



INVESTING FOR OUR SENIORS

The impact of public funding for research on aging in Quebec’s Estrie region

The population of Quebec is aging rapidly. To ensure the wellbeing and health of seniors, it is important to invest in research projects aimed at better understanding and managing aging and rehabilitation.

Thanks to financial support from three public organizations, projects by researchers in the Estrie region are leading to innovations that have a positive impact on seniors not only at the regional level, but also on seniors throughout Quebec and even outside the province.

Healthy aging

Today, nearly one in five people in Canada are aged 65 or older. According to the latest government data, this is also true for Quebec, where most people in this age group continue to live at home.

Quebec seniors living at home



By 2030, a quarter of Quebec’s population is projected to be 65 years of age or older. In 2061, more than one third will be in this age group.

Supporting research for a key population

Three public stakeholders — the Canada Foundation for Innovation (CFI), Quebec’s Ministère de l’Économie et de l’Innovation (MEI) and the Fonds de recherche du Québec (FRQ) — collaborated on a study that highlighted the social and economic impacts of public research funding on the wellbeing and health of seniors. The three organizations concurrently fund research on aging and rehabilitation to promote, among other things, monitoring and maintaining seniors in their homes.

This funding supports the purchasing of equipment and software, the establishment of multidisciplinary research teams and acquisition of essential skills and knowledge by students.

By assessing new ideas, exploratory research lays the foundation for developing and demonstrating promising products, services and practices. This can attract further investments that help create the conditions public and private investors need to adopt and commercialize them.

Significant impacts for seniors

The CFI, MEI and FRQ have funded several research projects led by the Centre de recherche sur le vieillissement (CdRV) and the Ingénierie de technologies interactives en réadaptation (INTER) strategic cluster. Affiliated with Université de Sherbrooke, the CdRV conducts its activities within the Centre intégré universitaire de santé et de services sociaux de l'Estrie – Centre hospitalier universitaire de Sherbrooke (CIUSSS de l'Estrie – CHUS). In addition, some projects are carried out with researchers from the Interdisciplinary Institute for Technological Innovation (3IT) and DOMUS laboratory (DOMUS stands for “DOMotics at the Université de Sherbrooke”) in the Faculty of Science at Université de Sherbrooke.

Here are some examples of the social and economic impacts of the funding:



Providing in-home rehabilitation

Michel Tousignant (INTER, CdRV) and his collaborators have created the free and open-source TeraPlus telerehabilitation platform to reduce wait times for patients seeking treatment after an accident or surgery.

Impacts:

- Wait times at the outpatient physiotherapy clinic reduced from 18 to 12 months
- Collaborations underway to deliver and implement the platform in private clinics and hospitals in Quebec and France



Promoting autonomy through safer housing

The DOMUS laboratory team has designed intelligent systems that enable seniors with cognitive impairments to remain independent longer in their homes.

Impacts:

- Support systems installed in a three-unit residence in Estrie
- The technologies developed ensure the physical safety of individuals, and provide information on the quality of their sleep or the proper use of their medication





Managing Parkinson's and dealing with trauma

Karina Lebel (INTER, CdRV) has taken advantage of advances in motion-capture technology, wearable sensors and data processing to develop innovative measurement approaches of movements that support individualized patient management.

Impacts:

- New tools to remotely assess the symptoms and functional mobility of people living at home with Parkinson's disease
- Instrumented mannequin to support the training of first responders and medical personnel in avoiding any movement that could aggravate an injury



Enhancing the wellbeing of patients undergoing hemodialysis

Mélanie Godin (Université de Sherbrooke) and her CdRV partners have devised a way for seniors receiving hemodialysis to be able to exercise during treatment and thus improve their sleep, mood, stress management, mobility and independence.

Impacts:

- Development and evaluation of a cycling ergometer prototype that lets patients pedal in the recommended position during hemodialysis
- Studies underway to improve the prototype, create an implementation guide and ultimately test the pedal system in several teaching hospitals



Reducing chronic pain

Guillaume Léonard (INTER, CdRV) has analyzed the effectiveness of neurostimulation with electrodes applied to the skull to reduce, or even eliminate, chronic pain, which is prevalent in the elderly.

Impacts:

- Trials with several patients that show neurostimulation changes pain from intense to mild-moderate and in some cases, completely eliminates it
- Reduced medication and side effects, improved wellbeing, recovery and even return to work



Delaying Alzheimer's

Stephen Cunnane (CdRV) has developed new non-pharmacological nutritional strategies to compensate for the brain's energy deficit using alternative fuel known as ketones.

Impacts:

- Development of a ketone tracer and imaging analysis techniques
- Creation and commercializing of a drink rich in medium-chain triglycerides that can improve cognitive performance and delay the progression of dementia in Alzheimer's patients



Increasing mobility

Véronique Provencher (CdRV) and her collaborators have worked to create a living laboratory, the Laboratoire d'innovation par et pour les aînés (LIPPA), and launch the Mobilâînés project, a one-stop shop to maximize the independence of seniors by helping them get around.

Impacts:

- Mobilization of at least nine public and community organizations in Estrie
- Creation of a directory with 45 existing tools for planning trips



Perfecting the distribution of nutritional supplements

Nancy Presse (CdRV) investigated the distribution of small doses of a nutritional supplement administered orally as a medication, one to four times a day, rather than as a full serving at snack or meal times to combat malnutrition in seniors, particularly those with dementia.

Impacts:

- Pilot testing that demonstrates a stronger compliance rate in patients receiving the oral supplement divided into small doses
- Increased appetite and body mass index found in these individuals

Strong leveraging effect

Diversification of public funding creates a leveraging effect that ensures research teams can secure other sources of funding, including from the private sector.

The funds invested by the CFI, MEI and FRQ have enabled research teams to acquire state-of-the-art equipment, attract collaborators to form multidisciplinary teams and develop solutions and prototypes to address the challenges of aging and rehabilitation.

Complementary funding sources have supported the hiring of research staff and the attraction and training of graduate students, as well as facilitated proofs of concept.

A couple examples:

Following the promising preliminary results of her pilot study, Nancy Presse (CdRV) received funding from the Alzheimer Society of Canada for a randomized controlled trial in a hospital facility, and funding from the Canadian Institutes of Health Research to test a toolkit for implementing her geriatric feeding strategy in two types of long-term care facilities in Montréal.

Stephen Cunnane (CdRV) received additional funding from the Alzheimer's Association and Nestlé Health Science to continue his work on measuring ketones and the effects of ketone salts on the brain functioning of people with mild cognitive impairment.

Investments that pay off for the future

The various research projects supported by the CFI, MEI and FRQ in Quebec's Estrie region are working to reduce government spending on health by helping seniors continue to live at home, and by improving their health care.

More effective use of healthcare professionals

For example, the estimated annual savings for each team of five physiotherapists who used the TeraPlus platform was between

\$100,000 and \$250,000

Talent development

Each research project bolstered the training of talent and the development of a highly skilled workforce.

A new generation: 80 highly qualified individuals



69

students and postdoctoral fellows



11

research professionals

Many graduate students have obtained positions in healthcare or university settings.

Keep reading to learn more about how public funding for research on aging in Quebec's Estrie region benefits our seniors: [Executive summary](#) | [Full report](#)