POWER message is that ED professionals have the agency, credibility, and experience to be proactive, because we work at a critical healthcare intersection, the junction between community, prehospital, primary, and acute care. We provide services ranging from resuscitation to public health to geriatrics. EDs are the decision point for most hospitalizations, a gateway to urgent imaging, surgery, specialty care and critical care.

We are the only open door for many complex and marginalized patients and for growing numbers of those unable to access the right care in the right place. ED providers have a unique system perspective, a view of many possible pathways, including promising future directions. In that new construct, emergency physicians can be powerful agents of change, observing, anticipating, and responding to the health issues of the day, with a voice that resonates across the entire medical system.

How Can this Report be Used to Create Health Policy?

This report invites healthcare stakeholders to recognize the importance of EDs as barometers of overall system health, and emergency physicians as repositories of health system expertise. However, for any system to be functional, there must be an ever-present focus on purpose. We believe the Quintuple Aim [4] is the best framework to guide healthcare policy, and we've used it to inform the development of the EM:POWER report and recommendations.

Detailed action plans that cater to population needs will be essential to ensure the report has ongoing value. These are largely the purview of provincial health authorities and Emergency Care Clinical Networks [5] which we recommend be established to lead and coordinate clinical services and HHR planning. The report itself provides the framework and flexibility to allow local autonomy and decision-making; but the federal government holds a key coordinating role to connect provincial/territorial leadership from across Canada to help address common challenges. These include crowding, closures, and Health Human Resources (HHR) as well as to facilitate the establishment of accountability frameworks and disaster preparedness.

It is important for decision-makers to realize that the journey to a more cohesive and functional system will be daunting, take time, and will not conform to political cycles and exigencies. Strategies arising from this report must be based on a clear, depoliticized, long-term vision,

with short, medium, and long-term objectives. This avoids the one problem, one solution trap that ultimately fails and reverts to emergency backlogs.

The Practice of Emergency Medicine and CAEP Advocacy

Advocacy can be an important part of an emergency career, giving a sense of agency and connection to the larger problems that underlie our daily work lives. Organized emergency medicine can provide a powerful platform for addressing societal needs that manifest first or frequently in our EDs.

Beyond the current focus on crowding and closures, CAEP has also articulated positions on topics such as violence in the ED, opioid use disorder, gun control, intimate partner violence, homelessness, and care of the elderly. In addition, our organization is currently leading advocacy for national red flag laws to protect those at imminent risk of harm, such as victims of intimate partner violence, those with mental health disorders and the elderly. [8] These topics are linked by way of their prevalence in vulnerable populations or those suffering health inequities. All visit our emergency departments, often feeling they have no other recourse.

During the first year of the pandemic, nimbleness was the order of the day, and a small kitchen cabinet of CAEP executive and public affairs leadership developed 18 position statements and communiques related to COVID-19, along with hosting over 40 media events. [7] This work was essential to preserving and protecting emergency staff, and to ensuring our patients continued to have access to emergency care.

In a post-pandemic world, access block, and the resulting negative impact on patient health and mortality will dominate the discussion for the foreseeable future. [8] While ED crowding has become an international problem, as we emerge from the pandemic this has been particularly chronic and intractable in Canada. The problem is covered extensively elsewhere in this report, but the necessary changes will only come about if we have effective emergency medicine champions to engage with planners and decision-makers, within and beyond medicine.

Training Future Leaders in Public Affairs

As the EM:POWER Task Force formulated this report, we were frequently asked, “Who is this report’s target audience? Those providing care in the ED or those outside it?” While our proximate audience is within healthcare, the ultimate drivers of change are those who consume it, the citizens of Canada, our patients. They will demand system improvement through their

publicly- elected officials. The importance of public affairs to emergency care thus becomes self-evident.

Succession planning is important in any political sphere, and this is no different. There are notable emergency physician public affairs thought leaders, who for decades have increased emergency medicine’s profile and advanced its priorities. However, there is little to no formal education in public affairs within EM training programs, even though those in the ED are inextricably linked to, and impacted by, health policy. EM training programs would therefore do well to include such training within a larger Health System Sciences curriculum [9] to nurture the next generation of public affairs leaders.

Recommendations for Emergency Medicine’s Future Role in Health Policy and Public Affairs

1. CAEP should actively engage with federal /provincial/territorial ministries, health policy experts and medical organizations to promote the report and its recommendations.
2. Provincial ministries of health should fund and enable Emergency Care Clinical Networks (ECCN) and integrate them with the broader Healthcare system governance structure.
3. The Provincial/Territorial Council of Deputy Ministers of Health should establish and fund a National Emergency Care Council to provide expert advice to each provincial ECCN; connect/coordinate provincial leadership from across Canada to help address key challenges (e.g., crowding/closures/human health resources); and assist in the development of accountability networks and disaster preparedness.
4. CAEP should continue alliances with organizations who share their goals and objectives such as CMA (Canadian Medical Association), NENA (the National Emergency Nurses Association), IFEM (the International Federation for Emergency Medicine), the Society of Rural Physicians of Canada (SRPC), and the Coalition for Gun Control.
5. EM:POWER’s framework recommendations should be presented to provincial and regional ECCNs as a basis for system redesign at a more granular level, based on local population health needs and resources.
6. EM training programs should include public affairs as part of a Health Systems Science curriculum, to educate residents and nurture the next generation of public affairs leaders.

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Chapter 13

Emergency Medicine in the Era of Climate Change

“

While research has found that most physicians believe climate change is a health threat, they do not feel prepared to manage the situation.

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The overarching purpose of this report is to catalyse system redesign to allow for better emergency care in the future. Climate change is the biggest global health threat of the 21st century, [2] and tackling it is our biggest health opportunity. [3] We exist within a global ecosystem in which the health of our patients and our future ability to treat it are inextricably intertwined with the world around us. [1]

Though emergency medicine has traditionally given little thought to our environment beyond illness resulting from extreme heat or cold, our very ability to do our job with the needed resources is now threatened by the potential for supply chain dysfunction, infrastructure challenges, and social disorder attributable to climate change. These challenges coexist with increased patient presentations for physical and mental health compromise related to wildfires, floods, emerging infectious diseases and much more. [4]

This situation is being met by an emergency medicine workforce that is significantly under-educated on climate-related health issues. Curricular surveys show most medical students are still not being taught about climate change or air pollution, [5] and while research has found that most physicians believe climate change is a health threat, they do not feel prepared to manage the situation. [6] Only a minority of those surveyed by our EM:POWER Task Force feel climate change is a very important (11%) or important (22%) issue facing the Canadian healthcare system overall [EM-POWER survey]. This rate of change in our thinking isn't keeping

up with what’s happening on our planet and is unlikely to achieve a viable outcome because just as time is brain, time is planet.

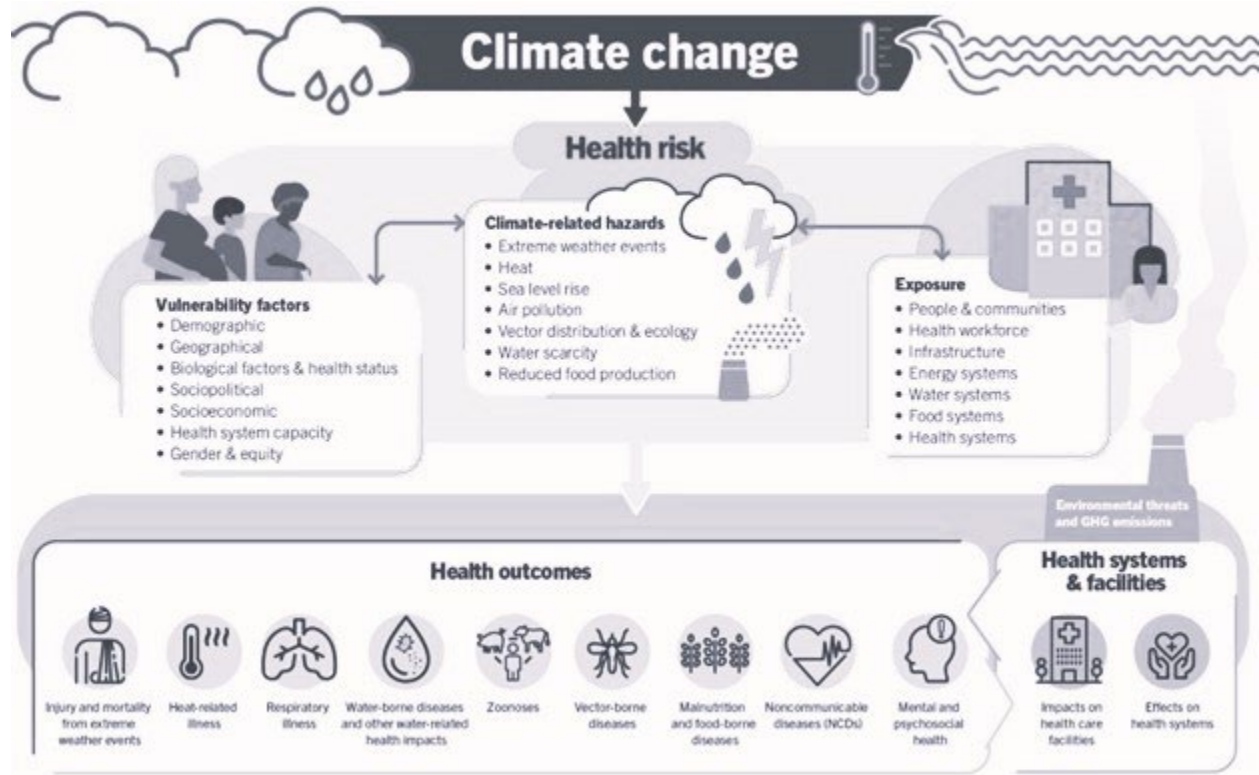


Figure 20. An overview of climate-sensitive health risks, their exposure pathways and vulnerability factors. Climate change impacts health both directly and indirectly, and is strongly mediated by environmental, social and public health determinants. (World Health Organization Report, October 2023)

Emergency medicine must use the breadth and depth of its collective knowledge and skill—in science, education, disease management, bioethics, and advocacy—to address the challenges of this new era of altered planetary physiology: the Anthropocene. [7]

Physical Health	Zoonoses (infectious diseases spreads from animals to humans) Heat/Cold Injury Respiratory/Cardiovascular illness Hurricane/Floods/Drowning
Mental Health	Geographic displacement and associated mental distress, mood disorders, suicidality. Weakened social cohesion, violence, aggression
Costs*	Increased ED visits Increased hospital admissions Displaced populations
Equity	The greatest impact of climate change is on marginalized populations, such as: Poor/homeless Visible minorities Workers in hazardous conditions (e.g., construction) Those living in environmentally-fragile areas. Those with pre-existing health conditions Older persons Children Those with disabilities
Access	Hospital evacuation Crowding with decreased access
Workforce	Overwork and burnout, leading to attrition. Increased absenteeism Leaving areas inordinately impacted by climate change
Quality	Crowding and boarding with negative care experience Negative impact on healthcare team well-being Exacerbated health inequity Increased costs Negative impact on population health Supply chain disruption

Table 6. Impact of climate change on health and health systems [8]

*Findings replicated by the Canadian Climate Institute [9]

Priority Areas for Action and Recommendations

There are four priorities for emergency medicine as we reframe health and healthcare on a planet whose ecological foundations have become unstable:

1. Adapt to emerging conditions, now and in the near future.
2. Mitigate the trajectory of change.
3. Educate ourselves, our patients, and our elected leaders.
4. Do our part to make planetary health a societal priority.

Adaptation

Climate emergencies are already increasing in frequency and severity. There must be an understanding within emergency programs of local climate risks, along with adaptation of design and operational plans:

- Emergency physician leaders should be familiar with patient population-health, and ED operational impacts of current climate change events, such as wildfires, prolonged heat events, floods, and population displacement.
- Canada has a National Adaptation Strategy for climate change, [10] which hosts a Disaster Risk Reduction table. Much of this is relevant to emergency physicians and should be integrated into EM training (see Education below). Emergency medicine disaster experts should be integral parts of this conversation and sit at the table.

Mitigation

While measures to combat climate change are the foundation of our response to this crisis, it remains true that, whatever our response, some of the impacts of climate change will remain with us for years to come. Because of this, mitigation of potential immediate-term risks is critical:

- ED directors must be aware of the temperature and precipitation projections for their region, plan for the consequent operational impacts, and work with climate-savvy architects and engineers to design infrastructure for a changing environment, and
- Emergency medicine leaders must collaborate with governments and other healthcare stakeholders to ensure the necessary supply of pharmaceuticals and other products and mitigate their impact on the environment.

Education

Teaching of climate-related emergencies within a broader understanding of the Anthropocene should be part of residency training and continuing professional development. There is

evidence that the general population underestimates the immediate risks of climate change on health—such as mental health, infectious diseases, and heat-related illnesses. [11] Physicians therefore have roles as both learners and public educators in climate change:

- Because emergency physicians are familiar with treating patients impacted by extreme heat, wildfires, and floods, they should increase their role in public education related to climate change and climate emergencies, and
- CAEP should harness its internal expertise in education, research, and public affairs—along with allies from other disciplines—to help illustrate and mitigate the health impacts of climate change.

Prioritization: Make Health and Wellbeing an Overarching Goal

It will be impossible to create a highly functional health ecosystem in any individual country within a destabilized global ecosystem. Currently, no country meets its population’s basic needs while keeping resource use at a sustainable level. [12] And modelling suggests that it will be difficult to continue to increase growth in GDP while decreasing its impact on the planet. [13] This puts us at risk of crossing global tipping points that could lead to runaway warming and vast destabilization, the so-called hothouse earth. [14] An urgent dialogue is necessary to reframe our social priorities, and as stewards of the health system, physicians must necessarily become stewards of the planet as well.

Conclusion

The foundations of human health and health systems are being destabilized by climate change. All health professions require a reframing of their priorities and redesign of their systems to include an evidence-based, values-driven response to the ecological emergency facing us. This includes expanded education and professional development, engagement in national and provincial adaptation strategies, and leadership in the public domain. It’s a daunting challenge, but if there’s any specialty with the skill and character to adapt to rapidly-changing conditions, it’s emergency medicine. A broad understanding of the urgency and complexity of the emergency before us is lacking, but there is no shortage of information—and no time to waste.

Additional Reading

- The theme of direct health impacts caused by future weather and climate is frequently noted in the [Canada's Changing Climate](#) series subject area reports, which are essential reading for physicians.
- The [Climate Atlas of Canada](#) has a very accessible library of short articles, and the health section has some directly relevant topics.
- From the World Health Organization, the direct [impact of climate change on health](#).

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Chapter 14

Building on Values: Justice, Equity, Diversity, and Inclusion (JEDI)

The title of this chapter is borrowed from the (Romanow) Report of the Royal Commission on the Future of Healthcare in Canada, written over 20 years ago. [1] As we move forward in the redesign of emergency care, we must continue to ensure that we keep our core values in mind. The Canadian Charter of Rights and Freedoms, founded on the concept of a just society, [2] states that “every individual . . . has the right to equal benefit without discrimination based on race, national or ethnic origin, colour, religion, sex, age, or mental or physical disability.” [3] Yet, we witness daily examples where this standard is not met.

Health equity is defined as “the state in which everyone has the opportunity to attain their full health potential, and no one is disadvantaged from achieving this potential because of social position or other socially determined circumstances.” [4] The causes of health inequity do not begin or end with the health system, but with the social determinants of health that impede some groups from having access to the resources and opportunities others enjoy.

As respected members of society, physicians can and should be powerful advocates for social justice to ensure healthy living conditions for all. Most urgently, however, it is incumbent on us to tackle the systemic discrimination that persists within our own health system. This chapter will outline some of the ways we can do so, with a focus on ED staffing, leadership, and care of marginalized populations. It is important to note that the implications of JEDI go far beyond this brief overview; JEDI should inform all aspects of emergency care planning and be considered in relation to all sections of this report.

Many diverse and marginalized populations do not feel safe accessing care in the ED, often sensing that they are not heard and their needs are not addressed. [5,6,7,8,9] The scourge of anti-Indigenous racism has contributed to tragic deaths like those of Brian Sinclair [10] and Joyce Echaquan. [11] Healthcare is also plagued by additional types of racism, as well as ageism, ableism, sexism, homophobia, transphobia, and other forms of discrimination. An important part of the solution is to ensure the diversity of Canada’s population is reflected in its healthcare system. [12, 13] Representation matters; it has profound impacts on how people view and use the system, trust providers, and adhere to healthcare recommendations that affect patient outcomes. [14,15,16] Despite small advances in this area, significant disparities continue to exist among physicians with respect to representation, level of advancement, and

salaries by gender, age, and race/ethnicity. [17,18,19] Research demonstrates increasing harassment, sexual assault, hiring bias and pay inequity among women and racialized minorities, even when accounting for education, academic rank, geographic training, clinical hours worked, years of experience, and administrative roles. [17,12,20,21] The effects are further increased if someone identifies as being part of more than one equity-deserving group. [12] Just a few years ago, an Ontario ED was discovered to not have hired a female physician for 16 years, despite women making up over 40% of ED residents. [22] Hospitals and healthcare systems must ensure that they employ diverse hiring panels, mandate training to mitigate bias and regularly review staff makeup to evaluate whether it represents the population it serves. [23]

The lack of diversity is even greater within leadership positions, where racialized individuals are considerably lacking. Without diversity, teams miss key perspectives to guide decision-making and engender mistrust in underrepresented communities. Diverse leadership may be more likely to promote culturally sensitive care and foster a culture of anti-racism among staff and is thought to also improve patient experiences and outcomes. [12]

In addition to diversifying leadership and workforce, efforts should also be made to educate healthcare staff on the impacts of discrimination in medicine and incorporate JEDI into medical education (24). It's essential that all healthcare staff are trained to provide culturally-safe care to the diverse populations we serve. [25,26] A diverse workforce with proper training in JEDI has the potential to decrease treatment disparity, increase cultural sensitivity, and inform policymaking to facilitate change. [27]

Several other JEDI-promoting initiatives should be adopted as we move forward:

Enhance Inclusivity

Some easy-to-implement changes to enhance inclusivity within the ED include posting non-discrimination policies, using visuals that promote diversity, offering population-specific resources, and creating “all-gender” bathrooms. [28]

Collect More Data

It is essential to properly capture ED patients' gender identity. [26] In order to better understand the community that the ED serves, efforts should be made to collect expanded sociodemographic data, particularly race and ethnicity. Barriers to care, such as transportation,

food insecurity and housing, also need to be gathered. [26,29,30,31,16] Data must be leveraged to ensure we understand our patients' diversity, address the right problems, and evaluate our change processes.

Equitable Technology

It's important to ensure that the adoption of new digital technologies—especially those delivered privately—doesn't increase health disparities by providing care only to those who can afford the technology or have the cultural comfort and health literacy to use it. [32,33,34,35,36] Care should also be taken when implementing AI-based technology, to ensure biases are not further amplified.

Diverse Voices of Patients

As we look ahead, the patient voice, including diverse perspectives, must inform ED co-design and policy development, fulfilling the dictum nothing about us without us. [37,29]

Impact of Stress on Provider Bias

Finally, we note the synergy between the promotion of JEDI and the overall aims of this report. As the safety net for Canadians, the ED is the primary locus of care many patients whose health is affected by adverse social and economic conditions. Lacking access to care through other means, they are disproportionately impacted as the quality of ED care drops. [38] The stress of working in an understaffed, overstretched ED can impair a provider's decision-making, increasing the chance that racial and other biases will pollute clinical judgement that further exacerbates differences in care between populations. All measures required to create a functional system of emergency care, as discussed in other chapters, are also crucial to the pursuit of JEDI.

In addition to the recommendations below, we encourage you to read the excellent submission by the CAEP Health Equity Subcommittee (*Appendix 2*).

Recommendations for Building on Values: Justice, Equity, Diversity, and Inclusion (JEDI) in Emergency Medicine

1. Emergency care programs (ECPs) should promote diversity within leadership and among healthcare staff, to better understand and care for the communities they serve.

2. ECPs should foster patient and community engagement from marginalized groups in clinical service planning and delivery.
3. All ECP staff must undergo formal training to better understand the different cultures and populations they serve.
4. ECPs should expand the collection and utilization of sociodemographic data to better evaluate and address JEDI within their programs. There should be public reporting of key operational outcomes that impact marginalized and oppressed populations.
5. Academic departments of emergency medicine should contribute to the understanding and amelioration of inequities in emergency care delivery by supporting JEDI-focused research and multidisciplinary special interest groups (SIGs).
6. JEDI must be a paramount consideration as digital health is incorporated into Canada's healthcare system.

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Chapter 15

Lessons from Other Healthcare Systems

We are inundated with reports of Canadian emergency department closures, crowding, patient morbidity, mortality, dissatisfaction, and healthcare worker burnout. These are not unique to Canada; other countries with better performing healthcare systems are similarly challenged.

This chapter illustratively compares health policy approaches from several OECD countries and identifies potential best practices for Canada, covering the areas of workforce planning, system capacity, long-term care and private vs. public care. To provide inside as well as outside perspectives, we focus on countries in which at least one contributing author has clinical experience: Australia, the UK, and (in the long-term care domain) Sweden. Both Australia and the UK reliably score in the top four of the Commonwealth Fund's 11-country comparisons, with the UK occupying the top spot for years, until funding cuts began to erode access and equity. [5] Sweden tends to be in a mid-range standing overall, but along with other Scandinavian countries is considered an exemplar in aged care.

Last year, the Canadian Medical Association (CMA) [1] and health policy experts [2,3] outlined healthcare concerns that require bold government action. To achieve our goals, it is essential to be a Learning Health System, [4] open to lessons from the experience of our peers as well as our own.



Workforce Planning

CANADA

It is 2am, two hours past end-of-shift. I have just seen a patient whose appendix ruptured after 9 hours in our waiting room. An irate woman approaches me. She's heard there is single physician coverage overnight, and her husband has already waited six hours. I explain that our funding only allows for one night physician, but ask about her husband. He has had 3 months of abdominal pain, weight loss and cannot get a primary care physician since his doctor retired 2 years ago. Six weeks ago, a clinic doctor ordered an ultrasound. The doctor called today, reported that the scan showed an abdominal mass, and told him to go immediately to the ED for further investigation. I order a CT scan and ask the nightshift emergency physician to see him.

AUSTRALIA

I begin winding down at 9:30pm from a 3pm-11pm shift, but am on call until 8:30 the next morning. The senior registrar (a recent overseas hire) has arrived with an intern, a junior doctor, and a junior registrar for the night shift. There are 25 patients waiting to be seen, so I continue working until 4am. Earlier that day, a patient with appendicitis was referred in. He arrived with his GP's notes and a confirmatory CT report. The physician at triage contacted the on-call surgical registrar, and the patient was sent to the surgical assessment unit within the hour. Given increased patient demand, the hospital has created a second physician-triage role for the ambulance bay. There is an oncology hospital connected to our hospital, so I never see patients with undifferentiated masses in the ED.

UNITED KINGDOM

It is midnight. I'm covering the night shift for a missing senior trainee. The department is critically overcrowded, with 6 patients blocked in ambulances, 8 children waiting, and over 30 patients in the ambulatory area. I have a junior doctor, three less experienced doctors in training, and one advanced clinical practitioner with me. My colleague who started at 17:00 is tired and hoped to leave at midnight, but has agreed to stay until 02:00. We deploy two clinicians to the paediatric area and send the rest to ambulatory, leaving a skeleton team in the "majors" area. I apologize to patients in the ambulatory area, telling them they will be waiting many hours, perhaps all night, and if they need admitting they will likely spend the night on chairs since we have no more trolleys. I have made this announcement so often it is second nature.

Workforce Overview

In 2021, Australia, the UK and Canada had 3.9, 3.1 and 2.8 physicians per 1000 population respectively. [6] Australia also has more nurses (12.8 nurses/1000) than Canada (10.1) and the UK (8.7) (7). Many Canadian physicians are independent contractors, invoicing their provincial healthcare system on a fee-for-service basis. [8] In recent decades, many physician groups have negotiated alternate funding arrangements (AFA) with their provincial health ministries.

AFA contracts pay a defined income for specified work expectations; however, typically they preserve the physician’s independent practitioner status and do not provide pensions, sick time, vacation, health, or dental benefits. [9] Unlike their Canadian counterparts, Australian and UK hospital physicians are salaried employees. Compensation packages for physicians in Australia include retirement funds, prorated sick, annual, and 10-year service leave.

In Canada, physicians-in-training are employed by the university and require supervision until they’re eligible for licensure after a 2- to 7-year residency/fellowship. In contrast, Australian and UK physicians are licensed after their first postgraduate year (Foundation Year 1) and can practice independently. Australia and the UK have a higher physician workforce than Canada because of their large unsupervised physician-in-training staff who work at disadvantaged hours (up to 12 years in some cases) for less pay than consultants.

Canada

Canadian provinces pursue workforce strategies without interprovincial integration. Overall, personnel planning is fragmented, with insufficient planners using unstandardized data. As an example, Ontario’s Ministry of Health has a Workforce Planning Branch, [10] but its three databases are disconnected, not linked to medical training data, and do not provide trends or supply-demand analyses. [11,12,13] In addition, past provincial workforce planning models have not differentiated between certified emergency physicians (FRCP and CCFP-EM) and family physicians who work ED shifts as part of comprehensive rural family practice. There is also insufficient data on the number of ED hours/year, and trends worked by family physicians. Consequently, workforce planners would be unable to estimate how many new FRCP and CCFP-EM training positions are required to fill the current and growing gap in ED coverage (see Chapter 2).

In Canada, private recruiters pursue overseas healthcare staff; however, these individuals often learn post-migration that they lack the qualifications to work here. [14] Some provinces, including New Brunswick and Alberta, [15,16] use financial incentives to “poach” healthcare workers across provincial borders. Canada’s licensure is provincial, and healthcare workers can only work where they are specifically licensed. As of 2023, Ontario has now recognized the credentials of workers registered in other provinces and territories. [17] This move towards national registration is positive but will likely facilitate further poaching from other provinces. [18]

In 2016, the Collaborate Working Group on the Future of Emergency Medicine in Canada, created by CAEP, the Royal College of Physicians and Surgeons and the College of Family Physicians projected a national shortfall of 1,518 emergency physicians by 2025. [19] However, the recommendations of the report were not implemented by governments, resulting in no meaningful changes to workforce planning.

Australia

Research has suggested that Australia's approach to workforce planning and accreditation is superior to Canada's because of its strong federal involvement. [20,21] The Australian federal government coordinates workforce planning, training, interdisciplinary engagement, integration, adaptation, and strategic planning across all health disciplines. It uses comprehensive supply and demand data that describes training, migration, workforce aging, service use, and population demographics.

Workforce models are analyzed iteratively, using varying assumptions, as well as estimates derived from stakeholder engagement. Retention scenarios are also inputted into workforce models. [22] The Australian government has developed many proactive 10-year strategic plans. [23,24,25] These address regional shortages by augmenting the rural and remote workforce, using immigration policy and controlling Medicare provider numbers to adjust the number of overseas-trained physicians, and by funding medical students. [26,27] State and territorial governments staff public hospitals, provide training placements, and identify workforce shortfalls.

Australia has a unified national registration that ensures standardization of all 15 regulated health professions and allows practice across state and territorial borders. [28] With global physician and nurse shortages, international recruitment is controversial; [29] an exodus of UK physicians to Australia and New Zealand has exacerbated UK shortages, and Australia has been criticized for poaching. [30,31] The Australian Nursing and Midwifery Federation has recommended an increase in domestic training and declared that aggressive international recruitment is unethical. [32] To promote worker retention and limit interstate poaching, the New South Wales parliament abolished wage caps for junior doctors, paramedics, nurses, and other healthcare staff. [33]

Post-pandemic, unanticipated senior staff departures created ED physician shortfalls, especially in rural hospitals. In response, the Australian College of Emergency Medicine (ACEM) developed

guidelines for retaining senior emergency physicians. [34] Meanwhile, locums or junior on-call physicians cover nightshifts, [35] and senior ED physicians use virtual care links for review and supervision. [36] Many small rural hospitals that were previously managed by general practitioners have, in effect, lost their emergency departments, [37] and instead, nurses provide urgent care with virtual support. In some regions, the virtual ED physician is the only doctor available.

Australian virtual care also supports ambulance services, aged care, and primary healthcare networks; patient-initiated virtual consults with emergency physicians are available but require co-payment. This shift to virtual care has raised concerns about service duplication, lack of care coordination, care delays and questionable cost-effectiveness. [38]

United Kingdom

In England, workforce planning is national; however, it has been inconsistent, based on payroll data that does not adjust for part-time workers, and misclassifies providers by their contract status, rather than their function. The NHS is awaiting publication of an updated workforce plan.

England, as of June 2022, has a staffing crisis with 133,000 vacancies, of which 9,000 were medical. The Royal College of Emergency Medicine (RCEM) estimates the UK will need 6,300 whole time equivalent (WTE) EM consultants by 2038 but will fall 600 short. This does not account for changes that will extend consultant working hours overnight in major centres. In addition, many junior doctors are leaving to work overseas, and senior doctors are retiring early. Trends within the nursing workforce are poorly understood, but sustainability is a major concern. The NHS is adding non-physician roles for advanced clinical practitioners and physician associates, but their impact is uncertain, and many are leaving emergency medicine for primary care.

Learnings

Canada can learn from Australia's federal involvement and nationalized approach to the integration of data, regulation of healthcare disciplines, workforce supply-demand calculations, and 10-year strategic plans. It aligns with the Savage Model [39] discussed in Section Two (Optimize Access Points), Chapter Six of this report. The Task Force endorses CMA recommendations that Canada develop a national workforce strategy and eliminate interprovincial mobility barriers. This should involve national, or at minimum, provincial

workforce planning, using a standardized approach to data, measurement, and prediction as well as considering the effects of evolving provider work patterns and population aging. [40]

We recommend Canada expand physician capacity by increasing from the current 2.8 doctors per 1000 population to the OECD average of 3.6, [6] with distribution matching population need by type and geography. This can be accomplished partially through a judicious immigration policy, keeping in mind ethical concerns around poaching from countries with more severe provider shortfalls. Canada's physician workforce should grow primarily by expanding medical school enrollment, and through providing opportunity for many more Canadians.

To benefit underserved regions, Canada should introduce incentives to attract physicians to high-need specialties, such as emergency medicine. The health workforce capacity could also be enhanced by promoting the concept of working to full scope. This would mean greater (and graded) responsibility for residents and trainees. To complement the physician workforce, roles for nurses, pharmacists, social workers, nurse practitioners and even volunteers could be expanded as members of the emergency team. Because of Canada's licensing and training requirements, we are unlikely to move to the Australian model of licensed independent junior doctors; we therefore strongly advocate for increased training positions and national portability for emergency physicians.



System Factors: Hospital Capacity and Time Targets

CANADA

As my shift begins, there are 56 admitted patients waiting in the ED for an inpatient bed, several for over 48 hrs. Six are critically ill, waiting for ICU. In the hallway, I see a patient with a new pancreatic mass, whom I referred to General Internal Medicine two days ago. The patient is being discharged today with their entire 51-hr hospitalization spent in the ED. This unfortunate situation reminds me of a recent study comparing an Australian and Canadian ED. Between 2012 and 2016, as the Australian hospital's occupancy increased from 87.6% to 89.7%, the hospital increased its hospital beds from 714 to 930 and short-stay beds from 8 to 14. In contrast, when the Canadian hospital's occupancy increased from 97.6% to 99.6%, the hospital decreased its acute bed count from 343 to 313. It does not have a short stay unit. [41]

AUSTRALIA

Four admitted patients are waiting in the ED, but none are critical. During a typical shift, we admit 15 patients who move to a ward within 16 hrs. Today, only 10% of admissions achieved the 4-hour NEAT (56) target. I have assessed a patient with right upper quadrant pain whose bloodwork is pending. She is almost at 4 hrs, and her presentation seems like biliary colic, so I enter a bed request, consult General Surgery, and transfer her to the surgical assessment unit to ensure NEAT is not breached. I send an older patient post-fall to our 30-bed short stay unit (SSU) where patients can stay for 24 hours. I hand the patient over to an intern I haven't met before, but an SSU consultant will take over. My colleague informs me that her ED has admissions boarding for over 20 hrs. They plan to expand their short stay unit, but there will be delays due to staff shortages.

UNITED KINGDOM

I come on shift at 1700. Our resuscitation and major areas cubicles are all full, and patients are lining the corridors. I recognize several patients who are still here from yesterday. Many are older persons, some confused. Our "HALO" area, a decommissioned clinical decision unit staffed by paramedics and designed to facilitate ambulance offloads, is also full. If I need a resuscitation cubicle, I will have to rapidly decant a patient into a corridor space. There are 15 patients in ambulances waiting to be offloaded, so I send nurses and doctors out to care for them. The longest offload delay is over 6 hours, and the longest wait in the emergency department is 36 hours. My first job is to apologize to the family of a patient who came in yesterday and died in a side room because there was no inpatient bed for her. The family is understanding because they have seen the conditions in our ED, but for the patient it is too late, and the nursing staff are upset she could not be cared for in a more suitable area.

System Overview

Canadian healthcare governance is provincial; consequently, Canada has 14 separate healthcare systems, one for each province and territory, plus a federal system for First Nations people living on reserves, members of the armed forces and other specific populations.

Provinces and territories currently provide 78% of health funding, while the federal government contributes 22%. [42]

Australia's healthcare system is also federated with a similar division of federal and provincial powers; however, unlike Canada, there has been a trend towards more centralization with greater federal involvement. [20] Australia's public hospitals are co-funded by federal, state and territory governments. The federal share increased from 40% to 50% by January 2020 because of the COVID-19 pandemic. [43] Funding is aggregated in the National Health Funding Pool, then distributed to Local Hospital Networks [44] that are third parties for local hospital networks, state health departments and providers. [43]

The UK has a National Health Service (NHS), nationally funded but administered by separate arm's-length bodies for England, Scotland, Wales, and Northern Ireland.

While all three nations' systems are somewhat devolved, Canada's is the most decentralized, [2] and arguably the least actively managed.

In 2019, Canada had 2.5 hospital beds per 1,000 population, compared to Australia's 3.8, and the OECD average of 4.4. [48] According to the World Bank, Australia's 2019 health expenditure per capita of \$5,427USD was greater than Canada's \$5,048; however, Canada's expenditure represented a higher percentage of GDP than Australia's (11.0% vs. 10.2%). [46] The UK, at the end of a decade of austerity measures, stood at \$4,265 spending per capita (9.9% of GDP) [46] and 2.4 hospital beds per population. [45]

Canada

Most Canadian hospitals rely on global budgets negotiated with their health ministries, but Ontario, Quebec, and BC have shifted toward activity-based funding, where financing is dependent on the care and services provided. [47,48,49] The Ontario Ministry of Health (MOH) distributes funding largely through global budgets, Quality Based Procedures (QBP) and Health-based Allocation Models (HBAM). [48,50,51] HBAM allocates funding based on expected expenses that takes annual case volume with clinical, social, and demographic weight factors into consideration. It provides 38% of hospital funding, but there is a fixed total funding envelope, so if all the expected expenses at a hospital increases, the individual funding may not. [50] For QBP, which accounts for up to 30% of funding, a hospital must achieve specified quality outcomes for procedures, such as hip replacements.

Many Canadian jurisdictions have, at various times, set targets for ED wait times or length of stay. Generally, however, such targets have been too weakly enforced to constitute a

meaningful policy lever. [52] Where the (non) achievement of targets has been attached to consequences, these tend to be carrots rather than sticks. Hospitals in Ontario, and formerly BC, did receive pay-for-performance funds for achieving time targets. [48,53,54] Such funds are often reinvested in flow-improvement interventions such as observation units, [9] a strategy associated with modest benefits in some jurisdictions, though not in others. [53]

Australia

Australia's public hospitals operate mainly through activity-based funding, where the number, mix and complexity of patients are considered, [29,55] but some rural and regional hospitals receive block or global funding.

In 2012, evidence linking ED crowding with mortality prompted Australia to adopt the National Emergency Access Target (NEAT), under which 90% of all ED patients should leave the department within 4 hours. [56]

However, NEAT's outcomes were mixed and ultimately did not reach the four-hour target.

The substantial investments to achieve NEAT included [57]:

- Staffing augmentation, such as RN flow coordinators
- ED physician in charge
- Expanded working hours
- More allied healthcare workers
- New care models, and
- New hospital policies.

The new care models included short-stay units, team-based care, fast track, senior physician at triage, admit streaming, medical and surgical assessment units, and discharge transit lounges. And the new hospital policies introduced single call admission, over-census escalation, direct admission, and bed allocation,

The initiative reduced 30-day mortality in Western Australia, but not in other states, [58] and most hospitals could not achieve NEAT, especially for admissions. [56] Unintended consequences became evident. As patients approached the 4-hour mark, staff became stressed to abruptly prioritize them, resulting in data manipulation, gaming, decision-making and compromised care quality. [56,57,59] NEAT also compromised communication, morale,

teamwork, and education, negatively impacting organizational resilience, sustainability, and clinical outcomes. [60])

Despite NEAT, access block has persisted and worsened since COVID-19. A recent review by ACEM (the Australian College of Emergency Medicine) [61] recommended:

1. Reducing bed occupancy from 95% to 85% by increasing inpatient capacity
2. Establishing adequately resourced, meaningfully used short-stay units (not to serve as holding wards)
3. Expediting ED to inpatient transitions, and
4. Balancing time targets with patient safety metrics.

The New South Wales parliament [33] adopted ACEM's 85% occupancy recommendation, abolished healthcare wage caps to ensure retention, and implemented several service increases and process improvements. There was no time target recommendation because of concern about its punitive consequences. [33]

United Kingdom

Between 2003 and 2008, the UK shifted from global budgets to activity-based funding for hospitals. During this period, patient volumes increased, and length of stay decreased; however, as other major interventions were occurring simultaneously, it's difficult to assess how much the shift in funding contributed to these outcomes. [62]

In 2004, the government implemented a new standard, which required 95% of ED patients to be admitted, transferred, or discharged within 4 hours. Early top-down efforts to achieve this were often obscured by data manipulation and failed. [63] Later efforts focused on demand management, hospital process improvement, and changes to emergency care. These did dramatically reduce the proportion of 'long waiters', although the change was achieved in part by hastily admitting patients nearing the 4-hour mark. The average ED length of stay, however, did not decrease. [64] The 4-hour standard was last met in 2011, and system performance has since declined, despite many initiatives designed to meet this constitutional standard.

Ambulance response times, offload delays, [65] and numbers of patients waiting more than 12 hours in emergency departments have all increased substantially. [64] Estimates by the Royal College of Emergency Medicine (RCEM) suggest that up to 500 UK patients die every week because of emergency care delays. [66]

An important part of the picture is that hospital capacity has decreased; there are now about half as many hospital beds in the UK as there were 30 years ago. [67] The UK's beds-per-population ratio is now lower than in most OECD countries, [66] and hospital occupancy has risen well above the desired 85% level. The King's Fund is an independent charity founded more than 100 years ago that conducts research to improve health care in the UK. It released a recent report that suggested the greatest bottleneck is post-acute care, where after hospitalization, patients need medical support, either at home or in a specialized facility.

Intermediate (transitional) care capacity sits at about half the level of demand, while budget cuts have significantly reduced the availability of community-based long-term care beds, which are funded by local councils, outside the purview of the NHS. [67] Without expanded system capacity and a complementary policy, the 4-hour standard is insufficient to improve access.

A 2019 National task force failed to generate promising new strategies, and the UK government now favours a return to the 4-hour standard, but with a lower threshold of 76%. Even if achieved, the RCEM believes this target will not reduce ED crowding. Instead, its recommended solutions to ED crowding include prioritizing evidence-based interventions, improving hospital capacity and social services, ensuring the emergency medicine workforce is adequate, and introducing meaningful transparent performance metrics. [68]

Learnings

In the Canadian model of global budgets, every arriving patient is a cost to the hospital. More patients mean more stress on hospital resources. This creates an incentive to limit patient care and reduce access. [69]

We recommend that Canadian hospitals shift from global budgets with fixed funding envelopes and no embedded growth towards activity-based funding, which has become the international norm. Under this funding plan, every arriving patient is revenue. This motivates efficiency, flow, and throughput, allowing hospitals to expand capacity to better meet patient demand. [49]

However, we also recommend reviewing the positive and negative international experiences with activity-based funding before incorporating it into the Canadian context. [70] Flow targets provide clarity around expectations and can drive operational improvement, but they are only surrogate quality measures, and may lead to gaming or compromising patient safety. [71,72,73] They remain essential, but must be thoughtfully and carefully incentivized.

Aged Care

CANADA

I see an older patient who has become increasingly frail and is failing at home. With no community beds available, she waits 2 days on an ED stretcher and develops a delirium. On the inpatient ward, with little rehabilitation care, she becomes increasingly deconditioned. No longer a candidate for home care, she waits in hospital 6 more weeks for long-term care placement.

AUSTRALIA

I see an older patient who has become increasingly frail and is failing at home. After 2 hours in the ED, I transfer her to the emergency short-stay unit where she rests and has tea. The care coordination team is unable to mobilize her and recommend admission. She stays in an acute medical bed for 20 days and is discharged to a rehabilitation centre.

SWEDEN

I join a geriatrics outreach team (geriatrician and two public health nurses) for a home visit. We visit an older person with dementia who lives with his wife in a comfortable, municipally supported 2-bedroom unit. He is in a wheelchair and his wife is making breakfast. The geriatrician assesses him while the nurses replace the dressings on his legs for peripheral edema, and draw bloodwork. Since his diagnosis of heart failure 2 years ago, the team has been able to prevent any potential visit to the local emergency department.

System Overview

International long-term care (LTC) comparisons are difficult because of data limitations as well as variability in definitions and reporting of LTC beds. [74] However, we know that despite an aging population, Canada has invested less in LTC capacity than many countries, about 1.4% of GDP. [75] Sweden tops the list at just under 5% of GDP, while the UK and Australia stand at about 1.5% and 1.2% respectively. A recent international comparison suggests that England and Canada have the poorest access to LTC. [76] In addition to their lower public spending levels, these countries also rely less on client and family co-payments, and limit access based on the available LTC budget. In Australia, Canada, and the UK, care workers for the aged are in short supply and often poorly paid. [76,77,78]

Canada

Canada's LTC facilities may be publicly or privately owned (for-profit or not-for-profit), [79] but they are publicly funded and regulated by provincial governments [80,81] with federal

contributions. [82] Residents typically provide co-payments, with details varying widely by province. [83] Home care and community services represent approximately 6% of the health budget and are funded in a separate envelope; [84] services and co-payments, if applicable, also vary by province.

There are about 29 long term care (LTC) beds per 1,000 people over 65. [74] Long waits suggest that this is insufficient to meet demand: in 2021, more than 38,000 Ontarians were on a recent LTC waitlist, with a median wait time of 171 days. [85] Shortfalls in long term care also drive the Alternate Level of Care (ALC) phenomenon, in which patients who no longer require acute hospital care cannot be safely discharged, [86] and as a result, ALC patients, including those waiting for LTC, occupy 17% of Canada's hospital beds. [87]

The Conference Board of Canada has determined that Canada will need 199,000 more LTC beds by 2035, a doubling of current capacity. This will cost an estimated \$65 billion over the next 13 years, along with \$130 billion in operating expenses. (2019 \$CAD). While substantial, the benefits outweigh these costs, as it will unburden the hospital system, improve access to acute care, support 123,000 new jobs, and have a net positive effect on the economy. [88] However, it's important to note that estimates are based on current patterns of care; innovations that enable more people to age at home may reduce the need for beds.

Australia

Aged care in Australia is under federal jurisdiction, [89] with services including care homes, short-term, respite, transitional care, and four levels of home care. [90] As in Canada, the government subsidizes aged care with an expectation of co-payment from residents. Not-for-profit, for-profit, and government providers deliver aged care services.

In 2008, [91] the most recent data indicated that the average waiting time for residential care was 24 days.

As of 2015, the country had 111 aged care spaces (81 residential and 30 home care) per 1000 people aged 70+ and aimed to raise this to 125 by 2021-22. [92]

In 2022, patients with alternate level of care needs occupied 6.5% of Western Australia hospital beds. [93] But since COVID-19, residential care has become less popular, and home care is now favoured, with the result that wait times for aging in place have increased.

Separate from their traditional home care services, Victoria and Tasmania make substantial use of Hospital in the Home, [94] a virtual ward that provides acute care for patients who are considered part of a hospital's case mix. Each patient separation, or departure from hospital, is funded as an inpatient admission. A 2009 review revealed that one year of Hospital in the Home admissions (n=32,462) would have filled a 500-bed Australian hospital. [95] To support aged care, some regions have implemented virtual emergency services, and EMS residential outreach; [96] however, pre-existing GP support models within care homes also reduced ED transfers. [97]

Sweden

Under the Swedish Social Services Act, municipalities deliver aged care, funded by municipal taxes and government grants. [95] Municipalities must ensure that housing and residential areas accommodate older and disabled persons. A focus on enabling patients to live at home for as long as possible is a hallmark of the Swedish and other Scandinavian systems, combined with facility-based care as a last resort rather than a default option. [98,99]

Home services and special housing are provided publicly and privately, with a maximum copayment of 2,300SEK (about CAD\$300) monthly, which is adjusted based on income. [100] Sweden has created mobile multi-disciplinary geriatric teams for complex older persons who need more services, along with transitional units with physician oversight, and community ambulance nurses specifically trained to care for older persons.

Municipalities have only three days to transfer hospitalized ALC patients back into the community. If this goal is not met, the municipality pays the additional hospital costs; [101] as a result, Swedish hospitals have few ALC patients.

Learnings

We support the Conference Board of Canada's conclusions that large investment in LTC is necessary. This should begin immediately and continue as a 10- to 15-year health system priority. There is room for stronger federal input, particularly if this comes with funding, interprovincial standardization, and national strategic planning.

We recommend immediate investment in LTC transition capacity to address crippling ALC levels. This would:

- Expedite hospital outflow.

- Mitigate acute care and emergency access block.
- Decrease unit costs for ALC patients now stranded in acute hospitals.
- Improve rehabilitation and functional outcomes for older patients.

These units should be based on population needs, and reserved for their intended purpose—otherwise, they become holding units that fill up rapidly, yielding no benefit. [102] To prevent hospital transfers, LTC programs should introduce virtual support services, and partner with community paramedics to provide unscheduled care.

Substantial home care and LTC investment is critical, but should not occur without associated accountability expectations, including the extension of overcapacity protocols to the hospital–community transition (see Section 3: Accountability).

Canada should shift further towards the Scandinavian model of aging in place, offering a menu of subsidized home-based and residential services at different levels of intensity.

Resident/family co-payments should be set in a way that is consistent and equitable across residential care settings; increasing the role of co-payments may be appropriate where the alternative is self-funded housing, and where fees are income-adjusted to ensure equity.

We should not necessarily adopt Sweden’s municipal model; after all, a municipal model also exists in the UK, but underfunding and poor integration with the NHS make it more of a hindrance than a help. However, Canada should consider introducing mechanisms that allow money to follow the patient to the most appropriate location along the continuum of care. Processes should also integrate the governance and operations of acute and community care programs to ensure a smooth transition of care.



Private vs. Public Healthcare

CANADA

I encounter an active 76-year-old patient who twisted her right knee playing pickleball. She arrives with medial swelling and a limp. After assessing the injury, I diagnose her with a medial ligament sprain and possible meniscal tear. I refer her to a publicly-funded sports clinic where she can follow up with a physician, and acquire further imaging if needed. Because she is over the age of 65, she is eligible for publicly-funded physiotherapy (but it may take a few weeks) and I provide a list of outpatient clinics. If the patient wants to be seen faster, she can pay for physiotherapy privately.

AUSTRALIA

I encounter an active 76-year-old patient who twisted her right knee playing pickleball. She arrives with medial swelling and a limp. After assessing the injury, I diagnose her with a medial ligament sprain, possible meniscal tear, and refer her back to her primary care provider who can arrange further imaging and physio, as required. However, the patient tells me she cannot manage at home, and requests that I contact her orthopedic surgeon. The surgeon admits her to the private hospital for an MRI. I had earlier tried to transfer a patient with dementia and heart failure to the same hospital. The transfer was refused because of the patient's comorbidities.

UNITED KINGDOM

I encounter an active 76-year-old patient who twisted her right knee playing pickleball. She arrives with medial swelling and a limp. After assessing the knee, I diagnose a medial sprain, possible meniscal tear, and recommend follow-up with her primary care provider who can arrange imaging and physiotherapy. She states she cannot access her primary care provider, and there is a 6 month wait to see a physiotherapist. I advise that she can access a private orthopedic specialist or physiotherapist faster at her own expense.

Canada

Many argue that Canada should allow privatized healthcare, as other countries do, to offload public demand and improve access for all. However, evidence suggests this approach may bleed resources from the public system, improving access for those able to pay, but leave public wait times unchanged. [102] In discussing this, we must distinguish financing (who pays) from delivery (who gets paid).

The Canada Health Act mandates public financing of medically-necessary physician and hospital services, but other healthcare is financed privately or through a mix of public and private financing. This includes drugs delivered outside hospital, services by non-physicians, outpatient dentistry, most long-term care, and procedures not deemed medically necessary, such as cosmetic surgery. Presently about 30% of Canadian healthcare is financed out-of-pocket or through private insurance. Each province has some form of Pharmacare, [103] but have high

patient co-payments and/or co-insurance. This is in contrast to both Australia (104) and the UK, [105] where drug benefit programs are national and heavily subsidized.

Care delivery is also largely private. Many clinics are privately-owned, and most physicians are self-employed contractors who determine when they work, how much they earn, and what patients they see. There's high corporate involvement in for-profit pharmacies and long-term care facilities. Most concerning is that companies have moved into the provision of virtual urgent care which generates more health cost but unclear value. [106] Some provinces use private for-profit clinics to address elective surgical backlogs, such as cataract surgery. [107]

Is Private Better?

Will private care delivery offload the public system? It is unclear. Private facilities can mobilize resources quickly and may add care capacity, but private delivery, especially by corporations, carries risk. There is evidence that for-profit hospitals and nursing homes deliver poorer-quality care. [108,109] Private clinics tend to skim high-volume, low-complexity (high profit) work, and some offer privately-financed options that bend or breach Medicare principles. Private facilities also poach staff from the public system. Since COVID-19, provider shortfalls, high workloads and stress, job-related burnout, and relatively low wages have driven many providers—particularly nurses—to private agencies where they have more control, better hours, and higher wages. Hospitals are then forced to re-hire these agency nurses, paying them higher wages as well as agency profit margins. [110] Canadian nurses are also finding higher pay and better hours in the USA, [111] leaving understaffed Canadian hospitals, ED closures, longer patient waits and greater stress on those left behind. [112] Privatization introduces market forces that may be good for providers, but bad for patients and public financing. It seems inevitable, however, that privatization will increase over time.

Australia

In Australia, rural and remote care, academic medicine, and complex cases are concentrated in public hospitals. However, 40% of hospitalizations, 60% of surgical admissions (mostly elective), and 1% of emergency admissions are to private hospitals. [113,114] Private (for-profit and not-for-profit) hospitals charge patients and their insurance carriers and receive government subsidies for insured services. [113] These hospitals tend to skim “easy” patients and transfer those with more complex conditions to public hospitals. Conversely, public hospitals purchase

capacity from private hospitals for patients who are low-complexity, insured, and convalescing. [114]

Long public wait times drive patients into the private system, which provides Australians a choice but creates inequity. [115] Better compensation also draws providers to private settings, [114,115,116] but private hospitals do not provide full-spectrum care, so system integration and planning are weakened, and subsidies provide less return on investment. [114] Private surgical care could reduce public wait times if it increased surgical capacity by adding surgeons or operating time. But if it shifts surgical capacity (surgeon time) from public to private settings, it will not shorten public wait times, and it has not. [114,116]

United Kingdom

Despite universal healthcare, 10% of the UK population has private health insurance, either self-funded or through employment. [117] This is primarily to access elective or specialized care when waiting times are long, and it creates inequity. The UK government uses private healthcare to reduce wait times for elective surgery (such as hip replacement) and diagnostic imaging (eg CT or MRI), in the hope of increasing inpatient bed capacity. Based on the ability to pay, patients with urgent, emergent needs, low complex issues or day surgery can access NHS or private care. But complex patients with less urgent problems who need an inpatient bed may face long waits for treatment in NHS facilities; this is because private providers tend to choose simpler cases. Unintended consequences abound. For example, specialties that can provide private care are more attractive, and patients often pay higher rates to have problems addressed by private doctors, sometimes in NHS facilities. Patients with the ability to pay for outpatient care, such as physiotherapy, may do so.

A Word About the American Healthcare System

Explorations of what Canada can learn from other health systems is often met with resistance, for both good and bad reasons. The good is that we can't simply import another country's health system without also importing its history and culture; nor can we expect to find a magic bullet among the myriad features and initiatives that happen to exist abroad. The bad reason relates to the fear that looking beyond our borders means looking south to the heavily-privatized American system.

Based on inequities, the USA scores dead last in Commonwealth Fund comparisons, administrative inefficiencies and ballooning costs of its multi-payer system. [5] This is why we

did not include it in our comparative discussion. However, there are models of care within the US, such as the not-for-profit Intermountain Healthcare, [118] from which we can learn. Intermountain Healthcare is the pioneer of incorporating quality improvement into clinical care as a Learning Health System. [119])

Learnings

All 38 countries in the OECD (Organisation for Economic Co-operation and Development), including Canada, have private delivery of publicly-funded health services.

Canada differs from Australia and the UK (and all other OECD countries) in that private, for-profit hospitals aren't allowed under the Canada Health Act. Conversely, Canada also has more privatization in some sectors, such as Pharmacare and long-term care, when compared to Australia, UK, or Sweden. While private hospitals offer the promise of decanting patients from an overburdened public system, they also have a deleterious impact on the health workforce and exacerbate societal inequities. Highly-privatized systems do not fulfill the equity facet of the Quintuple Aim, which makes them incompatible with Canadian values.

Our current healthcare system is not nearly as accessible as it should be, does not consistently achieve patient or provider satisfaction, and has mixed population outcomes. Until we do better on these measures there will continue to be conflict between those calling for more privatization and those defending the promise of Medicare. There is another way, but a critical part of the Canadian healthcare redesign puzzle requires us to be a Learning Health System, [4] one that's open to the experience of others and balances the best of all systems in pursuit of the Quintuple Aim. [120]

Recommendations: Lessons from Other Healthcare Systems

Canada has a relatively poor-performing healthcare system, and we can learn from others. Our review of international practices suggests that high-performing systems are more centralized, integrated, and collaboratively managed than Canada. There are no magic bullets, but several potential innovations are highlighted in the list below:

1. Develop a national workforce strategy with strong federal input using a standardized approach to data, measurement, integration, and prediction.
2. Eliminate interprovincial mobility barriers.

3. Increase physician capacity, primarily through medical school expansion, targeting the OECD average of 3.6 per 1000 population with appropriate distribution matching population needs.
4. Introduce market-based incentives to attract physicians to practice in areas of most need (e.g. generalist-specialist mix, marginalized populations, and rurality).
5. Encourage health professionals, including medical trainees, to work to full scope.
6. Increase peer-to-peer support by telemedicine for rural physicians.
7. Shift away from global hospital budgets toward activity-based funding, but tailor it to the Canadian system with appropriate guardrails.
8. Under an accountability framework, develop system-wide flow targets aimed at improving access to long-term care, acute care, emergency care, diagnostic imaging, specialty access and primary care. Incorporate incentives that discourage gaming, and progress toward these targets in a graded fashion. We strongly recommend 85% hospital occupancy. Consider short-stay units that are not holding areas.
9. Make long-term care the priority target for new spending but ensure this investment is linked to an accountability framework and performance measurement.
10. Evolve toward an aging-at-home model. Consider increasing patient and family co-payments adjusted to ability to pay, and having home care patients considered part of a hospital's case-mix for funding allocation.
11. Add LTC transition spaces and community overcapacity beds that would serve as rapid intake buffer capacity to improve access to care and hospital outflow. Consider policies to incentivize rapid re-integration of hospitalized ALC patients back into the community.
12. Introduce virtual support and community paramedics to augment home (and facility) care and reduce transfers to hospital.
13. Implement overcapacity protocols that bridge the hospital-community outflow interface.
14. Acknowledge the reality that provider compensation in the public system must be competitive with the private system.

15. Consider privatization only in areas where evidence resulting from comprehensive comparisons with other healthcare systems suggests an improvement of patient and population outcomes. At a minimum, there should be no equity threats. If implemented, closely monitor the system for—and regulate response to—unintended consequences.
16. Collaborate with international partners to develop more comprehensive international recommendations for health system improvement.
17. Learn from and collaborate with other countries to be an effective Learning Health System.

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NEXT STEPS

“

What if there was a different starting point—the intended function of the system—and planners worked backward to determine the most suitable form for that function?[1]

”

It starts but must not end here. A single report will not change the trajectory of health care in Canada. Leading large-scale change is a continuous process, initiated by the impetus to make positive change and fed by a continuous cycle of consultation, engagement, and improvement.

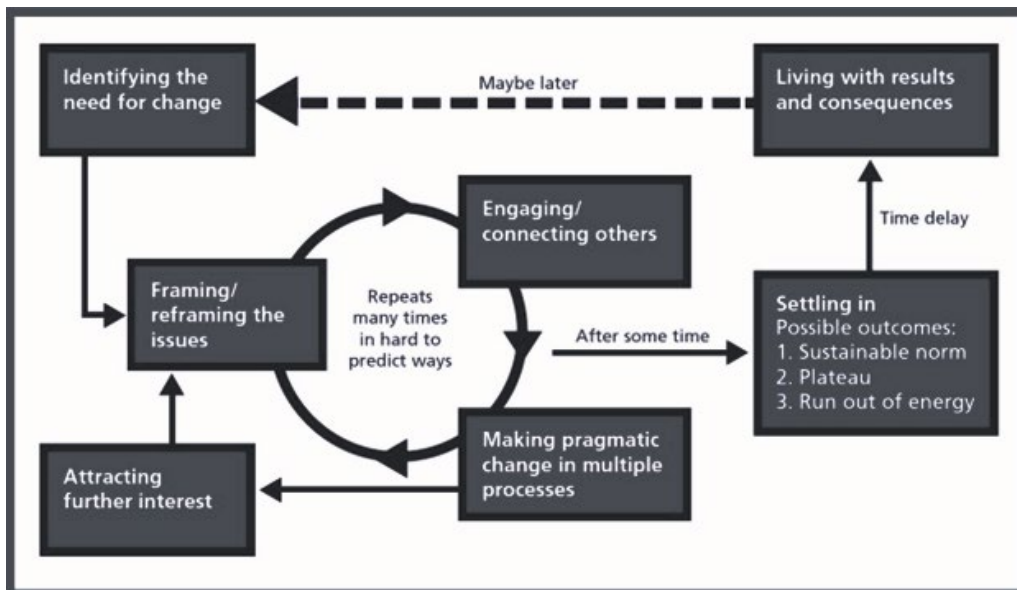


Figure 21. The Leading Large Scale Change model that has guided our work, and should influence future strategies, both locally and at scale. (NHS England Sustainable Improvement Team, 2017.)

EM:POWER's underlying assumption is that the entire emergency medicine system must be better integrated and aligned to the needs of our patients and populations to optimize its role in achieving the Quintuple Aim.

This report's recommendations and change strategies are not just theoretical, but can be applied at local, regional, and national levels across Canada to pave the way for a more efficient, patient-centered, and resilient emergency care system.

Essential redesign aspects of a high-functioning health ecosystem have been explored and include:

- Optimizing access points to emergency care within integrated clinical networks (a reference point for addressing unexpected ED closures and workforce challenges)
- Creating accountability frameworks to address system-wide access block (a reference point for ED crowding)
- Disaster, pandemic, and surge preparedness, as well as system and workforce readiness and resilience (a reference point for the daily and weekly surges we experience in our EDs), and
- Adapting and evolving to a changing world and advancements in knowledge, by becoming a Learning Health System.

These findings have been shared with all Provincial and Territorial Ministers and Deputy Ministers of Health at their respective fall meetings. CAEP subsequently proposed that the Provincial and Territorial Ministers support a national forum, which would allow for health leaders, stakeholders, and policymakers to build on the momentum of the EM:POWER project, and use its evidenced-based recommendations as a framework for system change in the following areas:

- Facilitate the exchange of best practices, successful strategies and lessons learned from across the country
- Promote collaboration among emergency care providers, policymakers, administrators, decision-makers and other stakeholders
- Promote the establishment of care networks to coordinate clinical services and workforce planning



- Identify and propose system-wide policy recommendations centering around accountability frameworks, to help alleviate ED crowding and improve patient outcomes
- Identify pilot initiatives that can be trialed/adopted where needed in Canada
- Identify potential champions across the country to initiate change, and
- Establish consensus on how best to move forward on a continuing basis to further system redesign and help achieve the Quintuple Aim.

We look forward to hearing from the Ministers and working with them collaboratively to build a better emergency care system within a redesigned health ecosystem that will benefit all Canadians.

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“

You do not rise to the level of your goals. You fall to the level of your systems.

-James Clear

”

CONSOLIDATED CHAPTER RECOMMENDATIONS

[Please see Key Recommendations on page 25](#)

Chapter 2: What Have Emergency Departments Become and What Should They Be?

1. EDs should prioritize emergent and urgent care based on the definitions outlined in this chapter as per [Table 1](#).
2. To do so, they should review their ED usage and identify non-emergent populations that have the greatest impact on their bottleneck resources, then negotiate or develop more appropriate alternative care options and pathways for these patients. Top priority populations will include admitted patients waiting for inpatient beds, frail elderly patients (especially those requiring housing, placement, or complex chronic disease management), and patients with chronic mental health and addiction concerns.

Chapter 3: ED Categorization, Quality, and Standards

1. Provincial health ministries should establish Emergency Care Clinical Networks (ECCNs) to coordinate clinical service and HR planning, operational guidance, and quality improvement-patient safety initiatives.
 - a. A National Emergency Clinical Care Council (NECCC) should be created; endorsed by CAEP, supported by the federal government (secretariate, administration, travel, integration with CIHR etc.), and given a mandate by the Council of Provincial Deputy Ministers of Health to support the EM:POWER recommendations at the provincial level through national collaborations, benchmarking, and sharing of successes, innovations, and lessons learned.
 - b. Provincial Ministries of Health and/or Health Authorities should fund and enable these provincial ECCNs and integrate them with the broader healthcare system governance structure.
 - c. Emergency physicians, ideally in a co-lead dyad, should provide leadership to these ECCNs and be given a seat at the appropriate decision-making tables.
2. ECCNs should oversee categorization, standardization (facilities, equipment, required competencies) and integration of EDs and other emergency care access points.

- a. A Plain-language 4 level categorization taxonomy should be used to help guide clinical services planning. Level 1 ED = comprehensive services associated with large tertiary care hospital, Level 2 ED = advanced services associated with other large urban or regional hospitals, Level 3 ED = full services associated with community general hospital, Level 4 ED = basic services associated with small rural hospital.
- b. These levels should be determined/assigned by population weighted distance calculations, annual volumes, and be modified by the function the ED is expected to fulfill in the system. Once assigned, the MoH/HA must adequately fund and support each ED site to meet this required function. EDs must meet the standards consistent with their level of designation.
- c. Network-integrated Urgent Care Centres and Network-integrated peer-to-peer Virtual Care (P2PVC) in this context means that these access points to the Emergency Care system must be designed, integrated, and held to the same quality improvement patient safety standards as EDs (One Network, many Access points).
- d. CAEP/NECCC should create a national template and example standards for provinces to adopt in the domains of physical space, safety, equipment, DI/lab availability, medication availability, staffing numbers/ competencies/ professionalism, and transitions of care pathways.

Chapter 4: Competencies, Certification and Teamwork

1. ECCNs should ensure that to work in an ED, attaining and maintaining individual and team emergency care competencies is required. The resources and opportunities necessary to meet this expectation should be funded and/or supported by the MoH/HA.
 - a. The CAEP 2020 vision statement should be updated, nuanced, and re-endorsed to reflect distinctions between Level 1-4 EDs in Canadian urban and rural centres.² All emergency physicians entering practice in Level 1 and Level 2 EDs

² A Plain-language 4 level categorization taxonomy should be used to help guide clinical services planning. Level 1 ED = comprehensive services associated with large tertiary care hospital, Level 2 ED = advanced services associated with other large urban or regional hospitals, Level 3 ED = full services associated with community general hospital, Level 4 ED = basic services associated with small rural hospital

should be certified in emergency medicine. Coverage in Level 4 EDs can be provided by comprehensively-trained family physicians with the necessary EM competencies. Level 3 EDs should work towards coverage by certified emergency physicians over the next decade. Given the shortage of emergency physicians in Canada, concerted efforts to increase EM residency training positions and prepare practice-eligible certification candidates will be crucial in attaining this goal.

2. CAEP and emergency care leaders in nursing and paramedicine should advocate for the funding/support necessary for nurses and paramedics to attain and maintain emergency care competencies. They should also encourage all providers to work to their full scope of practice, and enable expanded scopes where needed (e.g., geriatric critical care, etc.).
3. ECCNs should establish and support team-based care, creating complementary roles and responsibilities in the service of patient needs.
 - a. Team science should be used in the design and evaluation of team performance in the ED.
 - b. Mid-level providers such as NPs, PAs, Doctors of Pharmacy (Pharm Ds) etc. should attain/maintain emergency care competencies, and be added to the ED staff when and where they complement the team approach to improving patient care.
 - c. Inter-disciplinary simulation should be used extensively in the training and maintenance of competence of ED teams. Simulation resources and programs should be funded and supported by ministries of health and health authorities.
 - d. Emergency physicians should provide a leadership role in a team approach to care in an ED.
 - e. A Community of Practice (muti-disciplinary, shared goal, common interests) approach to improving emergency care across silos, sectors, and systems should be intentionally developed and supported.

Chapter 5: System Integration

1. ECCNs should endorse the 10 principles of healthcare system integration [4] and develop and implement projects that follow those principles.

2. Emergency care systems should experiment with, evaluate, and adapt/adopt (or eliminate based on the evaluation) integrated Urgent Care Centre access points and peer-to-peer virtual care support among EDs.
3. Emergency care systems should work with EMS agencies to implement and evaluate pre-hospital coordination centres and expanded scope EMS concepts.
4. Emergency Departments must have 24/7/365 access to single call, no-refusal support by specialists, and operational clarity and consistency around transfers and admitting services.

Chapter 6: Emergency Physician Resource Planning

1. ED directors at the site level should understand the logic and variables of the Savage Model so that they can keep the current data points necessary for the model to be accurate.
2. Provincial ED leaders should understand the logic and variables of the Savage Model so they can influence ministerial and university policy makers around potential leverage points. This will reduce the current and projected FTE gap in ED coverage in Canada.
3. Health ministry and authority leaders must understand the link between clinical services planning and HHR planning (including impacts provider burnout) in emergency care systems.
4. Health ministry and authority leaders must be prepared to adequately fund and support a system that meets the current, future, and surge needs of its population.

Chapter 7: Access Block and Accountability Failure

1. Ministries of Health should initiate the introduction of accountability frameworks like those described here, which incorporate accountability zones, expectations, and performance targets.
2. Ministries of Health should drive system accountability planning, assure population-capacity-alignment, and establish a legislative and labour environment (including financing) that allow hospital CEOs, boards, and regional authorities to be effective.
3. Facility and program leaders should acknowledge the concept of accountability zones and develop real-time policies to clarify care accountability in unclear or disputed cases (see Accountability Zones).

4. Facility and program leaders should implement accountability performance measures specifying timely patient access and flow targets for all programs (*Table 4*).
5. Program leaders should develop effective queue management strategies and surge contingency plans that do not involve blocking access and deferring care to other programs.
6. To improve patient access to care and achieve program accountability, program leaders should drive the implementation of many or most of the accountability strategies described in this document.
7. Facilities should implement demand-driven overcapacity protocols that will be activated when pull systems are failing and access block is compromising care delivery. Overcapacity protocols should also bridge the hospital-to-community transition.
8. Regional, facility and program leaders should implement accountability measurement and reporting systems. They should monitor care gaps and use defined performance measures to determine whether gaps are best addressed through new capacity, enhanced efficiency, or reallocation of existing resources. Where the root cause is capacity, they must advocate for new resources. Where it is inefficiency or misallocation, they must demand change. [8]

Chapter 8: Disaster Preparedness

1. At all levels of the healthcare system there must be a clear and consistent understanding of what defines a disaster: when the demand placed on the system has outstripped its ability to deliver care.
2. All healthcare facilities (including hospitals, long-term care homes,) and agencies, (including public health, prehospital, patient transport, and community healthcare) must have a minimal degree of competency in disaster, and have their competency tested periodically.
3. All healthcare facilities must have a plan for surge capacity. Because a system that is near or above 100% occupancy cannot, by definition, cope with surges, the plan must include a constant level of actual bed redundancy. This redundancy must consist of real beds—staffed, but unoccupied—as opposed to theoretical bed expansion above the existing census.



4. Outside of healthcare facilities and agencies, the primary care system needs to be supported and educated for its role in disaster preparedness.
5. 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.
6. Preparedness planning needs to be high concept and must include an all-hazards approach.
7. Preparedness planning must be integrated at all levels of the health system.
8. 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.
9. 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 Federal/Provincial/Territorial initiatives and support.
 - c. Have a defined command and control structure based on IMS principles and supported by an emergency operation 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 healthcare providers.
10. Education and training in disaster preparedness should have dedicated annual funding to both achieve and maintain competency.
 11. Competency should be validated through structured cyclical auditing that, where applicable, should be integrated as a critical factor into the existing evaluation processes of the organization.
 12. Disaster response must be a Required Organizational Practice (ROP) without which healthcare facilities cannot be accredited. Specifically, accredited healthcare facilities and agencies must make disaster preparedness an accreditation requirement which is assessed using specific, measurable, and scientifically-driven standards.
 13. Facility training must include periodic exercises that involve all components of the disaster response and that are objectively assessed for purposes of quality improvement.
 14. Any educational program must promote coordination of services and alignment of disaster plans between the various healthcare 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 to ensure ongoing healthcare to all citizens.
 15. All planning must take into consideration vulnerable segments of the population, such as children, the elderly, and patients with special needs.
 16. 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 healthcare disaster.

17. 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 and education models for maintenance of disaster preparedness competence for all responders and care providers.
 - d. Clarification of the division of authority between healthcare 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 healthcare facilities, regional authorities, the Ministries of Health, the Public Health Agency of Canada, and other Federal and Provincial/Territorial agencies.
18. To ensure interoperability between regions and all levels of healthcare, 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. A multi-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]
19. 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 healthcare facilities.

20. Create a common national database for unidentified patients, ideally with trackable location identifiers, which would be available to all healthcare centres to ensure effective identification and reunification of patients and families.

Chapter 9: Coevolving in the Research and Quality Ecosystem

1. Increase funding, training, infrastructure, and planning to support and expand the emergency medicine research workforce.
2. Develop a pan-Canadian EM research network with highly connected nodes. Each node should have the resources necessary to coordinate researchers across the EM spectrum and facilitate inter-specialty, interdisciplinary and interprovincial collaborations. This network should incorporate all relevant stakeholders, so we can become an integrated community of practice and learning health system with a focus on achieving the Quintuple Aim.
3. Facilitate data-sharing across jurisdictions. Develop a simplified and harmonized national approach to funding, data-sharing, privacy and legal agreements, ethics approval and research consent. Eliminate the need for redundant data, ethics, and privacy processes for multicentre and multi-jurisdictional research.
4. Link clinical care, quality improvement, knowledge transfer and knowledge translation using models to move research rapidly to the bedside.
5. Emergency medicine research efforts and funding should focus on the most urgent and impactful patient and population healthcare needs.

Chapter 10: The Future of Digital Health in Emergency Medicine

1. EM leaders in Canada must work together with all stakeholders to build a DH record system which allows access for both patients and direct healthcare providers.
2. To achieve this, health information systems should be integrated at regional, as well as F/P/T levels.
3. Emergency physicians must embrace leadership and stewardship roles in DH, to ensure that the most effective initiatives are supported and that precious public resources are not diverted to frivolous ventures or privatization of DH.

4. EM specialists should assume key roles in the regulation of DH applications in healthcare by way of legislation and government policies.
5. Departments of EM and EM professional societies should collaborate in national and global translational (practically-oriented) research to best apply digital health's strengths to EM's needs.
6. EM training and professional development should be reviewed to ensure core competencies related to the use of DH are taught.
7. Digital health should be a focus of quality improvement initiatives at hospital EDs and academic ED departments.
8. Appropriate consideration should be given to the varying levels of digital literacy, access, and education in Canada's populations to help prevent barriers to the equitable and fair implementation of digital ED health. [39,40]

Chapter 12: Emergency Medicine's Future Role in Health Policy and Advocacy

1. CAEP should actively engage with federal/provincial/territorial ministries, health policy experts and medical organizations to promote the EM:POWER report and its recommendations.
2. Provincial ministries of health should fund and enable Emergency Care Clinical Networks (ECCN) and integrate them with the broader healthcare system governance structure.
3. The Provincial/Territorial Council of Deputy Ministers of Health should establish and utilize a National Emergency Care Council, comprised of provincial leadership from across Canada, to help address key challenges (e.g., crowding, closures and HHR), and assist in the development of accountability networks and disaster preparedness. (See also Chapter 3, recommendation 1a.)
4. CAEP should continue alliances with organizations who share their goals and objectives such as CMA (Canadian Medical Association), NENA (The National Emergency Nurses Association), IFEM (The International Federation for Emergency Medicine), and the Coalition for Gun Control.

5. EM:POWER’s framework recommendations should be presented to provincial and regional ECCNs as a basis for system redesign at a more granular level, based on local population health needs and resources.
6. EM training programs should include public affairs as part of a Health Systems Science curriculum, to educate residents and nurture the next generation of public affairs leaders.

Chapter 13: Emergency Medicine in the Era of Climate Change

1. Adapt to emerging conditions, now and in the near future.
 - a. Emergency physician leaders should be familiar with patient population-health, and ED operational impacts of current climate change events, such as wildfires, prolonged heat events, floods and population displacement.
 - b. Canada has a National Adaptation Strategy for climate change, which hosts a Disaster Risk Reduction table. Much of this is relevant to emergency physicians and should be integrated into EM training (see Education below). Emergency medicine disaster experts should be integral parts of this conversation and sit at the table.
2. Mitigate the trajectory of change.
 - a. ED directors must be aware of the temperature and precipitation projections for their region, plan for the consequent operational impacts, and work with climate-savvy architects and engineers to design infrastructure for a changing environment.
 - b. Emergency medicine leaders must collaborate with governments and other healthcare stakeholders to ensure the necessary supply of pharmaceuticals and other products and mitigate their impact on the environment.
3. Educate ourselves, our patients and our elected leaders
 - a. Because emergency physicians are familiar with treating patients impacted by extreme heat, wildfires, and floods, they should increase their role in public education related to climate change and climate emergencies, and

- b. CAEP should harness its internal expertise in education, research, and public affairs—along with allies from other disciplines—to help illustrate and mitigate the health impacts of climate change.
4. Emergency physicians should contribute to making planetary health a societal priority.

Chapter 14: Building on Values: Justice, Equity, Diversity, and Inclusion (JEDI) in Emergency Medicine

1. Emergency care programs (ECPs) should promote diversity within leadership and among healthcare staff, to better understand and care for the communities they serve.
2. ECPs should foster patient and community engagement from marginalized groups in clinical service planning and delivery.
3. All ECP staff must undergo formal training to better understand the different cultures and populations they serve.
4. ECPs should expand the collection and utilization of sociodemographic data to better evaluate and address JEDI within their programs. There should be public reporting of key operational outcomes that impact marginalized and oppressed populations.
5. Academic departments of emergency medicine should contribute to the understanding and amelioration of inequities in emergency care delivery by supporting JEDI-focused research and multidisciplinary special interest groups (SIGs).
6. JEDI must be a paramount consideration as digital health is incorporated into Canada's healthcare system.

Chapter 15: Lessons from Other Healthcare Systems

Canada has a relatively poor-performing healthcare system, and we can learn from others. Our review of international practices suggests that high-performing systems are more centralized, integrated, and collaboratively managed than Canada. There are no magic bullets, but several potential innovations are highlighted in the list below:

1. Develop a national workforce strategy with strong federal input using a standardized approach to data, measurement, integration, and prediction.
2. Eliminate interprovincial mobility barriers.

3. Increase physician capacity, primarily through medical school expansion, targeting the OECD average of 3.6 per 1000 population with appropriate distribution matching population needs.
4. Introduce market-based incentives to attract physicians to practice in areas of most need (e.g. generalist-specialist mix, marginalized populations, and rurality).
5. Encourage health professionals, including medical trainees, to work to full scope.
6. Increase peer-to-peer support by telemedicine for rural physicians.
7. Shift away from global hospital budgets toward activity-based funding, but tailor it to the Canadian system with appropriate guardrails.
8. Under an accountability framework, develop system-wide flow targets aimed at improving access to long-term care, acute care, emergency care, diagnostic imaging, specialty access and primary care. Incorporate incentives that discourage gaming, and progress toward these targets in a graded fashion. We strongly recommend 85% hospital occupancy. Consider short-stay units that are not holding areas.
9. Make long-term care the priority target for new spending but ensure this investment is linked to an accountability framework and performance measurement.
10. Evolve toward an aging-at-home model. Consider increasing patient and family co-payments adjusted to ability to pay and having home care patients considered part of a hospital's case-mix for funding allocation.
11. Add LTC transition spaces and community overcapacity beds that would serve as rapid intake buffer capacity to improve access to care and hospital outflow. Consider policies to incentivize rapid re-integration of hospitalized ALC patients back into the community.
12. Introduce virtual support and community paramedics to augment home (and facility) care and reduce transfers to hospital.
13. Implement overcapacity protocols that bridge the hospital-community outflow interface.
14. Acknowledge the reality that provider compensation in the public system must be competitive with the private system.
15. Consider privatization only in areas where evidence resulting from comprehensive comparisons with other healthcare systems suggests an improvement of patient and



population outcomes. At a minimum, there should be no equity threats. If implemented, closely monitor the system for—and regulate response to—unintended consequences.

16. Collaborate with international partners to develop more comprehensive international recommendations for health system improvement.
17. Learn from and collaborate with other countries to be an effective Learning Health System.

APPENDICES

The authors would like to thank the many individuals, organizations and CAEP committees that made formal submissions to the Task Force; unfortunately, we were unable to include all of them. The following appendices are included because they address specific subpopulations at risk or were deemed to be of practical value to healthcare leaders as they consider system redesign.

Appendix 1: Submission from CAEP’s Rural Remote and Small Urban Section

If you live in a rural or remote community, Canada’s promise of universal and accessible health care falls short. Many people who live in geographically remote parts of the country, distinctly or partly populated by Indigenous people, must be transferred out to receive care and then transferred back home for ongoing care.

This untenable situation prompted The Society of Rural Physicians of Canada to shed light on the health care obstacles these communities struggle with. The Rural Road Map: Report Card on Access to Health Care in Rural Canada provides an excellent and comprehensive call to action on many of these challenges, with suggested approaches to improving care and equitable access.

There is, of course, extensive overlap with the issues facing all emergency care in Canada. Taken as a whole, there is no coherent healthcare system. At the highest level, the federal/provincial separation (federal money but provincial rules, federal oversight but inter-provincial disparities) is a problem that at the very least needs interprovincial universal agreement in principle. More to the point, legislation is needed to allow for many of the changes long called for by the various organizations consulted for this project.

National licensures/certifications for all medical and paramedical professions seems one of the most obvious first goals. At the provincial level, disparate health regions/zones/corporations have resulted in deeply ingrained challenges. Such divisions create innumerable obstacles to providing effective and timely transfers, and referrals – or even basic healthcare access for various populations.

At the system level, the problems multiply. Fee-for-service can be considered perverse remuneration, trading volume for quality. That statement is not to be taken lightly, as it is not to discredit the countless dedicated and talented providers who always have, and continue to offer, the best possible care to their patients. Yet it reveals a system that unintentionally undervalues preventive care and education, and thrives on people being sick, needing procedures and prescriptions, etc. The downstream effects are the situations we all face, that of overfull understaffed facilities, excessive wait times and sub-par care.

Emergency care challenges inevitably vary by geography and facility. As a profession, there's a wide range of obstacles. The high-level matters include certification requirements by the credential-granting organizations (e.g. CCFP/CAC-EM/FRCP/NP/PA); human health resource planning, defining scope of practice; and accessible and available training and resources. Other issues to consider are the front-line challenges, simply the lack of staff, and the urban-centric nature of specialized tertiary care, a logistical fact that will unlikely change. This highlights the difficulties of patient transfers and most-appropriate dispositions or treatment outcomes for patients based on location and access.

Emergency department (ED) boarding, where patients are kept in the department for an extended time because of the lack of hospital beds, is not an ED problem, but an accountability problem that lies up the chain. Advocating for high-level change is the thrust of this project and the call from all the emergency organizations involved.

The lack of technology-driven solutions to some of these issues is particularly disappointing in a country the size of Canada. **Strategically placed CT scanners that can be run by the many well-trained techs with dedicated virtual radiology support from tertiary centres** could have a massive impact on cost and time reductions in patient care and disposition, to say nothing of best practice.

“Surge” has a somewhat flexible definition that requires context. The difference between a mass casualty incident and a disaster are available resources that overlap with the ability for them to be mobilized and leveraged. There's also a difference between predictable and unpredictable, such as flu-season vs. new global pandemic.

If the question is how to be prepared for the unexpected, the answer should be implicit in the understanding of emergency medicine. There are two simple—if not exactly easy—requirements:

1. **Broad training and preparation in emergency preparedness:** planned high-fidelity simulation, interprofessional and inter-departmental at a minimum. (Anyone involved in Disaster Management planning will attest to the lack of support for that.)
2. **Timely resource availability:** Emergency Departments and programs cannot be allowed to be run like restaurants, with just-in-time delivery of supplies, and needing every seat filled to make ends meet.

Emergency Departments MUST be protected from running at 100% capacity. That is the current default, and it GUARANTEES system failure as it dismisses the very reason such departments are needed; the unplanned, the unexpected and the surge. These are the situations that require an ED with empty beds and a full complement of available staff (nurses, respiratory therapists etc. not committed to the care of patients already in house).

To the accounting firm, to the administrator, to the hospital board, that looks like wasted money, unused resources. They do not live in our world and do not appreciate the reality.

There must be legally enshrined protection of resources to allow for immediate response to surges. Experience has shown that any appearance of “surplus” will inevitably evaporate rapidly once a crisis is declared over.

Let us remember Rudolf Virchow, the father of pathology, and the aphorism he coined nearly two centuries ago: “Medicine is a social science and politics is nothing else but medicine on a large scale. Medicine as a social science, as the science of human beings, has the obligation to point out problems and to attempt their theoretical solution; the politician, the practical anthropologist, must find the means for their actual solution.”

The changes needed are not at the level of emergency departments or practitioners. They are far broader in scope and mandate. How a community is able to respond to a surge only exemplifies this.

References

1. Rural Road Map Implementation Committee. Call to Action: An Approach to Patient Transfers for Those Living in Rural and Remote Communities in Canada. Mississauga, ON: College of Family Physicians of Canada and the Society of Rural Physicians of Canada; 2021

Appendix 2: Submission from Health Equity Committee

(EM:POWER Survey Questions Bolded)

How would you encapsulate the major problems you perceive in the current status of the health care system as a whole:

The health care system is under tremendous strain from our society's large burden of illness related to the social determinants of health. This is particularly true in the emergency department (ED), which acts as a shock absorber. When patients cannot access primary care, they end up in the ED for prescription refills, low acuity issues, and exacerbations of chronic illnesses that have gone unattended. When inpatient wards have a high burden of Alternate Level of Care (ALC) patients - and available acute beds are limited – overcrowding results, and admitted patients are boarded in the ED for extended periods of time.

The ED has seen a recent rise in the number and proportion of visits related to social illnesses. Patients experiencing homelessness, for instance, often present to the ED simply because they cannot access stable, or even temporary, housing. They may also present with medical complications resulting from this social illness, such as frostbite or even hypothermic cardiac arrests in winter months.

These examples demonstrate how the burden of social policy failures shift to the ED from under-resourced community supports, such as affordable housing programs or shelters, and also how this shift results in worsening outcomes for our patients, and higher costs to the system overall.

To be clear, reducing ED use is not the primary concern; these visits represent a failure of upstream social and health policy and an inefficient use of public resources that fuel the impetus for ED providers to drive social change. As emergency room providers, we bear intimate witness to these failures, and advocating for upstream solutions is therefore an important role we must fulfill.

Emergency departments are well equipped to collect data on these social and health policy failures. For example, EDs could publicly report on the following metrics:

- Proportion/number of visits to the ED for patients without primary care access.
- Proportion/number of visits to the ED for patients who could not access primary care in a timely way (for example same day or next day).
- Proportion/number of visits to the ED related to a lack of pharmaceutical coverage.
- Proportion/number of visits to the ED related to a lack of dental care coverage.
- Proportion/number of visits to the ED related to a lack of physiotherapy coverage.
- Proportion/number of visits to the ED related to a lack of mental health care coverage.
- Proportion/number of visits to the ED due to substance use disorders.
- Proportion/number of visits to the ED related to housing instability/homelessness.
- Proportion/number of visits to the ED related to income insecurity.
- Proportion/number of visits to the ED by race or ethnicity.
- Proportion/number of visits to the ED due to lack of appropriate home care services.
- Proportion/number of visits to the ED due to a lack of appropriate long-term care.
- Proportion/number of visits to the ED due to precarious/unsafe labour.

While these data require effort to collect, this information would provide a critical window into the shocks due to social and health policy failures that are currently being absorbed by our EDs. It could be used to put pressure on governments to address upstream issues and relieve pressures on the ED.

This data could be collected through intermittent surveys of random patient samples on the factors driving the reason for the specific ED visit that day. Collecting and reporting these metrics would ideally be mandatory, and part of a coherent strategy by all levels of government to guide efficient and effective public policy (though there may be some

reluctance to have such a bright light shone on these failures). However, independently collecting these metrics and publicly reporting them would empower ED providers and citizens to advocate for better public policies.

What are the obstacles to delivery of emergency care (as you define it)?

Social safety Net Easily Overwhelmed: Many of the operational systems that deal with upstream determinants of health continually function in a state of crisis. There seems to be little capacity, and in this environment, it is often quite challenging to address the social determinant itself or to provide meaningful solutions to delivery of care.

For instance, in most settings, people experiencing homelessness find it a challenge to access emergency shelter spaces. Housing options or a way out of homelessness that meet the needs of people impacted are quite limited. People who use drugs or experience mental health emergencies face similar challenges.

In times of crises, service operators become easily overwhelmed and difficult to mobilize. In a recent example, Shigella outbreaks occurred in two major cities (Edmonton and Vancouver) among people experiencing homelessness. This led to significant surges in ED visits and ultimately admissions to hospital. With resources so quickly overwhelmed, it took weeks to mobilize a community-based response (hygiene stations and more bathroom access) that helped to break the transmission of illness and treat people more reliably outside hospitals.

Undoubtedly, climate emergencies that displace resources will more drastically affect people who are unable to access basic needs. We have already seen seasonal increases in deaths and injuries for people facing injuries from environmental exposures in both winter and summer climate extremes. These are expected to rise in the future.

Institutional Distrust: Many groups, including racialized individuals (especially those from Indigenous and Black communities), and people who face social precarity (such as those who use drugs) face challenges just seeking care. This adds complexity to providing emergency care, subsequent treatment plans, and follow-up resources.

Rigid and hierarchical processes make it difficult for us to adapt to the needs of an individual. Rapid mobilization of communities is essential in times of mass casualty or environmental catastrophes; building trustful relationships are useful guiding principles



that allow for emergency care to be flexible and in the best interests of the people receiving it.

System Planning: Many places and communities with high needs do not have readily available access to ED care. We need to systematically consider and define what emergency care looks like and have resources and strategies to deliver medical treatment for communities that need them. At times of system level surges, pre-built capacity is essential to deliver emergency care. A support system of primary care, pharmacists, overdose prevention workers, and other allied- health professionals with expandable skill sets are useful parameters to consider in system- wide planning; this will allow for meaningful regionalization of resources.

What actions do you think might provide solutions, who are the stakeholders who need to take those actions and what time frame should they be taken in (Immediate, within two years, within five years)?

1. Action

NEED TO INVEST UPSTREAM

Accountable Stakeholder

Federal and provincial governments

Timeline

Intermediate and long-term

We as a society understand that when everybody has the basics, we all have more and we are all healthier. The equitable system costs all of us less and builds a healthier society.

Many of the resources we spend are on costly impacts of a fragmented and out-of-reach system that does not address people’s basic needs. Access to housing, dental care, medications, and primary care are core elements of investments in the upstream.

Alongside, there is an urgent need to prevent ongoing financialization of the housing market. This continues to be one of the biggest drivers of economic insecurity and lack of affordable housing across the country. The downstream effects include rising homelessness and challenges for people who are homeless to find rents that are affordable within the social welfare system.

2. Action

DATA CAPTURE

Accountable Stakeholder

Hospital Administration

Timeline

Immediate

EDs are the ultimate downstream manifestation of health outcomes that are impacted by poor upstream factors. Our EDs capture a wealth of data that tells us what's wrong with the rest of the health system and society at large. While we routinely discuss these factors, we unfortunately have a very obscure understanding of the populations we serve. We need to regularly capture health indicators such as housing status, and income-based medication coverage alongside factors, such as race and gender, that impact health.

There should be mandatory reporting around the metrics measured in the databases. These datasets should also help guide accreditation standards and setting agendas and priorities e.g. setting priorities such as benchmarking that under 10% of ED visits should relate to impacts of homelessness.

3. Action

INCREASING COMMUNITY CAPACITY

Accountable Stakeholder

Health profession regulatory colleges

Timeline

Intermediate

We need to get better at defining skills before a surge takes place by building opportunities and increasing mobility between regions for health care staff. This may mean providing virtual or on-site support more seamlessly to areas affected by a crisis or natural disaster in direct emergency provision or also in other scenarios, such as opioid agonist therapy (treatment for those with an opioid disorder) and other basic service delivery. The regulatory frameworks make this challenging and difficult to mobilize, however pre- developed pathways would reduce the administrative burdens around these concerns in a longer-term emergency.



4. Action

EMERGENCY CARE OUTSIDE THE ED

Accountable Stakeholder

Provincial governments

Timeline

Immediate

Many emergency care spaces don't require ED care. We need alternate options for people.

Case example: *Drug poisoning events take place in 6-7% of people who use drugs. Less than 1% of those require acute care resources or transport to a hospital.*

Unfortunately, due to a lack of supervised consumption sites and only thinking of emergency care in EDs – most drug poisonings are transported to local EDs and require vast EMS and acute care resources.

Integrated emergency care options, for instance for drug poisonings, to be cared for in supervised consumption sites that have the expertise and capacity to care for drug poisonings. Patients can be observed and transferred when appropriate.

One of the barriers to moving care into the community and out of the EDs is often the medico-legal risk (that the patient will sue the provider); but we also need to consider the risk of not moving that care, of having overwhelmed ED systems where those who need acute care may not be able to get it in a timely and accessible way.

Are there any specific changes that must occur for the system as a whole to adapt to surges in demand (both short term such as a mass casualty and long term such as a pandemic)?

How We Need to Adapt for Surges: The system must be redesigned to ensure sufficient capacity in the community to support the majority of a response. This includes planning for the following: immediate access to shelter, income supports, food/water/medications/medical supplies, expanded access to primary care, additional mental health and substance use supports, and a rapid public health response to mitigate any delayed effects (from overcrowding, missed preventive health interventions).

ED and acute care resources should be reserved for those with critical illness or injury who can only be managed in an ED or acute care setting to ensure those with the highest acuity are seen in a timely and appropriate fashion. Local data should be used to inform planning and risk assessments. From a national perspective, cross-coverage of geographic locations should be facilitated by the regulatory colleges. This includes developing advance guidance around expanded scopes of practice during an emergency situation; national licensure that can be granted immediately; advance planning with transportation partners to rapidly move healthcare workers to areas of need.

In essence, the ‘safety net’ needs to be in the community’s formal capacity to respond, not in the acute care setting.

Are there any specific changes that must occur for the system to deliver emergency care (as you define it) during surges in demand?

Prevention of illness and injury is paramount. This means ensuring maximal health of the population before, during and after major events. All individuals must have access to a primary care home, safe housing, a legal income that covers basic needs, access to medications and dental care, and a community support system. Capacity in the community must be in place to augment these supports during and after disaster situations.

Specific protocols must exist to increase staffing in emergency departments (from other areas of the hospital or via a national response system as outlined above), expanded space in the hospital and in the community via pop-up EDs (via pre-existing relationships and disaster planning); and increased access to pre-purchased supplies and equipment and/or other supply chain arrangements specific to disaster scenarios.

Appendix 3: Views from CAEP’s Pediatric Emergency Physicians

The current healthcare system is failing our pediatric patients. Sick children create significant stress on families looking for immediate answers and reassurance. Families either lack a medical “home” or those that do have a primary care physician, tell us they are unable to access their doctor in a timely fashion. Many medical homes are unable to provide same-day visits, and even those that do, cannot offer care outside regular business hours.

Data from arrivals to pediatric emergency departments (PEDs) demonstrate that most visits are after-hours, evenings, and weekends. This is partly because children seem sicker at bedtime, but also because many caregivers are unable to miss work to take their child to the doctor. Many visitors report coming to the ED with non-urgent complaints because they lack access to care, such as not having a physician, or are unable to see theirs in a timely fashion, or their doctor won’t see children in person if they’re infectious.

The government needs to look at where primary care can be bolstered, consider expanded licensing, increase the use of allied health where appropriate, and ensure families have a medical home they value and trust. Families need to be able to get care in a timely fashion by the provider that most matches their needs. This would decrease use of Emergency Departments (EDs), help with overcrowding, resource and staffing issues, and fragmented care, and reduce costs to the healthcare system.

Although virtual care can help to enable accessible care in many circumstances, it’s important to ensure the use is patient-centric, limited to beneficial situations and when a physical exam is not needed. For example, the most common complaints in pediatric emergency departments are fever and abdominal pain. Neither of these lend themselves to virtual visits and require physical exams to make a diagnosis.

From our lens it appears that current advice services like Telehealth in Ontario and 811 in Alberta for pediatrics lead many families to seek care in the ED. Many current protocols are too conservative. They do not leverage technology to source additional data to help drive decisions, and even when these services recommend seeing primary care, many come to the ED as noted above because they have challenges with access. Families need a reliable source to help them navigate the healthcare system and to know when they should worry.

We need primary care and a medical home to be accessible to all when there is demand. We also need to empower our population to increase health literacy, **many families lack basic health literacy to understand when to worry, and how to manage common illness.** We still see significant “fever phobia,” with many families seeking care for reassurance and guidance on how to manage common viral illnesses that don’t require a physician, prescription nor ED care—possibly not even primary care in many cases.

Current residency programs in family medicine dedicate only one month of training to pediatrics, and with the increased aging population, many trainees work in practices with little to no young patients, leading to a lack of comfort managing child health.

Caregivers who have a primary care physician often seek medical advice at PEDs to validate the care their child is receiving, and more often when their child is not improving. Recognizing we see a skewed and not representative population, many patients arrive at our department on antibiotics for viral illnesses, treatment that is not evidence-based, nor current. This reinforces families with the message to go to the ED for “good care,” leading many patients to bypass primary care, even when they have a provider. Investment is needed to ensure primary care physicians are comfortable seeing and treating children, and that mechanisms are put in place to ensure primary care physicians are quickly and easily up to date with common childhood presentations.

From a broader lens, our current healthcare system is designed, and providers rewarded, to treat illness. Funding is also not outcome-focused, and most providers are paid by volume.

Families feel rushed, and even when they receive the correct care, they often seek additional providers for reassurance or explanation, leading families to see two to three providers for the same problem to get the “right care.”

A focus on keeping our population healthy is lacking, along with insufficient funding to keep patients out of hospitals. There are many examples, such as IORA Health (a company in the US), that keep patients healthy so they avoid ED visits, need fewer interventions, and cost the system less. Also, a large portion of their care can be provided by allied health, non-physician professionals such as physiotherapists and dieticians, whose services are typically covered by a combination of public and private funding sources. Their involvement further decreases healthcare costs.

Most provinces lack a single unified patient record or an EHR (Electronic Health Record) that is easy to use. Patients receive care from many different providers across different locations, and it becomes challenging to deliver treatment with incomplete medical history. Lack of access to a full patient history or previous investigations leads to repeat testing and creates a risk of patient harm by making decisions with insufficient information.

We have seen a marked rise in the need for mental health, which was only further exacerbated by the pandemic. Unfortunately, resources have not kept pace, with many unable to get care until they are hospitalized. We fund psychiatrists, but not resources such as therapists who manage mental health. Many PEDs are not equipped with social work and mental health experts to appropriately support these patients when they do present. Current training is also lacking in this area. We need to look at expanding mental health resources in the community to increase access, prevent deterioration and/or need for the emergency department. And when patients do need the ED, ensure we have appropriately trained personnel.

Most importantly, the system is designed and funded to run at 100%. There is no room for growth, no room for surges that are anticipated, nor the ability to deal with those that are unexpected. This makes access to care difficult and creates stressful environments that lead to burnout among providers, further exacerbating the problem. We continue to push for ways we can do more with less within the same inflexible system; instead, we should be taking a bigger look at how we can recreate a patient-focused health system that keeps patients thriving, and at the same time has the capacity when they get sick.

Visits to pediatric emergency departments continue to rise year after year. For example, prior to the pandemic, the increase rate at SickKids Hospital in Toronto was 5% a year. Current PEDs lack sufficient physical space to provide care for these increased volumes. This is further exacerbated by a rise in boarders, due to a lack of inpatient beds that limit usable ED space. Current numbers of specialised ED nurses and physicians have not kept pace with the growth, and given the current pressures, many have decreased their full-time schedules or shifted to other work. In places with unions, ED nurses do not receive additional pay, despite the increased hazard and worse conditions compared to other departments, making it a less desirable area to work.

We need to ensure that we plan and train the appropriate number of personnel based on anticipated demand, and invest in retention strategies to keep the current skilled workforce

in whom we have already invested. As noted in our healthcare system in general, most PEDs lack funding models that allow for allied health to expand and support the workforce by seeing low acuity patients. Funding is also not aligned to usage, nor adjusted for growth and complexity; even within a hospital, many services do not operate 24/7 to match ED needs, which creates further delays and pressures to the system.

Recommendations

Many surges, particularly in pediatric emergency departments are predictable. We see huge swings in volumes based on infectious patterns, with almost double the patients in winter months as in the summer. Current funding and physical space are based on averages, making it challenging to increase and decrease resources based on demand. This means we always run short during flu season. We also talk about surge as if it's unexpected, yet we see the same patterns year over year. **Hospitals need to be more fluid in their design to increase ED footprint as needed for both anticipated and unanticipated surges.**

Staffing must look at having personnel cross-trained, increased ability to shift resources from areas that see a decline to those that need a rise. Changing licensing to cross Canada and making hospital privileges easier to obtain means resources can be moved to meet demand.

We need to leverage data, AI, and new technology such as wastewater monitoring to better predict and plan for anticipated and unanticipated spikes in patient volume.

The stress to the system is exacerbated when it is already running at 100% capacity. Investing in novel ways of providing care, along with prevention, would allow EDs and hospitals to operate closer to 80% so they can manage surges.

We need to shift how we view healthcare in Canada. There needs to be an investment in preventative care to keep people healthy, a strong primary care home where providers are sufficiently trained and comfortable with pediatric patients and can see them when they need to be seen—not Monday to Friday during business hours. Emergency departments should be focused on using their expertise to provide care to acutely unwell patients, traumas, etc., and not be the safety net for our healthcare system. Instead of intervening earlier with lower-cost solutions, this costly way of operating often results in patients deteriorating and getting to their worst.



General medical training for children’s emergencies is inadequate, leading to unnecessary, costly referrals to EDs, and suboptimal care. Residency education in Canada should be designed to ensure that acutely ill and injured children have access to high quality primary medical, virtually and in-person, as the case may dictate.

Appendix 4: Submission from CAEP's Geriatric EM Committee

Canadian Emergency Departments welcome more patients over the age of 65 than any other population segment: between 20% and 40% of all visits, depending on the location. This proportion by a population marked by increasing complexity is expected to grow significantly. Yet many ED providers and users would say that emergency rooms have been slow to address specific changes that would lead to more efficient department function and better outcomes for this population.

Emergency Departments (EDs) have long been considered the nexus of care with patients entering through self-referral, or referral by specialists or primary care providers. However, few who use them want to be there, and instead arrive as the result of a complex array of factors, including perceived illness severity or pain, difficulty in accessing primary care resources, and accessibility ease of ED-based resources.³

In recognition of these challenges, the CAEP Geriatric EM Committee recently developed a position statement to guide EDs across the country on making effective change aimed at enhancing the ED experience for older people, their caregivers and ED providers. This position statement can be summarized into eight core, evidence-based recommendations, supported by expert consensus and practical examples:

1. Emergency departments recognize older people as key users and ensure departmental and institutional commitment to enhancing their care.
2. Emergency departments establish local processes for interdisciplinary assessment of complex older patients, particularly those likely to be discharged, as this is associated with reduced ED length of stay, decreased return visits, decreased hospital admission, and improved functional outcome.
3. Emergency departments involve family members and caregivers in the care of older people during their stay.⁴

³ Reasons Patients Choose the Emergency Department over Primary Care: a Qualitative Metasynthesis, Vogel JA, Rising KL, Jones J, Bowden ML, Ginde AA, Havranek EP. Reasons Patients Choose the Emergency Department over Primary Care: a Qualitative Metasynthesis. *J Gen Intern Med.* 2019 Nov;34(11):2610-2619. doi: 10.1007/s11606-019-05128-x. Epub 2019 Aug 19. PMID: 31428988; PMCID: PMC6848423.

⁴ Reasons Patients Choose the Emergency Department over Primary Care: a Qualitative Metasynthesis, Vogel JA, Rising KL, Jones J, Bowden ML, Ginde AA, Havranek EP. Reasons Patients Choose the Emergency Department over

4. Emergency departments prioritize training and education of their staff to develop competence in emergency care of older people.
5. Emergency departments develop standardized approaches to common geriatric presentations - including acute functional decline, frailty, delirium, polypharmacy, and adverse drug events, falls and dementia.
6. Emergency departments modify the physical space with equipment to support the needs of older people, whether through basic low-cost modifications or through departmental redesign.
7. To learn about their older patients, and to identify areas to enhance care, emergency departments should work to ensure high-quality transitions of care through reliable discharge communications between providers, patients, caregivers, and community supports.
8. Emergency departments identify and collect data about key quality indicators about the care of older ED patients.

In relation to both in- and out-flow, the ED is intricately connected to its community and locally-based services. This link has long been recognized, but little enacted upon. With the demographic shift to a more aged population, EDs must work to ensure clear communication with community services, especially around challenges and opportunities. Providers need to build relationships with these services so that transitions of care to and from the ED are established, and pathways optimized. Creating this offers care options that may avoid unnecessary ED presentations altogether.

There are nationwide examples of innovative practice that can be grouped into the following programs of care:

- a) Enhance relationships with programs that promote appropriate ED avoidance:
 - Prehospital access to responsive and timely home-based services including multidisciplinary care (Registered Nurse, Physician, Care Aid, Physical Therapist, Occupational Therapist, Pharmacy, Speech-Language Pathologist etc.). For

Primary Care: a Qualitative Metasynthesis. J Gen Intern Med. 2019 Nov;34(11):2610-2619. doi: 10.1007/s11606-019-05128-x. Epub 2019 Aug 19. PMID: 31428988; PMCID: PMC6848423.

example, the House Calls program in Toronto, Ontario: the Seniors First program in Saskatoon, Saskatchewan.

- Prehospital access to institutional-based care, including respite and rehabilitative services; short-stay units that allow enhanced care for a brief period while older people recover from challenges and functional decline associated with mild to moderate illnesses that otherwise do not require acute care.
 - Use of alternatively trained health care providers such as Community Paramedicine and Nurse Practitioners to provide enhanced and timely community-based care that was previously unavailable due to either geographic constraints or other service limitations.
- b) Enhance programs and relationships with programs that promote improved ED throughput:
- Dedicated geriatric emergency management (GEM) nurses serve a critical role in the ED to help with care of older adults, and have been shown to reduce repeat ED visits.⁵ They are trained to complete targeted assessments of older people in the ED, to help with clinical assessment and decision-making, and to make care recommendations and community referrals for additional services.
 - Standardized communication tools from community providers including private/personal care homes and long-term care that provide essential patient information, including primary concern, past medical history, medications, functional and cognitive status, goals of care, contact information for care providers and next of kin. Regional implementation of such programs has been shown to enhance information-sharing, improve transitions of care and provider experience, e.g. Yellow Envelope program in Australia.⁶
- c) Enhance programs and relationships with programs that promote successful discharge from the ED:

⁵ Leaker H, Fox L, Holroyd-Leduc J. The impact of geriatric emergency management nurses on the care of frail older patients in the emergency department: a systematic review. *Canadian geriatrics journal*. 2020 Sep;23(3):250

⁶ https://www.safetyandquality.gov.au/sites/default/files/2019-06/transfer_to_hospital-envelope_template.pdf

- Identification of older people at risk in the community through routine ED screening, and subsequent implementation of enhanced community follow-up and supports. There are many tools the ED can use to identify older people at subsequent risk of decline; early assessment and intervention may prevent repeat ED attendances and enhance longevity of discharge.
- Access to short-stay community-based units that allow enhanced care for a brief period, while older people recover from challenges and functional decline associated with mild to moderate illnesses that otherwise do not require acute care.
- Timely access to responsive home-based care and support that can provide enhanced care upon discharge from the ED.

Disaster Readiness in the Geriatric Population

Older adults are more likely to face adverse consequences in times of natural disasters. This is in part due to mobility impairments, decreased sensory function (vision and hearing impairment), pre-existing medical conditions, and pre-existing social vulnerabilities.⁷

It has been suggested that to be successful in a disaster situation, three levels of target preparedness and intervention should occur by older people. These include:

- Personal education to the person and their family/caregiver.
- Establishing agency with existing care services that can be enhanced during disasters, such as meal programs, transportation services, and home nursing programs.
- Incorporating older patients' specific needs into the emergency management system at a community level.⁹

The American Red Cross recommends that older people have a clear understanding of their personal needs, including mobility and sensory devices, medication and medication

⁷ Fernandez LS, Byard D, Lin CC, Benson S, Barbera JA: Frail elderly as disaster victims: emergency management strategies. *Prehosp Disast Med* 2002;17(2):67–74.

information, medical equipment supplies, and clear communication plans, such as contact cards for family, and care providers.⁸

Application of Virtual Care Modalities

Telephone or video-based consultation has received increased attention and development since the COVID-19 pandemic however, its existence is not new. Virtual consultation and assessment have been present in specific populations for many years, including those in rural and remote places, as well as for people whose ability to leave their home environment is restricted (e.g. RaDAR and the Remote Memory Clinic, Saskatchewan and the Telemedicine IMPACT Plus Clinic - Geriatric Arm, Ontario).

The COVID-19 pandemic brought about an explosion of virtual health initiatives, including many aimed at better accessibility for at-risk seniors, preventing social isolation and loneliness, and improving access to specialist and multidisciplinary assessment for those who would otherwise struggle to obtain it. Population-wide telehealth services⁹, such as the nationally available 811 (RN-led but provincially-run and includes varying models), became central fixtures for many to access testing, assessment and care. While several programs around the country that use telehealth triage/physician referral claim it results in significant ED avoidance rates, there's little evidence to support this, especially in older service users. This may be because of the rapidity and necessity of their role, however more evidence and evaluation are needed to support these claims.

Despite this, we believe virtual care is here to stay, and will have an important role for many older people. Virtual care has been shown to reduce complications related to travel and distance, even in those with cognitive impairment.¹⁰ It will likely be especially important in rural settings to enhance accessibility to specialized care and follow-up. However, careful patient selection and clinic set-up must be considered, as older people are often more complex, and

⁸ Emergency Preparedness for Older Adults, <https://www.redcross.org/get-help/how-to-prepare-for-emergencies/older-adults.html>

⁹ 811 healthlines: Newfoundland and Labrador: <https://www.811healthline.ca/medical-advice-and-health-information/>; PEI <https://emci.ca/integrated-health-programs/>; SK <https://www.saskatchewan.ca/residents/health/accessing-health-care-services/healthline>

¹⁰ <https://www.frontiersin.org/articles/10.3389/fneur.2021.761965/full>



virtual services lack the ability to perform physical examinations and gather nuanced data that only in-person assessment might allow.

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Appendix 5: The Facility-Level Accountability Framework

“

Emergency inflow is often viewed as a problematic and unmanageable source of variability, but in reality, ED inflow is highly predictable. With the exception of disaster situations, ED arrivals and admissions can be predicted to the hour.

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This facility-level framework addresses the patient journey into and through acute care facilities. While the system level framework is largely conceptual, the facility-level framework provides concrete strategies to make patient care accountability a reality, and increases the likelihood that patients receive the right care in the right place. It discusses accountability zones, program transitions, bottlenecks, triage, reverse triage, and high-value care, with the goal of mitigating ambulance offload delays, emergency access block and hospital access block. It recommends a compact indicator set to track accountability performance.

Patient queues appear at consistent locations in acute care settings. Queues represent care bottlenecks and unmet needs. The EMS-ED (Emergency Medical Services-Emergency Department) transition is a critical bottleneck, where constraints include the triage process and the unavailability of ED care spaces. The ED-inpatient transition is a second critical bottleneck, which is often limited by inpatient referral processes and by delayed transfer to an inpatient care space.

Problem	Patient status	Queue Location	Patient need	Accountability	Process time goal
Emergency access block	Ambulance arrival	EMS stretcher	An ED care space	ED	30 min
	Walk-in arrival	Waiting room	An ED care space	ED	0-60 minutes by CTAS level
Hospital access block	Referred ED patient	ED stretcher	Disposition decision	Inpatient MD	2 hours
	Emergency inpatient	ED stretcher	Inpatient care space	Inpatient program	2 hours
Community access block	Referred inpatient	Hospital bed	Community-LTC	Community-LTC	7 days / 4% ALC rate

Table 7. Bottlenecks and Accountabilities

The ED Accountability Zone

Accountability Transition at the EMS-ED Interface

EMS provides prehospital care, not hospital care. EMS accountability ends at the time of ED triage, so patients on EMS stretchers fall within the ED accountability zone. It is an ED responsibility to manage these patients rather than leaving them under EMS care. Delays occurring after ambulance arrival relate to ED occupancy, process delays and to the actual offloading process. The ambulance offload time target is 30 minutes from arrival, which incorporates ED triage, registration, handover communication and patient offloading to an ED location. Offload location and speed will depend on patient status.

ED Accountability (“No Patient Left Behind”)

ED accountability means providing timely assessment and care, and having queue management strategies and surge contingency plans. EDs should adopt a no patient left behind mentality: patients should be triaged IN to care areas, rarely or never OUT to external waiting rooms or hallways. Triaging IN puts patients in the vicinity of care providers, facilitates recognition of severe pain or clinical deterioration, and makes ED staff aware of their queue.

The *law of mass action* states that the rate of a chemical reaction is proportional to the concentration of the reactants. This law applies to care systems, where the rate of a process is proportional to the concentration of patients queuing in front of it. If there are no waiting



patients in view, there is less motivation to maximize efficiency, expedite discharges or implement innovative process change. [i] Allowing patients IN has other benefits: It reduces patient frustration and anxiety and allows patients to see that staff are doing their best to provide care. [ii,iii,iv] Conversely, diverting patients to external waiting areas puts them in an unsafe location (triage nurses cannot monitor waiting rooms), leaves them out of sight and out of mind for care providers, and gives ED staff an illusion of control that reduces the impetus to develop or activate adaptive responses and access contingencies.

Management By Closing the Door Promotes Stasis - Not Innovation or Efficiency

Triage In! Provide the Right Care in the Right Place

On arrival, CTAS 1 patients will go immediately to a critical care location. CTAS 2 and 3 patients should go within 30 minutes to a staffed ED care area, capable of providing necessary assessment and management. Triageing these patients to unstaffed areas like external waiting rooms or hallways should be tracked as a process deviation. Patients who have unstable vital signs, altered mentation or agitation, who are frail or incapable of sitting, or who have a possible life-limb threat based on triage assessment will typically go to an acute nurse-staffed stretcher. The same time goals and inflow principles apply to ambulatory self-referred CTAS 2-3 patients, and those arriving with police. Patients who are under arrest, agitated, flight risks, or who pose a threat to staff may require a period of police or security attendance.

CTAS 2 and 3 patients who can sit, and have no apparent life-limb threat, may be directed to an internal rapid assessment zone (RAZ) or intake area (see below). Patients with mental health problems may be placed in psychiatric assessment areas, while those with isolated orthopedic injuries, extremity pain, back pain, burns, wounds, contusions, eye problems and other low complexity single-system problems may be directed to minor treatment areas. Minor treatment is a more appropriate term than “Fast Track,” which may give patients unrealistic expectations.

Triage is often a bottleneck that can aggravate emergency access block and a priority for emergency care access initiatives.



“

If there are no waiting patients in view, there is less motivation to maximize efficiency, expedite discharges or implement innovative process change.

”

You Can't Push Patients into a Full Department!

It's difficult to triage into a full department, but it's worse to leave patients with potentially serious illness in unmonitored areas without assessment or care. Triageing out (caring for some patients while setting others aside) is an example of rationing. Current ED processes typically leave undifferentiated and untreated patients blocked in waiting rooms to assure optimal ongoing management for stable patients already in care. This is an example of paradoxical care allocation.[48] When demand exceeds capacity, thoughtful care allocation decisions are required. If care resources are limited, priority logically goes to patients with the greatest need. [2,16,49,50]

Matching care provision to need is challenging because patient need diminishes with the treatment provided during the ED visit. On their arrival, undifferentiated patients are high priority. They may be in pain or have occult serious illness that is undetectable during a triage evaluation (e.g., headache with subarachnoid hemorrhage or leg pain with necrotizing fasciitis). A dangerous resource allocation decision is if a stable patient is occupying a nurse-staffed stretcher awaiting repeat troponin results while a woman with a ruptured ectopic pregnancy is blocked in a hallway. This type of care maldistribution—which should be a never event—is in fact a regular occurrence.[48] It happens because we have become comfortable addressing demand-capacity mismatches by closing the door and leaving sick patients in queues.

Ambulance offload time in the ED (from arrival to crew released)	30 minutes
Time to ED triage	10 minutes
Left without being seen (LWBS) rate	2.5%
Time to ED physician, stratified by CTAS levels 1-5	0-120 minutes
EDLOS (Length of Stay) from triage to disposition (disposition refers to discharge or referral for admission)	CTAS 1-3: 4 hours
	CTAS 4-5: 2 hours

Table 8. ED Performance and Time Targets

ED Accountability: Challenges and Strategies

The Nurse-Staffed Stretcher Bottleneck

The nurse-staffed stretcher is the functional unit of the ED, and a key bottleneck server that is typically 100% occupied. The law of constraints tells us that flow can be improved by adding resources at bottlenecks or unloading bottleneck servers. [57,58]

Mitigating Strategies

Proactively Match Demand and Capacity [58]

Emergency demand for a nurse-staffed stretcher is predictable: it’s highest in the afternoons and evenings, and lowest overnight. It’s higher on Mondays and lower on weekends. [31] ED managers should be aware of site-specific high-acuity inflow patterns and staff accordingly. This might mean reducing RN assignments overnight and augmenting evening coverage, or shifting hours from weekends to Mondays, or adding a nurse assignment on Monday morning to prepare for expected incoming volume. [13]

ED nurse-staffed stretcher capacity is profoundly altered by the need to manage boarded inpatients. This demand makes it more difficult to match emergency demand to capacity as recommended above; however, inpatient boarding patterns are also clear in the data. These staffing needs should be tracked and planned for, independent of emergency care. Boarding data will be invaluable for defining inpatient queues, and when considering innovative approaches to managing them—for example, medical assessment units (see below) or intake/capacity buffers on inpatient wards.

Divert Patients from the Acute Stretcher Bottleneck to Intake or Rapid Assessment Zones

Intake and RAZs are excellent diversion strategies for emergent and urgent patients. [v,vi] These are high-volume mid-complexity, no-dwell care areas with linked waiting chairs and treatment chairs (*Figure 24*). Most CTAS 2 and 3 patients are appropriate for intake or RAZs, assuming they are capable of sitting and have no apparent life-limb threat. Examples include abdominal pain, headache, dizziness, renal colic, chest pain, back pain. Rare patients are assessed in an intake zone and then upgraded to a monitored stretcher, but this is not a problem.

These areas typically employ a coordinating nurse (intake leader) who is responsible for prioritizing incoming patients and assisting with care activities. [68] Other nurses perform focused assessments and care, ideally in conjunction with physicians. Depending on department philosophy, nurse diagnostic and treatment protocols may be initiated. Intake patients are examined on a stretcher or exam table, then moved to a treatment chair if they need IV medications, or to a waiting chair if they require investigations. Patients do not own or dwell in a stretcher, which is the primary distinguishing feature from ED acute care areas. For this reason, high throughput is achieved using relatively few stretchers. Intake zones are distinct from minor treatment areas, which are high-volume low-acuity single-system care zones that specialize in minor trauma, burns, wounds, orthopedic injuries and EENT problems. Intake zones and minor treatment areas provide large buffer capacity to unload acute nurse-staffed stretchers.

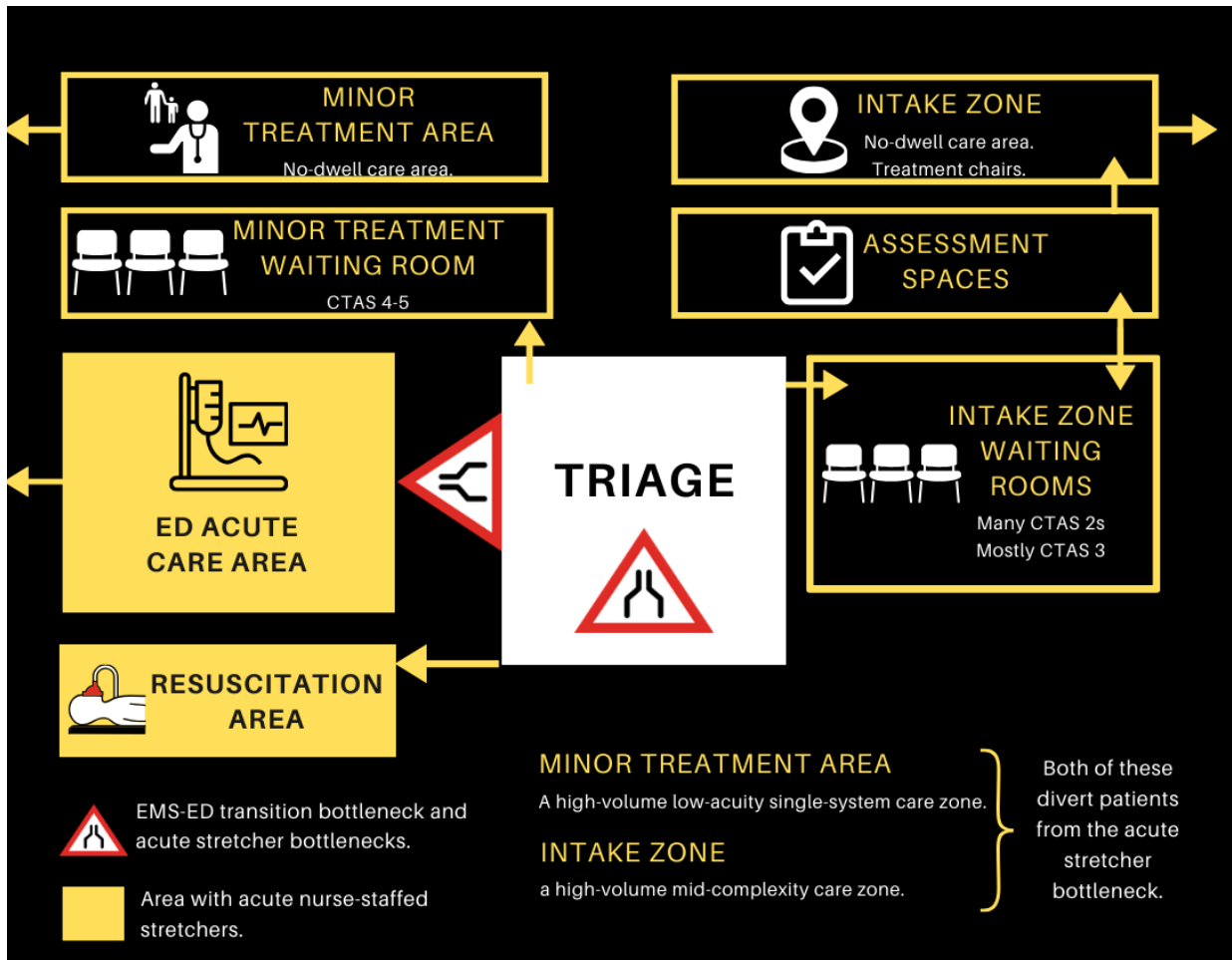


Figure 22. ED Bottlenecks and Inflow Options

Advanced Triage

Advanced Triage is a good option when urgent or emergent patients arrive, and no acute care spaces are available. A physician can respond to triage, rapidly assess the patient, determine likely diagnosis and stability, and in many cases divert patients away from the nurse-staffed stretcher bottleneck to an alternate care location. [59,60,61] A motor vehicle accident victim with a spine board and collar might be quickly cleared to a minor treatment stretcher or waiting area, and a stable patient with possible appendicitis might have imaging initiated and go to an intake waiting location, rather than an acute stretcher. Advanced front-end provider response adds precision to the triage determination and reduces time to provider in concerning cases. [62]

Triage and Reverse Triage

Triage and Reverse Triage are strategies to free up care capacity under high occupancy conditions and to match available resources to patient need. Within each ED area, care allocation decisions are made using a series of ongoing triage and reverse triage decisions. In this context, **triage** means directing resources to patients in the accountability zone who have the greatest need—often those in the queue. **Reverse triage** means redirecting resources away from patients whose need and benefit have diminished, or withdrawing care resources that are no longer required. [54,55,56] For example, moving a stable chest pain patient out of a monitored stretcher to a waiting chair, discharging patients whose imaging study can be performed as an outpatient tomorrow, or allowing patients with renal colic to receive fluid and analgesics in a chair while awaiting their CT. If immediate testing will not change the patient’s outcome, it can be deferred.

Surge Contingencies and Protocols

EDs should develop surge contingencies, including physician and nurse call-ins, accelerated discharges, or even temporary reassignment of minor treatment staff and stretchers to acute care roles (review the disaster plan for other ideas). ED managers should match care provision as much as possible to expected variation (e.g. high Monday inflow) in patient demand by adding or reducing flex capacity. [13] During full occupancy situations with no stretcher availability, patients may be diverted briefly to alternate acute care locations (e.g., resuscitation or triage stretchers) until an appropriate care space can be opened. Surge protocols to move admitted inpatients to appropriate inpatient units should be activated when necessary. Refer to *Appendix 6, Overcapacity Protocol*, for details.

Proactive Ambulance Redirection

Many systems allow EDs to mitigate volume surges by initiating ambulance diversion. This usually requires meeting diversion criteria but it is reactive, prone to gaming, may occur inequitably despite similar crowding conditions in multiple departments, complicates care by delivering the wrong patient to the wrong site, and is one more example of management by blocking access. If EMS diversion is used as a surge contingency, it should be done with the goal of smoothing demand across facilities, it should be initiated centrally rather than by a stressed facility, and it should be based on real-time EMS arrival and offload data. Several cities have such systems in operation.

Reduce LOS (Length of Stay) by Addressing Physician Bottlenecks [58]

Reducing stretcher dwell time and overall EDLOS are other ways to free up ED capacity. LOS reduction requires focus on two physician-dependent intervals: door-to-doctor and doctor-to-disposition. Physicians are the ED's most expensive resource. Like triage nurses, they are a bottleneck resource, usually 100% occupied. Based on the same concept of matching capacity to demand, physician staffing should be matched to known ED inflow patterns, which are highly predictable. Because physicians do not like to be inactive during shifts, they tend not to overstaff low periods, but they may understaff high periods. Fixing the physician bottleneck may mean:

- Adding physician hours during predictable high-volume periods, or
- Flexible shifts with early call-in and go-home options, or
- Physician surge shifts (short unassigned shifts during busy periods that physicians can sign up for in advance), or
- Even on-call coverage.

Adding physician hours has cost and HR implications. Another important approach to the physician bottleneck is to unload MDs by shifting nonclinical and administrative tasks to other providers. As bottleneck servers, the physician role should be limited to making diagnostic, treatment, and disposition decisions, and performing procedures. Better integration of nurse-physician activities to improve teamwork, or adding clinical assists like physician assistants, nurse practitioners or scribes,¹¹ are options.

Changes in ED case mix profoundly affect ED operations. Patients with complex chronic disease, mental health and addictions, frail elderly, and patients with homelessness or other complex social concerns now depend disproportionately on ED care. These complex patients now outnumber traditional "emergency patients," fall outside the usual ED physician scope of knowledge, require more time than ED physicians can offer, and their care requires awareness of community resources that ED physicians do not possess. In the spirit of unloading bottleneck

¹¹ Walsh P, Cortez V, Bhakta H. Patients would prefer ward to emergency department boarding while awaiting an inpatient bed. *J Emerg Med.* 2008;34:221-226.

servers, hospitals can substantially enhance flow by assuring that relevant geriatric, homecare, mental health and addictions expertise is available in the ED to support these patient groups.

Improving doctor-to-disposition time means reducing time-consuming or deferrable investigations, improving turnaround times for necessary investigations, and using the simplest effective treatment approaches (e.g., oral rather than IV rehydration, fewer IV medications, and fewer first-dose drug dispenses if a community pharmacy is open). Research is convincing that ED physician decisions to refer, to perform CT or to perform ultrasound imaging are powerful drivers of prolonged EDLOS.^{vii} Consultation for patients requiring hospitalization is unavoidable but ED physicians should question in other cases whether *immediate* specialty consultation or advanced imaging is necessary or whether these can be deferred to an outpatient setting. The causes of physician-related delays vary across facilities, and there are a multitude of improvement possibilities. This author suggests a site-specific improvement team to brainstorm the best approaches to these two key ED time intervals.

The Inpatient Program Accountability Zone

Accountability Transition at the ED-Inpatient Interface

Extended admitted patient LOS in the ED (boarding) is the number one cause of ambulance offload delays, the #1 threat to emergency care access,^[31] and the number one operational priority for EDs in high-income countries. [18,38, viii, ix, x, xi, xii] EDs deliver emergency care, not inpatient care. ED accountability ends at the time of an admission order, which means admitted patients in the ED fall within the inpatient accountability zone. It is an *inpatient responsibility* to manage these patients, rather than leaving them under ED care. Care delays at the ED-Inpatient transition are ubiquitous and often prolonged. These relate to the inpatient referral process, the inpatient transfer process and high hospital occupancy rates.

Inpatient Accountability (No Patient Left Behind)

Inpatient accountability means providing *timely assessment and care* and having queue management strategies and surge *contingency plans*. Like EDs, inpatient programs should adopt a *no-patient-left-behind* mentality. Admitted patients should be rapidly transferred to the *right* care areas.



A root cause of ED boarding is the decoupling of queue management accountability from operational expectations: programs are not expected to be accountable for their waiting patients.[15] When a hospital program determines they are unable to manage their queue, the default process is to stop inflow and board inpatients in the ED. If hospital programs close beds for budgetary reasons—to allow staff vacations (seasonal closures) or because of sick calls—the unstated assumption is that the ED will simply hold more inpatients. If an inpatient discharge is delayed from 0900 until 1600 hours, one more ED stretcher will be blocked for the day.

For patients referred to an inpatient service, the ED-inpatient transition interval has two components. **The consultation interval**, reflecting consultant response, is measured from consult request to disposition decision (an admit, discharge or transfer order). This is a shared ED-consultant accountability period. **The inpatient transfer** interval reflects program and operational responsiveness and is measured from admission order to unit transfer. The target time for each interval is 2 hours, a total of 4 hours from consultation to unit transfer. A 4-hour target from ED triage to consultation and a 4-hour target from consultation to unit transfer means a cumulative 8-hour target for admitted patient LOS in the ED. Inpatient time targets were summarized in Chapter 7.

The Consultation Interval

The first bottleneck for ED patients awaiting inpatient care is the delay from consult request to admit order, which may last many hours. [xiii] Consultation delays have major operational impacts. In a hospital that admits 20,000 patients per year, a mean 3-hour consult decision time (vs. 2-hour target time) means 20,000 hours of lost ED capacity—enough to treat ~5,000 additional ED patients who are blocked in waiting rooms. Similarly, a 12-hour EDLOS, compared to an 8-hour target LOS, means 80,000 hours of lost ED capacity—enough to treat ~20,000 more ED patients (see *Table 9*).

EDLOS for admitted patients	ED stretcher hours used	Opportunity cost
4 hours	80,000	20,000 ED visits
8 hours	160,000	40,000 ED visits
12 hours	240,000	60,000 ED visits
16 hours	320,000	80,000 ED visits
20 hours	400,000	100,000 ED visits

Table 9. Effect of Prolonged Inpatient Boarding on ED Operational Capacity

**In a hospital with 20,000 admissions per year and ED processing time of 4 hours/patient

The most efficient consultation process involves attending-to-attending discussion and immediate admission order, followed by trainee assessment if necessary. Another acceptable process is to have a decision-maker (attending physician or senior house staff) perform a rapid assessment to assure patients are appropriate for their service, then write an admitting order and assign junior staff to do further evaluation and complete treatment orders.

In specific instances (e.g., hip fracture, large kidney stone with intractable pain, etc.), consulting services may prefer that the ED initiate admission and enter holding orders to avoid a disruption in the operating room or a 3:30 am telephone discussion. Consulting services can customize the process to suit their needs, as long as they are achieving negotiated time targets. Strategies to address consultation process challenges are summarized in Appendix 6. Special consultation considerations include house staff involvement, inpatient service caps, off-hours referrals, unclear need for admission, desire to avoid brief admissions, wrong service (Goldilocks) referrals and batch referrals.

The Inpatient Transfer

The delay for admitted patients being moved to an acute inpatient bed is the greatest flow constraint and therefore the number one priority problem. [18,31,38,71,72,73,74,75] The theory of constraints says that until this delay is addressed, other efforts to improve efficiency, reduce waiting times, ED lengths of stay and ambulance offload delays will have limited benefit. The table above illustrates the profound effect of ED boarding times, where even a one-hour delay in inpatient transfer is operationally important, and each four-hour increase reduces ED care capacity by ~20,000 patient visits per year. Small flow improvements have a profound effect on emergency care access.

The ***law of mass action*** states that the rate of a chemical reaction is proportional to the concentration of reactants. This law is relevant to care systems, where the rate of a process is proportional to the concentration of patients queuing in front of it. If programs can address inflow challenges by closing the door, leaving waiting patients out of sight and out of mind, there is less motivation to optimize processes, expedite discharges or implement innovative change.[1] Unit staff develop an illusion of control that reduces the need to initiate adaptive responses and contingency plans. Expediting access despite high occupancy introduces an evolutionary stressor that drives innovation and improvement.

Timely transfer puts incoming patients in the vicinity of the right care providers, reduces treatment delays, improves outcomes, and makes inpatient staff aware of patients queuing for their care. Timely transfer also reduces patient frustration and anxiety. Research shows that, facing care delays, patients would rather be in inpatient hallways than in ED waiting rooms. [ii,iii,iv,12] Conversely, blocking admitted patients in ED stretchers leaves them with the wrong providers in a noisy chaotic environment where the lights never go out, where there is no privacy, limited bathroom access and little opportunity for sleep.

You Can't Push Patients into a Full Hospital!

It's not ideal to push patients into a full hospital, but it's safer than leaving undefined and seriously ill patients outside without care. When patient need exceeds care capacity, rationing is inevitable and thoughtful allocation processes are necessary. Priority for limited resources logically goes to patients with the greatest need and those who will experience the greatest benefit. [2,16,49,50]

Matching care provision to patient need is challenging because need diminishes based on treatment provided during the hospital stay. Incoming patients with acute illness or injury are high priority. Early in their stay, these patients benefit from advanced expertise and aggressive or interventional care. As they improve, the transformation to wellness continues but illness severity (need) and treatment intensity (benefit) diminish as inpatient time progresses.[48]

Whether the diagnosis is myocardial infarction, hemothorax or hyponatremia, patient need and benefit are front-loaded. Ironically, hospitals often allocate care resources in a paradoxical fashion, leaving [1] incoming acutely ill patients blocked in ED stretchers and waiting rooms in order to assure ongoing optimal management for stable patients already in care. If a stable patient is occupying a semi-private room awaiting a nuclear scan, a rehab bed or a ride home while a patient with undiagnosed sepsis is blocked in a hallway, this is a dangerous resource allocation decision that is incongruent with accepted ethical principles. [2,16,49,50]

This type of care maldistribution is common and causes many adverse patient outcomes. [18] Recommended inpatient accountability time and flow targets are summarized in Table 10.

Consultation interval (referral to disposition decision)*	2 hours
Inpatient transfer time (admission order to unit transfer)*	2 hours
EDLOS for admitted patients	8 hours
Mean hospital discharge time (with scheduled departures)*	11:00 am
Actual LOS/Expected LOS*	96%

Table 10. Inpatient Performance and Time Targets
 Note: *Denotes critical access and flow target.

Inpatient Accountability: Challenges and Strategies

The Inpatient Bed Bottleneck is the primary hospital bottleneck. Operations management principles tell us to add resources at bottlenecks or unload bottleneck servers whenever possible. [58] Adding beds may be necessary in some settings, but other approaches provide benefit at lower cost. These include optimizing flow processes, providing the right care in the right place (appropriateness), matching capacity to demand, reducing avoidable demand (i.e. shifting care activities to outpatient settings), limiting demand variability (smoothing), reducing low-value care activities, optimizing hospital LOS, and improving outflow of ALC patients to community.

Mitigating Strategies

Optimize Flow Processes

Demand and capacity are primary determinants of access, but process speed and differential flow rates have dramatic effects on emergency and hospital crowding. ED inflow times are measured in minutes, while ED outflow to the hospital is measured in hours with an EDLOS target of 8 hours. Rapid ED inflow associated with slow hospital inflow is a recipe for inevitable severe crowding—even if hospital capacity is sufficient to address demand.

This type of flow mismatch predictably overwhelms EDs every day, beginning around noon and ending after midnight when sufficient time has elapsed to allow equilibration. [31] Flow differentials cause emergency access blocks, care delays, waiting room disasters and a constant sense of crisis. This phenomenon is easily confirmed by touring your ED between 3pm and 8pm, when you will find a war zone with EMS stretchers lined up in hallways and crowds of sick patients blocked in waiting rooms (*Figure 25*). Repeat the same tour between 3 am and 8 am, after flow equilibration. The hospital bed count has not changed, but you will find a calm ED environment with no EMS crews waiting, and every patient in a care space.

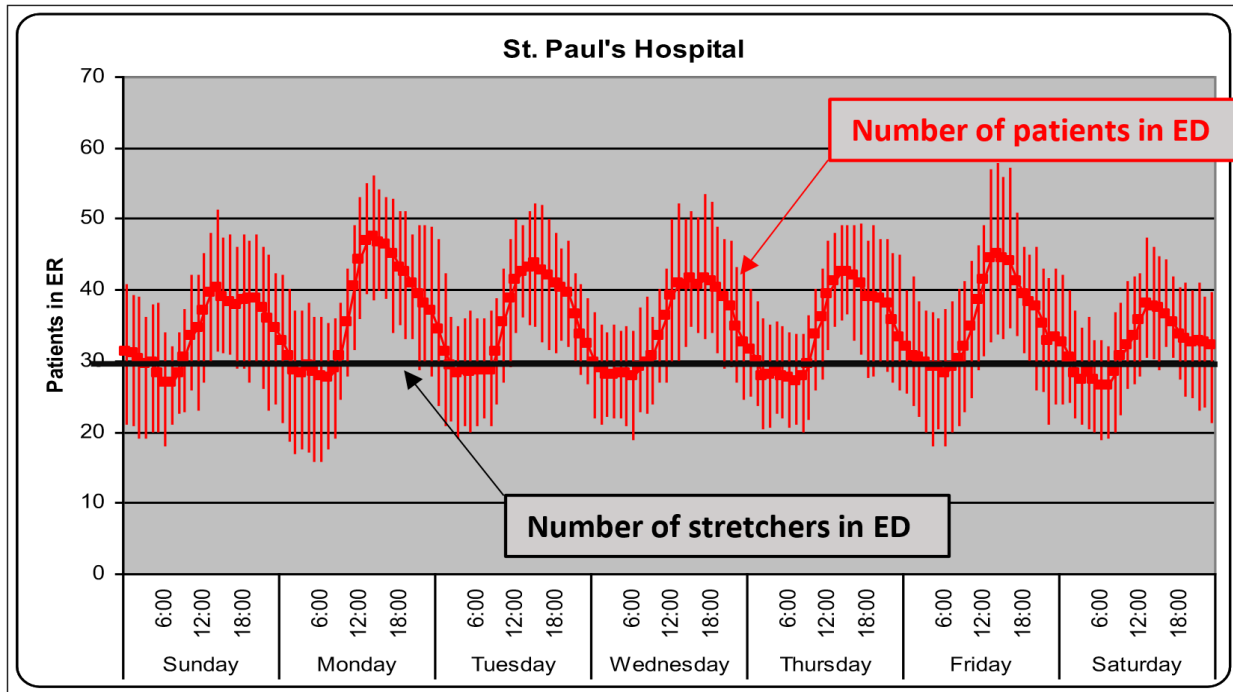


Figure 23. Effect of Flow Differentials on Emergency Access Block
**Rapid ED inflow early in the day and slow ED outflow until later in the day lead to predictable overcrowding conditions on a daily basis.*

Donald Berwick, President of the Institute for Healthcare Improvement stated that, “Flow is every bit as consequential for the health of our systems and the well-being of our patients and deserves the same strategic prioritization as safety.” [13] Optimizing flow processes will eliminate a substantial proportion of what appear to be capacity shortfalls without changing hospital capacity. It’s unlikely inpatient units will be able to match ED inflow rates. However, the same effect may be achieved by rapidly flowing admitted patients out of the ED into intake (buffer capacity) areas on inpatient units or to medical admission units that are designed to achieve rapid intake and subsequent controlled outflow distribution to inpatient units. Each of these options has the effect of moving part of the inpatient queue into an area of inpatient program control.

Modify Capacity

Programs that depend heavily on emergency departments to manage their patients may do so because of efficiency challenges, capacity shortfalls, poor flow processes, or all of the above. Achieving program accountability may require re-evaluation of program capacity, thoughtful



assessment of the resources necessary to meet the needs of their target population, adjustment of hospital bed maps, or even new investment (program right-sizing), assuming there are demonstrated high levels of program appropriateness and efficiency. Even if no overall capacity increase is provided, programs should adjust capacity to match known variability in day-to-day and seasonal patient demand—for example, operate intake beds for morning admissions and open “swing” beds during anticipated surges. [13]

Day-Ahead Demand Capacity Matching [13]

Because emergency admissions are so predictable, day-ahead demand-capacity matching is an important strategy. Program leaders should ensure that each unit or clinical area has capacity for new patients at the beginning of each day and, specifically, that they are prepared to accept incoming elective patients as well as predicted emergency admissions. The expectation to create enough inpatient space for anticipated next-day demand should be incorporated as a key accountability strategy.

Reduce Demand on Inpatient Beds

Clinical Decision Units (CDU) and Medical Assessment Units (MAU) [13, xv]

CDUs can prevent brief avoidable hospitalizations. MAUs can serve as rapid ED outflow destinations and flexible buffer capacity to reduce stress on inpatient units. Rather than pushing patients to the wrong units during surges, which creates inefficiency for inpatient services, patients can be temporized in an MAU until the right unit has an available bed. MAUs can investigate, diagnose, treat and discharge (or admit) patients. They can arrange discharge to next-day specialist or clinic appointment, and they can prioritize high impact care pathways (e.g., frail elderly short stay). MAUs can be combined with CDUs to create a powerful hospital care resource, or they can limit themselves to providing flexible buffer capacity during high inflow periods. The value of these units will differ depending on underlying capacity and efficiency factors and how they are used. For example, if MAUs are managed like standard inpatient medical units they will fail.



“

Programs that generate queues need waiting rooms.

”

Optimize Hospital Outflow

Achieving hospital LOS targets is essential to improve patient flow into and through the hospital. Better discharge processes can free up substantial hospital capacity. This is not news. Most hospitals have decades' worth of discharge planning initiatives behind them. Important themes include:

- Scheduled discharges
- Early discharges
- Weekend discharges
- Discharge checklists
- Structured discharge huddles
- Discharge display boards summarizing barriers to discharge (and how they will be addressed), discharge coordinators, and
- Bed utilization nurses to identify ALC patients and investigate prolonged LOS.

Most front-line nurses and physicians are more attuned to the patient in front of them [1] than they are to other waiting patients, to flow optimization or to discharge processes. When access blocks and care delays are not immediately apparent to them, they may resist flow and access improvement initiatives, seeing these as not patient-focused. These initiatives are constantly

working against gravity and require substantial leadership involvement, energy input, staff education and ongoing communication to succeed and be sustainable. [80]

Utilize Alternate Admitting Destinations

When the most appropriate inpatient unit is full and generating a queue, patients may be diverted to similar units (e.g., medical to medical) or occasionally to unlike units (medical to surgical). These options and overcapacity care concepts are discussed further in Appendix 6: Overcapacity Concepts and the Overcapacity Protocol.

ED Holding

The objective of an accountability framework is not to empty out emergency departments; it is to assure patients can access necessary care. This framework therefore does *not* suggest that all admitted patients must leave the ED. In the interest of program collaboration, there are times when it makes sense for a program—usually the ED—to continue caring for patients who have transitioned out of their accountability zone. [xvi] For example, if an ED is not operationally stressed and has capacity to accept incoming emergent and urgent patients, they might continue caring for admitted patients until an appropriate inpatient bed becomes available. Limits to ED holding are discussed further in Appendix 6, Overcapacity Protocols. [xvii]

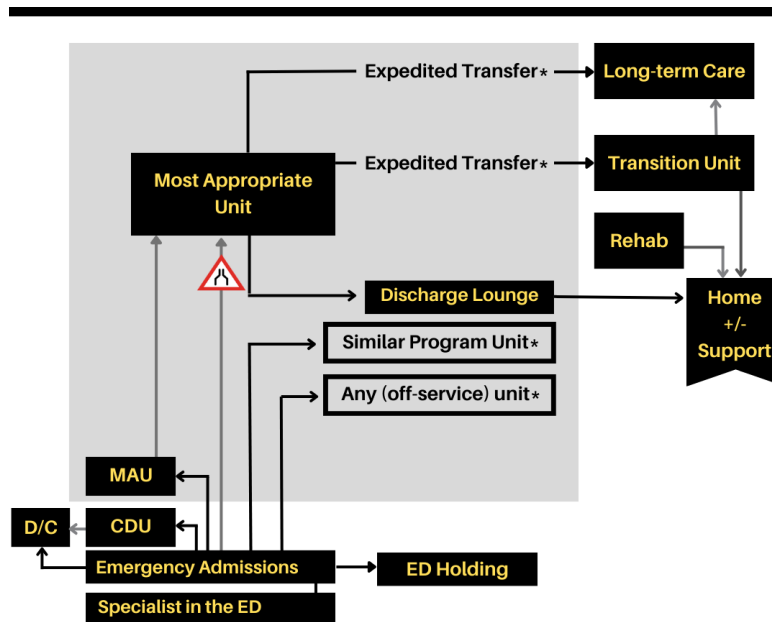


Figure 24. Unloading the Inpatient Bed Bottleneck: Gray arrows are default pathways to inpatient beds (primary hospital bottleneck). Black arrows are strategies for decompressing inpatient beds. * = pathways activated during OCP activation. A



specialist in the ED can provide options to convert many admissions into discharges (D/Cs). CDUs can prevent brief avoidable hospitalizations and MAUs can serve as rapid inpatient inflow destinations and flexible buffer capacity.

Triage and Reverse Triage

Triage and Reverse Triage are methods of reducing demand on hospital beds and matching demand to available capacity. In this context, triage means identifying the sickest patients in the accountability zone (not just those already in care) for expedited care. Reverse triage means redirecting resources away from patients whose need and benefit have diminished or withdrawing care resources that are no longer required. Both are strategies to improve the balance of care delivery and reduce delays for sick patients. Reverse triage can free up substantial hospital resources. Although this is counterintuitive to providers who believe it is never appropriate to limit care, there are strong arguments, previously described, supporting reverse triage as a mechanism of freeing up care capacity. [53,54,55] Programs should reassess patient needs and adjust care delivery on an ongoing basis to manage demand, free up capacity, and match available resources to patient need.

Specialist in the ED

Urban ED physicians can initiate specialty referral for admission but generally have poor access to immediate specialty consultation. Patient problems (particularly in tertiary centres) are sometimes too complex to allow discharge after a brief ED assessment; however, the availability of a real-time ED specialist assessment /management /follow-up option can convert many admissions into discharges.

Reduce Demand Variability (Smoothing)

Failure to control system variability is a major cause of access block. [13,47, xviii, xix, xx, xxi] Natural variability (e.g., influenza outbreaks) and scheduled variability (e.g., surgical admissions clustered early in the week) generate large fluctuations in bed demand. [31] High variability increases demands on many services, including lab, imaging, and ICU. [47] Service- and provider-related LOS variation, weekday/weekend variation in admissions and discharges,ⁱ seasonal bed closures, staffing shortfalls, diminished consultant availability and plummeting hospital discharge rates on weekends—as well as lack of palliative or LTC intake outside of short working day bankers' hours—mean that system capacity is also highly variable and unmatched to patient demand.[31] All of these factors are sensitive to better demand management and inflow planning.[83]

Uncontrolled variability in demand and capacity are incompatible with facility efficiency. These create more severe and prolonged overcapacity situations during which hospital access block and ED boarding become extreme. High levels of variability require that hospitals target lower occupancy levels to accommodate demand fluctuation, but budgetary concerns make lower occupancy levels unpalatable to administrators and funders, who often feel that hospitals should not have unused capacity. [1] Smoothing variability and matching demand to capacity are essential, effective, and underutilized strategies that would resolve the care gaps seen in many hospitals. [47,82,83,84,85]

Emergency inflow is often viewed as a problematic and unmanageable source of variability, but in reality, ED inflow is highly predictable. With the exception of disaster situations, ED arrivals and admissions can be predicted to the hour. Emergency variability is referred to as natural variability, and it is difficult to modify. In most hospitals, scheduled variability associated with elective admissions, surgical scheduling, and poorly-managed discharges accounts for a much larger proportion of variability. This means hospitals actually create much of their crowding and overcapacity problem.[47]

Scheduled admissions (elective variability) are ideally smoothed around natural emergency variability to reduce demand peaks. Instead, elective variability is often stacked on top of natural variability to create demand highs that overwhelm hospital resources and trigger periods of hospital crowding. Reducing elective variability (smoothing) is essential for efficient hospital operations and is an important high-yield solution. This is particularly true for surgical scheduling, which is the main source of elective variability and a major cause of hospital access block. [31,81,82,83,84] Facilities should assure that elective surgical schedules are designed to create a predictable flow of patients to downstream ICUs and inpatient units. [13]

Activate Surge Contingencies and Protocols

Inpatient programs should develop surge contingencies specific to their circumstances. These may include transfers, service agreements, capacity enhancement, discharge lounges, accelerated discharges (review the disaster plan for ideas), overcapacity care spaces, and surge protocols for the expedited transfer of ALC patients to transition units or overcapacity care locations in the community (discussed in *Appendix 6: Overcapacity Protocol*). There are many options to consider before blocking sick admitted patients in ED stretchers.

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Additional References can be found [at the end of Section Three](#)

Appendix 6: Overcapacity Concepts and the Overcapacity Protocol

Conceptual accountability is easy, but actual accountability is hard. Accountability frameworks clarify program expectations, but accountability strategies—especially surge contingencies and queue management plans—are necessary to move accountability beyond a concept. This appendix highlights proactive strategies for achieving accountability targets. It also summarizes program-specific responses developed by leaders and staff in multiple hospital and community programs to accommodate flow during overcapacity protocol (OCP) activation.

Overcapacity Concepts

Before describing the OCP, it's important to discuss pull (provider-driven) and push (demand- or patient-driven) processes. In a pull system, receiving providers control patient inflow and pull patients in when capacity is available, and when they're ready for the next patient. Readiness is based on perceived ability to care for a patient under preferred operating conditions. Care units would ideally pull patients rapidly when they're admitted; but in pull mode there is no urgency to activate surge contingencies, free up inpatient capacity or deviate from normal processes because patient inflow can be stopped at any time.

Pull systems are provider-driven and protect preferred operational processes even during surge periods. This means patients and upstream programs suffer the consequences of access delays related to surges and program capacity or efficiency shortfalls. Pull processes can remain the default operational mode under normal conditions, but during surges and at times when program access block is worsening, a push contingency may be necessary.

In a pure push system (not proposed here), patients would automatically flow to the right program when their care need is identified. Right care in the right place improves patient outcomes and system efficiencies. An effective overcapacity protocol is a partial step toward that solution. Under specified conditions of severe access block, a demand-driven overcapacity protocol should be activated during which patients are pushed more rapidly than usual to the most responsible program, forcing the program to activate surge contingencies and move waiting patients more promptly to the right care. [1-3].

Dr. Peter Viccellio was one of the first emergency medicine leaders to posit that it would be better for everyone if extra medical and surgical patients could be distributed to appropriate

medical and surgical units throughout the hospital, placing one or two extra patients on each ward, rather than having large numbers in EDs for prolonged times.

He suspected that when inpatient nurses and doctors saw patients in hallways, beds would be found quickly. [1] He was right. Rooms got cleaned faster. Patients were discharged more efficiently. Available beds were registered in the system as being available more quickly. “We found the nursing staff didn’t like patients in the hallway,” he said. “It was not very nice to the patient. Of course, it isn’t nice for them in the ED hallway either, but down there they weren’t so visible to the rest of the hospital. It’s not just room versus hallway—but which hallway,” he said.

Demand-sensitive OCPs prioritize patient need over system norms. An effective OCP is a push contingency plan to be activated when pull systems are failing and the system is overwhelmed. They are patient-focused but they stress receiving programs by temporarily removing their control over inflow. Some who read the description of a demand-driven OCP are uneasy with the concept. Their understandable response is, “*You can’t just push patients into a full emergency department or hospital!*”

This response is intuitive, but it embodies the *management-by-closing-doors* approach, and the alternative—blocking sick patients outside a full hospital—is even less acceptable. Nor is it feasible to have an open ED with a closed hospital, particularly when ED capacity is a fraction of hospital capacity, and when challenges manageable by an institution will overwhelm a single unit. If we believe that *high acuity* patients need access to timely care and if as a result there are *too many* medical, surgical, pediatric, mental health or geriatric patients in the hospital, it’s more appropriate to distribute small numbers to the most accountable medical, surgical, pediatric, mental health and geriatric units than it is to contain all of them in one emergency department that is already overcrowded and that doesn’t have the resources or expertise to care for them.

Inpatient leaders see chaotic ED conditions with sick patients in overcrowded waiting rooms and on EMS stretchers lined up along hallways. Some fear that opening the doors to these patients will create similar chaos on inpatient units and compromise hospital operations. Others argue that OCPs move patients into hallways. On the contrary, the main OCP objective is to move the sickest patients (and those not yet assessed or stabilized) *out of hallways* and into care spaces.

Expedited inflow for acutely ill patients will sometimes push convalescing patients into less optimal situations or trigger earlier discharges. While not perfect, this is the most ethical approach when care resources are finite, and it may even benefit patients who are pushed to less acute settings. [5-9] Overcapacity protocols have proven safe, with low rates of ICU transfer and mortality. [1,3,5,9-11] They reduce ambulance offload delays, as well as delays to emergency and inpatient care. They liberate care spaces for sick patients and improve patient outcomes. [1,2,5,10,11]

Likely Impact of Overcapacity Care

Evidence shows that overcapacity protocols are unlikely to create inpatient crowding conditions like those now seen in EDs. [8] Currently, under *pull* conditions, hospital inpatients accrue in ED stretchers while patients continue flowing in from the community. ED and inpatient care shortfalls are concentrated in a single unit, magnifying the apparent size of the problem and reinforcing the belief that *overcrowding* cannot be solved without large increases in system capacity. However, if unmet care needs are distributed across an entire facility, the resulting degree of crowding becomes substantially less.

Recent research addressed this hypothesis, asking the question: “If we expedite inflow for emergent and acute patients, what’s the likely impact on inpatient care demand?” The study looked at 1.8 million ED visits in 12 Canadian cities and estimated the *high acuity access gap* at 25 hospitals by multiplying the number of arriving CTAS 1-3 patients by their average wait time to reach an ED care space. [8] For each hospital, this access gap represented the absolute care shortfall, and the number of stretcher or bed hours that would be required to provide timely access for arriving high acuity patients. The study also looked at each hospital’s inpatient bed base (care capacity), excluding specialty areas like maternity.

Median inpatient bed base for the study hospitals was 462, which equates to over 4 million bed hours per hospital per year. The access gap for high-acuity patients, reflecting the amount of time that patients were collectively blocked outside EDs, was 46,000 hours per site per year on average. Results were similar at community and tertiary sites. This is a sizable gap during which many patients will suffer adverse events, but it represented only 1.14% of inpatient capacity at the corresponding hospitals, a gap that could be eliminated by a 90-minute reduction in average inpatient LOS for a hospital with 30,000 separations per year. [12] This suggests that if access block is viewed as a whole hospital problem (rather than concentrated in the ED) it could

be substantially mitigated by modest efficiency improvements with or without new capacity. [12]

The Overcapacity Protocol

Hospital leaders often say, “We tried an overcapacity protocol and it didn’t work.” They are correct: many OCPs are unsuccessful. This is usually because they were designed to fail. Effective OCPs are not supply-based or time-based. They do not apply arbitrary EDLOS time limits like the NHS 4-hour rule, they do not apply arbitrary limits on the number of overcapacity spaces on inpatient units, and they do not apply limits on the number of admitted (boarding) patients in emergency departments. They are demand-driven, sensitive to patient need, and they maximize the use of ED and hospital resources. [1,4]

This appendix will provide a detailed template for a demand-driven overcapacity flow protocol based on the successful Vancouver Coastal Health and Alberta provincial OCPs but modified by post-implementation learnings from the two jurisdictions. [10,13] The OCP package will describe guiding principles, triggers for OCP activation, patient eligibility criteria, OCP-related roles and responsibilities, hospital staff action plans, and recommended operational practices to assure OCP safety and effectiveness. [13]

OCP Physiology

Most overcapacity protocols are *supply-driven*. They identify a small number of overcapacity flex spaces on hospital units and stop inflow when these are full, regardless how many patients are waiting for care. Units can therefore regain inflow control and opt out of surge responses by delaying discharges, assuring that OCP spaces remain occupied. This turns OCP spaces into permanently-occupied care spaces. It restores the ability to solve demand-capacity mismatches by closing the door, and it eliminates the need to increase capacity or improve efficiency. Units that do develop effective surge plans, or improve flow, efficiency and appropriateness will be punished by ongoing inflow. Supply-driven OCPs rarely succeed and are more likely to inhibit care access than improve it. [4]

The law of inertia states that an object in motion remains in motion, and an object at rest remains at rest unless acted upon by an outside unbalanced force. Change does not occur without a motivating force. The ability to solve demand-capacity challenges by blocking inflow eliminates the need to change, innovate, optimize lengths of stay, improve discharge processes,

reverse triage, reduce waste, push ALC patients to community settings less damaging to their health, or even to lobby for needed program capacity. The overcapacity protocol is an outside unbalanced force. By pushing blocked patients into a program’s care zone, OCP serves as a (partial) evolutionary stressor that forces programs to develop actual solutions by modifying demand, care allocation, work processes, flow strategies, efficiency, or capacity. [14]

No Patient Left Behind

The OCP mantra “no patient left behind” reflects a belief that hospitals should not close the door on sick patients regardless of occupancy, and that the system must respond as a whole during surges. [13] If more patients are permitted into the hospital than normal operating conditions allow, care demands must be distributed across the facility in a balanced fashion, as much as possible to accountable programs,[5] rather than concentrated on a single unit that has no chance of managing it. Under OCP, high acuity arrivals are triaged into the ED, not to a waiting area, regardless of ED occupancy. This inflow pushes stable admitted patients to inpatient units if necessary.

Unlike the NHS and Australian 4-hour rules, the proposed OCP does not limit the number of inpatients boarded in emergency departments or their boarding duration. It’s demand-driven—activated only when an ED is overcapacity, heavily occupied by inpatients, and unable to accept high-acuity arrivals. [10] If inpatient programs implement effective queue management and surge strategies, the need for OCP activations will greatly diminish, and they can continue operating in pull mode indefinitely.

OCP Principles

- When standard pull processes fail, push approaches including OCP should be implemented in a consistent manner that distributes risk and care demands throughout the facility and moves patients to their most accountable programs.
- The overcapacity protocol should be activated to provide access for urgent or emergent patients who are blocked from care—not to promote flow for the sake of flow or merely to move patients to the right program.
- Higher levels of OCP activation will affect programs other than the most responsible program (e.g., elective surgery postponement). Patients should be

placed on the right unit the first time as much as possible to minimize impact on collateral programs.

OCP Development

The OCP-related strategies described in this document were not devised by the author. Prior to Alberta's provincial OCP implementation, all program leaders attended a provincial implementation meeting in Edmonton where the rationale for OCP and its basic inflow parameters were explained. Programs were asked to meet and develop proactive flow processes that would reduce the need to initiate OCP surges, and to develop internal response plans for use during OCP activations. [10,13] The contingencies summarized in this document therefore arose from providers in each program. These were intended to make the OCP more effective and more acceptable to hospital programs and patients.

OCP Activation Criteria [10,13,14]

1. No acute ED stretchers are available for arriving emergent or urgent patients, AND
2. ED occupancy (patients in treatment/staffed care spaces) exceeds 110%, AND
3. The percentage of acute ED stretchers occupied by admitted patients, patients waiting for consult decision, or patients waiting for diagnostics exceeds 35%.

When activation criteria are fulfilled, the most stable admitted patients in the ED will be distributed one by one on a no-refusal basis, within 15 minutes, to hospital beds or intake spaces on the most responsible inpatient unit. [10] All units pre-identify their best overcapacity care locations, usually unstaffed bedheads, lounges or hallway spaces near the nursing station. During OCP activations, inpatient units are expected to place sicker incoming patients into staffed beds, pushing stable patients or those awaiting discharge to overcapacity spaces or discharge lounges. Units require pre-determined adaptive strategies and contingency plans, which will differ on every unit.

Alternate OCP Activation Criteria

1. Any patient with an EDLOS greater than 24 hours should be moved promptly to a bed on the most accountable inpatient unit.
2. An OCP surge should be initiated if more than 20% of acute ED stretchers are occupied by admitted patients who have waited >8 hours for an inpatient bed.

NOTE: Criteria for hospital-to-community surges will be discussed later in the document.

OCP Levels

Level 1	Inflowing patients go to optimal units (renal to renal, sub-acute to sub-acute). If no Level 1 options are available, proceed to OCP Level 2.
Level 2	Patients go to similar units e.g., medical to medical. If no Level 2 options are available, proceed to OCP Level 3.
Level 3	Patients go to any unit (e.g., Medical to Surgical). Units are not required to go more than 10% overcapacity with dissimilar patients, so no more than 10% medical patients on a surgical unit. At level 3 consider lateral transfers, e.g., from Medicine to Mental Health. If no Level 3 options are available proceed to OCP Level 4.
Level 4	<p>Site VP, facility medical director and senior team meet to identify next steps within the facility and across the zone (zone OCP). At this stage, the team might decide to initiate additional measures, including:</p> <ul style="list-style-type: none"> • Ask EMS to initiate temporary 1-hour non-critical EMS diversion • Ask EMS to hold up to two non-critical patients consolidated under 1 crew in an ED hallway • Enlist department heads to facilitate early discharge of stable patients on multiple units • Early discharge of patients from the ED • Early discharge to community-LTC transition units • Open or expand an MAU-Surge unit to accept EIPs from the ED • Urgent repatriations of patients from the site to their home facility • Postpone upcoming elective admissions or procedures • Review other strategies from the facility’s disaster plan • Call code orange (Disaster)

ED Inflow Processes [13]

1. Arriving emergent/urgent CTAS 2-3 patients move within 30 min to an ED care space.
2. If no ED space is available, patients will move to an ED overcapacity space or intake space where care can be initiated.

ED Pre-OCP Actions

- Notify EMS dispatch that the site is approaching OCP conditions.



- EMS prioritizes pending interfacility transfers from OCP site.

ED OCP Actions [13]

1. When OCP activation criteria above are fulfilled, the ED charge nurse notifies the hospital flow coordinator that OCP criteria exist and that inpatient transfers should begin in 15 minutes.
2. The ED charge nurse provides a list of emergency inpatients with their diagnoses, their admitting service and their EDLOS. Admitted patients should be prioritized for inpatient transfer based on longest EDLOS unless there are compelling reasons to do otherwise.
3. The hospital flow coordinator will contact optimal and similar inpatient units to determine which are most able to accept an overcapacity patient rapidly, and to determine which unit will be #1, #2, #3 and #4 on the hit list.
4. Overcapacity surges can stop when the ED no longer fulfills OCP criteria and is able to accept waiting emergent and urgent patients; however, because OCP activations tend to occur during high inflow periods, it's better to transfer admitted patients in batches of four to six. If only one or two patients are moved during an overcapacity activation, repeated activations over a period of hours are likely because of ongoing ED inflow.
5. In general, patients who are surged to an inpatient unit during an OCP activation should go to a staffed bed rather than an over complement space. To free up beds for sicker arriving patients, stable patients closer to discharge are more appropriate for placement in less ideal care locations if this is required (reverse triage).

Ventilator dependent or airway impairment
Imminent death
Patients requiring constant care, ICU, or new ongoing BiPaP/CPAP
Patients requiring greater than 4L of oxygen via nasal cannula
Pediatric patients under 5 requiring greater than 1 L of oxygen
Patients at risk for cardiac event awaiting admission to a monitored cardiac unit
No inpatient negative pressure room available for a patient being managed in an ED negative pressure room (e.g. TB)
Patients requiring isolation precautions (contact or droplet), if isolation is available in the ED and unavailable on inpatient units.
Respiratory virus infections who cannot be appropriately isolated (until infection excluded).

Table 11. Patients Not Eligible for OCP Inpatient Transfer

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Professor of Emergency Medicine, Queens University, Kingston, Ontario

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Renfrew County Paramedic Service, Ontario

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Medical Director, Emergency Management, The Ottawa Hospital / Associate Medical Director, Regional Paramedic Program for Eastern Ontario & Lecturer, Ontario

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Medical Director, Calgary Zone Urgent Care Centres, AHS, Alberta

Organizational and Group Consultations and Submissions

Association des médecins d'urgence du Québec

Association des spécialistes en médecine d'urgence du Québec (ASMUQ)

British Columbia Centre for Disease Control (BC CDC)

CAEP:

- Academic Section
- Digital EM Committee
- Equity Diversity and Inclusion Advisory Group
- Ethics Committee
- Geriatric Emergency Medicine Committee
- Global EM Committee
- Health Equity Working Group
- Membership
- Pediatric Section
- QIPS Committee
- Rural Remote and Small Urban Section
- Sexual Orientation and Gender Identity Committee
- Women in Emergency Medicine Committee

Canadian Association of Physician Assistants

Canadian Medical Association (CMA)

Centre for Excellence in Emergency Preparedness (CEEP)

Centre for Health Economics and Policy Analysis (CHEPA)

Collaborative Working Group on the Future of Emergency Medicine of Canada

College of Family Physicians of Canada (CFPC)

HealthCareCAN

International Association of Emergency Managers (IAEM)

National Association of EMS Physicians (NAEMSP)

National Emergency Nurses Association (NENA)

Paramedic Chiefs of Canada

Royal College of Emergency Medicine (UK)

Royal College of Physicians and Surgeons of Canada

Society of Rural Physicians of Canada

World Association of Disaster & Emergency Medicine (WADEM)

Efforts to solve emergency crowding and access block have failed, generally because the root causes have not been addressed.



Our emergency care crisis was not caused by rising emergency visits, COVID, or too many low acuity patients, but by a lack of hospital beds for admitted patients, poor access to long-term, community and complex primary care, as well as rising levels of unmanaged mental health and addiction.