



ANNUAL REPORT

2019-2020

covid-19, technology and the way forward



Aging Gracefully across Environments using Technology to Support Wellness, Engagement and Long Life

Corporate Profile

AGE-WELL NCE Inc. ("AGE-WELL") is a federally-funded Network of Centres of Excellence established in 2015 to support Canadian research and innovation in the area of technology and aging. AGE-WELL is dedicated to the development and delivery of technologies, services and policies/practices that benefit older adults and caregivers. Our aim is to help older Canadians maintain their independence, health and quality of life through technology-based solutions that increase their safety and security, support their independent living, and enhance their social participation.

As Canada's technology and aging network, AGE-WELL brings together more than 250 funded and affiliated researchers from 45 universities and research centres across Canada. More than 400 industry, government and non-profit partners work closely with us on solutions for healthy aging. AGE-WELL also trains the next generation of leaders in the field of technology and aging, with more than 760 trainees now in our ranks. Our research projects align with AGE-WELL's eight Challenge Areas, which are designed to move the dial when it comes to supporting older adults and caregivers in Canada—and achieving social and economic impact.

Our Vision

Canada's leadership in technology and aging benefits the world.

Our Mission

To develop a community of researchers, older adults, caregivers, partner organizations and future leaders that accelerates the delivery of technology-based solutions that make a meaningful difference in the lives of Canadians.

Our Values

EXCELLENCE

Based on a strong and leading scientific research foundation

COLLABORATIVE IMPACT

Using a transdisciplinary approach, we share knowledge, ideas and resources across disciplines and stakeholder groups to generate better outcomes

CAPACITY-BUILDING

We train the best and brightest academic and industry talent

LEADERSHIP

We are recognized globally in the area of technology and aging

INNOVATION

We are engaged in a continuous process to create new ideas and solutions

INTEGRITY

We uphold the highest ethical and intellectual standards in our research and business activities

EQUITY

We are committed to equity, diversity and inclusion in all aspects of our network.

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Acknowledgements

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Networks of Centres of Excellence

Government of Canada Gouvernement du Canada Réseaux de centres

d'excellence



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And the support of its host institution:



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COVID-19, technology and the way forward

A message from the Scientific Directors

AGE-WELL exists to bring technology-based solutions to older adults and their caregivers. This mission is more important than ever in light of the COVID-19 pandemic.

COVID-19 has illuminated the need for technologies to support older adults, who have been disproportionately affected by the crisis, as well as those who care for them.

How can technology make a difference?

Technology can connect people and reduce social isolation. It can help older adults live at home for as long as possible—something most of us want. Technology is increasingly being used to deliver our health and community services. It can play a major role in transforming care and support across all settings, including long-term care where there has been such tragic loss of life and suffering.

We know that older adults are receptive to technology. A poll conducted in July 2020 by Environics Research for AGE-WELL shows that COVID-19 has significantly increased the use of many technologies among older Canadians. Nearly two-thirds (64 per cent) of respondents aged 65 and older agree that technological advancements can help to lessen the impact of COVID-19 on daily life.

AGE-WELL is leading the way in delivering technologies to meet the needs and desires of seniors and caregivers. Communications platforms, smart-home sensors, wearables and remote therapies—these are just some of our innovations that enhance the independence, health and quality of life of older adults, and support caregivers. These innovations have the added benefit of easing pressures on hospitals and long-term care.

NETWORK GROWTH

AGE-WELL has mobilized a vast community. Our network now includes more than 250 researchers from 45 Canadian universities and research institutes, over 760 trainees and more than 400 industry, community, government and academic partners. Importantly, over 4,900 older adults and caregivers are involved to ensure that products are practical and useful.

We can report an impressive 118 technologies, services, policies and practices under development or already making a difference in people's lives. AGE-WELL is also proud to support 47 startups with a combined total of 37 products on the market. These companies are also creating jobs and generating social and economic benefits.



Dr. Alex Mihailidis Scientific Director, AGE-WELL



Dr. Andrew Sixsmith Scientific Director, AGE-WELL

RENEWED FUNDING

In April 2020, we launched phase two of AGE-WELL, following news that AGE-WELL has been renewed through the federal Networks of Centres of Excellence (NCE) program for another three years. With almost \$22-million in funding over that period, we will solidify Canada's leadership in the AgeTech sector, get more products into the hands of people who need them, and prepare future leaders through our unique training program.

Last spring, AGE-WELL announced 22 new research projects that build on successes in the first phase (2015-2020). These projects align with AGE-WELL's eight challenge areas, which are designed to move the dial when it comes to supporting older Canadians and caregivers—and achieving social and economic impact. The challenge areas result from an extensive review of federal and provincial policy priorities, and consultations with over 1,000 stakeholders across Canada.

AGE-WELL has fostered a truly engaged community and we look forward to working with everyone to provide creative solutions that make a meaningful difference in people's lives.

A message from the Chair of the Board

Whatever the world looks like post-COVID-19, technology will play a substantial and different role. It will become increasingly important in enabling Canadians to age in place, live healthily and stay engaged.

No Canadian organization is better positioned than AGE-WELL to lead the response of Canada's AgeTech sector during and after the pandemic. AGE-WELL will ensure that technology-based solutions are inclusive, effective and adopted. These innovations will be central to necessary changes in community care, home care, hospital



Mimi Lowi-Young Chair, AGE-WELL Board of Directors

care and long-term care for older adults.

AGE-WELL is home to research experts and thought leaders in the burgeoning field of technology and aging. Our network has become a go-to authority, consulted by government, industry and the media, among others.

In August 2019, I had the honour of presenting to an NCE Expert Panel in Ottawa. It was an amazing experience to showcase AGE-WELL's achievements from the first five years—and to share our vision for the future of AgeTech. Now, with renewed support from the NCE program, we will fulfill our promise to make Canada a world leader in the development of technologies that make life better for older people and their caregivers.

A message from the Managing Director

The past year has been a time of intense activity and innovation, despite the many challenges posed by the pandemic. In the pages of this report, you will read about the progress we are making, and meet people who are benefiting from our work.

In the months leading up to the pandemic, we held a number of high-profile events to propel forward the technology and aging sector. AGE-WELL's 5th Annual Conference, held in Moncton, New Brunswick in October 2019, was an important opportunity for knowledge exchange. AGE-WELL 2019 attracted more than 300 researchers, trainees, older adults, caregivers and partners from industry, government and the community.

When COVID-19 arrived, our teams pushed forward as best they



Bridgette Murphy Managing Director, AGE-WELL

could. So many AGE-WELL projects have relevance during COVID-19, like a new communications platform that is helping residents in long-term care to stay in touch with loved ones.

In the midst of the pandemic, we launched an ambitious Core Research Program and unveiled a COVID-specific research funding initiative with our partner Mitacs. We also established a new AGE-WELL National Innovation Hub in Prince George, British Columbia, focused on aging in the North.

AGE-WELL now has four innovation hubs across Canada (see page 20). Last summer, we took the AGE-WELL National Impact Challenge into the virtual realm. Held in three regions across Canada, four winning startups took home a total of \$60,000 in cash plus in-kind prizes.

As part of network renewal planning, AGE-WELL undertook a voluntary audit of network composition, policies and programs as an essential first step in developing a network EDI strategy. With leadership from our Board of Directors, and Equity, Diversity and Inclusion Working Group, we have translated our learning and decisions into an EDI Action Plan.

We are indebted to the many stakeholders who took part in AGE-WELL's renewal application process. We also thank our funder, the Networks of Centres of Excellence, and our host institution, the University Health Network. Our grateful thanks also go to the AGE-WELL Board of Directors, committee members, researchers, trainees, staff members, partners, older adults and caregivers, who work so hard on much-needed technology-based solutions.

AGE-WELL by the numbers

AS OF DECEMBER 2020

250+ Researchers

2,023

Total Number of Publications

110+

International Collaborations across 28 countries

400+

Partners

- Industry
- Non-profits
- Government
- Academia

234

Innovators of Tomorrow Certificates awarded

AGE-WELL-Supported Startups

Policy Submissions

118

AGE-WELL Solutions

across the Product Readiness Level (PRL) Scale

53 Outcomes

(technologies, services and policies/practices)

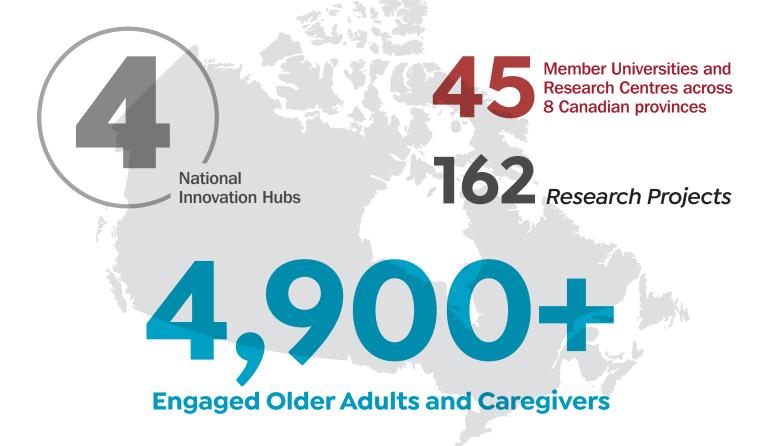
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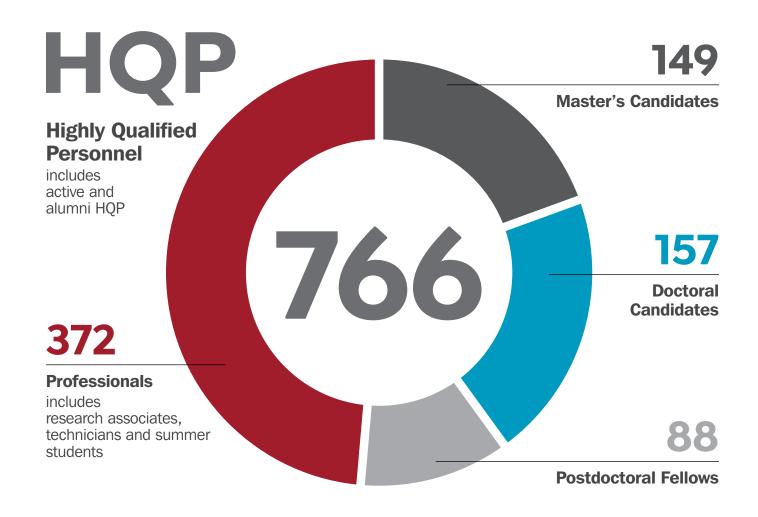
Experimental Implementation

Prototype

Incubator

6 Innovation Research





7

Innovation & Impact

A brief look at some AGE-WELL-supported products designed to enhance quality of life for older adults and caregivers:



Connecting the unconnected

Some of the most heartbreaking stories during the pandemic have come from residents of long-term care and their family members cut off from each other due to restrictions. Technology is an imperfect substitute for hugs, kisses and hand holding, but the damage of distancing can be alleviated with innovations like FamliNet, a multi-media messaging platform. FamliNet offers older adults with little or no computer skills or with sensory loss an easy way to connect with family and friends. In August 2020, Famli.net Communications Inc. launched its EasyConnect system, which guides families through a step-by-step process to set up a FamliNet private network with their loved one. FamliNet supports a growing number of languages. It is used in Canadian retirement and long-term care homes, and a public version is available. FamliNet was developed at the TAGlab at the University of Toronto, with support from AGF-WFII.

Contact tracing tool for seniors' facilities

Software startup Welbi has created a new contact-tracing feature to help senior living communities reduce the spread of COVID-19 and other infectious diseases. It quickly generates a list of who could have been potentially exposed to the virus during daily activities, when and where. The company added the contact-tracing capability to its wellness platform, which personalizes recreation programs for older adults in seniors' facilities. Welbi's platform is projected to be in over 500 facilities across Canada by the end of 2021. AGE-WELL investigator Dr. Jeffrey Jutai, a University of Ottawa professor, worked with Welbi CEO Elizabeth Audette-Bourdeau and her team to bring the platform to market.



Telerobotic stroke rehab

Supervised in-home rehab therapy—that's the goal of a "telerobotic" rehabilitation system created by an AGE-WELL research team. The platform uses virtual reality, haptics, robotic technology and internet communication to improve sensory and motor function in older stroke survivors. Dr. Rajni Patel (Western University) is collaborating with Dr. Robot, a Toronto company, to move the system into clinical testing and commercialization. Dr. Mandar Jog (London Health Sciences Centre) and Dr. Patel are exploring potential applications of the technology for other age-related movement disorders.





Setting standards to help cushion falls

Research by AGE-WELL's PRED-FALL team shows that wearable hip protectors halve the risk of hip fractures when older adults fall. But it's important to wear the right hip protectors. So the team worked with the Canadian Standards Association (CSA) to lead the development of a new standard for measuring the protective value of hip protectors. The standard, published in January 2020, will guide market regulation and customer awareness by ensuring that hip protectors are appropriately tested and labelled for their ability to reduce impact force and fracture risk in a fall. The researchers are also working to increase uptake of hip protectors in long-term care facilities across Canada. The team is led by Dr. Steve Robinovitch (Simon Fraser University) and Dr. Fabio Feldman (Fraser Health).

Introducing Steadi-Two

Steadi-Two, a compact battery-free stabilizing glove that "intelligently" reduces hand tremors for people living with Essential Tremor and Parkinson's disease, launches its pre-order campaign to the Canada-US market in January 2021. Customers of Steadi-One, the original glove introduced in 2019 by AGE-WELL-supported Steadiwear Inc., described the product as life changing. Their feedback has been incorporated into the design of Steadi-Two, resulting in a glove that is smaller, lighter and more comfortable. The glove uses a novel and cuttingedge magnet-based system to stabilize the wrist and forearm and minimize tremors—allowing the wearer to do tasks they usually find challenging, such as writing, using a computer keyboard or drinking from a cup without spilling. Both versions of the glove are Health Canada and FDA (US Food and Drug Administration) registered class 1 medical devices.



Innovation & Impact

A brief look at some AGE-WELL-supported products designed to enhance quality of life for older adults and caregivers:

Games that bring health benefits

Digital games can help to maintain and improve health and quality of life for older adults who face physical, mental and social changes of aging. Those were among the findings of a 2020 white paper by AGE-WELL researchers Drs. David Kaufman and Louise Sauvé and project coordinator Dr. Alice Ireland. Working with older adults, the team has developed a series of digital, online and virtual reality games to improve social interactions, reduce loneliness and social isolation, and encourage intergenerational gameplay and continued learning. Many of the games are now available on the App Store and Google Play, as well as the Serious Games Hub quiz design platform at www.jeuxserieux.ca.





Automatic brakes for rollator walkers

Millions of people rely on rollator walkers to get around. A key feature of these walkers is the ability to lock the brakes in place for stability when standing, or sitting on the device. Rollator walkers have a manual braking system so users must remember to engage the brake to prevent the device from rolling away and potentially causing a fall. Now, an AGE-WELL-supported team has developed an automated braking system. University of Waterloo engineer Dr. James Tung and startup Qoltom Inc will be getting feedback from users before taking their product to market. The Schlegel-UW Research Institute for Aging is a project partner.

Rehab app for total knee replacement

About 80 per cent of older adults who undergo total knee replacement surgery don't follow through on their rehab. The result: higher rates of revision surgeries and surgical complications, a lower quality of life, higher pain medication use, and additional cost to the individual and the health-care system. With support from AGE-WELL, Curovate launched an app in early 2020 designed to break down the barriers to rehabilitation following total knee replacement. The evidence-based app provides easy-tofollow video-guided exercises, progress tracking, measuring capabilities and reminders—all on a smartphone. There's no need to travel for appointments, and older adults can do their rehab right at home. Curovate also includes rehabilitation apps for people who have had a total hip replacement or surgery to repair a torn knee ligament (anterior cruciate ligament or ACL).





Mobile swallowing therapy

It's estimated that 20 per cent of people over the age of 55 experience swallowing difficulties. Therapy requires ongoing visits to a clinician. What if it could be completed remotely, especially during COVID times? A Canadian startup that won the 2019 AGE-WELL National Impact Challenge in Vancouver has gone on to commercialize the Mobili-T, a mobile swallowing exercise-therapy system. True Angle Medical Technologies launched the product in summer 2020. Mobili-T is a wireless piece of hardware that is placed under the chin, and an app that provides real-time feedback on a mobile device. The patient is remotely followed by a clinician, explains Dr. Gabi Constantinescu, True Angle's chief product officer and a clinician-researcher. Her team includes CEO Dr. Jana Rieger and CTO Dylan Scott, who helped launch the Edmonton-based company and develop the system with the involvement of patients and clinicians.

Dealing with pain in people with dementia

Imagine being unable to tell someone that you are in pain. This distressing situation is common for people who have difficulty speaking due to severe dementia. It makes pain assessment challenging for caregivers; pain is under-assessed and under-treated in long-term care. AGE-WELL researchers are working to change this. They have developed an app aimed at facilitating pain assessment, and an online training program on pain assessment for rural and remote facilities. These tools have led to improvements in the frequency of pain assessments. The PAIN-CARE team is also working towards the development of computer-vision algorithms designed to identify pain behaviours. Leading the work on the automated visionsystem are Dr. Thomas Hadjistavropoulos (University of Regina) and Dr. Babak Taati (The Kite Research Institute, University Health Network). Dr. Eleni Stroulia (University of Alberta) oversaw the app development.



#SeePainMoreClearly

Research Excellence

66 The AGE-WELL network is one of the best things that has ever happened to the Canadian research scene.

The effectiveness of this network may be unprecedented. 99

Dr. Thomas Hadjistavropoulos, Research Chair in Aging and Health, University of Regina

AGE-WELL research focuses on solutions

that have real-world impact—and produce social and economic benefits for Canadians. You can see it in everything we do. We are getting an incredible return on investment from projects undertaken in our first five years. An impressive 118 products (technologies, services, policies and practices) are in development or already on the market.

And we're looking forward. In April 2020, AGE-WELL announced 22 new research projects, which represent an investment of more than \$10-million over three years. In total, the projects are led by 48 researchers based at 20 universities and research centres across Canada, and involve over 100 partners from industry, government and non-profit organizations. We believe firmly in this approach which breaks down silos between disciplines and sectors.

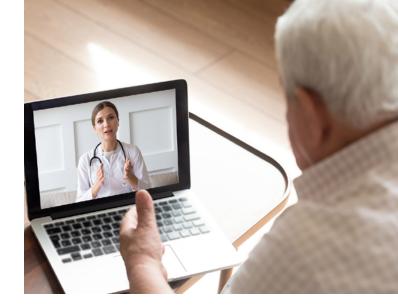
Consider the range and relevance of these projects, which include:

- The design of apps to empower older adults to engage in the digital world, reduce social isolation and facilitate meaningful connections to family members
- The development, implementation and evaluation of a culturally safe, Indigenous-led diabetes and weight management telehealth service focused on Indigenous older adults
- The creation of a unique platform to accelerate the validation, commercialization and adoption of home care technologies such as smart-home systems and home health devices.









As always, older adults and caregivers are deeply involved in these projects to ensure products are practical and will be used. These stakeholders take part at every level of our network. They participate in studies, advise on research relevancy, and serve on the Older Adult and Caregiver Advisory Committee and the Research Management Committee.

Collectively, the new projects, part of our Core Research Program and Platform Project Program, will drive innovation across AGE-WELL's eight challenge areas where technology can make a significant difference (see page 19). These challenge areas are more than research themes; they will guide our overall strategic direction going forward.

AGE-WELL also continues to support post-discovery research through a Strategic Investment Program (SIP) Accelerator program. In 2019-2020, we funded eight SIP projects, advancing an array of needed products, such as medication reminders and special mats that monitor health during sleep. Further, we funded six "SIPs" that advance the work of core projects from the first phase of AGE-WELL. And four innovations hubs, spread across Canada, focus on regional innovation for national benefit (see page 20).

Dr. Frank Knoefel of Bruyère Research Institute (seated) and Carleton University student Haoyang Liu with a pressure-sensitive mat designed to monitor health during sleep.



COVID-19 response

Our teams have developed COVID-19-relevant add-ons and plans to ensure their technologies can support older Canadians and caregivers, now and after the pandemic. The relevance of our projects is indisputable, with researchers working on systems that connect people, offer virtual care options, and make it possible for people to live more safely and longer in their own homes. Technologies such as effortless lifts and health-monitoring systems can make a difference for residents and staff in long-term care. And the list goes on.

AGE-WELL also launched new funding partnerships specifically targeted at COVID-19-relevant research. In September 2020, with our partner Mitacs, we co-funded awards to support industry-academic partnered R&D that will deliver technologies and services to benefit seniors and caregivers in light of COVID-19. The funded projects include service robots and a smart watch to monitor vital signs.



Key innovations

The pandemic has proven the value of innovations that help older adults live independently for as long as possible. It's what most of us want and it has the added benefit of easing the burden on institutional care. These are just some of the AGE-WELL-supported products that can enable older people to continue to live healthily and safely in their own homes:

- Medication and daily life management app and service for people living with dementia
- Smart-home technology for aging in place (sensors, lighting, voice-activated reminders and prompts)
- Apps and remote therapies to help people manage their health at home, while staying connected to health professionals
- Non-intrusive health monitoring technology (no video or sound recording)
- Virtual exercise programs designed for older adults
- Digital games that connect, stimulate and encourage learning
- Socially assistive robots that prompt older adults with cognitive impairment to do daily tasks such as getting dressed, preparing meals and exercising.







Smart glove 'worth its weight in gold'

At age 75 and retired for 15 years, Betty Faulkner still regrets the career roadblocks she experienced due to her hand tremors.

"My tremor really affected me on a professional level," says the former federal government auditor from St. Albert, Alberta. "I was going out to audit businesses and of course my tremors were bad. It was embarrassing...it was difficult. People just thought I was nervous, but I wasn't."

For Faulkner, the solution was to finish her career working in the office doing problem resolution for auditors who worked directly with clients in the community. While her role was rewarding, she still feels she could have accomplished more.

Faulkner has a family history of Essential Tremor. Both hands are affected by tremors but the right hand is worse and Faulkner is right-handed. She struggles to operate a computer keyboard and mouse, drink from a cup without spilling, and with many other daily tasks.

66 Wow, I can do it... I'm getting some of my life back 99

She tried medications to control her tremor, which developed slowly starting at age 25. The results have not been dramatic. She also considered surgical interventions including deep brain stimulation, but feared possible side effects such as memory loss.

Despite the COVID-19 pandemic that keeps the world traveller and her husband, Howard, home for now, Faulkner has a new lease on life thanks to Steadi-One, a compact battery-free stabilizing glove developed by AGE-WELL-supported Steadiwear Inc.

"I've had tremors for the last 50 years and finally we have some serious non-chemical help," says Faulkner. "It's worth its weight in gold."

The glove "intelligently" stabilizes the wrist joint and forearm in people living with Essential Tremor and



Parkinson's disease. It uses vibration damping and nanotechnology to provide resistance to hand tremors.

Since receiving the Steadi-One glove about a year ago, Faulkner has been busy doing many tasks and activities without having to ask for assistance. Howard Faulkner even made a video of his wife putting on make-up for the first time in decades. "Wow, I can do it...!'m getting some of my life back," she says excitedly in the video.

"With COVID, I'm home—I've got asthma so I don't go out. The glove has given me freedom and independence to do things I want to do, like a 1,000-piece jigsaw puzzle, with so little frustration," adds Faulkner. "I have a feeling of control and I don't have to ask for help."

She is in regular communication with Steadiwear cofounders Mark Elias and Emile Maamary, to provide user feedback and as an early adopter of Steadi-Two, the second version of the glove which launches in January 2021. "I am so impressed with them."

Steadiwear received the coveted Grandmothers' Choice Award at the 10th Annual Startupfest in 2020. The company was also recently named one of the top 10 Canadian health-care startups by Polidea, a software and information technology company.

AGE-WELL funding over several years has helped to bring the stabilization glove to market, with the goal of enhancing life for people who have Essential Tremor and Parkinson's disease, the most common movement disorders in the world.

Technologies to help ease the crisis in long-term care

The COVID-19 pandemic has laid bare the need for technology-based solutions to support older adults and staff in long-term care. No technology can supplant the human touch in caring for older people. But if it can ease the burden for overworked staff, then it makes them better able to focus on their most important person-to-person duties. Technology can also improve safety for all. Some examples of AGE-WELL-supported products that can help:

• A compact device that allows a single caregiver to transfer a person to and from a bed, without contact and without risking injury to either, in a dignified manner (Able Innovations)



 An easy-to-use communication platform for older adults who have limited or no computer experience (FamliNet)



welbi welbi

• A platform that personalizes recreation programs for older adults, and has built-in contact tracing capabilities (Welbi)

• A wearable device that can be used for contact tracing; if a resident, staff member or visitor tests positive, it provides a readout of every person who had been in recent contact—invaluable information in controlling an outbreak







• An app to help staff record and monitor pain behaviours in residents with dementia who have limited ability to communicate their pain (PAIN-CARE)

• A tablet-based assessment tool that analyzes a person's natural speech to detect and monitor Alzheimer's disease and other cognitive disorders. The tool records short samples of a person's speech as they describe a picture on the screen (Winterlight Labs)





 Technologies designed to engage residents with cognitive impairment in physical and cognitive exercise, and to assess physical and cognitive status (Centivizer)

AGE-WELL researchers are also working on a longer-term initiative to identify and harness the potential of technology in long-term care settings across Canada.

AGE-WELL Poll:

COVID-19 has significantly increased the use of many technologies among older adults

Older Canadians have upped their use of many technologies and online services during the COVID-19 pandemic, according to an AGE-WELL poll conducted by Environics Research in July 2020.

"At a time when older adults face enormous challenges, it is encouraging to see that many are reaching for technologies, online services and apps to help," said Dr. Alex Mihailidis, AGE-WELL Scientific Director and CEO. "They are receptive to technology that allows them to stay in their own homes, and open to virtual health and virtual community with family and friends."

Among the findings:



• Two-thirds (65 per cent) of Canadians aged 65 and older now own a smartphone, compared to 58 per cent in 2019, and most who own one (83 per cent) use it daily.



• Thirty per cent of those 65+ are streaming (Netflix, Prime, YouTube, etc.); over 4 in 10 (45 per cent) of them report increased online streaming due to COVID-19.



· With many seniors staying at home more during COVID-19, two in 10 (19 per cent) of Canadians 65+ are using online shopping for essential items, like groceries, for "health, wellness and/or independence" (of whom 6 in 10 report utilizing it more due to COVID-19).



· During the pandemic, seniors have increased their use of video calls as a way to communicate with family and friends. About a quarter (23 per cent) of Canadians 65+ now use video-calling on their smartphones, twice as many as in 2019; 6 in 10 of whom report increased use due to COVID-19.



· Over a quarter (29 per cent) of Canadians 65+ use social media for "health, wellness and/or independence" (of whom 42 per cent report utilizing it more due to COVID-19).



 Thirteen per cent of Canadians 65+ now use exercise or activity apps or trackers; one in five (19 per cent) of those have increased their use due to COVID-19.











 Over one-third (37 per cent) say they use social media to communicate with family and friends (4 in 10 of whom report utilizing it more as a mode of communication due to COVID-19).



 Fifty-seven per cent of Canadians aged 65+ had a telehealth appointment in the past three months, and eighty-two per cent of those who had one were satisfied with it. Experience with video appointments is still limited (4 per cent).

The findings dispel any notion

that older adults are technophobic, said Dr. Andrew Sixsmith, AGE-WELL Scientific Co-Director. "Most are unfazed by technology and they are using a lot of it during these challenging times. We were already seeing older adults using more technology, but COVID-19 is clearly a catalyst that is taking tech use to a new level."

The survey also looked at the impact of COVID-19 on age-related concerns. The findings show that COVID-19 has affected attitudes toward aging. Fifty-one per cent of Canadians 65+ are now optimistic about aging, compared to 58 per cent in 2019.

About 1 in 2 (or more) of respondents aged 65+ are more concerned about health and losing loved ones, moving to a nursing home, and moving to a retirement home. And 65 per cent have felt isolated at least some of the time during the COVID-19 pandemic.

Impact of technology during COVID-19

On the positive side, 6 in 10 Canadians aged 65+ agree that technological advancements can help to lessen the impact of COVID-19 on daily life, maintain relationships with family and friends, reduce social isolation, pursue hobbies, stay independent, manage health as they age, maintain mental health, and stay active and in their own homes as they age.

The poll found that half of Canadians aged 65+ are willing to pay out-of-pocket for technology that helps manage health and wellness. Almost 7 in 10 (66 per cent) are willing to pay out-of-pocket for technology that allows them to stay at home as they age.

Seventy-two per cent of Canadians 65+ feel (at least somewhat) confident using current technology. However, 16 per cent say there is a lack of training on how to use technology and 9 per cent experience poor connectivity.

"Despite the increasing use of technology by seniors, we need to remember that some people are still losing out and there is a digital divide between the technology haves and have-nots. We need to make sure that technologies are accessible, affordable and available to all," said Dr. Mihailidis.

The poll surveyed 2,026 Canadians aged 50 and older. It was a follow-up to a similar survey done in 2019. For more details, see https://agewell-nce.ca/archives/10884



The Future of technology and aging in Canada: AGE-WELL Challenge Areas

AGE-WELL's eight challenges are designed to move the dial when it comes to supporting older adults and caregivers in Canada—and achieving social and economic impact. The challenge areas were identified through public consultations with over 1,000 stakeholders and a comprehensive review of policy priorities across governments in Canada and internationally, relating to seniors.

- 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

AGE-WELL National Innovation Hubs

AGE-WELL hubs are places where industry, community, government, researchers, end-users and others can interact and generate new ideas together. The aim is to foster more efficient development, testing and delivery to market of products and services that will benefit older people and caregivers across Canada. We have four national innovation hubs:

Advancing Policies and Practices in Technology and Aging (APPTA) *Fredericton*, *N.B.*

APPTA supports governments in generating opportunities to address the policy and practice challenges of an aging population. This hub is a partnership between AGE-WELL and the New Brunswick Health Research Foundation (NBHRF).

The Centre for Technology Adoption for Aging in the North (CTAAN) *Prince George, B.C.*

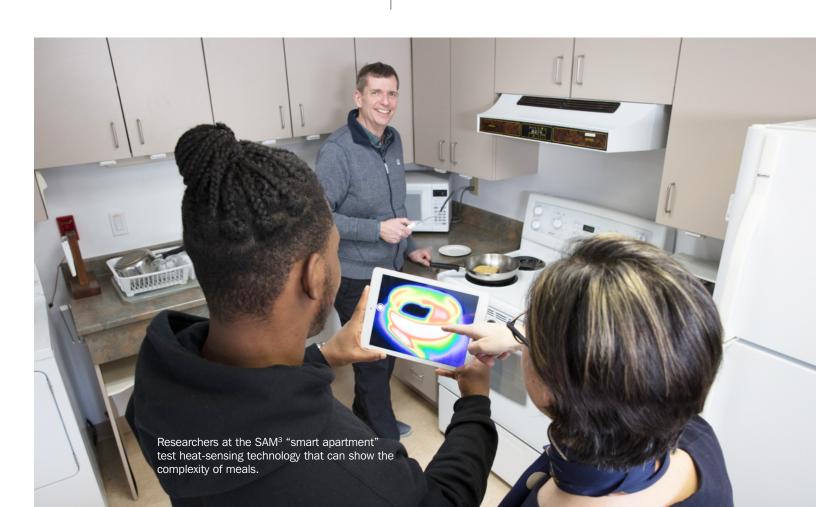
CTAAN's programs will streamline the process for the adoption of technology that enhances the lives of those aging in northern and rural communities in Canada. CTAAN's founding partners are AGE-WELL, Northern Health and the University of Northern British Columbia (UNBC).

Digital Health Circle (DHC) Surrey, B.C.

The Digital Health Circle supports the creation of new digital technologies that have a real-life impact on current and future generations of older adults. The hub is jointly championed by AGE-WELL and Simon Fraser University (SFU).

Sensors and Analytics for Monitoring Mobility and Memory (SAM³) Ottawa, ON.

SAM³ is driving the development of sensor-based smart technologies that monitor older people's health and wellbeing to keep them healthy, safe and as independent as possible. The hub is a joint initiative of AGE-WELL, Bruyère Research Institute and Carleton University.



Advocating in the caregiving space

Ron Beleno understands aging and caregiving

issues in a personal way. He looked after his father, who had Alzheimer's disease, for the last 10 years of his life. Beleno knows firsthand how important it is to have support and resources available to navigate the caregiver's journey. He has emerged as a leading advocate in the caregiving space.

For Beleno, sharing his experiences with a larger audience evolved organically. At first, other caregivers reached out to him for advice. As demand for his expertise grew, he became an advisor to not-for-profit groups and a sought-after speaker. He realized there was a need to have someone with his depth of understanding and skill set helping to guide others.

Beleno's involvement with AGE-WELL began five years ago. He was giving a presentation at a meeting of the Alzheimer Society of Canada. Dr. Alex Mihailidis, AGE-WELL's scientific director, was there. So was AGE-WELL researcher Dr. Lili Liu. After Beleno's presentation, the two invited him to become part of AGE-WELL.

It was a natural fit. Beleno is a big believer in technology as a way to support older adults to live independently for as long as possible, and to assist their caregivers. While caring for his father, he used a variety of technologies, like a video monitoring system used for communication, to help his father continue to live safely at home.

Beleno was soon immersed in a number of AGE-WELL research projects, bringing great ideas, business sawy and an invaluable caregiver perspective. He collaborated with one team on a new website which helps consumers choose GPS technologies that can locate loved ones with dementia who wander. He is working on a localized alert system called Community ASAP that could help police find missing seniors.

Beleno also helped lead the formation of the AGE-WELL Older Adult and Caregiver Advisory Committee (OACAC) to advise the network as a whole. The OACAC brings the expertise and counsel of older adults and caregivers directly into network decision-making. "OACAC was created to be that connection piece that would allow older adults and caregivers to contribute and work with researchers at an equal level," says Beleno, who is committee co-chair.



Caregiver Advisory Committee, attends AGE-WELL Day on the Hill in Ottawa in 2018.

Beleno's selection as a recipient of the 2020 AGE-WELL Honorary Fellow Award was recognition of his substantial contributions to research and innovation in the AgeTech sector, as well as to AGE-WELL. "This award is humbling for me," says Beleno. "It acknowledges the voice that an older adult and caregiver can have in the community, and the impact we can have on others. It says that sharing

66 OACAC was created to be that connection piece that would allow older adults and caregivers to contribute and work with researchers at an equal level... 99

my voice, my stories and my challenges are valued. This recognition is not mine alone. I share it with the voices of many others who channelled their stories through me."

Looking forward, Beleno will be exploring new avenues to share his knowledge and continue to work with AGE-WELL to change the narrative around aging and to provide caregivers with new hope and support.

"AGE-WELL makes a difference in many people's lives—improving them by offering solutions, validation and policy changes," says Beleno. "I know my dad would be proud of what we are accomplishing. I am grateful to community members, specifically older adults and caregivers, who have allowed me to be part of their lives, have a meal with them, break bread and to say, 'We are all cheering for each other and we want you to succeed."

Knowledge Mobilization & Commercialization

beneficial for our startup. To be introduced to AGE-WELL's network of researchers and private entities has helped us validate not just our product but also our business plan. We have identified numerous opportunities to leverage the expertise of network members. We now have partnerships with leading geriatric facilities and our technology is being utilized to co-develop sustainable care models for during and after COVID-19.



Jayiesh Singh, founder and CEO, Able Innovations

At AGE-WELL, great ideas are just the beginning. We care deeply about concrete outputs—and getting innovations to people who need them. That could be an end-user, a policy-maker or a health professional.

To that end, we carefully track every project's progress using a "product readiness level" scale, ensuring that it advances along the innovation pipeline. AGE-WELL has over 100 products already deployed or in development.

Supporting successful startups

We are proud to support a growing number of Canadian startups and entrepreneurs who are developing needed products, creating jobs and generating wealth.

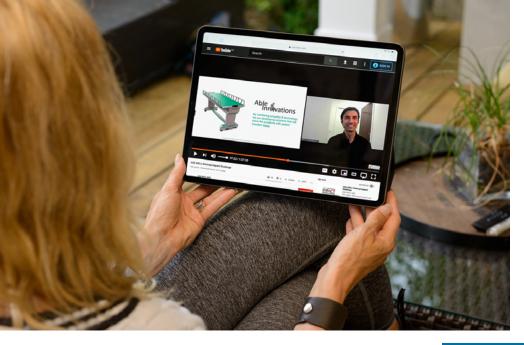
Since launching the AGE-WELL Startup Affiliate program in July 2019, we have continued to develop programs, resources and market opportunities for a portfolio that now includes 47 startups. Combined, these companies have a total of 37 products on the market.

And they are making a difference in challenging times. Take, for instance, Curovate, which in 2020 released an app for in-home rehab after knee replacement surgery. On page 36, we profile a 72-year-old who benefited from this app amid a COVID-19 lockdown. Startup affiliate Tenera Care is rolling out a platform that can be used for contact tracing in senior living facilities. If someone tests positive, it shows who the individual has interacted with, at what distance, in what location, and for how long.



Dr. Frank Naccarato, president of Quantum Robotic Systems, developed the ROSA, a robotic stair-climbing assistant, in collaboration with George Brown College's School of Mechanical Engineering Technologies, assisted by AGE-WELL's Strategic Investment Program.





Able Innovations, a Toronto startup working on an automated patient-transfer technology, won the second competition in the three-part AGE-WELL National Impact Challenge. CEO Jayiesh Singh delivered the winning pitch for the DELTA Platform, which enables patient transfers with just one caregiver.

AGE-WELL is adept at identifying, guiding and supporting talented innovators, and connecting them to partners in our network. Our startups also benefit from the mentorship of AGE-WELL's chief entrepreneur, Michael Tamblyn, president and CEO of Rakuten Kobo. Older adults and caregivers provide startups with valuable feedback during "insight sessions."

We love competitions at AGE-WELL. They are another way to support entrepreneurship in Canada's AgeTech sector. To date, over 100 startups across the country have competed in our events. In summer 2020, we awarded a total of \$60,000 in cash (plus in-kind prizes) to four regional winners at the AGE-WELL National Impact Challenge, held virtually.

Congratulations to the winning startups: Able Innovations, eNable Analytics, Novalte and Tochtech Technologies. We thank all the finalists, judges and the sponsors of this event: Aging2.0 Local / Halifax Chapter, BC Seniors Living Association, Bereskin & Parr LLP, CARP, IBM Canada Ltd., Impact Centre, Innovacorp, Innovation PEI, New Brunswick Innovation Foundation, Ontario Brain Institute, Spectrum Health Care and YouAreUNLTD.

Startups also scale up by leveraging AGE-WELL support to gain additional grants and investment. For instance, three startups spun out of AGE-WELL research have raised over \$19-million in investments.

INNOVATION IN ACTION:

Check out our startup profiles at https://agewell-nce.ca/community-2/startups

What's AgeTech?

AgeTech refers to a growing sector that is advancing the use of technologies, such as information and communication technologies (ICTs), mobile technologies, robotics, wearables and smart home systems, to enhance the lives of older adults.*





Jessica Yang, CEO and co-founder of Tochtech Technologies, won the third and final competition in the 2020 AGE-WELL National Impact Challenge for Sleepsense, a non-wearable device that allows caregivers to monitor the overnight safety of older adults.

^{*}Sixsmith, A. (2020), "COVID-19 and AgeTech", Quality in Ageing and Older Adults, https://doi.org/10.1108/QAOA-07-2020-0029

Engaging decision-makers, influencing policy

Just as delivering products is vital, so is sharing knowledge. AGE-WELL works closely with decision-makers to inform policies that include technology. For example, we provided input to ensure that technology-based solutions are part of Canada's Dementia Strategy.

Our innovation hub called APPTA develops policy briefs and reports, and has an impact on government at the federal, provincial and territorial levels. APPTA recently conducted a review of policies and barriers that influence the use of virtual health. COVID-19 has created shifts in health-care delivery, and APPTA's findings are essential to making health care more accessible.

AGE-WELL also engages directly with health professionals to increase their uptake of emerging technologies. Our recent AgeTech webinar series helped care providers navigate the growing number of technology-based interventions to support healthy aging.

Funding emerging entrepreneurs to tackle COVID-19

Two talented young entrepreneurs each received \$25,000 through the AGE-WELL Emerging Entrepreneur Awards. Our 2020 program was targeted specifically at entrepreneurs with COVID-19-related products. The award provides emerging entrepreneurs with financial resources, mentorship and training to kick-start or scale their businesses. The recipients are:



Victor Fernandez demonstrates Virtual Gym

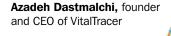
Dr. Victor Fernandez, Postdoctoral fellow, University of Alberta, founder and CEO, Virtual Gym

Dr. Fernandez is commercializing Virtual Gym, a serious game platform designed for older adults. Virtual Gym can guide users through personalized exercises for both fitness and rehabilitation. It allows health-care professionals to monitor users' activity and progress. With social distancing in place due to COVID-19, this product enables older adults—especially those in long-term care—to stay active safely.

Azadeh Dastmalchi, PhD candidate, University of Ottawa, and founder and CEO, VitalTracer

Dastmalchi's VitalTracer is a medical smartwatch that can monitor vital signs such as blood pressure, heart rate, respiratory rate, temperature and

blood oxygen levels. The watch can provide early detection of suspected COVID-19 symptomatic cases and thus reduce potential disease, according to the company.





AGE-WELL's impact on Amintro has been the greatest thing that's probably ever happened to us. It has absolutely exposed Amintro to a larger audience and built the recognition and the credibility

for our organization. 99

Charlene Nadalin, founder and CEO, Amintro





Charlene Nadalin and her mother Marge: when her father died, Charlene created an app to fight social isolation. Left: Image of the Amintro app, which helps adults aged 50+ make friends.

AGE-WELL Honorary Fellows

AGE-WELL unveiled an awards program in 2019 to recognize members who have made long-term and substantial contributions to research and innovation in the AgeTech sector, as well as a significant contribution to AGE-WELL.

Congratulations to the awardees:



Dr. Alan Mackworth, 2019 AGE-WELL Honorary Fellow Award

Dr. Alan Mackworth is a professor emeritus at the University of British Columbia and former chair of AGE-WELL's International Scientific Advisory Committee. Dr. Mackworth is widely known for his accomplishments in the field of artificial intelligence.



Ron Beleno, 2020 AGE-WELL Honorary Fellow Award

Ron Beleno is a dedicated advocate in the caregiving space. He helped lead the formation of the AGE-WELL Older Adult and Caregiver Advisory Committee (OACAC), and serves as committee co-chair. Beleno brings his wisdom and lived experience as a caregiver to many AGE-WELL research projects.



Dr. Susan Kirkland, 2020 AGE-WELL Honorary Fellow Award

Dr. Susan Kirkland, a professor at Dalhousie University, is a member of AGE-WELL's Board of Directors, where she brings critical insight as a researcher. Her commitment to meaningful inclusion and engagement of older adults in research has helped shape the approach to "co-creation" for which AGE-WELL is revered.

AGE-WELL 2019:

Conference spotlights current and future innovations to support healthy aging

AGE-WELL's 5th annual conference, Exploring the Future of Technology and Aging, created a buzz. AGE-WELL 2019 attracted more than 300 researchers, trainees, older adults, caregivers and partners from industry, government and the community who all share a common goal: to support healthy aging through the development of technology-based solutions.

Held in October 2019 in Moncton, the event showcased an extraordinary range of technologies being created by researchers and entrepreneurs supported by AGE-WELL. From smart-home systems to apps that connect people and new ways to monitor cognitive health, dozens of innovations were on display.

Watch a video here.

Scientific talks highlighted how AGE-WELL is pushing the boundaries of research and innovation. Poster presentations described a wide array of real-world solutions designed to meet the needs of an aging population. A forum for networking and collaboration, AGE-WELL 2019 was also an opportunity to thank those who have played a role in the tremendous growth and success of AGE-WELL.

Generous sponsors of AGE-WELL 2019 were: Bereskin & Parr LLP, Best Buy Canada, Canada's National Ballet School, Canadian Frailty Network, Fasken, Ontario Brain Institute, HomeEXCEPT, TELUS Health and YouAreUNLTD. ■



Former Canadian astronaut Dr. Robert Thirsk gave a captivating speech about health care in deep space. Since real-time assistance by ground-based flight surgeons will be impossible, astronauts will need autonomous and intelligent systems, which could also benefit people on Earth.



Dozens of innovations designed to support healthy aging were on display.









 $\label{eq:AGE-WELL 2019} \ \text{put the spotlight on a multidisciplinary program of research and innovation from across the AGE-WELL network.}$

Training the Next Generation

66 The value of the EPIC training program cannot be overstated.

It provided me with an opportunity to incorporate activities from other disciplines, new approaches and a whole new community.

Dr. Aki-Juhani Kyröläinen, postdoctoral fellow, McMaster University and Brock University, and recipient of an AGE-WELL-MIRA training award

AGE-WELL's unique training program is a great success story. Across Canada and beyond, we champion emerging researchers and young professionals known as HQP—or highly qualified personnel.

Our EPIC training program (*Early Professionals, Inspired Careers*) provides HQP with access to exclusive educational programming, experiential opportunities such as internships and exchanges, funding and mentorship. Every trainee gains crucial experience in working with older adults and caregivers, and understanding their needs.

EPIC is all about nurturing future leaders in the AgeTech sector. In 2019-2020, AGE-WELL recruited and supported more than 760 HQP from across eight Canadian provinces, Australia, Belgium, Denmark, France, Mexico, the United Kingdom and the United States. In the last fiscal, we awarded 38 Innovators of Tomorrow certificates, and hosted our fourth Summer Institute, in Montebello, Quebec.

Tackling problems, now and post-COVID-19

Our trainees are applying themselves to pressing problems that affect older adults and caregivers. Whether it's a system to help people recover at home after hospital or an app to predict the degree of loneliness and social isolation, many HQP projects are highly relevant to the COVID-19 pandemic.

In August 2020, 21 early career researchers from 10 universities across Canada received AGE-WELL Graduate Student and Postdoctoral Awards in Technology and Aging. The total value of the awards is \$380,000, with more than \$105,000 provided through matching funds from five post-secondary and research institute partners.



AGE-WELL's new Indigenous Graduate Student Award was presented to **Kelly Davison**, a PhD student at the University of Victoria (UVic) to explore the effects of virtual care on community-dwelling older adults, including the "unprecedented mobilization of virtual care services" during COVID-19. **Jessica Percy-Campbell** received the Michael F. Harcourt Policy Fellowship, named for AGE-WELL's founding board chair and patron. Percy-Campbell, a PhD student at UVic, is examining how older adults use Google Home and Amazon Alexa, and the implications for privacy, surveillance and aging in place with technology in Canada.

Among other award recipients:



Lindsay Kuramoto, a University of Toronto (U of T) master's student, is developing a remote vital signs monitoring system that can be used at home after surgery, and benefit older adults in their daily lives. The award is co-funded by the Faculty of Applied Science & Engineering at U of T. ■



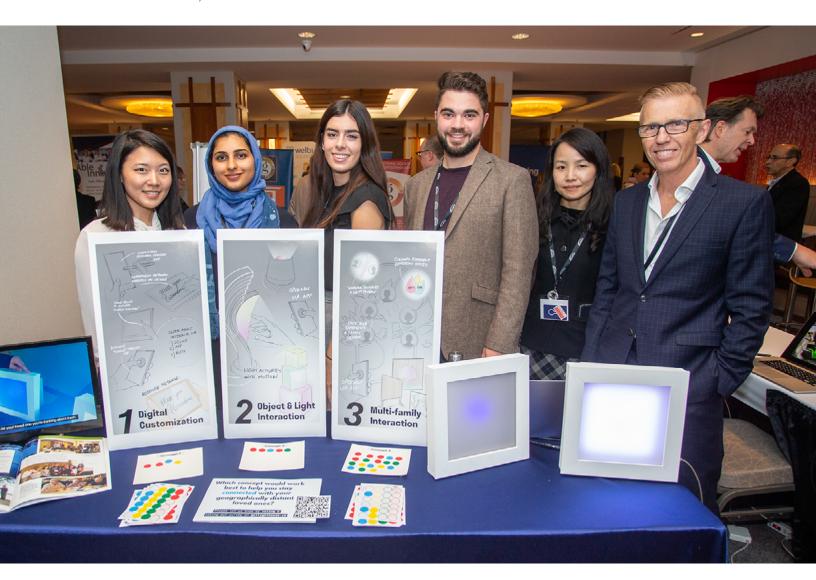
Dr. Cari McIlduff, a University of Saskatchewan postdoctoral fellow, is working with urban Indigenous older adults to learn what they want from technology and its ability to respond to health and wellbeing concerns and needs. Dr. McIlduff's award is co-funded by the Saskatchewan Health Research Foundation (SHRF).

Building careers, sharing knowledge

AGE-WELL trainees are landing positions in industry, academia, government, health care and community organizations. They are sought after for many reasons, including their transdisciplinary skills and understanding of how policies can support the adoption of technology.

In 2020, we refined our EPIC program in order to reach even more trainees worldwide. The certificate component of the program now consists of four online courses, with additional ones in the works. Across EPIC, equity, diversity and inclusion are core to promote consideration of, and collaboration with, under-represented groups in the co-creation of new knowledge.

During the AGE-WELL 2019 Summer Institute, a group of trainees (Team Echidna) came up with a proposed technology called Lighthouse. It takes the form of personalized artwork for fostering long-distance social engagement between geographically separated families. The team has since developed several prototypes and was awarded Best Demo at the AGE-WELL conference in October 2019. Shown here, from left to right: Susan Lee, Amna Liaqat, Iulia Niculescu, Jesse Mastrangelo, Dr. Mineko Wada (Missing: Karan Shastri), with Dr. Andrew Sixsmith, AGE-WELL scientific director.



Trainee Profiles

Dr. Peyman Azad Khaneghah

66 It's not a game. It's an app that you're going to use to get health benefits, so we need to be cautious about the decisions we make. 99



Helping people choose the right mobile health app

Occupational therapist Peyman Azad Khaneghah started his PhD at the University of Alberta determined to create a mobile app to help patients spot signs of depression and other mental illnesses.

With more than 300,000 health apps already on the market, he soon realized that what people might need more is help sorting through this often confusing array of offerings.

So Dr. Azad Khaneghah created an app rating system, which he's refining and putting online as part of a project funded by AGE-WELL, with non-monetary support from the Organization for Bipolar Affective Disorders.

It's all about giving app users, family caregivers and health-care providers the tools to ask the right questions when they're looking for an app, says Dr. Azad Khaneghah, an AGE-WELL trainee who is now a postdoctoral fellow at the University of Waterloo.

"It's not a game. It's an app that you're going to use to get health benefits," he explains. "So we need to be cautious about the decisions we make."

It's easy to focus on the "superficial" features, such as an app's appearance, while overlooking potentially serious drawbacks. Many apps have privacy and security flaws, make unsubstantiated health claims or may be produced by untrustworthy developers, he says. Other mobile apps may cost a lot, while offering minimal or untested benefits.

"Most of these apps haven't been backed with clinical data or research," he points out.

The new rating system—dubbed the Alberta Rating Index for Apps (or ARIA)—is a two-step process that guides people as to what to look for, both before downloading an app and while using it.

Dr. Azad Khaneghah believes the system, developed under the leadership of Dr. Lili Liu at the University of Waterloo, is more important than ever because of COVID-19 and the toll it can take on mental health.

The goal is to get the web-based rating system online in early 2021, creating a crowd-sourced repository of mobile health apps where users can see summaries of available ratings. ■

Trainee Profiles

Benett Axtell

66 The technology brings browsing, reminiscing and organizing pictures together in a simple, digital—and social—process. 99



Creating digital connections

Benett Axtell believes photographs can play a role in easing the social isolation experienced by some older adults.

That's why Axtell is developing a novel technology called PhotoFlow. It's a digital application that combines picture organization and oral reminiscence. As users are prompted to talk about their memories of images displayed on a tablet screen, automatic speech processing captures their words—like "beach" or "bonfire"—and links similar images digitally. This makes it easy for users to locate images using key words—and to show them to others.

"The technology brings browsing, reminiscing and organizing pictures together in a simple, digital—and social—process," explains Axtell, a doctoral student who works on PhotoFlow with Dr. Cosmin Munteanu, co-director of University of Toronto's TAGlab (Technologies for Aging Gracefully).

Axtell is excited by the potential of emerging applications like digital storytelling to enhance social connectedness and improve quality of life for seniors.

A native of Vermont with a BA from Smith College in Massachusetts, Axtell is now associate director of TAGlab, a role that involves overseeing technology transfer. The skills and experience gained as an AGE-WELL trainee helped open the door to this position, says Axtell.

PhotoFlow could hit the market in 2021.



Networking & Partnerships

Our partnership with AGE-WELL has provided opportunities to invest with confidence in high-quality, reputable solutions that align with our strategic priorities and meet the needs of Canadians wishing to age in place. 99

Carol Annett, President and CEO, VHA Home HealthCare

AGE-WELL was established with an inspiring mission: to develop a community of researchers, older adults, caregivers, partner organizations and future leaders to accelerate the delivery of technology-based solutions that support healthy aging. Before AGE-WELL came along, no organization had been tasked with bringing everyone

together in this way.

Since 2015, AGE-WELL has grown from 80 partners to more than 400. They include industry, community, academic

and government organizations. An ever-growing number of partners are coming on board to leverage AGE-WELL's leadership and expertise in the AgeTech sector.

Over the past year, we welcomed high-profile partners like Best Buy Canada, CanAge and Startup Canada. We also saw increasing engagement from associations representing senior living providers, where a need for change and the potential of technology has become very evident.

Our partners are involved in significant ways, both with individual research projects and with network-wide initiatives. Partnerships open doors for the adoption of AGE-WELL innovations—helping us get products to those who need them. We are deeply grateful for the role our partners play in collaborating on research projects, co-funding awards for trainees and co-hosting events.

Older Adult and Caregiver Advisory Committee (OACAC) leaders



Ron Beleno, Co-Chair



Phil Davis, Co-Chair



Sherry Baker, Vice-Chair



Caron Leid, Vice-Chair



An advocate for people living with Alzheimer's, Jim Mann is a member of AGE-WELL's Research Management Committee. Mann was diagnosed with early-onset Alzheimer's at the age of 58.

Tapping into lived experience enriches everything that AGE-WELL does. Older adults and caregivers are key partners in our network. More than 4,900 seniors and caregivers are involved with AGE-WELL. They engage with individual research projects, conduct "relevancy reviews" of research proposals, share insights with startups, and serve on committees like the Older Adult and Caregiver Advisory Committee and the Research Management Committee. ■

66 AGE-WELL is doing a great job at including older adults and caregivers in the development of their products, programs and services. They're using the people experiencing these realities as advisors, which is so important.

Dr. Olive Bryanton, Atlantic Representative, Prince Edward Island, AGE-WELL Older Adult and Caregiver Advisory Committee



Living under COVID-19 restrictions

Citizen science: Members of AGE-WELL's Older Adult and Caregiver Advisory Committee wanted to highlight how older Canadians and caregivers are experiencing the COVID-19 pandemic. So they authored a report that lays out scenarios and issues that older adults and caregivers are facing, categorized by AGE-WELL's eight challenge areas. The report, Living under COVID-19 restrictions, led to conference presentations and continues to be widely shared. It's an example of the tremendous contributions and involvement of end-users in the AGE-WELL network.

International Leadership

As AGE-WELL's profile grows, so too do our international partnerships and collaborations. In 2019, AGE-WELL took part in a number of high-profile government missions that led to new partnerships, such as one with the Northern Health Science Alliance (NHSA), a U.K. research and innovation network. We were thrilled to support several AGE-WELL startups to join trade missions that have boosted international exposure for Canadian AgeTech companies.

It's incredibly gratifying to see AGE-WELL startups selling products internationally. Take Braze Mobility, which makes blind-spot sensor systems for people who use wheelchairs. The company's innovation is being sold across the U.S. and will soon debut in Germany and New Zealand. Innovations like these are having a real-world impact. Be sure to read our story about a product that caught the eye of a European who needed remote care during a COVID-19 lockdown (page 36).





Blind-spot sensors for wheelchairs: Dr. Pooja Viswanathan is cofounder and CEO of Braze Mobility Inc. The AGE-WELL startup has developed the world's first patent-pending blind-spot sensors that can be added to any wheelchair to provide the user with feedback about obstacles in their blind spots.



At AGE-WELL, one thing often leads to another. An AGE-WELL research team recently entered into a major international collaboration with the Haukeland University Hospital in Norway. Another team partnered with the U.K.-based company Consequential Robotics, leading to two successful national grants. And stay tuned for results from a major international collaboration focused on **an innovative training program for seniors called StayFitLonger.** The project is supported by AGE-WELL and the Canadian Institutes of Health Research (CIHR) in the EU Active and Assisted Living (AAL) programme.

AGE-WELL researchers are being tapped from around the world for their knowledge and expertise. Dr. Alex Mihailidis, AGE-WELL scientific director, represented Canada on a panel about the legacy of COVID-19 and healthy longevity at the 2020 International Longevity Policy and Governance Summit. AGE-WELL members were front and centre at the first in a series of international innovation exchange events organized by the Academic Health Science Networks (AHSN), U.K.-based innovators and stakeholders in the health-care space, in partnership with AGE-WELL.

Our events are reaching increasingly large audiences, even as events moved on-screen over the past year. People from more than 35 countries tuned in to our first-ever virtual EPIC conference in June 2020, highlighting to us that population aging will be one of the most significant social transformations of the 21st century worldwide. We also reached global audiences last year through interviews with journalists from as far away as Brazil and Australia. AGE-WELL researchers did a record-setting number of media interviews in 2019.

App offers rehab globally in the time of COVID-19 and beyond

Just as Miro Sobocan was about to begin

physical therapy after total knee replacement surgery early in 2020, his rehabilitation facility in Dolenjske Toplice, Slovenia was closed due to the COVID-19 pandemic.

Undeterred, the 72-year-old retiree turned to his "favourite hobby," the internet, for a solution. He found Curovate, a total knee replacement rehabilitation app he now describes as "life changing and a nine out of 10."

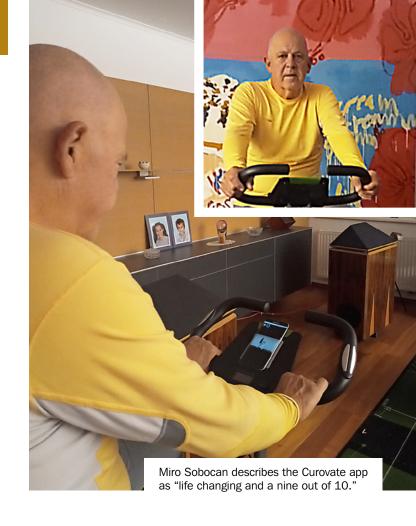
That's high praise from someone whose career included computer programming and auditing IT companies that produce software. What impressed him most was the design of the app and how easy it is to follow even for older adults who aren't tech savvy. "There are visuals and sometimes pictures tell more than a thousand words," says Sobocan. "It's very cleverly done."

Developed and brought to market with support from AGE-WELL, Curovate is a smartphone app that provides older adults who have had knee replacement surgery with a full six-month evidence-based rehabilitation program that can be done in the comfort of one's own home.

66 My colleague said... 'You are walking like a young man.' 99

It includes video-guided exercises demonstrated by an older adult and instructions on how to use the smartphone to measure knee range of motion. The app provides daily and weekly achievement reports and reminders, and access to the Curovate team for any questions. It even counts repetitions and sets of exercises so there's no need for the user to take notes.

Sobocan found almost everything he needed for his rehab right in his apartment. "I made use of chairs, tables, doors and weights that I had," he says. Since the program called for walking or biking, and at the time he was concerned about doing these activities outdoors due to COVID-19, he decided to purchase a stationary bike. "It was the only investment besides the app."



Prior to the surgery on his left knee, Sobocan was struggling with his mobility. "I was moving with pain, I was using painkillers. I even tried injections," he says.

Using the Curovate app, he made tremendous progress. When the rehab facility re-opened in the summer, he went there for 14 days and had no trouble with the physical therapy.

Today, his pain is gone. "Without Curovate, everything I achieved would have been harder and maybe even impossible. I have been playing golf and walking 12 kilometres—each three to four times a week. My colleague said just two days ago, 'You are walking like a young man.'"

Now that winter has arrived in Slovenia and the second wave of the pandemic has again shut down public life, Sobocan is returning to his Curovate app to ensure he maintains his mobility and independence.

Curovate was launched in January 2020 with support from an AGE-WELL Strategic Investment Program (SIP) grant to University of Toronto professor Jonathon Rose, who collaborated with Curovate CEO, app developer and physiotherapist Nirtal Shah. The app also includes rehabilitation programs previously created by Shah for total hip replacement and ACL repair (torn knee ligament).

Total knee replacement involves surgery to replace weightbearing surfaces of the knee joint in order to relieve pain and disability of osteoarthritis and other diseases of the knee. Demand for the surgery and rehabilitation are increasing worldwide as the population ages and the procedure becomes available in more countries.

Moving Forward

The COVID-19 pandemic presents one of the biggest challenges our world has faced. It has accelerated the need to reframe the way we care for, and include the voices of, older adults. Technology, as we are seeing, is part of the solution. It can support older adults to stay connected, safe and living independently in their own homes. It will be increasingly important in modernizing our care systems for shifting demographics.

Because of COVID-19, the time for implementing technology-based solutions has been moved up drastically. The need for technology has intensified. It is no longer acceptable to "wait and see" on virtual and digital health. But while the pandemic has proven the value of virtual care, availability is fragmented and narrow, and access to broadband is often a challenge in rural and Indigenous communities. Access to AgeTech must be equitable, and barriers to adoption need to be addressed.

As the leading Canadian organization advancing innovations for older Canadians, AGE-WELL will play a key role in driving change that improves the quality of all our lives as we age. Our network of research experts across disciplines and partners spanning all sectors is making extraordinary progress in addressing challenges faced by older Canadians and caregivers. Together, we can deliver technology solutions for these challenging times and for the future, while building a thriving AgeTech sector that is part of Canada's economic recovery.



Financial Statements

STATEMENT OF FINANCIAL POSITION AGE-WELL NCE Inc.

As at March 31

	2020 \$	2019 \$
ASSETS		
Current	204.022	007 200
Cash and cash equivalents Due from University Health Network	324,633 5,699,657	227,322 7,981,468
Unspent research grants held at participating institutions	1,076,761	1,773,711
Accounts receivable	84,922	173,581
Prepaid expenses	3,537	16,258
Total current assets	7,189,510	10,172,340
LIABILITIES AND NET ASSETS Current Accounts payable and accrued liabilities Unearned revenue	44,835 9,274	307,918 32,180
Total current liabilities	54,109	340,098
Deferred contributions	6,766,688	9,504,514
Total liabilities	6,820,797	9,844,612
Net assets		
Unrestricted	368,713	327,728
Total net assets	7,189,510	10,172,340

On behalf of the Board:

Mimi Lowi-Young, Chair, Board of Directors

Barbara Stymiest, Chair, Finance and Audit Committee

Please refer to the audited financial statements on the AGE-WELL NCE website: www.agewell-nce.ca

STATEMENT OF OPERATIONS AND CHANGES IN UNRESTRICTED NET ASSETS AGE-WELL NCE Inc.

Year ended March 31

	2020 \$	2019 \$
REVENUE		
Networks of Centres of Excellence grant	8,310,913	7,419,892
Grant from other partners / organizations	28,163	131,550
Other sources of funds	108,011	135,766
	8,447,087	7,687,208
EXPENSES		
Research and training	6,745,449	5,982,290
Networking meetings and events	500,035	504,657
Communications	160,474	150,249
Professional fees	42,463	54,906
Travel	12,865	20,565
Administration	944,816	846,797
	8,406,102	7,559,464
Excess of revenue over expenses for the year	40,985	127,744
Unrestricted net assets, beginning of year	327,728	199,984
Unrestricted net assets, end of year	368,713	327,728

Cash and in-kind contributions from partners held and spent at network member institutions are not included in these statements.

The Network follows the deferral method of accounting for contributions which include government and other grants. Deferred contributions represent unspent resources externally restricted for program expenses in future years. Changes in the deferred contributions balance are as follows:

	2020 \$	2019 \$
Balance, beginning of year	9,504,514	9,421,438
Amounts received during the year – NCE	5,575,000	7,597,018
Amounts received during the year – Non-NCE	26,250	37,500
Amounts recognized as revenue during the year – NCE	(8,310,913)	(7,419,892)
Amounts recognized as revenue during the year – Non-NCE	(28,163)	(131,550)
Balance, end of year	6,766,688	9,504,514

Please refer to the audited financial statements on the AGE-WELL NCE website: www.agewell-nce.ca

as of December 2020

MEMBER UNIVERSITIES AND RESEARCH CENTRES

Baycrest Centre for Geriatric Care

Bruyère Research Institute

Carleton University

Centre de recherche de l'Institut

universitaire de gériatrie de

Montréal (CRIUGM)

Children's Hospital of Eastern Ontario

Research Institute

Collège Mérici

Dalhousie University

First Nations University of Canada

George Brown College

Health Sciences North Research

Institute

Laurentian University

London Health Sciences Centre

McGill University

McMaster University

Montreal Heart Institute

Ontario Shores Centre for Mental

Health Sciences

Ontario Tech University

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Université de Sherbrooke

Université du Québec à Montréal

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University of Alberta

University of British Columbia

University of Calgary

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University of Ottawa

University of Regina

University of Saskatchewan

University of Toronto

University of Victoria

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6Harmonics

AbbVie

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(AAL)

Active4Care

Aditum Health

ADL Smartcare

AdvantAge Ontario

Aerial Technologies Inc.

Age Care Technologies Ltd

Aging 2.0

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Alberta Health Continuing Care

Alberta Health Services

Alberta Innovates

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Alberta Therapeutic Recreation

Association

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Alzheimer Society of Calgary

Alzheimer Society of Canada

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Alzheimer Society of Manitoba Alzheimer Society of Ontario

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Tean

Baxter Corporation

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and Innovation

Baycrest Health Sciences

Bayshore Healthcare

BC Care Providers Association

BC Ministry of Health

BC Hydro

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BC Silver Alert

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Sciences network

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Institute on Aging & Lifelong Health,

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New Brunswick Innovation Fund

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Centre

North Okanagan Friendship Centre

Society

Northern Health Authority

Northwood

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/NILIC A

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Zhejiang University

as of December 2020

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Centre for Technology Adoption for Aging in the North (CTAAN), Prince George, BC

Shannon Freeman, Academic Director

Richard McAloney, Director

Digital Health Circle (DHC), Surrey, BC

Sylvain Moreno, Chief Executive Officer and Scientific Director

Tom Philpott, Chief Operating Officer

Sensors and Analytics for Monitoring Mobility and Memory (SAM3), Ottawa, ON

Bruce Wallace, Executive Director

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EBT Medical Tenera
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eTreatMD TOM - JLG Health Solutions

Famli.net TrakTab

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Lumentra Welbi Marlena Books WeTraq

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as of December 2020

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AGE-WELL NCE Inc.

Toronto Rehab – UHN 550 University Avenue, 13th Floor Toronto, Ontario M5G 2A2 CANADA

T / 416 597 3422, ext. 7778 E / info@agewell-nce.ca www.agewell-nce.ca









