



## AIR Program Awards 2021-2022

1. **Project Title:** Implementation of a validated digital memory augmentation platform to enhance memory for everyday events

**Project Lead(s):** Morgan Barens, University of Toronto

**Funding Amount:** \$49,750

**Primary Challenge Area:** Cognitive Health & Dementia

**Summary:** Memory loss can have profound consequences for the self-identity, personal autonomy, and social relationships of those affected, which can in turn further worsen memory loss. A promising approach to mitigate memory loss is Digital Memory Augmentation (DMA), in which portable devices capture information about everyday episodes, allowing for later review and recollection. HippoCamera is a unique DMA platform that uses smartphone technology to mimic how a critical brain structure called the hippocampus supports the acquisition and retention of new memories, making it the first and only neuroscience-guided digital memory aid. Our project partner, CABHI (The Centre for Aging + Brain Health Innovation at Baycrest) has created Leap, a diverse online community of over 1,000 older adults and caregivers who come together to evaluate the design and usability of digital solutions aimed at older adults. This community provides an excellent environment to implement HippoCamera and continue to iterate key features and functionality through rounds of structured user testing and feedback.

2. **Project Title:** Bridging culture and care through community-based research: Implementation and evaluation of a digital diabetes program for Indigenous communities

**Project Lead(s):** Joseph Cafazzo, University Health Network

**Funding Amount:** \$50,000

**Primary Challenge Area:** Health Care & Health Service Delivery

**Summary:** In Ontario, Indigenous older adults face a significantly disproportionate level of diabetes compared to the general population. With the growing use of digital health programs to support disease management, the University Health Network (UHN) developed the *bant* platform to support diabetes self-management. The UHN team partnered with the Barrie Area Native Advisory Circle (BANAC)'s Mamaway Wiidokdaadwin Indigenous Interprofessional Primary Care Team to leverage the *bant* platform and co-develop a collaborative service for equitable access to diabetes care. Our teams found that older adult patients require cultural and service level changes to facilitate timely access to culturally-safe diabetes care. Using a community-based approach, we aim to evaluate the extent to which the program was successfully implemented, and the barriers and facilitators to implementation. With BANAC recognizing technology-facilitated health care options as a regional priority, we plan to host a knowledge translation community event with the Indigenous Health Circle to explore the applicability of scaling *bant* across the care centres in North Simcoe Muskoka.



3. **Project Title:** Implementing and enhancing the 2RaceWithMe intervention to increase resilience, and reduce social and physical frailty

**Project Lead(s):** Mark Chignell, University of Toronto

**Funding Amount:** \$49,000

**Primary Challenge Area:** Healthy Lifestyles & Wellness

**Summary:** 2RaceWithMe gives residents in long-term care enjoyable exercise and a way to experience parts of the outside world that they are no longer able to travel to all while being comfortably seated in a chair or wheelchair. Residents can also videoconference with their family while exercising, thereby reducing social isolation. The project will use three phases of investigation: baseline, three-month follow-up, and final follow-up, and will conduct focus groups at each phase. This project will include user-centred design and refinement of the intervention based on feedback from residents, staff and family. The aim will be to learn from AGE-WELL innovation hubs and research centres and from our successful implementation of 2RaceWithMe at York Care Centre to develop an implementation plan that will first be tested and refined at the Faubourg du Mascaret care home in Moncton. At the conclusion of this project, we expect to have a highly refined implementation plan that can be used to implement 2RaceWithMe successfully in a variety of settings. This will allow us to scale up sales of 2RaceWithMe, with the goal of being the market leader in exergaming solutions for older people throughout North America.

4. **Project Title:** Increasing access to advanced falls risk assessments for seniors living in supportive living settings using the ProMote virtual care platform

**Project Lead(s):** Martin Ferguson-Pell, University of Alberta

**Funding Amount:** \$49,902

**Primary Challenge Area:** Health Care & Health Service Delivery

**Summary:** Identifying seniors at particular risk for falling requires an expert clinical assessment. However, clinicians with this expertise are scarce and, for seniors in rural settings, travelling to an urban clinic for assessment is impractical and costly. Virtual care can help solve this access barrier, but videoconferencing is inadequate for a falling risk assessment and the current falls risk assessment tools are limited in their ability to identify the root cause of these vulnerabilities and guide treatments to reduce falling risk. Novel approaches for the delivery of virtual care are needed to ensure that equitable access to care is addressed while ensuring that the quality of the assessment and outcomes are not compromised. Our team has developed ProMote, a virtual care platform incorporating a telepresence robot to support authentic interaction between the patient and clinician, as well as a markerless motion capture system for data collection. The overall goal of this project is to reduce the risk of falls for seniors in supported living environments through exercise programs targeted at their specific vulnerabilities related to their coordinative abilities (i.e. balance, coordination, movement patterns).



5. **Project Title:** Assessing the effects of implementing AgeTech to support dementia care in a rural setting in northern British Columbia

**Project Lead(s):** Shannon Freeman, University of Northern British Columbia

**Funding Amount:** \$50,000

**Primary Challenge Area:** Supportive Homes & Communities

**Summary:** The Northern Health Authority's newest facility showcasing the use of AgeTech to support high-quality care and enhanced quality of life for persons living with dementia will open in April 2022. This new and innovative approach to the integration of technology is the first of its kind in rural and northern British Columbia. Our interdisciplinary team worked together to identify client and community-specific needs and various AgeTech solutions to maximize the quality of care and life for persons living with dementia, reduce workload demands, and enhance the working environment for those who support them. Together, we seek to embed AgeTech in a small-sized facility using a person-centred model of care where persons are supported through various technologies to remain more active, engaged, and live well. The goal of this project is to describe the development, implementation, and functioning of a smart technology approach in this new facility during its first year of operation. We will focus on three types of AgeTech prioritized by our partners: 1) Non-invasive technology (Nano-Lit), 2) Technology to enhance environment and wellbeing (Just Vertical), and 3) Technology to enhance physical health (Centivizer). Data gathered over the first year of operation will highlight areas for ongoing technology innovation and inform policy decisions for future planned initiatives across northern BC.

6. **Project Title:** Pilot implementation of the ARMM device in a long-term care setting

**Project Lead(s):** Mirou Jaana, University of Ottawa

**Funding Amount:** \$50,000

**Primary Challenge Area:** Mobility & Transportation

**Summary:** Ambulation of residents in long-term care requires a minimum of two healthcare practitioners to complete, where one practitioner is responsible for walking with the resident and another would follow closely behind with a wheelchair. Due to limited staff resources, particularly in a long-term care setting, there are typically only two physiotherapists available on a time-limited basis. The Ambulation, Retraining and Mobility Mechanism (ARMM) device is an assistive product that attaches a resident's wheelchair to their walker. The purpose of this device is to allow the therapists to increase the number of residents they can see, since they can complete the ambulation on their own, without requiring additional support from another therapist or aide. This allows for increased frequency of patients' ambulation which can lead to improved physical outcomes. In addition, with the lateral bars as a support system, patients feel safer getting proprioceptive feedback when they are leaning to avoid tipping and falling. The purpose of this project is to: (1) Focus on the early stages of technology pre-implementation and employ a user-centred approach to map the workflow at Perley Health, (2) Examine the challenges and opportunities associated with the process, and (3) Test the use of the ARMM device with a group of 15 residents and capture feedback from both the residents and physiotherapists.



7. **Project Title:** Evaluating the efficacy of a smart activity sensor for senior care using the RE-AIM framework

**Project Lead(s):** Jie Liang, Simon Fraser University

**Funding Amount:** \$50,000

**Primary Challenge Area:** Supportive Homes & Communities

**Summary:** Dr. Jie Liang and AltumView have developed the Sentinare sensor, a powerful and unique AI sensor that uses deep learning algorithms to monitor the activities of seniors, collect their health statistics, and notify the caregivers immediately when emergencies such as falls and the wandering of dementia patients are detected. For this project, we will collaborate with the partner organizations by installing the system at their sites, and thoroughly studying its applications in different senior care settings, including long-term care, memory care, assisted living, and independent living. We will study five outcomes that are important to the impact and sustainability of the solution, namely Reach, Efficacy (Effectiveness), Adoption, Implementation, and Maintenance. The project will collect valuable feedback to improve our solution and insightful information for policymaking on how to adopt technology to benefit senior care, which will help to scale up our proposed solution, provide better protection for our seniors and society, and mitigate the challenges faced by our aging population.

8. **Project Title:** Implementing Walk-BEST technologies in a senior's independent living facility: Building a model to meet the needs of all stakeholders

**Project Lead(s):** Nancy Mayo, McGill University

**Funding Amount:** \$50,000

**Primary Challenge Area:** Mobility & Transportation

**Summary:** Many seniors do not walk well enough to gain health benefits from walking and poor walking quality can be dangerous. Most falls occur when people are not walking well. We are planning to implement three technologies to improve the quality of walking among residents of a senior's independent living facility. The main technology is the Heel2Toe™ sensor, a small device that clips to the side of the shoe and provides positive auditory feedback for a "good" step. To augment the effectiveness of the Heel2Toe sensor, we will also provide weekly workshops on how to walk BETTER, Faster, Longer, STRONGER (Walk-BEST). To improve the joint and muscle function needed to Walk-BEST, the Walk-BEST Chair has also been developed with an accompanying illustrated exercise guide. The triple C implementation model will guide the process through 1) Consultation to prioritize ideas, identify areas of improvement, and design a process map, 2) Collaboration to clarify the roles and responsibilities of each stakeholder with respect to the service to be implemented and the organizational culture, and 3) Connectedness to standardize protocols and identify resource needs. The project aims to improve the health and physical functioning of residents in seniors' residences through implementing the Walk-BEST technologies in one residence in Montreal and the development of a best practice implementation model.



9. **Project Title:** VRision Program – Scaling of a validated Virtual Reality training program for improving vision in older adults

**Project Lead(s):** Michael Reber, Krembil Research Institute, University Health Network

**Funding Amount:** \$46,600

**Primary Challenge Area:** Autonomy & Independence

**Summary:** Maintaining good vision allows seniors to stay independent and active, reducing their chances of isolation and developing depression and dementia, and notably helping them age in place. The VRision-system can be an incredibly valuable tool for improving vision in healthy older adults so they can continue their daily activities. The system consists of a stand-alone Virtual-Reality (VR) headset and specially designed activities (stimulations) that train users to follow objects in 3D space while introducing degrees of distractions. Information about the completion of each stimulation is transferred in real-time to a clinic where vision experts and refined algorithms tailor future tasks to appropriately challenge users, thereby improving their ability to maintain eye stability and their field of view. For this project, our team will compare two strategies: (1) Providing a unit in an interprofessional clinic where clients can visit regularly, and (2) creating a loaning system for clients to use VRision in the comfort of their homes. By evaluating the number of users, effectiveness for improving vision and quality of life, adoption by participating settings and staff, adherence to therapy, cost of intervention and adaptations, and project maintenance, we will identify which strategy gets VRision successfully into the hands (and eyes) of more seniors.