

## Cover page

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## Response to the questions

### Which health and well-being issues should be prioritised for prevention actions? Why?

Despite major investments in genetic, pharmacological, and surgical treatments, non-communicable diseases (NCDs, e.g., cardiovascular disease, cancer, diabetes, obesity) remain the leading causes of death and healthcare expenditures in Québec. Furthermore, Québec spends 41.4% of its GDP on healthcare (vs. Canada's 11.6% of GDP), most of which is on curative interventions that fail to optimise health outcomes. This has been at the expense of investing in primary to tertiary prevention, which has been shown to save lives with little cost and is associated with economic growth. Ultimately, the major underlying causes of most NCDs are not biological factors, but harmful human behaviours (e.g., low quality diet, physical inactivity, smoking, not adhering to medications) that are influenced by socio-environmental factors (i.e., the social determinants of health, such as food deserts, marginalization, low active environments, climate change) which are poorly addressed by current biomedical approaches. For example, adherence to NCD medications is 35% in Québec, uptake of vaccines for infectious diseases remains sub-optimal, over-prescription (by providers) and misuse of antibiotics (by patients) are the main drivers of antimicrobial resistance, all resulting in an avoidable disease burden for Québécois. Beyond current clinical care, most current health-related policies do not address key issues of human behaviour. Though behaviours (e.g., getting vaccinated, wearing masks, physical distancing) were key in preventing and mitigating the impacts of COVID-19, government agencies were unable to effectively incorporate behavioural science into their responses, leading to ineffective and even counter-productive interventions being deployed (e.g., advice-giving media campaigns using scare tactics). Of note, despite the central role of behaviours during the COVID-19 pandemic, only .007% of worldwide trial funding was for behavioural interventions. As another example of this disconnect, climate change is not only a major concern for the sustainability of our planet but it is 'the biggest health threat facing humanity', with multi-level human behaviours being the core driver of the problem.

Developing suites of complementary behaviour change (i.e., behavioural) interventions at the individual-, system-, and policy-levels will be fundamental to obtaining both planetary and human health through prevention-based solutions. This has been highlighted by the fact that both the World Health Organisation and the United Nations have made improving individual and population-level health behaviours a key priority. Moreover, even though behaviour change is critical to individual and population health, few high-quality behavioural interventions have been implemented into clinical or community practice, which is largely attributable to years of inadequate funding for behavioural science research, including implementation science.

Behavioural science is an interdisciplinary, intersectoral approach that develops interventions and programmes to positively impact human behaviours and decision-making, accounting for individual and socio-environmental influences. Québec has some of the world leaders in behavioural science; however, there is currently no Québec-based infrastructure to be able to bring this excellent group of scientists together, along with healthcare, policy, and community members, to be able to solve these challenging prevention issues.

To effectively address Québec's sustainable health challenges (Santé Durable) and to ensure that the solutions are equitable across the population, we need to invest in behavioural science research and capacity so that we can develop and implement a range of effective tailored behavioural interventions targeting individuals, populations, and systems. By doing this we will be able to tackle the key drivers of chronic diseases, along with aligned societal threats to health, through prevention from primary to quaternary levels.

### **Which population groups should the Strategy prioritise? Why?**

Importantly, there are significant social inequalities in the impacts of health and climate change that need to be addressed in all interventions for us to achieve equitable benefits and outcomes. The issue is less about prioritisation and more about using the behavioural science tools that we have available to develop interventions that are sophisticated enough to be personalised to the needs and values of different populations. Something as simple as a public messaging campaign can have targeted adaptations that engage different populations, rather than the current practice of using a “one message for all” approach, which tends to marginalise underrepresented populations.

### **What are your ideas for collective action to improve the health and well-being of the population?**

Québec has developed notable expertise in community and patient engagement in research. This can be leveraged to not only drive the process of finding prevention solutions that will be acceptable to the target populations, but are also deliverable by community and healthcare providers, and fundable by the government and other organisations. Furthermore, the engagement of all knowledge users in the full develop-to-implementation process has the indirect benefit of creating implementation “champions” within each knowledge user group. This allows for greater active collaboration and collective action.

### **How could innovation contribute to this?**

Digital behaviour change interventions provide opportunities to address the above challenges, especially considering that ~95% of Québécois over 15 (including 82.6% of those older than 65) utilise online services and ~80% have a mobile internet connection. Digital interventions also allow us to leverage artificial intelligence (AI) to enhance personalisation, something that has been shown to increase behaviour change. Although current digital interventions improve health behaviours and clinical outcomes, these changes have been modest and of limited duration. These limitations are largely due to the lack of use of behaviour change theories and frameworks and consideration of implementation during their development. As such, there is an opportunity to leverage the internationally-recognised Québec researchers in behavioural science, computer engineering and science, applied AI, and implementation science to co-create implementable evidence-informed digital behaviour change solutions and then implement them in real-world settings.

### **What are the main obstacles to overcome in implementing these actions? How could this be achieved?**

Implementing evidence into practice depends on changing human behaviour at individual, organisational, community, and population levels. The behaviour of managers, service commissioners and providers, ancillary, administrative and technical staff, policy-makers, politicians all impact the ability to implement any solution. Unsurprisingly, behavioural scientists have had a significant impact on the evolution of implementation science and the process of implementation in general. As such, investing in behavioural science research and capacity will not only allow for the development of solutions which will address the key underlying drivers of poorer health and wellbeing, but it will also allow Québec to create the ability to implement these solutions into current systems and communities.

**What are the main opportunities to consider? How could they be seized?**

As mentioned above, there is a significant amount of behavioural and implementation science expertise that exists within Québec. What is currently missing is coordination and the opportunity to systematically integrate this into current healthcare systems and community settings. As a simple first step, the creation of a formal network around behavioural science, which would include all knowledge users, would provide a hub for structure action on prevention to be initiated, developed, tested, and implemented.

**How can citizens be more involved in health prevention actions?**

As detailed above, there is notable expertise in Québec in how to engage knowledge users in the development and delivery of innovative solutions that can aid in societal benefit. Rather than recreate parallel structures, it would seem that we could leverage this excellence to be able to involve not only citizens but other key knowledge users that impact all aspects of the prevention spectrum.