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Enhancing Innovation in Canadian Hospitals: The Obstacles and the Solutions

Canada's hospitals are financially constrained, wait times are worsening and there are shortages of human resources. There is both an urgent need for capacity-enhancing innovation and a lack of resources to dedicate to it. This Commentary provides practical first steps for systemic changes that support an innovative hospital and healthcare system that puts patients first.

Rosalie Wyonch

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ENHANCING INNOVATION IN CANADIAN HOSPITALS: THE OBSTACLES AND THE SOLUTIONS

by Rosalie Wyonch

- Canadian hospitals are chronically capacity-constrained despite achieving world-leading results in reducing the length of time patients spend in hospitals and avoiding admission altogether with high rates of outpatient and day surgeries. They are near the limit of the improvements that can be achieved without broader system integration and policy changes to support capacity-enhancing innovation.
- Drawing on extensive interviews with front-line workers and decision-makers, this Commentary dives into the obstacles and enablers of innovation that can be implemented, shared and scaled up to improve healthcare outcomes.
- The most challenging innovation barriers include budget fragmentation, data system limitations, and the complex interplay between various stakeholders in the innovation process. For example,
 - There is no role or institution that is directly responsible for systemic improvement or evaluating barriers to innovation (or improving patient access or outcomes, for that matter).
 - There is no direct mechanism for successful pilot initiatives to transition to ongoing government programs that scale and spread across provincial hospitals.
- Combining information about population needs, funding structures and constraints, and expert insights shows how a lack of access to primary or community care contributes to hospitals' capacity challenges, yet they have few options or resources to improve integration and coordination. The current system allows for marginal innovation but is highly resistant to transformative innovation. The policy recommendations in this Commentary set out the first practical steps for transitioning the siloed inertia of the status quo to an integrated healthcare system that supports ongoing hospital innovation.

INTRODUCTION

Canada's healthcare systems face a critical inflection point marked by deteriorating access, growing wait times, and mounting capacity constraints.¹ This access crisis manifests acutely in hospital settings, where

1 According to the Commonwealth Fund international policy survey, 14 percent of the population doesn't have a regular provider or place where they receive primary care. Three-quarters of Canadians have difficulty accessing after-hours care and same- or next-day appointments (Zhang 2025). Other survey data indicate that nearly half of Canadians either lack a family doctor (19 percent) or face significant barriers accessing their primary care provider (29 percent) (Angus Reid 2023). In addition, 68 percent of Canadians say the overall quality of healthcare has deteriorated in the last 10-15 years (Angus Reid 2023) and more than half rate their provincial healthcare system as "poor" (Leger 2024). More than 80 percent of Canadians think that both the federal and provincial governments are not prioritizing healthcare enough (Angus Reid 2023). Eighty-five percent are worried about the state of their province's healthcare system and 87 percent think there is a shortage of nurses (Leger 2024). Across most measures, Canadian's perceptions of the healthcare system have significantly declined since the previous year (2023).

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Policy Area: Health Policy.

Related Topics: Access to Care; Health Technology; Financing and Insurance; Provincial Comparisons.

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long wait times in emergency departments or for urgent and elective procedures as well as hospital bed shortages manifest as the main symptoms of the underlying issues. The situation appears particularly paradoxical given that public healthcare spending per capita has increased by 41 percent over the past decade, while the number of providers working in direct patient care has also grown significantly (CIHI 2024 a, b).

This apparent contradiction – declining performance despite increased resources – signals deeper structural challenges within Canada’s healthcare delivery systems to adapt to increasing demand from a growing and aging population, new diseases, and new and expanding medical treatments. Of special note is the disparity between Canada’s demonstrated excellence in specific domains, such as outpatient surgery and minimally invasive procedures, and its persistent struggles with system-wide innovation adoption and scaling. International comparisons reveal that Canadian hospitals operate with the highest bed occupancy rates among OECD peers, while having fewer discharges and shorter average lengths of stay.² This suggests that the system is severely capacity constrained even while Canada’s hospitals have been adapting to manage growing population needs and have been very successful in some domains.

This *Commentary* examines the complex interplay of funding mechanisms and constraints, systemic structures, and organizational factors that influence hospitals’ capacity to adopt and scale innovations. Drawing on extensive stakeholder interviews, comparative international data, and detailed case studies, the research reveals how fragmented funding streams, misaligned incentives, and institutional rigidities create barriers to innovation adoption.

The stakeholder interviews reveal that successful innovation initiatives typically emerge from the convergence of strong clinical leadership, executive

support, and supportive policy frameworks that compare potential benefits of an innovation to current outcomes. However, the current system lacks consistent mechanisms to scale successful pilots or transition promising innovations from initial testing to sustained implementation. There are several critical factors that promote innovation adoption, including supportive funding structures that accommodate cross-departmental and cross-ministerial benefits, robust change management resources, and formal knowledge sharing networks to scale the adoption of best practices. Conversely, key barriers arise from budget fragmentation, data system limitations, and the complex interplay between various stakeholders in the innovation process.

The findings suggest that enhancing innovation adoption requires coordinated policy interventions across multiple domains, including procurement reform, alternative payment models, and strengthened knowledge sharing or other market-enhancing mechanisms. While maintaining universal access remains paramount, the evidence indicates that targeted structural reforms could significantly improve hospitals’ ability to implement and scale beneficial innovations.

A systemic overhaul to align the incentives of different decision-makers within the healthcare system to improve patient outcomes and ensure responsible resource stewardship would take significant resources, time and attention. While this might be the best option in theory, an already-resourced constrained system does not have the capacity to dedicate resources to improving capacity.

This *Commentary* recommends practical policy actions that reduce the barriers to new technology and better process adoption in hospitals. They would promote the transition of system structures and incentives to reinforce ongoing innovation, scaling and sharing of best practices.

2 While there is no agreed upon “optimum” acute care bed occupancy level, occupancy lower than 85 percent is generally considered the threshold required to prevent the risk of bed shortages. Canada is one of three OECD countries with a bed occupancy rate over 85 percent.

Funding and organizational structures are identified as the most important enabler of, or barrier to, innovation. Hospitals are funded predominantly through provincial transfers and most (or more) of the budget is already dedicated to providing ongoing care. Similarly, innovation and pilot funding might be sourced from different ministerial budgets or third-party grants with no direct mechanism to translate success to ongoing program funding. Adding to the challenge is the need for provider engagement in the change-management process, but physicians are not employees of the hospital and have no direct incentive to participate. To address these challenges:

- The health and economic development ministers at the federal and provincial levels should coordinate health innovation initiatives in their mandates to encourage interdepartmental collaboration and alignment to specific, measurable goals. A key first priority should be creating clear pathways or bridges for successful publicly funded innovation pilot programs to transition to ongoing programs and scale across the system.
- In the meantime, value-based funding mechanisms, public-private partnership structures and risk-sharing models that have proven to be successful in Canada should be encouraged through reviews of procurement policies. Reducing regulatory barriers and allowing for more flexible use of hospital resources allows hospital leaders and health companies to find creative solutions to overcome funding constraints and reduce the risk of uncertain outcomes for public funds. Risk-sharing ensures that health companies have an incentive to ensure their products achieve the advertised goals.
- Hospital executive and clinician/provider engagement are critical to success. Current system innovation depends on individuals at independent institutions collaborating and going above and beyond their job descriptions without direct incentives to do so. To address particular capacity challenges, the government could create time-limited incentives and complementary implementation guidance and resources that target specific goals. An important feature

would involve complementary resources being allocated to change management, patient and provider engagement and transparent reporting of outcomes.

The complexity of the healthcare system means there is no single “silver bullet” solution to increase hospitals’ capacity to adopt and implement new technologies and adapt processes to improve efficiency and patient/provider experiences. The recommendations above address the most common barriers to innovation and leverage the identified drivers as mechanisms to alleviate the most pressing capacity challenges. Like innovation, successful system change should be an ongoing and iterative process. The analysis and recommendations here provide practical first steps on the long road to transforming the resources-constrained and risk-averse healthcare system into a learning health system that is constantly innovating and prioritizes outcomes for patients. The paper proceeds as follows: the background sections provide comparative international context for Canadian hospital performance and innovation adoption. The following section examines current capacity constraints in hospitals including funding levels and systemic incentives or institutional roles that facilitate healthcare markets. The main analysis summarizes stakeholder perspectives on the barriers and facilitators of innovation. The final sections combine the barriers, drivers and constraints on hospital innovation to provide policy recommendations for enhancing hospital capacity.

BACKGROUND: SYMPTOMS OF CHRONIC CONDITIONS FOR CANADIAN HOSPITAL INNOVATION

International Comparison of Canada’s Healthcare Capacity and Resources

To get a clearer picture of how Canadian hospitals are performing, an international comparison is useful. Using OECD data, this section compares the resources, financing and utilization of hospitals

across peer countries. Overall, Canada is below average on some metrics and a world leader on others.

In terms of resources, Canada's hospitals appear to be slightly below average among peer countries. Total healthcare spending is in line with the average (excluding the US as an outlier). However, Canada has fewer hospitals, beds and staff than the average (Table 1). Notably, there is a large range across countries for the number of hospitals and beds; different countries allocate services relative to the geographic dispersion and density of the population and the size of hospitals. For example, Australia has more hospitals but many fewer beds per capita than Canada, likely because it has many smaller hospitals but relatively fewer with full ICUs. Conversely, the US has a similar number of hospitals, but higher numbers of staff and beds than Canada, suggesting larger hospitals on average. Overall, Canada has more staff per hospital than any of the comparator countries (except the US) but a closer-to-average number of beds. With the relatively few hospitals and the sheer size of Canada, it is likely that most hospitals are located in population centers with large distances in between, corresponding to significant access gaps for those who live in rural or remote regions.

Digging deeper into hospital resources shows that Canada falls behind international comparators when it comes to medical equipment, particularly diagnostic imaging. We have the fewest CT and PET scanners amongst comparator countries and rank second last for the number of MRIs relative to population size (Denmark has the fewest). Canada also ranks last for the amount of radiation therapy equipment. Canada has an average number of Gamma cameras but a slightly below-average number of mammographs.

An examination of the utilization of hospitals across countries clearly shows that Canada's hospitals are capacity constrained. Canada has

the highest hospital bed occupancy rate across comparator countries, while having the fewest discharges and shorter stays. The closest comparator is the UK, with high occupancy and similar length of stay but about 2.9 more discharges per 100 people. The Netherlands and Italy are also comparable, with slightly higher discharges per capita and similar average lengths of stay. In both countries, however, occupancy rates are much lower, reducing the risk of localized capacity shortages.

Despite having constrained capacity, Canada is a world leader in outpatient and day surgery, avoiding many hospital admissions in the first place. Similarly, a higher proportion of surgeries are laparoscopic (generally less invasive than traditional surgical techniques), reducing recovery times (see [online Appendix Table A1](#)). For example, 99.87 percent of cataract surgeries are day or outpatient in Canada, compared to 94.77 percent in Korea. Fully 94.93 percent of appendectomies are performed laparoscopically in Canada, compared to 78.6 percent in Spain. Rates for Canadian surgery are comparable to the international average across most procedures for which data are available, with the exception of notably fewer appendectomies.³

Overall, Canada has relatively few hospitals, less machinery and equipment, and more staff per hospital (less overall) than most comparator countries. Utilization data show the resultant capacity crunch; Canada has the second shortest average length of stay among the comparators, meaning that our system lacks room to manage capacity by further shortening the average length of stay. Shorter hospital stays and a higher proportion of outpatient and day surgeries show that Canadian hospitals have been adapting to capacity challenges by utilizing innovative surgery techniques and less invasive procedures, and by reducing hospital stays and recovery time as much as possible. Despite these improvements, high hospital-bed occupancy

3 Appendectomies remain a high-volume surgical procedure ranking in the top 10 inpatient surgical procedures in every province in 2022-2023, accounting for 2.3 percent of inpatient surgeries across the country.

Table 1: Hospital Resources, 2022 (or latest available)

	Total Healthcare Spending (per capita, USD PPP, 2022)	Overall					Medical Imaging (units per 1,000,000 inhabitants)					
		Hospitals (per 1,000,000 inhabitants, 2022)	Total Hospital Employment (per 1,000 inhabitants)	ICU Beds (per 100,000 inhabitants)	CT	MRI	PET	Gamma Camera	Mammograph	Radiation Therapy Equipment		
Australia	6,891.6	51.0		10.5	72.4	14.8	4.2	16.6	21.4	12.4		
Belgium	6,994.2	13.9		20.4	25.6	11.7	2.8	27.0	36.5	18.4		
Canada	6,845.1	18.1	17.3	17.1	14.2	10.4	1.4	13.9	17.2	2.8		
Denmark	6,665.3		22.3		43.3	9.2	8.8	13.4	16.2	11.7		
France	6,923.6	43.8	20.1	32.0	20.2	17.9	3.2	7.0				
Germany	8,541.5	35.6	17.9	31.4	36.3	34.9						
Italy	4,736.2	18.0	11.4	12.1	40.5	32.9	3.8	6.7	36.7	7.4		
Japan	5,423.8	65.3		19.9	115.7	57.4	4.7	11.2	33.8			
Korea	4,637.4	82.4	9.6	22.2	44.5	37.5	3.4	6.0	71.7	6.9		
Netherlands	7,277.4	41.4	16.9		15.9	15.1	4.9	7.0				
Norway	8,635.8		22.9		29.7	31.2	3.1	5.3	13.4	11.7		
Spain	4,533.8	15.8	14.2	21.1	21.4	20.6	2.4	6.7	16.8	7.4		
Sweden	7,009.5				23.7	17.4	2.7	6.8	12.9	6.1		
Switzerland	9,044.5	31.7	27.0		39.		4.8		29.9	17.4		
United Kingdom	5,866.8	29.7	25.3									
United States	12,742.1	18.4	21.5	29.5	42.6	38.0	5.8	48.8	72.9	11.4		
International average (listed jurisdictions)	6,668.4 (excluding US)	35.8	18.9	21.6	39.0	24.9	4.0	13.6	31.6	10.3		

Source: OECD Health Statistics – Hospital Resources.

Table 2: Hospital Utilization, 2021

	Discharges per 100,000 inhabitants	Occupancy Rate (curative care)	Bed Days (curative care)
Australia	16,151.3		0.8
Belgium	14,806.6	64.5	0.9
Canada	7,540.5	86.7	0.6
France	13,592.7	71.9	0.8
Germany	20,122.8	69.9	1.5
Italy	8,810.6	71.3	0.7
Japan	11,283.0	70.2	
Korea	14,619.7		1.1
Netherlands	8,019.8	61.2	0.4
Norway	14,484.8	78.3	0.9
Spain	10,402.9	70.9	0.7
Sweden	12,579.6		0.7
Switzerland	14,579.7	78.8	1
United Kingdom	10,432.4	80.9	0.7
US		65	

See Appendix Table A2 for disease mortality rates by country. Notably, Canada has an average or slightly below average mortality rate for neoplasms, endocrine, nutritional and metabolic diseases, diseases of the respiratory system and diseases of the circulatory system.

Source: OECD Health Statistics – Hospital Aggregates.

rates are a persistent sign of constrained capacity and possible bed shortages.

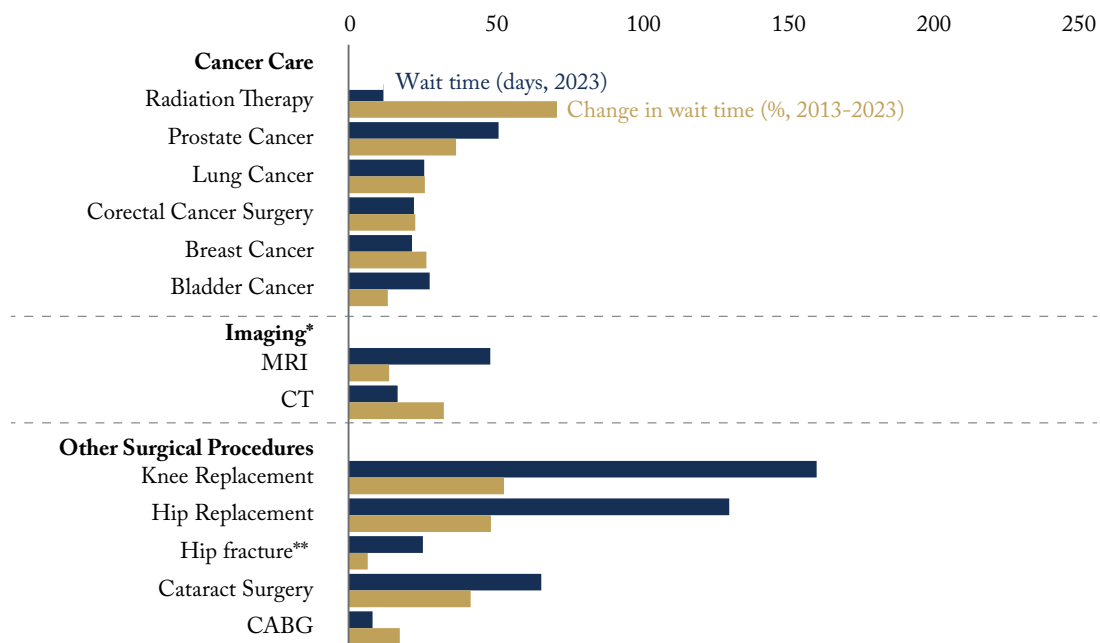
Priority Procedures: Wait Times and Volumes

A closer look at the picture in Canada highlights chronic capacity challenges. Median wait times for specialist appointments after referral reached 30 weeks in 2024, representing a 222 percent increase since 1993 and 2.3 weeks longer than the previous

year (Moir and Barua 2024). Similarly, median wait times for priority surgical procedures and diagnostic imaging have increased across all procedures tracked and reported by CIHI's hospital utilization data (Figure 1). While wait times have increased over the past 10 years, the number of procedures performed, though increasing significantly overall, have barely kept pace with a growing and aging population.⁴ Wait times increasing while population rates fall is a clear signal that Canada's hospitals are

4 In some cases, declining hospital population rates could be indicative of lower disease incidence, or improvements in treatment reducing the number of procedures required. Wait times increasing, however, indicates an ongoing capacity/access challenge. For some procedures, population rates have declined in the past decade including prostate cancer, colorectal cancer, cataract surgeries, and coronary artery bypass grafts (CABG). A significant increase in radiation therapy volume and a decline in cancer surgery rates likely reflects changes to how cancer treatment is being delivered over time. Similarly, CABG rates have declined as surgery techniques have evolved. Instead of an artery graft, some patients might be treated with angioplasty and stenting, depending on their specific condition. See [Harvard Heart Health 2019](#) for more information.

Figure 1: Wait Times for Priority Procedures in Canada (2023)



*National MRI and CT data covers 2018-2023. **Wait times for hip fractures are reported in hours, not days.

Source: CIHI 2024 c.

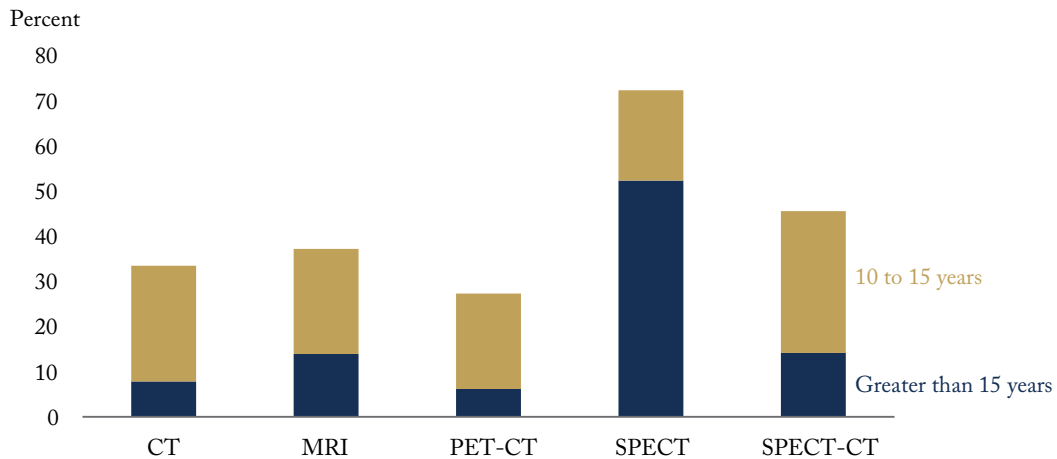
unable to keep pace with the increasing healthcare needs of the growing and aging population.⁵

Diagnostic imaging provides another stark example of the ongoing capacity challenges. Population rates for CTs and MRIs have remained constant for the past decade but wait times have increased. Canada already has less medical equipment (relative to population size) compared to OECD comparators, and the average age of medical equipment is growing. More than a third of CT, MRI and SPECT-CT units are at least 10 years old and will likely need to be replaced in the coming decade (Figure 2). Newer imaging

technologies can provide faster and more accurate diagnoses. Older equipment may require higher doses of radiation and allow for lower throughput of patients. Older imaging equipment is also more likely to break down and may be more challenging to repair (CADTH 2024). The Canadian Association of Radiologists' clinical guidance notes "the maximum life expectancy and clinical relevance should be no longer than 15 years for any technology" (CAR 2013).⁶ The already low number of units and increasing age of equipment shows that hospitals and imaging sites have not been able to replace aging units or expand capacity in line with

- 5 A particularly stark example is cataract surgeries – despite 99.9 percent being delivered as day or outpatient surgeries (minimizing procedure time and reducing patients' time in hospitals), population rates have declined over the past 10 years while wait times increased by 42 percent.
- 6 For specific information about life cycle of imaging technology based on the type of equipment and expected utilization, see [CAR Lifecycle Guidance for Medical Imaging Equipment in Canada – Table 1 \(2013\)](#).

Figure 2: Aging Diagnostic Imaging Equipment in Canada (2022-2023)



Source: CADTH 2024.

population needs. However, while some imaging sites are making full use of their equipment, some have the potential to increase capacity. For example, MRI machines are used for at least 80 hours per week at 73.9 percent of sites reporting data, but 6 percent of sites have their MRIs staffed and operational for fewer than 40 hours per week (CADTH 2024). Similarly, 10.6 percent of CT sites are operational less than 40 hours per week and 4.1 percent have them operational for less than 8 hours per day. In locations where imaging equipment sits idle, there is potential to increase access and capacity by increasing the number of operational hours.

There are certainly plausible explanations for the variable utilization of imaging equipment that might affect the potential for increasing its usage. Facilities might be located in lower-demand areas where population need does not require increased utilization. If equipment is designated to

a particular use or department but not fully utilized, increasing utilization could mean working with other departments to make use of the equipment when it is not designated for its primary purpose. The most likely explanation, however, is the most challenging to address: a shortage of staff to operate the machinery.

There are fewer full-time radiology professionals practising in Canada than compared to pre-pandemic (CADTH 2024).⁷ Most imaging sites have a process to determine the appropriateness of the ordered exams (74.2 percent of sites) such as necessity, timing and medical value. This prevents unnecessary tests from being performed, but also requires the time of radiologists and technologists. Only 28.3 percent of reporting imaging sites used clinical decision support tools and 12.7 percent used computer-aided order entry. These sites are concentrated in particular provinces, and there

7 See the case study “Remote MRI Operation Implementation Barriers in Canadian Healthcare” in Appendix B for an example of how technology can help to address labour shortages.

were no technology-assisted review processes for appropriateness reported from any sites in Alberta, New Brunswick, Newfoundland and Labrador, Nova Scotia or PEI. There is significant potential to improve appropriateness of diagnostic imaging while also contributing to more efficient use of limited specialized human resources through the implementation of technology-based review and ordering processes and clinical decision support tools.

Overall, longer wait times and procedure volumes barely keeping pace with population growth are symptoms of longstanding and growing capacity challenges in Canadian hospitals. Hospitals managed these challenges well for a period, but the pandemic and the associated deferral of many non-urgent procedures increased the need for healthcare while straining already limited resources beyond their capacity. Since the pandemic, the symptoms of chronic stress on Canada's hospital system continue to grow. Canada's hospitals have adopted technology and adapted procedures to improve efficiency and patient outcomes for some high-volume procedures over time, but the acute stress of the pandemic, combined with underlying chronic capacity challenges, have revealed a hospital system that is declining, in spite of many improvements along the way. Addressing the decline will require both addressing the acute capacity challenges and augmenting the underlying systemic drivers of system innovation and improvement.

CAPACITY CONSTRAINTS

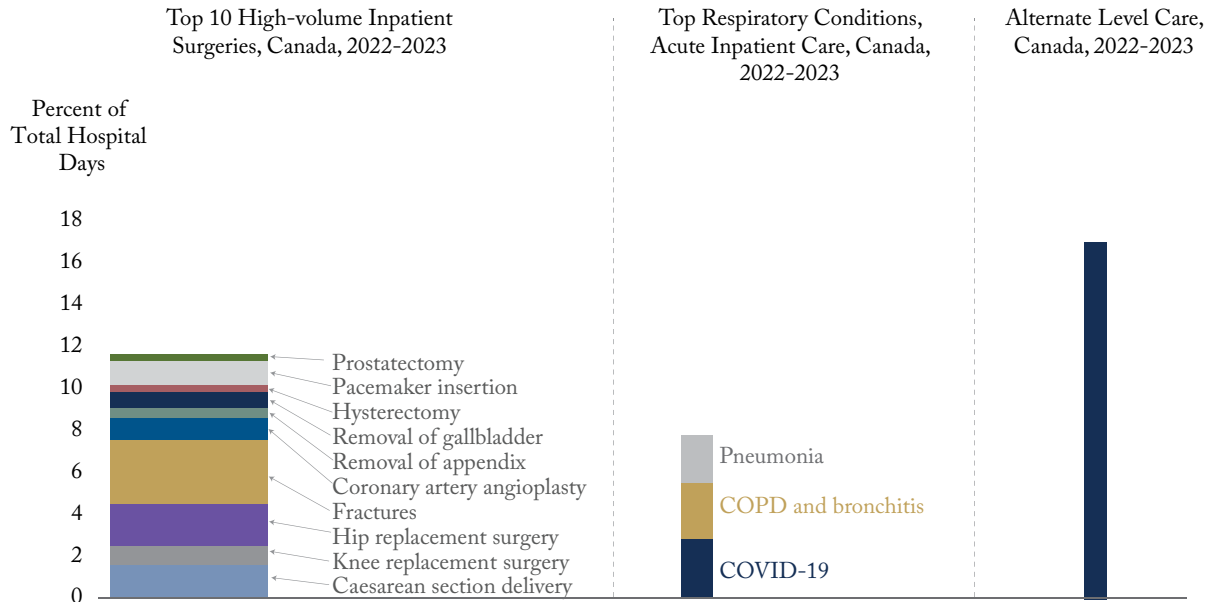
The following section evaluates hospital utilization data that provide both some explanation for persistent capacity concerns and further evidence of how hospitals have been adapting over time.

Evaluation of high-volume inpatient hospitalization data shows that respiratory conditions and alternate level care days account for more hospital bed occupancy than the top 10 high-

volume surgeries combined (Figure 3). The top 10 inpatient surgeries accounted for 13.9 percent of acute care bed days and 11.6 percent of all hospital bed days across the country in 2022-2023 (Figure 3, panel 1). COVID-19, Chronic Obstructive Pulmonary Disorder, and Pneumonia patients each account for more than 2 percent of total acute care bed-days. Alternate level care (ALC) patients; those whose needs could be more appropriately met outside of a hospital setting, account for the largest proportion of hospital bed days (Figure 3, panel 3). ALC patients accounted for 17 percent of inpatient hospital days across the country in 2022-2023. To put this into context, ALC volumes are equivalent to acute care bed occupancy for neurocognitive disorders, giving birth, heart failure, COVID-19, COPD and bronchitis combined (the highest volume diagnoses related to inpatient hospitalizations, as measured by total hospital days).

Across provinces, there are significant differences in ALC hospital bed use and trends. In PEI, 26 percent of total hospital days are ALC patients while in SK, ALC patients account for 13.8 percent. Since 2016-17, Alberta, Manitoba and the Yukon have all reduced the proportion of ALC hospital days. Nova Scotia has had a 52.8 percent increase in ALC hospital days since 2016-17, increasing the proportion of hospital days accounted for by ALC patients from 14.9 to 20.6 percent by 2022-2023. A high or growing share of hospital occupancy being ALC is likely due to a combination of factors: an aging population and associated increase in chronic disease; a lack of access to alternative care including rehabilitation, home and long-term care; and/or a lack of integration and coordination between hospitals and community care providers. For example, COPD is a chronic respiratory condition with no curative treatment that primarily affects older adults. It is responsible for a significant proportion of acute care utilization (2.7 percent of

Figure 3: Hospital Bed Occupancy, Canada, 2022-2023



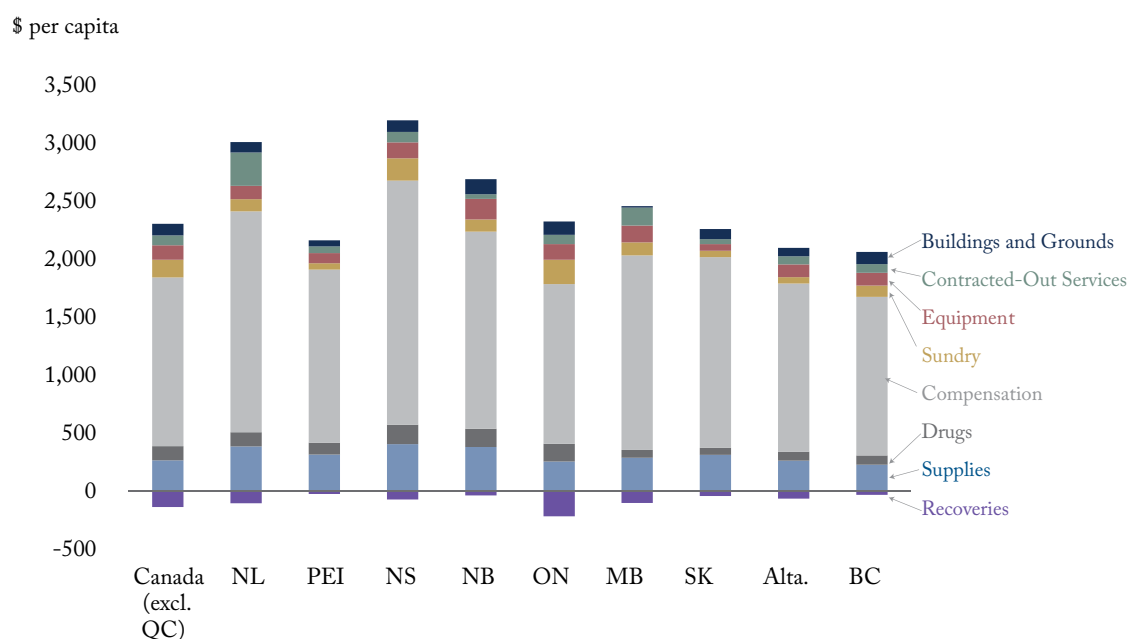
Sources: Table 2 Number, percentage and average acute length of stay for top 10 high-volume inpatient hospitalizations by province/territory, HMDB/OMHRS, 2022–2023.
 Table 4 Number, percentage and average acute† length of stay for top 10 high-volume inpatient surgeries by province/territory, HMDB, 2022–2023.
 Table 7 Number of hospitalizations and alternate level of care (ALC) cases, and length of stay (LOS) days, by province/territory, HMDB/OMHRS, 2021–2022 to 2022–2023.
 CIHI.

total hospital days) and ALC days.⁸ COVID-19 patients continue to occupy a significant proportion of beds: 3.4 percent of acute care bed days and 2.8 percent of total hospital days in 2022-2023.

Notably, COVID-19, chronic disease management and population access to community care are not directly within hospital control. Hospitals, however, are the last resort option when

other avenues become overloaded. The combination of ALC patient volumes and COVID-19 account for about 1 of every 5 days spent in hospital. These circumstances help to explain how Canadian hospitals can be both world leaders in some areas of innovation and also be chronically capacity constrained.

8 ALC days associated with COPD are not reported in CIHI data, however more than one qualitative interview participant used COPD patients as an example of high-volume users of emergency departments and proportion of ALC patients.

Figure 4: Provincial Hospital Spending by Type of Expense, 2022–2023


Sources: Canadian Institute for Health Information. Trends in Hospital Spending, 2005–2006 to 2022–2023 – Data Tables – Series A: Hospital Spending by Type of Expense. Ottawa, ON: CIHI; 2024. Statistics Canada. Table 17-10-0005-01. Author's calculations.

Spending, Funding and Limited Innovation Capacity

To get a deeper understanding of the capacity constraints within Canada, this section provides comparative data for provincial hospital spending and discusses how budgetary structures and incentives can distort the innovation process.

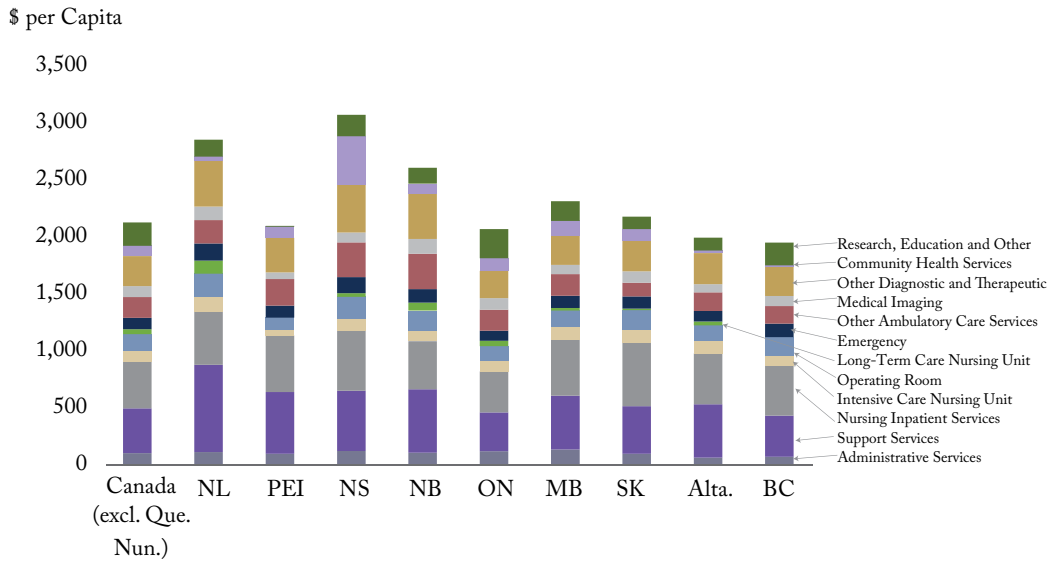
Overall hospital spending varies by province from \$2,032 per person in BC to \$3,152 in NS in 2022–2023 (Figure 4). Hospital spending, broken down by type of expense, shows that compensation of hospital staff (not including physician services) is by far the largest category, accounting for 63 percent of spending or \$44.8 billion in 2022–2023. Only about 5 percent of the

budget goes to equipment and another 4 percent to buildings and grounds. Saskatchewan and Alberta are particularly constrained, spending 72 and 69 percent of their budgets on compensation. Newfoundland and Labrador spend the most on contracted-out services, accounting for 10 percent of hospital spending. Ontario spends the least on compensation for employees on both a per capita basis and as a proportion of hospital spending.⁹ Ontario also spends the most on equipment for hospitals (about \$2 billion in 2022–2023) and has the highest expense recovery (\$3.4 billion) compared to other provinces.

Support services and nursing inpatient services are the largest share of hospital expenses in all

9 In Ontario, increases to hospital employee wages were limited by Bill 124. These data do not include retroactive pay increases following the Court of Appeal for Ontario ruling that the bill was unconstitutional.

Figure 5: Provincial Hospital Spending by Service Area, 2022-2023



Sources: Canadian Institute for Health Information. Trends in Hospital Spending, 2005–2006 to 2022–2023 – Data Tables – Series B: Hospital Spending by Service Area. Ottawa, ON: CIHI; 2024. Statistics Canada. Table 17-10-0005-01. Author’s calculations.

provinces when considering spending by service area (Figure 5). These areas account for 33.6- 50.1 percent of hospital spending across provinces. Intensive care accounts for a relatively small 2.4-5.6 percent. Some notable differences include Nova Scotia and New Brunswick dedicating higher proportions of spending towards other ambulatory care, and Manitoba and Ontario having the highest education and research expenditures (15.6 and 11.8 percent respectively). Nova Scotia spends significantly more on community health services and less on support services, while Newfoundland and Labrador is the opposite, spending the highest proportion among provinces on support services and a much lower proportion than average on community health services.

By both types of expenses and service areas, it is clear that compensation for healthcare providers accounts for the majority of hospital expenses. Differences across provinces highlight differences in

priority of focus and levels of constraints. Ontario spends the highest proportion on equipment and buildings, the most on research and development and has the highest recoveries of hospital expenses across provinces. Hospitals in the province are still extremely financially constrained with the majority facing budgetary deficits (Payne 2024).

Financial Barriers and Enablers

Hospitals are financially constrained, wait times are worsening and there are shortages of health human resources. There is both an urgent need for capacity-enhancing innovation and a lack of resources to dedicate to it.

Budgetary structures and fragmentation can pose a barrier to system innovation. When benefits of an innovation accrue to different departments or institutions than those bearing the implementation costs, traditional return-on-investment calculations

become misaligned with system-wide value creation. This can be the case at the government program level, regional administration level, or individual institution and departmental level – layers of silos lead to narrow optimization focuses that distort incentives and contribute to certain types of innovation being favoured over others. In addition, remuneration structures and market mechanisms affect the incentives of different stakeholders.

At the government program level, funding, strategic deployment of innovation grants and pilot funding can help overcome initial adoption barriers. These mechanisms are particularly effective when structured to support both implementation costs and rigorous evaluation, creating an evidence base that can justify broader adoption. Pilot initiatives can be extremely useful; however, funding is normally time limited and sourced from innovation or economic development programs. To become ongoing programs, ongoing funding need to be sourced from health ministries. However, there is no direct mechanism for successful pilots to become broader government programs. Healthcare is already the largest area of program spending and there are many competing priorities, creating significant constraints on the overall government capacity to invest in health innovation and scaling of successful pilots.

At the regional and hospital level, investments in remote monitoring technology and collaboration with home and rehabilitation care organizations may reduce emergency department visits and bed utilization. But they require substantial upfront expenditure from IT budgets, creating internal resistance or difficulty funding project implementation, despite net positive system impacts. A new surgical technique or tool might increase the cost of supplies or performing the procedure, but result in faster recovery times and lower readmission rates. Evaluating the net costs or benefits of innovation requires a comprehensive

view of care pathways, yet budget fragmentation can result in narrow evaluation of costs and benefits.

New technologies also require significant training or adaptation of clinical techniques, or administrative procedure so they might face push-back from staff, especially if they are already resource or capacity constrained. If technology replaces the need for a clinical provider or hospital staff, it will likely face resistance from labour unions and physicians. Conversely, if technology significantly reduces surgery and procedure times, it allows clinicians to increase the number of patients they treat, and the number of procedures they can bill to public insurance programs. This is also a significant benefit to patients, since higher specialist physician productivity contributes to reducing wait times. Hospitals, on the other hand, will prioritize cost-abating measures.

In addition, operational pressures and limited financial reserves contribute to institutional risk aversion regarding innovation adoption. With most hospitals having the vast majority of spending dedicated to fixed costs, they lack the financial buffer necessary for significant innovation initiatives. Even if they can raise revenues from charitable drives, foundations and other sources to fund the initial investment, they face uncertainty about ongoing operation costs that can increase risk aversion. This constraint is particularly problematic for transformative innovations that require substantial initial investment and organizational change. The result is a preference for incremental improvements over potentially more impactful systemic changes.

The transition toward value-based funding models presents opportunities to better align financial incentives with innovation adoption. Bundled payment approaches, which provide a single payment for all services related to a specific condition or procedure, create incentives for efficiency-enhancing innovation. Risk-sharing arrangements between hospitals and technology

providers can also help mitigate financial risk while ensuring vendor accountability for promised outcomes.¹⁰

Addressing financial barriers to hospital innovation requires a nuanced approach that combines targeted funding mechanisms with systemic payment reform. Success will depend on policy frameworks that can simultaneously mitigate financial risk while creating incentives for meaningful innovation adoption. As healthcare systems continue to face capacity constraints, developing these enabling mechanisms becomes increasingly critical for system sustainability.

CURRENT INNOVATION LANDSCAPE IN CANADIAN HOSPITALS

The Canadian healthcare innovation ecosystem operates within a complex intergovernmental framework that shapes both opportunities and constraints for transformation. The institutional architecture comprises several key elements, including (i) federal research funding through the Canadian Institutes of Health Research (CIHR), (ii) pan-Canadian health organizations focused on specific domains, (iii) provincial/territorial innovation agencies and initiatives, and (iv) academic health science centers and research institutes. In addition, the health product industry invests in the research, development and commercialization of new equipment, medical devices, pharmaceuticals, software, and tools that allow for changing methods of delivery or surgical techniques.

Several persistent structural features impede innovation scaling in the Canadian context. The constitutional division of powers presents a fundamental challenge. Healthcare delivery falls primarily under provincial/territorial jurisdiction while key levers like research funding and market access regulation remain federal. Economic

incentives, particularly fee-for-service physician payment models and siloed institutional budgets, can discourage adoption of innovations that could reduce costs or shift care between sectors. A lack of data interoperability within provincial healthcare systems results in duplication and fragmentation of patient records across care providers (primary care, hospitals, home care). Fragmented and complex purchasing processes increase costs for innovative companies seeking market entry. Conversely, centralized purchasing and assessment can present a challenge for small and medium-sized health innovators who might have difficulty meeting large volumes or competing in complex bidding processes. Some of these issues can be addressed within provincial healthcare systems and through interprovincial cooperation and pan-Canadian organizations including HEC, CIHR, CIHI and Canada Health Infoway. Some are more challenging to address from a policy context – for example, a constitutional amendment on the division of federal and provincial powers is highly unlikely and should be considered as a structural constraint. Policy can adapt the relationship through changes to the *Canada Health Act* or its interpretation, but the limited power of the federal government to directly affect provincial health policy is a structural, constitutional feature of the system.

Recent developments in innovation policy architecture suggest an emerging focus on implementation science and scaling. At the federal level, the Pan-Canadian Health Data Strategy emerged as a cornerstone policy framework, complemented by the \$2.2 billion investment in the renewal of the Pan-Canadian Artificial Intelligence Strategy. The Canadian Drug Agency has a mandate to develop a national procurement strategy in addition to its role as Canada's health technology assessment agency. Provinces also conduct health technology assessments related to provincial insurance plans and medical devices and

10 For more information, see [Healthcare Excellence Canada's Value-Based Healthcare Toolkit](#).

make recommendations about whether or not new products and devices should be publicly reimbursed. Notable provincial innovation initiatives include Ontario's \$30 million Health Technology Innovation Framework and British Columbia's Digital Health Initiative, which allocated \$45 million toward virtual care infrastructure. Nova Scotia's Health Innovation Hub describes itself as "a single point of entry enabling innovators, clinical teams, researchers, patients, students, partners, and investors to collaborate on innovative healthcare solutions." It is internally funded through overhead charges on industry-sponsored and investigator-driven research, as well as cost-recovery fees to support research ethics reviews. The federal government's December 2022 commitment of \$196 million to the Strategic Innovation Fund's Health Stream further exemplified the emphasis on commercialization of healthcare technologies.

Provinces are taking different approaches to innovation. Quebec's Innovation Santé 2023 program committed \$110 million to healthcare technology adoption, while Alberta focused on regulatory modernization through its Health Innovation Regulatory Framework. Saskatchewan and Manitoba opted for targeted initiatives in rural telehealth expansion, though with notably smaller budgets of \$15 million and \$12 million, respectively.

Canada's approach differs notably from other federal states that have established more robust national innovation architectures. The United States' Center for Medicare and Medicaid Innovation provides dedicated funding and infrastructure for testing and scaling delivery innovations. Australia's Medical Research Future Fund explicitly links research funding to healthcare system priorities, while the UK's Accelerated Access Collaborative provides coordinated pathways for innovation adoption. These comparative examples suggest potential models for strengthening Canada's

innovation infrastructure while respecting jurisdictional authorities.

The path from market approval of new products and devices to patient access, in Canada, involves multiple sequential and parallel processes, with significant jurisdictional variation. Previous research defines seven distinct phases of the innovation process: ideation, product development, regulation (Health Canada approval), evidence generation, Health Technology Assessment (HTA), payer/customer (hospital procurement, government reimbursement, alternative payment), and diffusion (NHS 2016, Jelen and Spring 2018). That research showed that the phases following regulatory approval are the most challenging to navigate. While the regulatory process is complex, its procedures and requirements are well-defined. Following approval, however, there are multiple potential avenues to market access.

To generate additional evidence of effectiveness, innovators could collaborate with hospitals, healthcare providers or research institutions to conduct a pilot study, could conduct additional trials in other markets (US, Europe, etc.), or go straight to market and try to sell their products. Any of these channels can generate additional evidence of real-world effectiveness. HTAs can be carried out once sufficient evidence has been generated about a particular medical product or technology. An HTA is a multidisciplinary systematic evaluation including the social, economic, organizational and ethical issues related to a health intervention or technology. HTA organizations evaluate outcomes and provide information about the relative efficacy of the product and its value, and make recommendations for inclusion or exclusion from public insurance plans.¹¹ Many products do not require an HTA. Instead, innovators and manufacturers will go to the market with the evidence generated during the development and

11 Health technology assessment can be performed at the national, provincial, regional or institutional level. For a list of HTA assessment organizations by province, see <https://www.cda-amc.ca/hta-organizations-province-0>

regulation phases, pilot studies or clinical trials (See Box 1 for more information on HTA and pathways to market access).

Diffusion of a health technology across a provincial healthcare system is an organic process consisting of many independent purchasing decisions. It can be a rapid or slow process, depending on resource constraints, priorities of the various decision-makers, costs of implementation and operation of the new process or technology, potential for cost-avoidance (efficiency-improving), government support, and other factors.

An assessment of Canada's healthcare innovation landscape points to the need for sustained policy attention to not just generating innovations, but also to creating the systemic conditions required for their effective scaling and implementation. The current structure reveals both significant challenges and opportunities for enhancement, particularly in the realms of coordinated action, sustainable funding mechanisms, and standardized evaluation frameworks. As the healthcare system continues to evolve, understanding these structural elements becomes increasingly crucial for developing effective innovation policy.

The following section provides an analysis of the innovation process following market approval, focused on the payer (hospital procurement, government reimbursement, alternative payment), and diffusion stages. It uses stakeholder interviews and individual case studies of innovation initiatives to provide insights about the systemic limitations on adopting new innovations, as well as further details on the incentives of the various decision-makers and stakeholders involved. For the case studies, see [online Appendix B](#).

ANALYSIS

To analyze the interconnected nature of factors affecting innovation, this study evaluates the barriers and drivers of innovation in Canadian hospitals through a spending and funding lens. It uses qualitative survey and interview data to explore systemic constraints and the incentives of various key decision-makers in the innovation process. Considering the financial and systemic constraints, mixed with human factors, one is confronted with a nuanced picture of the challenges health leaders face in driving innovation.

Stakeholder Perspectives: Drivers, Barriers and Strategies to Hospital Innovation

Drawing from the interview and qualitative survey data, this analysis synthesizes key insights from healthcare stakeholders across multiple roles and institutions to examine hospital innovation capacity in Canada. The qualitative data were gathered from surveying participants in an online workshop, as well as from long-form interview discussions with individuals throughout the health sector, by invitation. Altogether between the two groups, data were collected from 53 contributors.¹² Interview participants included frontline workers, researchers, hospital executives, provincial/regional administrators, foundation board members, medical supply company executives, group purchasing organization executives, and former health ministers and deputy ministers. Both groups were asked about critical barriers and drivers of innovation, lessons learned from their own experiences, and recommendations for government policy and structural change that would increase hospital's capacity to innovate. Interview participants were

12 The online survey had a 66 percent response rate from participants (n=33), while the long-form interviews had a response rate of 80 percent (n=20).

Box 1: Pathways from HTA to Diffusion of Innovative Products in Canadian Healthcare Systems

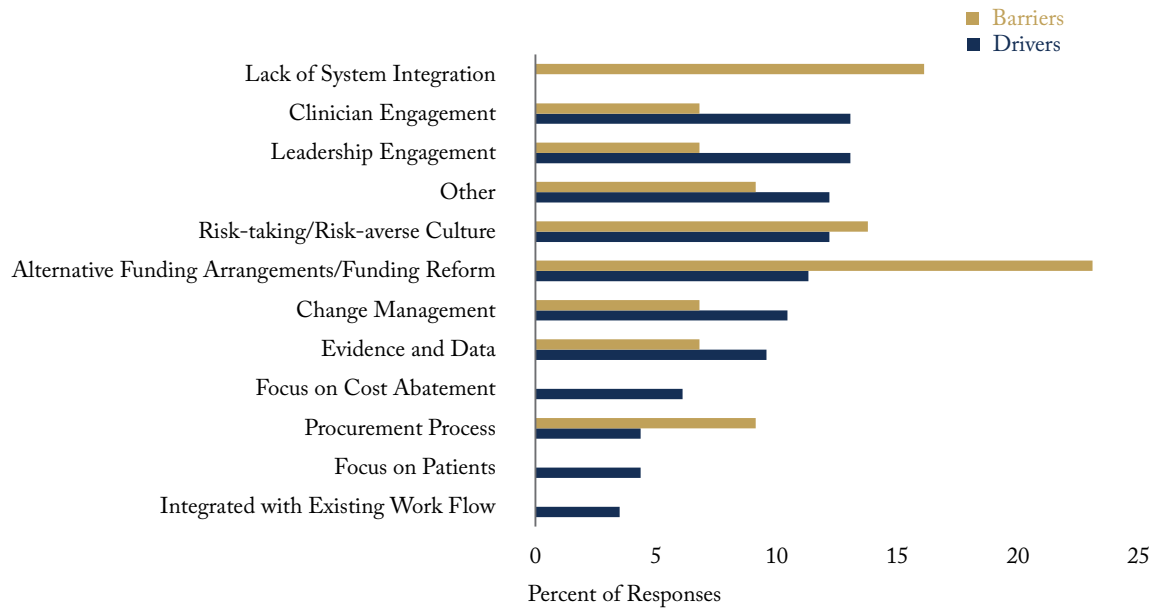
A favourable HTA recommendation does not guarantee that the product will be adopted across a provincial healthcare system, since hospitals make purchasing decisions and may or may not adopt any particular program. The HTA process is lengthy, typically taking at least 2 years at the national level for pharmaceutical products. Medical devices, evaluated at the provincial level, generally have shorter assessment timelines.

A favourable HTA recommendation is generally required for an innovative product to receive provincial government reimbursement (to be included in the insurance formulary or funded through program initiatives). Public insurance formulary decisions weigh efficacy against cost in decision-making but are ultimately limited in the overall budget, meaning that opportunity costs must be considered, and many products will not be reimbursed under public insurance plans. This is a significant barrier to accessing new products, but it also helps to ensure the fiscal sustainability of public health insurance plans. In Ontario, 81 percent of HTA-recommended technologies receive funding (Jelen and Spring 2018). Decisions to reimburse a product are influenced by government funding priorities, strategic political objectives of health ministers or regional administrators, and the expected aggregate costs and benefits of implementation. Local entities at the regional and hospital level typically conduct HTAs to support decision-making for the acquisition, implementation, maintenance, and disinvestment of healthcare technologies (Martin, Polisen, Dendukuri, Rhoads & Sampietro-Colom 2016).

There are additional avenues to commercialization outside of formal government reimbursement channels or sources of funding that innovators might rely on to move forward. Private healthcare organizations and allied healthcare professionals working outside the scope of public healthcare may purchase innovative products and services for their organizations. Some products can be marketed directly to consumers. Innovators might seek commercial opportunities in international markets. However, none of these channels have a clear pathway that leads back to broader scaling and adoption within Canadian hospitals.

Hospitals also have potential avenues to generate funding for innovation projects separate from traditional government channels. Hospital and charitable foundations can provide funding for additional research and evidence generation or raise funds for upfront capital costs (for example, the [Victoria Hospital Foundation](#) is in the process of raising \$17 million for the purchase of a da Vinci surgical robotic system and other best-in-class surgical instruments). If the technology solves an unmet need for specialized conditions, patient associations and disease-specific foundations can also advocate for adoption and be a source of funding (for example, the Heart and Stroke Foundation funding research on health data mining to identify early-stage electrical and biological markers linked to atrial fibrillation).

Figure 6: Drivers and Barriers of Hospital Innovation



Source: Author's calculations.

also asked to discuss key decision-makers and stakeholders, differences between process and technology innovation (or how they necessarily intersect) and to share their thoughts on funding, and systemic structural barriers and drivers of innovation.¹³

Overall, the qualitative data show that the most important drivers of innovation in Canadian hospitals are (Figure 6):

- Clinician and front-line staff engagement (13 percent);
- Leadership engagement (13 percent);
- Supportive funding (11 percent) and organizational frameworks (10 percent);

- Organizational culture and the courage to take risks (12 percent).

Notably, the largest drivers are mirrored in the largest barriers:

- Funding structures or lack of resources to dedicate to change management (23 percent, 7 percent);
- Lack of system integration: impeding evidence generation or the need for new technologies to integrate with legacy systems. (16 percent);
- Risk aversion and status quo rigidity (14 percent), lack of leadership (7 percent) or clinician buy-in (7 percent).

While many interview participants had success stories to share (see [online Appendix B](#)), many

13 See [online Appendix A](#) for further details of survey methods, questions and participants.

of the factors that led to success were dependent on contingent circumstances or required hospital leadership and clinicians to champion change.¹⁴ Leadership engagement emerged as crucial, with several respondents noting that executive-level “air cover,” combined with frontline champion support, enables successful innovation. The interviews also revealed that internally developed innovations face fewer implementation barriers than externally sourced solutions, suggesting the importance of early stakeholder engagement in development processes. The importance of clinical and hospital executive leadership as the largest drivers of innovation, with funding structures and a lack of system integration being the largest barriers, shows that the hospital system depends on individuals being intrinsically motivated to improve patient outcomes and/or efficiency.

Procurement

Procurement processes and group purchasing organizations facilitate market access while ensuring compliance with government policies related to public spending. It was identified as both a barrier to (9 percent) and a driver of (4 percent) innovation. As for its being a barrier, participants noted the complexity of, and time associated with, procurement processes. The complexity stems from different procurement processes across institutions, jurisdictions and provinces, and the budgeting and approval processes for large capital expenditures. However, participants noted that value-based procurement, including risk-sharing agreements and consideration of the effects across patient care

journeys, is a driver of innovation. Further, interview subjects viewed group purchasing organizations as playing a role in sharing best practices and results between institutions.¹⁵ They can also play a role in validating and providing market access for small and medium-size healthcare suppliers and ensuring a competitive bidding process. Conversely, they pose a barrier if they do not facilitate multiple supplier contracts, or if smaller health companies have difficulty competing or are unable to provide the volumes required. Group purchasing organizations facilitate lower prices by leveraging bargaining power, but can also stifle innovation if they become focused on reducing costs over improving value, or if they significantly reduce choice among suppliers in the market.

Hospital procurement in Canada operates through a multi-layered process that typically involves both institutional and regional decision-making frameworks. Individual hospitals generally conduct initial needs assessments and business cases, which are then evaluated through their internal capital planning and budget allocation processes. For technologies or supplies exceeding certain thresholds (commonly \$100,000), approval requirements extend to hospital boards and, in some cases, regional health authorities. This primary layer of decision-making intersects with broader procurement networks, including Shared Service Organizations (SSOs) and Group Purchasing Organizations (GPOs), which aggregate demand across multiple institutions to enhance purchasing power and achieve economies of scale. In some cases, institutions might be restricted in their purchasing decisions by policy, such as in Ontario,

14 Interview data suggest that crisis or extreme circumstances often create windows of opportunity for change, as demonstrated during the COVID-19 pandemic.

15 Some participants mentioned current facilitating factors and examples of procurement driving innovation. Others suggested that group purchasing organizations could or should play a larger role in sharing results and best practices among institutions and facilitating the scale and spread of products, services and devices that show improved patient outcomes and/or reduced costs.

where broader public service organizations must give preference to Ontario businesses for procurements below \$121,200.

The execution phase of procurement follows standardized public sector purchasing protocols, typically requiring competitive bidding for acquisitions above specified thresholds (varying by province, but often \$75,000-\$100,000 for goods and services). Hospitals increasingly employ value-based procurement frameworks that evaluate the total cost of ownership, clinical outcomes, and system impacts rather than focusing solely on acquisition and operation costs. This evolution reflects broader policy shifts toward integrated care delivery and system sustainability, though implementation varies significantly across jurisdictions. Notable variations exist in Quebec, where regional procurement bodies play a more centralized role, and in Ontario, where “Innovation Partnership” procurement models have been piloted to enable earlier market engagement and collaborative solution development with vendors.

Funding

Funding arrangements can be a driver or barrier, but as discussed in the previous section, hospitals are highly constrained in dedicating financial and human resources to innovation activities when many are capacity-constrained both practically and financially. Healthcare organizations face particular challenges in implementation, with siloed budgets preventing cost-benefit sharing across departments and creating misaligned incentives for adoption of new technologies or processes.

The pathway from pilot to implementation to larger scaling of adoption across the system is complex, and initial innovation funding is disconnected from ongoing funding and budgeting processes. Transitioning a pilot from an innovation program to an ongoing healthcare program involves different government ministries.

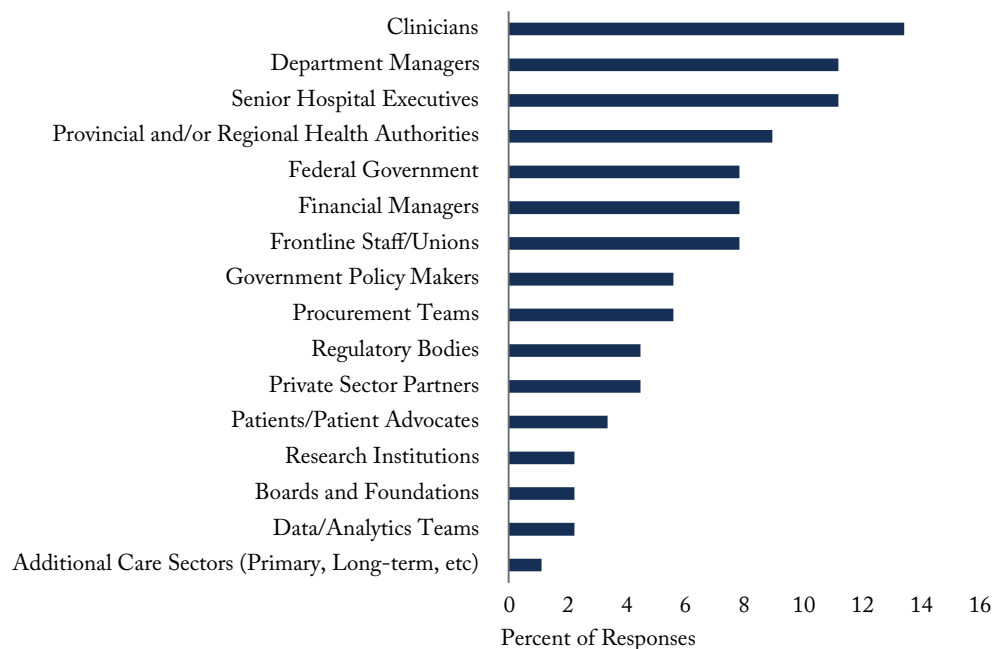
Lack of System and Data Integration

The interview data reveal a complex relationship between health system integration, data infrastructure, and innovation capacity within Canadian hospitals. The many different institutions, providers and policy decision-makers involved in system improvement have different incentives, goals and limitations. A lack of interoperable or complete data reduces both the information available to make strategic decisions and the measurement of the effects of ongoing initiatives. Several key themes emerge regarding how these foundational elements either enable or inhibit innovation adoption and implementation.

Multiple respondents highlighted how the separation between primary care, acute care, and post-acute services impedes the implementation of innovations that could improve patient care across the continuum. This fragmentation manifests in budget silos, where the costs and benefits of innovations often accrue to different parts of the system. As one senior administrator noted, even when an innovation demonstrates clear system-wide benefits, individual departments may resist adoption if they bear disproportionate implementation costs without receiving corresponding financial benefits. System integration challenges appear more pronounced in the context of value-based innovations that require coordination across care settings. Several respondents described situations where promising innovations failed to scale because they lacked supporting infrastructure for cross-sector coordination. This suggests that improving innovation capacity requires attention paid, not just to individual institutional capabilities, but to system-wide integration mechanisms.

Data systems and infrastructure emerged as both enablers and barriers to innovation. Advanced academic health centers with robust data analytics capabilities reported greater success in evaluating and implementing innovations. One respondent from a major teaching hospital described how their

Figure 7: Key Stakeholders Involved in Hospital Innovation Initiatives



Source: Author's calculations.

data analytics team enables rapid assessment of new interventions and process changes. However, this capability appears to be a characteristic of larger institutions, creating an innovation divide between larger academic or urban hospitals and smaller, rural or community hospitals. Within institutions, data can be used to identify high-volume or high-cost patient groups and help to prioritize initiatives and goals, providing a framework for evaluating opportunity costs and allocating limited financial and human resources to the highest-value strategic changes and investments in new tools and technologies. The lack of interoperability between different electronic medical record systems was consistently cited as a barrier to scaling innovations across institutions. The interviews suggest that integrated data systems, when properly implemented, can support innovation in several ways. They enable real-world evidence collection to demonstrate value, facilitate rapid evaluation of

implementation impacts, and support continuous quality improvement. However, respondents also noted that poorly designed or overly complex data requirements can create additional workload burdens that discourage innovation adoption. One physician leader specifically highlighted how excessive documentation requirements in electronic health records can shift clinical focus from patient care to computer interaction.

Key Stakeholders and Decision-makers

Interview participants were asked for their opinion on who the most important stakeholders are for successful implementation of new technologies and processes and overall strategic investments in innovation. In total, the 20 interview participants identified 89 stakeholders. Clinicians, followed by hospital executives and department managers were identified as the most important (Figure 7). Other

important groups involved in the innovation process include provincial and region health authorities, hospital financial managers, frontline staff and unions, as well as the federal government and policymakers. Interviewees also listed procurement teams, patients and patient advocates, regulatory bodies, private sector partners, research institutions, hospital boards and foundations, data and analytics teams and additional care sectors outside the hospital setting as relevant stakeholders that can be instrumental to the success of hospital innovation initiatives.

The fact that clinicians and hospital leadership were identified as the most important people to drive the implementation of new innovations reinforces the earlier results showing that innovations developed *within* hospitals face fewer implementation barriers. Clinicians are the end users and experts on how tools and technology should function in assisting them, as well as being the most familiar with current processes. Hospital executives, department and financial managers, supported by data teams, evaluate the potential impacts and can adjust budgets to adapt to change. Hospital boards and foundations provide oversight and assist with funding for new investments.

Physicians can also be a barrier to implementing new processes or technologies if they are resistant to change.¹⁶ Interview participants mentioned various circumstances where physicians are more likely to be resistant. Factors include a preference for habitual practice (not wanting to learn new techniques, or skepticism of improved outcomes), resistance to technologies or processes that reduce patient-physician interactions and have the potential to reduce total compensation and, in rare cases, if a medical technology directly competes with their own innovation.

With the adoption of new technologies and processes requiring the coordination of many groups, and with those groups having different incentives, pressures and constraints, innovation often stalls in the development and implementation phase. One interview participant provided a blunt explanation [paraphrased]:

The ‘iron triangle’ of government, labour, and medicine, creates institutional rigidity that impedes change. The governance structure, characterized by high unionization rates and political appointments to hospital boards, creates multiple veto points for innovation initiatives.

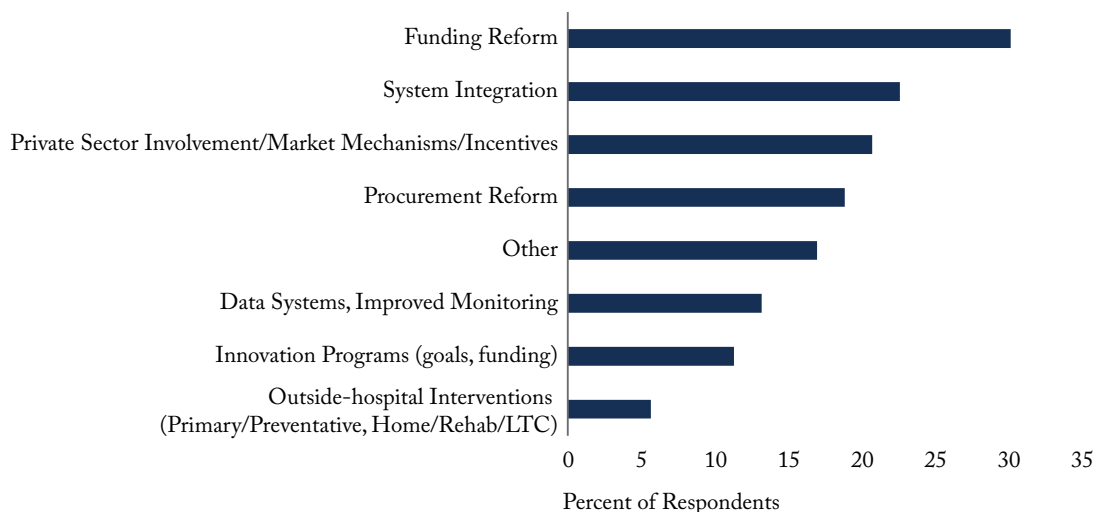
The “Other” Category

The interviews highlight multiple, interconnected barriers to innovation that are not easily categorized. While Canadian healthcare excels in specific areas such as maternal health, trauma care, and cardiac services, it struggles with chronic care management and elderly services. The interviews reveal a stark contrast in innovation capabilities between large academic health centers and smaller rural or community hospitals. Major teaching hospitals maintain robust research institutes and have proven able to successfully commercialize innovations. They also have more resource flexibility through research funding, scientific grants and larger populations from which to draw charitable donations. Community hospitals often have more constricted resources and are also more affected by an aging population and primary care access challenges.¹⁷ This disparity creates a two-tier innovation ecosystem within the hospital sector. Improving the spread and scale of proven techniques and technologies could reduce inequality

16 For example, traditionally trained surgeons may be skeptical of some minimally invasive surgery techniques, fearing being replaced by others because then radiologists and other non-surgeons may perform operations (Herzlinger 2006). Health provider resistance is usually cited as one of the major challenges or hurdles for innovation success (Cijvat et al. 2021).

17 The disproportionate burden relates to higher average ages and lower primary care attachment rates in rural areas.

Figure 8: Suggestions for Improving Hospital Innovation Capacity



Source: Author's calculations.

between hospitals and regions with different innovation constraints.

Participants' Recommendations to Improve Innovation Capacity

The stakeholders offered several consistent recommendations for systemic improvement.

First, implementing activity-based or risk-sharing funding models could create clearer incentives for efficiency and innovation adoption (Figure 8).

Second, strengthening data infrastructure and analytics capabilities would enable better assessment of innovation impacts and value propositions. Policymakers, hospital administrators, clinicians, researchers and health technology assessors all have distinct and complementary data needs. Areas with complementary data requirements should be the priority for coordination of data collection and sharing efforts. Clinicians, hospitals and researchers generate and use data, while the province has a role in encouraging interoperability and aggregate collection, dissemination and standardization of information.

Third, developing structured innovation pathways with clear evaluation criteria and implementation supports could help overcome institutional barriers. This will need to be a collaborative effort. The province concerned needs to create the funding support and transition pathway from pilot funding to ongoing program implementation and scale. Meanwhile, hospitals would continue to choose whether to opt in or out of various programs, based on their local priorities and population needs. Similarly, hospitals are integral to the selection of pilot projects.

Fourth, establishing risk-sharing mechanisms between industry and healthcare organizations could facilitate adoption of novel technologies. With limited resources, hospital administrators tend to be risk-averse about spending on new technologies that have limited real-world evidence of effectiveness. Risk-sharing mechanisms that link spending to outcomes, as well as public-private partnerships, can reduce the risk and cost of new technologies for hospitals.

Several interviewees emphasized the need for fundamental governance reform, suggesting separation of healthcare delivery from political control and allowing for more autonomous management of healthcare organizations.¹⁸ However, there were competing views on the role of competition, with some advocating for increased market mechanisms while others emphasized the importance of maintaining equitable access within the public system. Those in favour of increasing competition in the form of expanding private healthcare delivery options (publicly or privately paid) suggest it would drive innovation through market processes.

These findings suggest that improving hospital innovation capacity requires a multi-faceted approach, addressing both structural barriers and operational challenges while maintaining core system values. Successful innovation requires alignment across multiple stakeholders and careful attention to implementation challenges, particularly in terms of funding mechanisms and organizational culture.

DISCUSSION AND POLICY RECOMMENDATIONS

The analysis reveals complex interactions between structural constraints, funding mechanisms, and organizational factors that collectively influence innovation capacity in Canadian hospitals. While Canada demonstrates leadership in specific areas such as outpatient surgery and minimally invasive procedures, systematic barriers impede broader innovation adoption and scaling. The evidence suggests that addressing these challenges requires a coordinated policy response across multiple domains, with particular attention to the role of institutional leadership and system-wide integration.

International and domestic data clearly show that Canadian hospitals are strained for capacity with high bed utilization rates and more limited resources, particularly for diagnostic imaging. Hospitals have managed these resource constraints well in the past, but there are limits to how much additional capacity can be gained by shortening patients' time in the hospital or providing day and outpatient surgery. ALC patients and those with chronic respiratory conditions occupy more hospital bed-days than the top 10 inpatient surgeries. This means that hospitals cannot solve the capacity crisis alone, it will require coordination with community health services and primary care providers. The current system lacks the resources and the integration necessary to fully address hospitals' occupancy and capacity challenges. Lack of access to primary care increases emergency department use. Wait lists for LTC, under-provision of home and community care (particularly for chronic disease management) mean that more patients stay in hospitals for longer as ALC.

Current funding structures create inefficiencies and barriers to innovation in many ways. Siloed budgets that divide primary, hospital, and community care do not incentivize integration and collaboration. Fee-for-service independent physicians have mixed incentives to drive or impede innovation, depending on the context of the technology implementation or process change. Hospitals have limited financial or human resources to dedicate to strategic initiatives since most of their budgets are dedicated to compensation for care providers and supplies, drugs and devices used in ongoing treatment. Hospital funding from provincial government is generally not directly responsive to the health needs of the population and is restricted in terms of capital and other investments. At the program level, there is no direct

18 This varies across the country with different provinces having different administrative structures for healthcare and hospital oversight. For example, hospital boards are independent in Ontario while in BC, they are appointed by the Health Minister.

pathway for successful pilot initiatives to transition to ongoing program funding that can be expanded to spread and scale innovation across the province.

Procurement processes often prioritize cost minimization over value creation and innovation adoption. While group purchasing organizations play an important role in achieving economies of scale, public procurement practices can sometimes create barriers for innovative smaller suppliers, and have many layers of decision-making from hospital administration, to Boards, regional administration and up to the provincial government. Public procurement also tends to seek out a pre-ordained solution – requests for proposals specify specific product or service requirements and additional clinical parameters. While this approach makes sense for many commonly used supplies (bandages, syringes, PPE, etc.), it can be problematic for innovative solutions that don't neatly fit with current standards of practice or would require significant process, workflow or administrative changes.

The identified challenges cluster around three key areas: funding structures, system integration, and organizational capacity. The system reinforces a culture of risk-aversion and status quo rigidity. Innovation, supported by policy changes and adapted funding structures must be part of the solution to improve health system efficiency and patient outcomes. The largest challenge is freeing up or adding the necessary organizational capacity to address longer term strategic initiatives. The following recommendations are not intended to completely transform the healthcare system to be efficient, integrated and iteratively innovative, they are intended to be practical, actionable ideas that would set the foundations for such a transformation. Moving towards a health system centred on patient outcomes and ongoing innovation will require a combination of funding reforms, developing knowledge translation and sharing networks, and changes to public procurement practices.

Policy Recommendations to Improve Coordination, Capacity and Patient Outcomes

Improve intra-government collaboration to support the spread and scale of innovative solutions: Provincial and federal ministers of economic development, innovation and healthcare should coordinate their mandates for health-related initiatives and goals, with measurable outcomes and accountabilities to improve policy and system coordination. Initial goals should include improving data interoperability to allow for seamless patient transfers between primary, urgent and hospital care and creating clear pathways for successful innovation pilot initiatives to transition to ongoing funding and scale across health systems.

Encourage flexible, accountable funding structures: value-based funding mechanisms, public-private partnership structures and risk-sharing models that have proven to be successful in Canada should be encouraged through reviews of procurement policies. Reducing regulatory barriers and allowing for more flexible use of hospital resources allows hospital leaders and health companies to find creative solutions to overcome funding constraints and reduce the risk of uncertain outcomes for public funds. Risk-sharing ensures that health companies have an incentive to ensure their products achieve the advertised goals, benefit from evidence generation and ongoing iteration of treatment processes in conjunction with new technology, drive process innovation and achieve better results than implementing new products without adapting the associated processes.

Align incentive to solve priority challenges: Hospital executive and clinician/provider engagement are critical for successful implementation of technology or process changes. Current system innovation depends on individuals at independent institutions collaborating and going above and beyond their job descriptions without direct incentives to do so. To address particular capacity challenges, the government could create

time-limited incentives and complementary implementation guidance and resources that target specific goals.¹⁹ An important feature would involve complementary resources being allocated to change management, patient and provider engagement and transparent reporting of outcomes. (For example, reducing the total and proportion of ALC bed-days through a province-wide funding incentive with optional additional resource support that is partially contingent on achieving or exceeding the set goals).

Reduce Regulatory Barriers: Provincial and federal regulators and health system administrators should consider creating innovation sandboxes.²⁰ They provide a structured framework for testing new technologies and processes under controlled conditions with appropriate risk management protocols. Establishing innovation sandbox programs that include clear evaluation criteria, risk-sharing mechanisms, and pathways to broader adoption for successful initiatives would help to overcome barriers that impede the development and implementation of technologies and innovations. This particularly supports initiatives that do not neatly fit into current criteria or bridge multiple regulatory areas (such as software-enabled medical devices for drug delivery), or do not fit within current funding structures (such as virtual hospital services being delivered in community settings). Provincial health authorities should establish clear baseline requirements for critical systems and processes while allowing institutions flexibility in

how they meet these standards. This could include developing modular approaches to technology adoption that enable customization within standardized frameworks.

Facilitate Knowledge Translation and Market Efficiency: Group purchasing organizations could play a significant role in facilitating knowledge sharing between their hospital buyers by aggregating and communicating results across institutions. Similarly, they can facilitate evidence generation and improve access related to new innovations or smaller biotech companies by facilitating knowledge sharing between small innovators and potential customers, as well as across institutions implementing similar strategies.²¹ Additionally, procurement frameworks should be modernized to incorporate value-based criteria that consider total system impacts rather than focusing solely on acquisition costs. This modernization is the joint responsibility of (i) provincial governments that set public procurement policy, (ii) group purchasing organizations that implement and administer procurement policy and have some leeway in assessing value, and (iii) hospitals that can support adoption and balance internal funding to reflect where costs accrue and where they are reduced. This could include expanding the use of innovation partnership models that enable earlier market engagement and collaborative solution development.

19 For example, in 2010 Ontario had a “pay for results” program at 71 hospitals that included \$60 million in supportive change management funds and \$40 million “incentive” fund to reward qualifying hospitals for meaningful ER wait time improvements.

20 An innovation sandbox is a controlled environment in which organizations can test and experiment with new technologies and ideas. In some cases, regulations or rules for standard operating procedures are reduced to allow for more rapid testing of ideas and fewer implementation barriers within the sandbox.

21 For example, Mohawk Medbuy has an “Innovation LaunchPad Program” that provides a platform for small suppliers to interact with potential customers even when they do not have the capacity to compete for larger contracts (due to lower volumes, smaller economies of scale, etc.).

Create a Solutions Hub with an Innovation Marketplace:²² Government organizations facilitate collaboration between providers, researchers, institutions and technology companies to drive innovation.²³ Provincial governments should consider creating an innovation marketplace as part of public procurement and regulatory reform. It could serve as the platform where provincial health, regional and hospital administrators could go to the market with priority challenges and problems seeking technological solutions. This would be a very different approach to procurement, which currently seeks solutions only within pre-set parameters. Going to the market with problems instead of pre-determined solutions allows for a broader range of potential bids and approaches. Similarly, health innovation companies could provide information about their products, seek collaborations for research partnerships and conducting clinical trials. The platform could also facilitate overcoming knowledge and information gaps that impede the scale and spread of successful initiatives by encouraging health leaders to share their implementation challenges, solutions and results.

CONCLUSION

Canada's hospital system is showing significant signs of being capacity constrained while also achieving world-class results in some areas. Significant portions of capacity being dedicated to ALC care show that system integration and improvements in primary and community care are a necessary part of the solution. The evaluation of

funding and administrative structures shows many structural inefficiencies, particularly rigid budget structures and silos.

Some barriers to innovation are structural constraints and cannot be fully overcome. For example, there is a need for transparency and fair processes for spending public funds and a need to control costs to ensure long term fiscal sustainability. Facilitating responsible resource stewardship and fair markets is the role of health technology assessment and public procurement processes. While these processes change over time and could be adapted to better facilitate outcome-improving or cost-reducing technology adoption, the functions of HTA and public procurement in evaluating products and facilitating the market are foundational to the public system.

A stark reality of the current system is that no one institution or health leader is directly responsible for overall system improvement or to ensure coordination that prioritizes patient needs and improving outcomes. The system is fragmented and complex. This lack of integration leads to a lack of coordination, particularly when implementing strategic initiatives that involve other parts of the healthcare system. There is both an urgent need for capacity-enhancing innovation and a lack of resources to dedicate to it.

The policy recommendations in the previous section set out the first practical steps for transitioning from the siloed inertia of the status quo to an integrated and innovation public hospital care system. The priority should be addressing the largest capacity challenges and barriers to innovation.

22 The Advisory Council on Economic Growth (2017, p.8) defines innovation marketplaces as bringing “together researchers and entrepreneurs with public and private customers around a common business challenge. These marketplaces match innovation demand from corporations and governments with innovation supply from researchers and entrepreneurs. This matchmaking strengthens supply-chain relationships and the flow of information, thereby fueling further innovation.”

23 For example, the Nova Scotia Health Innovation Hub provides a single point of entry for innovators, clinical teams, patients, students, and investors to collaborate on healthcare solutions. Leveraging industry-sponsored research for cost recovery and providing a clear pathway to access innovation funding, the Innovation Hub facilitates innovation while reducing resource constraints and streamlining access pathways. While not a complete innovation marketplace, this initiative provides a clear pathway for collaborative research and initial market entry.

By improving coordination and integration of care, ALC bed-days can be reduced, addressing the largest capacity challenge. With increased capacity, Canadian hospitals will have more resources to dedicate to innovation initiatives to improve patient care and flow-through, creating an positive innovation feedback loop. Over the longer term, aligning funding structures and provider incentives to improving patient outcomes will reinforce integration and more efficient use of limited resources.

Success will require sustained commitment from multiple stakeholders, including provincial and federal governments, healthcare institutions,

and industry partners. The evidence suggests that targeted investments in system integration, funding reform, and organizational capacity building could yield significant returns in terms of improved healthcare delivery and system sustainability. The challenges facing Canadian hospitals are significant but not insurmountable. The path forward requires both immediate action to address acute capacity challenges, and also longer-term structural reforms to create a more innovation-enabling healthcare system.

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