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ECONOMIC VIEWPOINT

Healthcare Health Check:
Using Innovation to Deliver a Clean Bill of Health to Older Canadians

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Highlights

▶ While Canadian seniors are generally in good health, the sheer increase in their numbers will drive up healthcare expenditures. By 2044, people over age 65 are expected to represent about 23% of the population, up from 18.5% in 2021.

▶ Any examination of healthcare resources—human and capital—should look not only at acute care, but also public health programs, preventative care, long-term care and palliative care.

▶ Provinces should plan ahead to ensure there is an adequate number of skilled workers and sufficient infrastructure to meet future needs, particularly in fields involved in senior health. The importance of unpaid caregiving by family members can't be overstated. Excluding childcare, it's currently valued at over $97 billion annually (equivalent to 4% of GDP).

▶ Technology and innovation will be essential to meeting growing demand for healthcare, addressing cost pressures, and improving the health and quality of life of seniors. Remote monitoring using sensors and smart devices, digital health services and apps, artificial intelligence (AI), immunotherapy, 3D printing and ethical big data management for patient records will all be key.

▶ One area that promises to have the highest impact—in terms of both health outcomes and cost efficiency—is novel care models that shift the emphasis away from institutionalization and towards aging at home. These models encompass age-friendly cities and communities, smart home devices and designs, and local multidisciplinary teams that provide home care.

▶ Governments can foster greater adoption and integration of technologies via a comprehensive approach that accounts for the social determinants of health and leverages community-based actors. Public–private innovation partnerships and funding arrangements can ensure faster rollout and commercialization of geriatric technologies. But policymakers should also work to make tech available to everyone, especially among more vulnerable groups.

Most Canadians are living in good health well into their senior years, but sooner or later many will have complex healthcare needs. As the largest population cohort, the baby boom generation is already putting increased pressure on provincial healthcare systems. Planning ahead now, with an eye to adopting innovations to improve efficiency and capacity, will help ensure adequate services and quality care are available when Canadians need it.

An Aging Population Will Dramatically Increase Demand for Healthcare

Let's start with the good news. Seniors in Canada are generally in excellent health (Canadian Institute for Health Information (CIHI), 2011). This is due to a number of factors, including lower smoking rates, advances in medical care and higher healthcare spending, as well as socio-economic determinants of health

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such as higher educational attainment and income. In fact, compared to seniors in other countries, Canadian seniors are in excellent health (graph 1). As a result, life expectancy in Canada has climbed about six years over the past six decades. Women and men at age 65 can expect to live another 22 and 20 years respectively.

Graph 1
Canadian Seniors Are Exceptionally Healthy

Seniors ages 65+ self-reporting to be in good or very good health
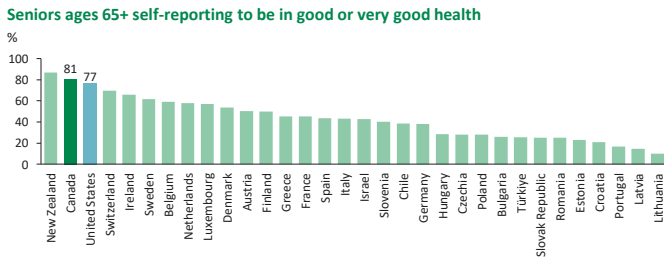
OECD and Desjardins Economic Studies

However, the "go-go" healthy years of early retirement frequently give way to the "go-slow" years and then the "no-go" years. People typically require more and more costly healthcare services as they advance through these later stages, which are often characterized by multiple chronic and deteriorating health conditions. In 2021, provincial and territorial governments spent over $90 billion on healthcare for older adults (graph 2). In fact, seniors ages 65 and up represented 18.5% of the population that year, but 43.2% of health expenditures. By 2044, about 23% of Canadians will be senior citizens. As detailed in the first note in our series on Canada's aging population, the growing number of older seniors will drive up healthcare expenditures over the next couple of decades.

Graph 2
Healthcare Spending Increases Significantly after Age 65

Total per capita health expenditures, 2021

Canadian Institute for Health Information and Desjardins Economic Studies

This looming potential healthcare crisis needs to be addressed through a multifaceted approach. The sheer number of people with medical conditions will require a larger healthcare workforce and more investment in infrastructure. And according to the Commonwealth Fund, Canada is outranked by many of its developed peers when it comes to healthcare system performance (table 1). Given Canada's aging population, that means major, multifaceted challenges ahead.

Table 1
Canada Lags Developed Country Peers on Healthcare System Performance

Healthcare system performance
Rank out of 11 selected developed countries (2021)*

COUNTRY	RANK
Norway	1
Netherlands	2
Australia	3
UK	4
Germany	5
New Zealand	6
Sweden	7
France	8
Switzerland	9
Canada	**10**
US	11

*Canada's ranking (out of 11): Access to care (9), care process (4), administrative efficiency (7), equity (10), health care outcomes (10).
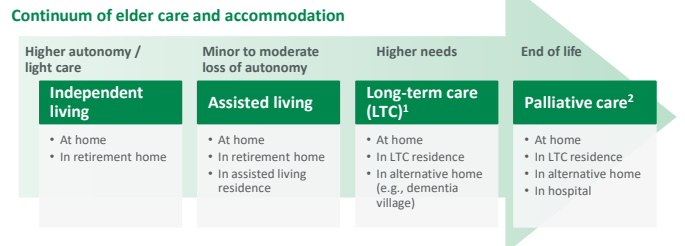Commonwealth Fund (2021) and Desjardins Economic Studies

But innovative care models can bring cost savings, productivity gains and better health outcomes. Around the world, we're seeing the spread of models that keep older adults in their communities for as long as possible, either in their homes with professional assistance or in an alternative community environment adapted to their needs. (See Exhibit 1 for an illustration of different care and accommodation options.) Although not always possible, keeping elderly adults in their homes if they don't require sustained medical attention is what most seniors want to preserve their autonomy. Indeed, over three-quarters of Canadians would prefer to receive care while continuing to live in their homes as they age (C.D. Howe, 2024).
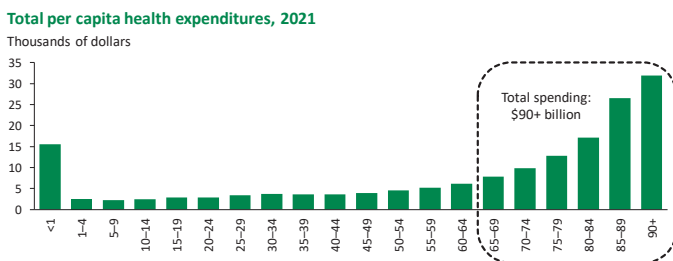
Exhibit 1
Care and Accommodation Choices Depend on Needs, Preferences and Availability

Continuum of elder care and accommodation

Higher autonomy / light care	Minor to moderate loss of autonomy	Higher needs	End of life
Independent living	**Assisted living**	**Long-term care (LTC)**[1]	**Palliative care**[2]
• At home • In retirement home	• At home • In retirement home • In assisted living residence	• At home • In LTC residence • In alternative home (e.g., dementia village)	• At home • In LTC residence • In alternative home • In hospital

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[1] Long-term care provides access to 24-hour nursing care, personal care and other therapeutic and support services. Long-term care homes can also be referred to as nursing homes, continuing care facilities and residential care homes. In Quebec, they are known as *Centres d'hébergement de soins de longue durée* (CHSLD). They differ from retirement homes that cater to more autonomous older adults.
[2] Palliative care provides pain management and comfort care typically near the end of life.

This can be achieved by adopting new and emerging technologies paired with support for family caregivers.

Canada's Caregiving Workforce and Infrastructure Are Strained

A Larger Workforce Will Be Needed to Provide Widespread Access to Quality Care

Meeting the medical needs of the rapidly growing senior cohort in the years to come will require significant increases in the number of healthcare workers, including doctors, nurses and other medical professionals. Additional personal support workers (PSWs) will be needed to assist with daily living tasks such as personal hygiene, medication management, nutrition and meal support. Canada has 3.8 long-term care workers per 100 people ages 65 and over, significantly below the OECD average of 5.7 and the US average of 4.5 (graph 3). And nearly 60% of them work on a part-time basis (OECD, 2023).

Graph 3
Canada Needs More Long-Term Care Workers

Long-term care workers per 100 people ages 65 and over, 2021 (or nearest year)

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The healthcare and social assistance sector has a major labour shortage (see our recent report), with a significantly higher job vacancy rate than the all-industry average (graph 4). While this rate is down from its peak, unfilled positions in this sector remain stubbornly higher than they were before the pandemic. And they

Graph 4
Job Vacancies in Healthcare and Social Assistance Persist

Canada: Job vacancy rate

* Seasonally adjusted
Statistics Canada and Desjardins Economic Studies

vary by sub-sector, with a job vacancy rate of 7% in hospitals and climbing. Canada can meet these staffing needs by planning now for more post-secondary education and training programs in health services. For example, Ontario's Learn and Stay Grant covers the cost of tuition and other direct educational expenses for specific healthcare programs in underserved communities, with the obligation to continue to work in that region after graduation. In Quebec, the government launched a 5-month accelerated training program that comes with a $12,000 grant to train patient care attendants to work in long-term care and at-home care. In addition to recruiting domestic students, prioritizing international students who choose these fields and intend to practice here can give Canada a highly skilled, domestically trained workforce. Remaining gaps could be filled through targeted immigration.
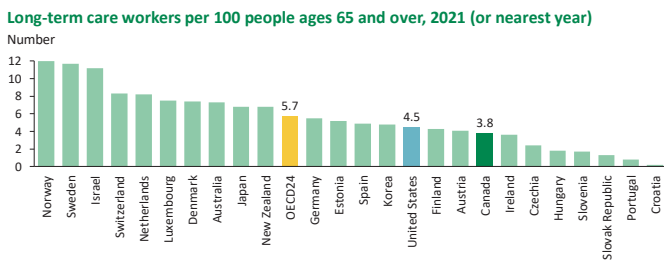
Absenteeism due to burnout is also a significant concern. A 2023 House of Commons report found that exhaustion and burnout among healthcare professionals during the pandemic led to widespread staffing shortages. The key to retention: improving incentives and policies to prevent burnout. Reducing the administrative burden for all staff is part of the equation. Physicians want better integration of electronic medical records (EMRs) and streamlining of cumbersome referral processes and forms. Health professionals also need greater schedule and workplace flexibility to stay motivated and feel empowered in decision-making that impacts their work.

Family Caregivers Will Continue to Play a Major Role in Eldercare

Eldercare for seniors living with complex health and daily living needs relies heavily on the unpaid and often undervalued labour provided by family members. This encompasses a broad range of responsibilities, from tending to medical needs to undertaking aspects of household and financial management. Each of these tasks becomes more complex and time-consuming as an elderly person's health deteriorates. According to the CareMakers Foundation, over 8 million Canadians are providing unpaid caregiving for loved ones experiencing significant mental or physical health challenges. As we noted in our recent report, women tend to take on greater caregiving roles for the seniors in their lives. And with women having children at a later age than before, they face an increased likelihood of having simultaneous caring responsibilities for both minor children and older relatives. The value of informal caregiving for the disabled and elderly is estimated to be $97 billion annually, or the equivalent of 4% of GDP (Statistics Canada). This is similar to the GDP of industries such as transportation and warehousing or information and communication technologies. And in many cases, caregiving can result in a decrease in providers' own employment income and career prospects.

A recent US report identified four main policy areas to better support family caregivers: increasing coverage of in-home services and supports; adding financial support for caregivers;
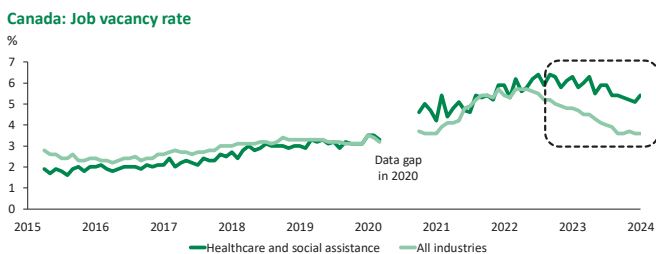
expanding the availability and accessibility of resources and navigational supports to find them; and alleviating caregiver burden while reducing disparities in access to in-home services. Internationally, Germany offers a distinctly generous model for family caregivers via its public long-term care insurance. (See box 1.)

BOX 1: German Long-Term Care Insurance Encourages Home Care by Informal Caregivers

Over 75% of beneficiaries receive long-term care at home, and two-thirds of those are cared for solely by informal caregivers. Recipients receive cash benefits for informal care ranging from EUR 316 to 901 per month. Caregivers receive social security benefits including pensions and accident insurance, caregiving coverage for up to four weeks of vacation, as well as an allowance for respite care of up to six weeks. They also benefit from free special care advice training and counselling. There is no limit to the duration of informal caregiving subsidies in Germany, and benefits can double for more severe conditions like dementia.

In contrast, Canadian Employment Insurance offers limited benefits. If caregivers of a critically ill or injured adult need to leave work, they can receive up to 55% of their earnings for up to 15 weeks, with a maximum of $668 per week. However, caregivers of patients already living with chronic conditions are not eligible unless there is a significant deterioration in their health. At the federal level and in Quebec and Ontario, there is also a tax credit for immediate family members caring for a disabled relative. Quebec additionally offers a refundable tax credit for short-term respite services.

Sources: OECD, European Commission, Government of Canada and the C.D. Howe Institute

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### Infrastructure Planning Needs to Ramp Up

As the population ages, there is a pressing need to adapt and enhance healthcare infrastructure to meet the specific needs of the elderly. Transitions out of acute care[3] are often delayed due to capacity constraints—lack of home care capacity and not enough long-term care beds in institutions. In fiscal year 2017–18 in Ontario, almost 12,000 patients in their final 90 days of life

waited to be discharged out of acute care into more suitable locations and accounted for over 200,000 patient-days (graph 5). In Ontario, acute care costs during a patient's last 30 days of life are on average 181% higher than during the preceding 30 days, whereas outpatient costs are 63% higher and continuing care costs 33% higher (C.D. Howe Institute, 2021). Moreover, extended acute care stays can result in hospital-acquired harm such as worsening frailty, further delaying this transition.

Graph 5
End-of-Life Patients in Acute Care Beds Wait for Alternative Placements

Patients in their last 90 days of life, Ontario 2017–18
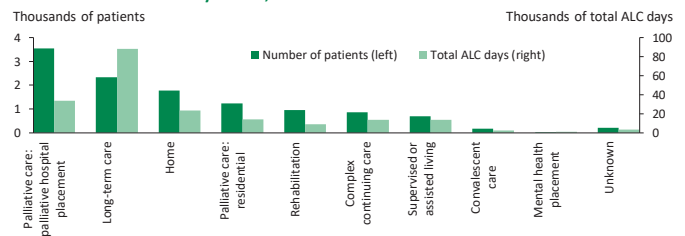
ALC: Alternate level of care (patients who don't require acute care and are waiting to be discharged to a more suitable care setting)
C.D. Howe Institute, Ontario Palliative Care Network and Desjardins Economic Studies

Other provinces face similar challenges. In Quebec, approximately 875 hospital patients were waiting for admission to a long-term care residence (CHSLD) as of February 2024.[4] The Quebec government highlighted this issue in its 2024–25 provincial budget and announced measures to provide alternatives for these elderly patients, including the gradual opening of 22 senior homes and alternative homes.[5] In line with its shift towards greater home care services,[6] the Government of Quebec also announced outlays of $581 million over 5 years to increase these services—with the goal of offering them to 417,000 people by 2028—and $750 million over 7 years to upgrade the tax credit for keeping seniors in their homes.

The cost of a standard hospital stay varies between $5,000 and $15,000 depending on length of stay and treatment, with an average of $7,800 in Canada and $8,600 in Quebec (CIHI). Alternate Level of Care (ALC) patients—hospital patients waiting to be transferred to more suitable care settings—account for 15.5% of acute care bed-days in Canada (excluding Quebec), with an estimated cost of $730 to $1,200 per day (Whatley, 2020). Home hospitalization is a fraction of that price, owing to shorter lengths of care, less healthcare utilization (e.g., fewer

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[3] Acute care provides short-term treatment of a medical condition, often in a hospital setting. Outpatient costs include physician and medication costs. Continuing care costs include homecare and long-term care.
[4] The overall waitlist for CHSLDs in Quebec was about 3,700 seniors as of March 2024. In Ontario, there were about 40,000 seniors waiting for LTC as of October 2022, and 76,000 receiving care, meaning the waitlist is more than 50% of LTC capacity (C.D. Howe, 2024).
[5] These novel senior homes and alternative homes (called "maisons des aînés" and "maisons alternatives" or MDAA) are targeted towards seniors with severely diminished autonomy and adults living with a physical disability. In contrast to CHSLDs, they are designed to more closely resemble a home. One such alternative home opened in Sherbrook in 2022.
[6] At-home assistance services for seniors grew from 19.5 million hours in 2018–19 to 34.7 million hours in 2023–24 (+78%). By March 2028, the government hopes to offer 43.6 million hours of at-home services to seniors (Quebec Budget 2024–25).

lab tests and specialty consultations) and reduced hospital readmissions. For instance, an American study found that acute hospitalization plus the 30-day post-acute period cost about 22% less with a hospital at home model vs. inpatient care (US$17,937 vs. US$22,991). An Israeli study found an estimated 57% savings per day. Canadian programs like the one in Alberta have also linked home care to positive patient outcomes and to reduced readmissions within six months among patients who were discharged early to finish their recovery at home. Home care also frees up much-needed hospital beds for acute care of other patients.[7] Moreover, studies have shown that providing home care post-surgery and post-hospitalization significantly reduces morbidity. Other surveys indicate that patients are highly satisfied with home-hospitalization. (See box 2.) In the next section, we'll explore novel approaches and technologies that enable seniors to stay much longer in their preferred setting: their home.

BOX 2: Hospital at Home

Home hospitalization, or hospital at home, uses multidisciplinary teams to provide intensive, hospital-level care in patients' homes for acute conditions that would normally require hospitalization.

Studies in different countries point to high patient experience scores and satisfaction with these models. In a 2019 UK survey of 206 patients, 99% said they were satisfied with home service and 97% said they would recommend it. In a 2021 US survey of 41 patients, 100% of respondents said they were likely to recommend the Mayo Clinic's Advanced Care at Home program. Similarly, on a recent Quebec survey, 93% of respondents were satisfied with home hospitalization, with 100% of patients preferring it over traditional hospitalization.

Sources: US National Library of Medicine, Journal of Community Nursing and Gouvernement du Québec.

Demand for At-Home Care and End-of-Life Care Is Expected to Increase

New approaches to aging at home are being developed in countries like the Netherlands and Denmark, which could inspire Canadian policymakers. (See table 2 for other international best practices and examples.) There are also some home-grown examples of innovation in the delivery of home care that relies on multidisciplinary teams for community-based interventions. Such models are being implemented with success in Quebec. In Montreal, the Verdun Hospital's at-home acute care team (*soins intensifs à domicile* or SIAD) facilitates communication and coordinated services between the hospital, the local community

Table 2
Best Practices for Policymakers with Respect to Aging and Health

BEST PRACTICE	EXAMPLES
Integrate technology into a broader approach to care	• Innovation hubs and partnerships (co-creation of technology, early consultation of end users and caregivers) to scale innovation, like the UK regional networks testing tech at small scale before broader adoption • Channelling of public funds to community non-profit resources • Funding grassroot efforts focusing on social work and prevention
Facilitate aging at home and healthy aging	• Aging communities: aging villages aimed at addressing social isolation, age-friendly cities (Brampton, ON adopted an age-friendly strategy in 2019), alternative environments to institutionalization for seniors with specific needs, like "Dementia village" in Hogeweyk (Netherlands) and Alzheimer village in Langley, BC • Holistic senior living facilitated by remote monitoring, telehealth, smart living space designs that reduce the risk of falls, and mobility aids in the home. Such models are widespread in Denmark, and a pilot project is underway in Sherbrooke, QC. • Germany: Long-term care insurance providing financial compensation for family caregivers in the home • Increasing the share of investments in home-hospitalization vs. institutional care • Flexible work arrangements for family caregivers (which are also beneficial for active older workers, who are more susceptible to developing cognitive issues)
Address labour shortage by reducing the burden and increasing flexibility for healthcare workers	• Japan subsidizes the integration of robotics and AI to supplement care in long-term care homes, reducing the physical burden on workers (lifting, etc.) • Attractive compensation and conditions for workers in long-term care homes, like in Germany, which set a higher statutory minimum wage for LTC* workers
Ensure patients can be involved in their health plan	• Give patients access to their electronic medical record and digital tools to help them navigate it • Sweden began providing its citizens with web-based access to their electronic health records in 2012, with rollout continuing through 2018
Enforce ethical standards for technology and data use	• Ethical data use (electronic records, AI, sensors vs. cameras) • Ensure standards are put in place for aging technology • Enhance awareness of solutions • Ensure innovations are affordable and accessible, even to remote communities and vulnerable groups

*LTC: Long-term care
City of Brampton, European Commission, Healthcare Denmark, OECD, Université de Sherbrooke DOMUS research centre, US National Library of Medicine, The Hogeweyk Dementia Village Associates and Desjardins Economic Studies

clinic (CLSC[8]), patients and their families via a single hotline, with a doctor and nurses available on call 24/7. Improved information flow and coordination is at the heart of these novel approaches.
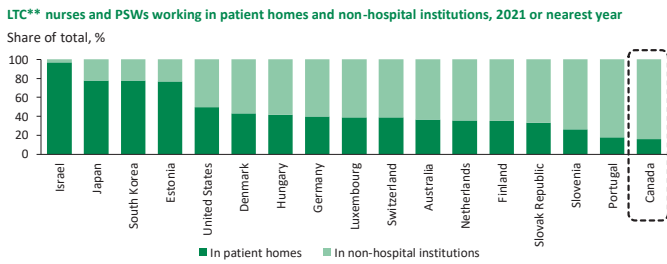
With people living longer, new models for palliative care are being developed, as they will be increasingly needed by an aging population. According to the WHO, "early delivery of palliative care reduces unnecessary hospital admissions and the use of health services." Instead of thinking of palliative care as comfort care for the last *few days* of life, they are increasingly being stretched over the last *two years* of life. Humane care and comfort at home during these last few years is often an appropriate approach that can reduce the cost and discomfort of repeated therapeutic interventions that may not be in the patient's best interest or what their family wants.

Palliative care delivered in the community could not only alleviate the strain on the acute healthcare system and reduce the cost of delivering end-of-life (EOL) care, it would also correspond to most seniors' wishes, as 87% of Canadians say they would prefer to receive EOL care at home. Canada trails many other OECD countries in this regard, with the smallest share of LTC workers in homecare vs. institutional (non-hospital) care settings (graph 6 on page 6). According to recent international benchmarking of end of life care, Canada ranks 22nd out of 81 countries on quality of death and dying, behind countries like Panama, Poland and Belarus. And it comes in well behind the UK, which ranks first thanks to nationwide palliative care with extensive integration in its National Health Service.

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[7] According to a study in Victoria, Australia, this model added the estimated equivalent capacity of a 500-bed hospital without building a brick-and-mortar facility.
[8] *Centre local de services communautaires*, which offers health and social assistance services to neighbourhoods across Quebec.

Graph 6
Canada Has the Lowest Share of LTC Workers in Home Care*

LTC** nurses and PSWs working in patient homes and non-hospital institutions, 2021 or nearest year
Share of total, %

■ In patient homes   ■ In non-hospital institutions

*Among OECD countries with available data. **LTC: Long-term care; PSW: Personal support worker
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Technology and Innovation Are Transforming Senior Healthcare Services

Technology and innovation can play a pivotal role in meeting the healthcare needs of Canada's aging society. Keeping seniors healthier for longer will not only improve their quality of life, but could also reduce the strain on our costly acute healthcare system. Table 3 summarizes some of the key innovations that will be particularly useful as our population ages. We expect domestic and international demand for these products and services to increase in the coming years.

Table 3
Innovations Transforming Healthcare and Services for the Elderly

INNOVATION	APPLICATIONS
Telehealth and digital health services	▪ Caregiving apps to allow seniors with chronic medical conditions to live at home independently (connecting patient, caregivers and family)
Sensors, smart devices and wearables	▪ Remote patient monitoring allowing for home hospitalization ▪ Prevention of heart failure, falls, etc.: smart sensors detecting risky behaviours; wearable tech such as bracelets detecting falls
Artificial Intelligence	▪ Early Alzheimer detection using an eye test ▪ Personalized targeted care based on big data analytics ▪ Software that analyzes medical exam results, prioritizing those with anomalies ▪ Monitoring patient health in real time
Immunotherapy	▪ Cancer treatment (oncology)
3D printing	▪ Hearing aids, made-to-measure prosthetics, replacement joints and implants
Multidisciplinary and innovative home care models	▪ Efficient routing to palliative care, reducing unnecessary hospital admissions ▪ Improved information flow via centralized hotline linking hospitals, CLSCs and eldercare residences (nursing homes, intermediary resources, CHSLDs) ▪ Community-based home care model: small teams, social support and personalized care
Ethical big data	▪ Leveraging hospital data to inform and drive new research ▪ Unify systems for easy, ethical access to patient electronic records

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Technologies Facilitate Aging at Home and Home Hospitalization

One key area of innovation combines gerontotechnologies (also known as AgeTech) and models of care delivery to allow seniors to age at home while receiving the appropriate medical attention and preventive care. These models have the double benefit of cost savings (avoiding hospital admissions) and higher patient satisfaction.

Remote monitoring technologies are being developed at a fast pace. They have great potential to support hospital-at-home models, as well as aging at home more generally. New smartphone apps and wearable technology such as

smartwatches and health monitors can be used to track vital signs and detect potential health risks before they become critical. Preventative care can be more cost effective than treatment and improve quality of life. The Stethophone app is at the cutting edge of this field. It was designed in Newfoundland and recently won FDA (U.S. Food and Drug Administration) approval. It transforms smartphones into high-end, medically accurate stethoscopes, allowing patients to record their heartbeat at the moment symptoms occur without any additional expensive equipment.

Smart bandages feature biosensors that monitor wound healing and infection and provide electrical stimulation to promote faster tissue closure with reduced scarring (Engineering and Technology, 2023). This technology—currently only a proof of concept—could be particularly beneficial for elderly patients, whose wounds can take longer to heal.

Bracelets and detectors capturing motion and other key data points, some embedded with AI-powered learning capabilities, can detect falls and alert patients and caregiving staff of risky behaviours such as neglecting a hot stove, forgetting to take daily medicine or getting out of bed at night and wandering outside.

Services such as telehealth can offer seniors access to healthcare services from the comfort of their own home, reducing demand for in-person care. Automation can be used to convey complex medical messages in straightforward terms and in the language of the patient. Moreover, phone and online services are broadly available to those who reside in rural or remote areas and to those with limited mobility. Mobile apps are being developed to facilitate the care journey, giving patients increased involvement and engagement in their own care. (See recent examples in Nova Scotia and in Quebec.)

These technologies and many others, combined with a comprehensive approach to homecare, have great potential to improve quality of life, alleviate labour needs and burden, and lessen the need for additional investment in hospital infrastructure, thereby leading to reduced public expenditures.

Data and AI Can Improve Patient Outcomes

Emerging artificial intelligence could lead to improved diagnostic accuracy and personalized medicine. As a result, treatment plans tailored to the individual needs of senior patients may lead to better health outcomes. For instance, AI-powered software can analyze large quantities of medical exam results, scanning for anomalies and prioritizing patients accordingly, thereby increasing the speed and accuracy of radiology scans (World Economic Forum, 2023). AI is also being used to predict individual patients' potential complications from cancer treatment, allowing for more personalized treatment and early prediction of patient needs. A Toronto startup has developed an eye test capable of detecting

Alzheimer's early using AI capabilities. AI can also improve real-time monitoring of patient health in hospitals. Such AI integration is still in its infancy but is expected to increase in the coming years.

Cloud computing is unlocking greater AI capacity that, if used wisely, can aid the flow of information between different systems and improve decision-making and medical attention to patients. For example, greater information sharing can eliminate delays in accessing electronic patient files across sites, better integrate diagnostic imaging system information into patient files and more. Distributed ledger (blockchain) technology can be used to securely store patient data. As we discussed in a previous report, it's ideal for ensuring patient privacy while also giving patients control over the sharing of their medical history across multiple healthcare providers. This could be particularly helpful for seniors taking multiple prescription drugs who could be at risk of adverse effects if providers are unaware of what other medications have been prescribed. AI also has significant potential to improve operational efficiency by streamlining administrative tasks.

Data analytics offers promising possibilities to better leverage hospital data to inform research that can eventually lead to prevention and better care. To make those possibilities a reality, ethical treatment of data to preserve patient confidentiality is essential. So is close collaboration between hospitals and university research institutes, which increases the potential to develop and apply new innovations, with positive spillovers on both sides.

Other Medical and Life Sciences Innovations Are Improving Healthcare

Immunotherapy—using a patient's own immune system to treat cancer—could change the treatment plan of oncology patients, with the potential for improved tolerance and outcomes. Clinical trials have been extended to include older adults, as people's immune systems undergo gradual changes as they age (Presley et al., 2021).

The treatment of patients with musculoskeletal injuries can be improved with 3D-printed prosthetics and implants. 3D printing has cut production times for hearings aids from more than a week to just one day (American Hospital Association). It also eliminates the need for costly manufacturing equipment.

Canada's Life Sciences Ecosystem Can Help Tackle Eldercare

To foster innovation in eldercare, Canada can rely on a dynamic medical technology and life sciences sector. Major subsectors include medical devices and technology (MedTech) and pharmaceuticals, but several subsectors and niches are emerging, driven by market demand and scientific advances, notably

health information technology and artificial intelligence (health IT/AI). There is also an increasing focus on aging technology (AgeTech[9]), with the government-backed envisAGE initiative launched in 2023 to accelerate innovation in this field. The Government of Canada has also recently introduced initiatives to ramp up domestic production of medical isotopes such as radiopharmaceuticals, which are used in cancer treatment and diagnostic imaging. Canada is ranked 8th worldwide in both medical device and pharmaceutical sales, with about 2% of the global market.

The fast-growing life sciences and medical technology industry has industrial clusters in Quebec (especially greater Montreal) and Ontario (including the MaRS discovery district in Toronto). These clusters, combined with a highly educated workforce and several university-affiliated research institutes, support a strong ecosystem in Canada advancing innovation in healthcare.

How Can Canada Foster Effective and Accessible Healthcare Innovation?

Life sciences companies face specific challenges when it comes to bringing their innovations to market and often struggle to scale up. Some ways to address these challenges include creative financing techniques, such as joint ventures with non-traditional partners, using venture capital—such as BDC's Healthcare VC fund—and leveraging pension funds, which play a much larger role in the life sciences space in the US than in Canada. Governments can also fund and support company incubators and accelerators in the industry, which can facilitate access to capital, infrastructure and lab space. Governments should also aim to reduce administrative bottlenecks when it comes to approving new products and processes, albeit without compromising on safety and standards.

The COVID-19 pandemic spurred some creative partnerships and collaborations. The health and auto industries partnered to build ventilators, and public healthcare teamed up with technology companies to roll out COVID-19 apps and solutions. Looking forward, there's much to gain from continuing such non-traditional joint ventures that pool capital assets and capabilities to drive and implement continued innovation in healthcare. Health innovation hubs and networks such as Age-Well, envisAGE and the Nova Scotia innovation hub facilitate information sharing, partnerships and financing opportunities to test, commercialize and scale solutions. These hubs generally bring together patients, families, industry, investors, clinical teams, governments, academic partners and healthcare foundations to collaborate on innovative healthcare solutions using a co-creation approach.

While these initiatives are encouraging steps in the right direction, industry stakeholders still say they need more

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[9] Technological solutions known as AgeTech or aging technology include products, services and practices that improve the daily lives of seniors and caregivers. They affect everything from housing and healthcare to autonomy, mobility, mental health, well-being, financial health, communication and social connection. (Source: EnvisAGE.)

resources and more effective government action. Potential solutions include enhanced targeted investments to fast-track innovation (e.g., accelerators) and a regulatory sandbox for new technologies that don't "fit" into existing regulatory categories, using concepts like "conditional approvals, iterative science-based assessments, and post-approval monitoring to fast-track effective technologies while still protecting the health of Canadians and the environment" (Life Sciences Ontario 2023 forum report). If the rollout of digitalized health records is any indication, Canada does seem to lag behind other jurisdictions like Sweden when it comes to rapidly integrating technology into the healthcare system. Governments have a balancing act between creating rigorous quality and safety standards and making sure citizens can benefit from advances in healthcare as soon as possible. To gain the population's trust, it will be essential to educate patients and disseminate information on things like what technology is available, how to use it and how personal data is being safeguarded.

Experts say even the best technology is of no use if it's not efficiently integrated into a broader social approach to care grounded in the local environment and the community of older patients. Many note that physical and mental frailty are part of a wider vulnerability and that supports to seniors should be comprehensive and preventative. Non-profit organizations and local networks are often well placed to provide that social safety net. Marginalized and more vulnerable populations, for instance, should be a particular focus for policymakers as they use a disproportionately large share of healthcare resources.

Conclusion

Seniors in Canada are generally healthy and living longer. But people's healthcare needs typically become more costly as they age. Canada faces a multi-pronged challenge in preparing the healthcare system for a growing number of senior citizens as baby boomers get older. The healthcare sector is already struggling with a labour shortage and employee burnout and absenteeism. Policymakers should invest now in human capital by training new healthcare workers, targeting immigration to fill any gaps and improving working conditions and flexibility for caregivers. Policies to support unpaid family caregivers can help keep increasingly frail seniors at home longer, improving their quality of life as most people prefer to age in place. Nonetheless, infrastructure will need to be evaluated to ensure adequate capacity. Lack of long-term care infrastructure and inadequate home care resources are already unnecessarily prolonging costly hospitalization in many cases.

Integrated ethically and appropriately, technology and innovation can help alleviate the strain on healthcare workers and infrastructure, enhance productivity, and improve quality of care. Innovations including remote monitoring, wearable technology, telehealth, AI, immunotherapy, 3D printing and patient e-record management have the potential to transform eldercare. Benefits could include keeping seniors healthy for longer and improving quality of life for older adults living with medical conditions by keeping them in their homes. Reducing demand for institutional healthcare and its attendant costs would be welcome. Technology alone isn't the solution, but rather a tool. It will only be transformative if it is integrated into a comprehensive approach to physical and mental wellness that encompasses the social aspects of healthy aging. Innovation hubs focused on local adoption of new technology and novel models of care inspired by international best practices can provide useful guidance and inspiration for policymakers.