The Future of Technology and Aging Research in Canada

Canada’s Technology and Aging Network
About AGE-WELL

AGE-WELL is a pan-Canadian network that brings together researchers, older adults, caregivers, partner organizations and future leaders to accelerate the delivery of technology-based solutions that make a meaningful difference in the lives of Canadians. AGE-WELL researchers are producing technologies, services, policies and practices that improve quality of life for older adults and caregivers, and generate social and economic benefits for Canada.

Currently, AGE-WELL includes more than:
- 250 funded and affiliated researchers from 42 universities and research centres across Canada
- 380 industry, government and non-profit partners who work closely with us on solutions for healthy aging
- 750 trainees who are the next generation of leaders in the field of technology and aging.

AGE-WELL was launched in 2015 through the federally funded Networks of Centres of Excellence (NCE) program.

AGE-WELL’s vision is:
Canada’s leadership in technology and aging benefits the world.

AGE-WELL’s mission is:
To develop a community of researchers, older adults, caregivers, partners and future leaders that accelerates the delivery of technology-based solutions that make a meaningful difference in the lives of Canadians.
The aging population is one of the greatest challenges of the 21st century.

This worldwide phenomenon requires global solutions if societies and economies are going to respond to the needs and aspirations of growing numbers of older adults.

Technology offers an unprecedented opportunity to improve the health and quality of life of seniors, create more sustainable health-care solutions, and open up new possibilities for businesses and government.

The technology and aging sector is now a major focus of research and innovation globally through initiatives such as Canada’s AGE-WELL Network of Centres of Excellence (NCE), Europe’s Active and Assisted Living Programme, and the international Aging2.0 network.

82% of Canadians aged 65+ believe technological advancements can help them stay in their homes longer and 70% are willing to pay out of pocket for this technology.¹

Most Canadians believe technology (75%) and artificial intelligence (69%) could help solve issues affecting our health system (e.g. access to care, addressing chronic diseases).²
Creating the Future

As Canada’s Technology and Aging Network, AGE-WELL is leading the way in developing technologies, services, policies and practices that improve the lives of older adults and caregivers. Building on its successes to date, AGE-WELL has launched a major renewal initiative that will set the research agenda in the technology and aging field in Canada in 2020 and beyond.

AGE-WELL will continue to drive innovation in the sector, influence policy and practice, and support R&D through strategic investments in the following eight Challenge Areas:

1. Supportive Homes & Communities
2. Health Care & Health Service Delivery
3. Autonomy & Independence
4. Cognitive Health & Dementia
5. Mobility & Transportation
6. Healthy Lifestyles & Wellness
7. Staying Connected
8. Financial Wellness & Employment
Focusing on the 8 Challenge Areas

Focusing primarily on eight Challenge Areas will enable AGE-WELL to “move the needle” when it comes to supporting older adults and caregivers in Canada—and achieving social and economic impact. Core to all of AGE-WELL’s work is a holistic approach that engages a wide range of stakeholders and takes into consideration principles of equity, diversity and inclusion.

The next phase of AGE-WELL represents a singular opportunity to continue the growth of Canada’s leadership in technology and aging.

What is a Challenge Area?

A Challenge Area is an important but difficult and complex problem area (often known as a “wicked problem”) that demands innovation and deployment of real-world solutions. A challenge in this context is NOT just about problems, it may be about economic opportunities and making a positive contribution to Canadian society and government policy. A Challenge Area goes beyond research questions or priorities.

How did AGE-WELL identify these Challenge Areas?

The Challenge Areas presented here are the result of an extensive review and public consultation process carried out across the AGE-WELL Network with its members, partners, older Canadians and caregivers. The New Brunswick-based AGE-WELL National Innovation Hub called Advancing Policies and Practices in Technology and Aging (APPTA) conducted a review of Canadian provincial and territorial policy priorities relating to older adults. The STAR Institute at Simon Fraser University engaged in an environmental scan of national and international policy documents.

The outcome of these activities was a short list of 18 Challenge Areas. Five local consultations were hosted across Canada (Vancouver, Edmonton, Winnipeg, Toronto, Montreal) in 2018 and members of AGE-WELL’s International Scientific Advisory Committee also provided their perspectives on this short list. Finally, the broader AGE-WELL community was consulted through an online survey that was open to the general public. Feedback from over 1,000 stakeholders through the in-person consultations and online survey was used to prioritize the final set of eight Challenge Areas.
Supportive Homes & Communities

In Canada, 85% of seniors would like to age in the homes and communities that they know. Aging in place is about being able to live independently in one’s own home and community through appropriate supports and services, including the design of physical spaces and the use of technology within the environment. As an older adult walks around their smart home, floor tiles would collect vital signs such as heart rate and blood pressure. Motion sensors would detect falls and connect the older adult to a caregiver or emergency services. Technology-based solutions can help seniors to live independently and improve their quality of life, while also supporting caregivers and providing a cost-effective alternative to long-term care.

There’s a tremendous opportunity for companies and startups to come up with innovative solutions to help older adults age in place at home and in the community.”

– Trish Barbato, Senior VP, Innovation and Strategic Partnerships, Revera, and AGE-WELL partner

Dr. Frank Knoefel (left) and Dr. Bruce Wallace with a pressure-sensitive mat that can monitor an older adult’s health while they sleep, alerting caregivers to potential problems.

Innovative Solutions

• Smart homes
• Socially assistive robots
• Age-friendly communities
Older adults and caregivers want access to quality and equitable health care that is proactive in addressing their needs and enhances their ability to live an active and healthy life. However, Canada’s health-care system is complex, and older adults and caregivers often face challenges such as getting to doctor’s appointments, obtaining health records, navigating the system and affording new technologies that improve quality of care. Disruptive technologies offer innovative new approaches. Virtual care platforms will allow older adults in remote communities to access health professionals from their homes. Wearable health technologies will empower seniors to play an active role in their own health management. Wander detection systems can provide caregivers with the peace of mind that comes from knowing that older adults are safe at home.

"There remains an incredible amount of potential for technology-based innovation in health services—tapping into it will improve quality of life of older adults and help to reduce the financial pressure on the health system."

– Mimi Lowi-Young, former health care executive, Chair, AGE-WELL Board of Directors

Shanil Gunasekara, Founder and Chief Executive of eTreatMD, with an app for arthritis management.
Innovative Solutions

- Assistive technology
- Stick-on hip protectors
- Rehabilitation devices

Autonomy & Independence

Aging is experienced differently across Canada and, while many older adults will retire in good health, 89% will live with at least one chronic condition, for which they may require varying levels of assistance. The challenge is for people to maintain their autonomy and independence, even in the face of impairment, disability or illness. While informal caregivers are key in making it possible for older Canadians to age in place, most older adults wish to continue making their own decisions even if they require assistance in carrying them out. Innovations such as information and communication technologies can help seniors and their caregivers make informed decisions about their daily activities and future plans.

“I would feel better sending patients home with technology that can help monitor their function and maintain their independence. This technology will offer a better quality of life for the individual and their caregiver.”

– Dr. Frank Knoefel, physician and AGE-WELL researcher
Cognitive Health & Dementia

The number of Canadians living with dementia is expected to reach 937,000 by 2031, a 66% increase from today.⁵ In the absence of a cure, technology-based solutions promote cognitive health and active lifestyles to help delay the onset of cognitive decline and provide assistance to those already experiencing some level of impairment. Innovative solutions can also provide early diagnosis allowing older adults and their caregivers to plan for the future. Virtual assistants are being designed to prompt people to carry out daily tasks at home, while also reducing caregiver burden. One in five Canadians has experience caring for someone living with a form of dementia.⁶ Supporting caregivers who provide the vast majority of day-to-day care for individuals with dementia is crucial.

There are brilliant researchers across Canada working together with end-users like me. This is an innovative approach and will result in technologies that are better targeted and more user-friendly.”

– Jim Mann, Alzheimer’s advocate and member, AGE-WELL Research Management Committee

DataDay is a new app designed to support people with early dementia or mild cognitive impairment.

Innovative Solutions
• Diagnostic and predictive tools
• Wandering detection
• Locator and GPS tracking devices
Mobility & Transportation

Canada has a growing demographic of older travellers who are seeking an inclusive transportation system that makes them feel comfortable, respected and safe. Whether they are travelling across the neighbourhood to get to the local grocery store or across continents for work meetings or vacations, the vast majority of Canadians aged 65 and over use transportation on a weekly basis. Current barriers to mobility and transportation for older adults include changing physical and cognitive capacities, wayfinding, affordability and ageism. Modernizing transport to include user-friendly navigation technologies like talking maps, obstacle-detection systems for wheelchairs and autonomous vehicles, would result in a more inclusive transportation system and a better quality of life for older Canadians.

“As Canadians age, our country’s transportation system has to adapt to ensure it is accessible to older adults and their caregivers. Integrating existing and new technology into the system can help all Canadians to maintain their mobility and independence.”

– Dr. Parminder Raina, Scientific Director, McMaster Institute for Research on Aging, and AGE-WELL partner

Dr. Pooja Viswanathan, CEO of Braze Mobility startup, developed an add-on system that turns any wheelchair into a smart wheelchair able to improve navigation and avoid collisions for users.

Innovative Solutions

- Smart wheelchairs and other smart assistive technologies
- Autonomous vehicles
- Transportation service mobile applications
Only 1 in 5 older Canadians achieves the recommended 150 minutes of moderate-to-vigorous physical activity per week. Also, 1 out of 5 Canadian seniors has experienced emotional distress in the past 2 years, which they found difficult to cope with on their own. Promoting healthy behaviours enables older adults and caregivers to maintain and improve their physical and mental well-being. Living a healthy lifestyle is not just about making conscious choices about nutrition, exercise and self-management of health conditions. It is also about the social, economic and contextual factors, or social determinants of health, that contribute to health outcomes. These include income and social status, education and literacy, employment and working conditions, physical environments, social supports, access to health services, gender and culture. Technology-based solutions offer a way to track, monitor and improve health, while empowering older adults to take control of their own well-being.

"We need new ideas to serve the rapidly-growing older population. As one who has had a life-long career in human rights, equality and accessibility, I applaud AGE-WELL’s efforts to consult and include a diversity of older adults and caregivers in its work, and to bring together researchers, industry and community representatives."

– Josephine Grayson, seniors' advocate

### Innovative Solutions
- Wearables
- Health and fitness applications
- Virtual exercise systems
An engaged and connected population of older Canadians and caregivers has significant benefits for our economy and our communities. While studies show that participation in community activities positively influences health and socioeconomic outcomes for older adults, approximately 20% of seniors in Canada currently experience social isolation. Staying connected is about strengthening the social networks of older adults and caregivers, and enhancing their capacity to be active members of Canadian society. From teleconferencing applications that bring seniors and caregivers together with friends and relatives who live far away to digital storytelling tools that foster intergenerational dialogue, Canadians are looking to technology-based innovations to keep them connected to the people they love and engaged in their favourite activities.

"Caregiving can be isolating but there are high-tech and low-tech ways in which you can care for your family member or friend. From using an app to consult with other caregivers to remote online meals, technology helps to keep me connected and engaged in my community."

– Ron Beleno, former caregiver, Chair, AGE-WELL Older Adult and Caregiver Advisory Committee

Steph Gagne and her father Richard Ratcliffe with the FamliNet.app platform created by Famli.Net, a startup supported by AGE-WELL.
Innovative Solutions

- Financial mobile applications
- Cyber-security enhancement programs
- Technology-based vocational programs
- Workplace accommodations

Older adults are long-standing contributors to the Canadian economy and have an abundance of knowledge and expertise to share with younger generations. Yet, many older Canadians are experiencing financial vulnerability and workplace exclusion as they age. Financial wellness and employment is about improving financial literacy for older adults, providing them with training opportunities that update their skills to meet the needs of a changing workforce and protecting them from financial exploitation. It is also about recognizing the unpaid contributions of caregivers in our economy. New technologies can support older adults to remain in the labour force longer and protect their financial well-being, thus positively impacting their autonomy and independence. Technology-based solutions can also support caregivers in the workforce who are striving to balance their care work and paid work roles.

“Employers are interested in assistive technologies to help meet the needs of Canadians who are juggling work and family care. Ongoing collaborations between those of us who create understandings of caregiver needs and goals, and product developers who design the technologies to address them, result in the most promising pathways to innovative solutions and services.”

– Dr. Norah Keating, AGE-WELL researcher
Get Involved

Join us in tackling these important challenges to improve the lives of older Canadians and their caregivers, today and in the future. We invite additional partners across all sectors, including government, industry, community and academia, to co-create solutions with long-term impact.

“As someone who cares for two aging parents with cognitive and mobility issues, I appreciate that AGE-WELL is developing technologies that will make things easier and better for us in the future. AGE-WELL breaks down silos and aims to create more effective and affordable solutions for seniors and those who care for them.”

– Mary Huang, family caregiver


3 HomeStars, CARP. Aging-In-Place Report. 2017 Nov.


8 Canadian Institute for Health Information. Canadian seniors and mental health. 2017.


10 Newall NEG, Menec VH. Loneliness and social isolation of older adults: Why it is important to examine these social aspects together. Journal of Social and Personal Relationships. 2017 Dec 27.