Whole Health Innovation Collaborative Meeting: Applying Precision to Preventative Health and Personalized Medicine

Meeting Highlights
April 25, 2017, Old Mill Toronto

Meeting Overview
The April 25, 2017 Whole Health Innovation Collaborative Meeting: Applying Precision to Preventative Health and Personalized Medicine was designed to gain insights from and engage in meaningful dialogue with experts and thought-leaders on how innovation is applied and can be better layered across the subthemes of public and population health, health care system functioning and design, and workplace health and wellness.

The meeting convened approximately 100 delegates made up of members of The Canadian Alliance for Sustainable Health Care, The Centre for the Future of Health, and The Council for Healthy Living, as well as stakeholders representing the public health, health care system, and employer sectors. This meeting highlight document summarize some of the key insights and ideas explored at the collaborative meeting.

Innovation
Innovation at The Conference Board of Canada is a cross-cutting theme as well as an area of major focus in many of our lines of business—from research, to knowledge mobilization and thought-leadership. This collaborative meeting explored the importance of addressing innovation from a horizontal and vertical perspective, and discussed how we can work together to find and implement solutions that will ultimately build a better future for Canadians by making our economy and society more dynamic and competitive.

Precision or Personalized Medicine
The concept of precision or personalized medicine has been used widely. This concept refers to medical interventions that separate patients into different groups, whereby medical decisions, practices, policies, and programs, and/or products are tailored to the individual patient based on their predicted response or disease risk.

Expanding upon this concept more broadly, a precision health approach to interventions across all pillars of health, including health promotion and public health, health care system design and interventions, and workplace health and wellness programming and policies, presents unique opportunities to enhance health and well-being for all Canadians while delivering value-for-money. Meeting delegates explored how Canada could become a leader in this space and what we stand to lose if we continue to lag behind peer countries.
Welcome and Opening Remarks

Innovation Across the Board: Insights, Understanding, and Impact

Dr. Daniel F. Muzyka
President and Chief Executive Officer
The Conference Board of Canada

Daniel Muzyka opened the meeting by welcoming delegates, summarizing Canada’s productivity and innovation challenges, and highlighting key research that the Conference Board is conducting in this area.

Key Highlights:

- Restrained growth of around 2 per cent strains Canada’s productivity.
- Canada is doing well on the discovery side of innovation, but falls short on the commercialization and implementation side.
- Innovation is a net driver of health care costs and more process innovation is needed to reduce these costs.
- Improving innovation is Canada’s greatest challenge as it can help reduce the health care and societal costs of disease.
- The Conference Board is exploring innovation through several research series, including pharmaceutical innovation, Lean, process management, and innovation procurement.
- Its research will continue to focus on three areas: population health, the design and functioning of the health care system, and workplace health and wellness and the role of the employer.

Setting the Stage: What is Precision Health?

Louis Thériault
Vice-President, Industry Strategy and Public Policy
The Conference Board of Canada

Louis Thériault set the stage by describing key aspects of health innovation and precision health, and highlighted the importance good health policy can play in making Canada’s health care system more sustainable.

Key Highlights:

- A whole health perspective includes both the demand and supply side.
- The workplace is a new area of focus for the Conference Board.
- Health innovation encompasses numerous areas such as applying the latest technologies (e.g., drugs, medical devices equipment, and organization), adopting behavioural economics, and improving delivery.
- Precision health involves targeted prevention based on individuals; decoding the genome was a huge leap forward in the potential technology can offer for targeted responses.
- Canada still needs to figure out how to organize and implement big data and the internet of things.
- Improving health policy is one of the most important challenges going forward.
Plenary Session 1

Applications for Precision Health: From Prevention to Treatment

This panel of speakers presented examples whereby precision and personalization can improve population health, from prevention to treatment within the public health, health care system, and workplace settings. The panellists discussed the application of genomics and cutting-edge technology for targeted intervention within these different settings and across the life-course, with experiences in Canada and abroad. The panel discussion also identified some of the challenges and opportunities for Canada in fostering, leveraging, and scaling precision health to achieve optimal impact.

Getting to N of 1: Designing Hyper-Personalized Experiences to Prevent Disease

Jeff Ruby
Founder and Chief Executive Officer
Newtopia Inc.

Key Highlights:

- Canada’s health care system is actually a sick care system; to bend the cost curve, we need to focus on prevention, at-risk individuals, and early warning signs and symptoms.
- Through insurers and employers, Newtopia (a disease prevention company) identifies people at risk through biometric testing, online screening, and health risk assessments.
- The data generated enables a hyper-personalized approach using genetic analysis/engagement, behavioural understanding, and personalized intrinsic motivation (the most conducive to sustainable change) using inspirational coaches, engaging delivery tools, smart touch tracking, and gamification.
- Newtopia’s hyper-personalized approach drives outstanding outcomes around engagement (e.g., in a three year randomized control trial, 76 per cent of participants lost an average of 10 lbs or 5 per cent of their body weight, with 10 per cent of body weight lost by 24 months—which positively impacted all 5 metabolic indicators and helped prevent disease onset).
- These health changes led to $122 per month or approximately $1,464 in-year cost savings for the employer.
- Through an innovative business model that aligns incentives and shares in the cost-savings, the program paid for itself in the first year and doubled the value for the employer in the second year.

Challenges and Opportunities for Precision Health Innovators—Protecting Canadian Inventions in Disease Prevention and Nutrition

Kathleen Marsman
Patent Agent
Borden Ladner Gervais LLP

Key Highlights:

- The Naylor report cited a large funding gap (with a 14 per cent success rate in the number of grants submitted by CIHR applicants)—this needs to change as funding is an important pre-requisite to innovation and shoestring budgets can’t afford to patent great innovations.
• The end of the CIHR proof of concept/principle fund (an unencumbered fund that did not require matching funds) left a gaping hold in Canadian health innovation funding and should be brought back.

• As all university and institutional technology must pass through technology transfer offices to commercialize, we need to bolster the role of tech transfer offices in bringing innovation to fruition, and promote the fact that commercialization costs are eligible in many project scheme operating grants.

• The Patent Office does not consider diagnostic methods as eligible inventions that are susceptible to proprietary position—however, if it doesn’t, they will not make it through to commercialization.

• CIHR should implement a commercialization voucher—an option for CIHR grant winners who bring an invention to their tech transfer office to receive a near-automatic commercialization coupon for downstream activities they propose (e.g., patent filing, advancing regulation, generating a business plan, etc).

• Canada needs to fix the research to commercialization chain by removing roadblocks to the patenting process and providing adequate tech transfer and commercialization funding.

Personalized Diagnostic Services Across the Patient Healthcare Journey

Jennifer Flexman
Director, Product and Service Innovation
LifeLabs

Key Highlights:

• As an estimated 70 per cent of health care decisions rely on a diagnostic test result, community labs and diagnostic services are a key leverage point for health care spending.

• Through precision health, diagnostic companies can impact how we achieve the triple aim in health: better health outcomes, better patient experience, and better value in the long-term to achieve sustainability in how we allocate health care resources.

• We can create a precision health experience and move the needle by addressing individual patient needs around health and wellness through a coordinated partnership approach.

• Technology platform: advances in science and research allow us to do things in new ways in the diagnostic world (e.g., pharmacogenetics—using genetic information to make better treatment decisions around drugs, dosages, allocation, and downstream treatment decisions; or Nutrigenomix—a new test panel that uses genes to provide better information to individuals to understand diet impacts).

• Service model: delivering new technologies and services to maximum impact (e.g., special blood drawing environments for autistic children, evaluating and interpreting genetic tests in a personalized context through counselling).

• Data: how data translates into actionable insights and empowers individuals by sharing information with them and their providers in a timely manner (e.g., LifeLabs’s online portal myresults™ launched in Ontario in 2015 or working with the Better Outcomes Registry and Network partnership through sharing non-invasive pre-natal genetic test results to support integrated and high quality care in the province).
Plenary Session 2
Keeping Up with the Joneses: Taking Canada from Laggard to Leader in Health Innovation

This facilitated session turned the tables on the audience by challenging them to work together in small and large groups to address key questions and brainstorm potential solutions to making Canada a leader in health innovation. After providing an overview of the innovation environment in Canada, Paul Preston asked meeting participants how they would change the health system (1) to allow the latest and greatest innovations to be adopted without increasing health care funding, and (2) how they would use an additional $10 billion in funding to make Canada a health innovation leader.

Moderator:
Paul Preston
Director, Science, Technology and Innovation Policy
The Conference Board of Canada

Key Highlights:

- The Conference Board defines innovation as “the process through which economic and social value is extracted from knowledge through the generation, development, and implementation of ideas to produce new or improved strategies, capabilities, products, services, or processes.” Innovation is something new or novel that adds value (social, economic, process improvements, business model changes, new technology, etc).

- Social dynamics (the behaviour of groups resulting from actions and interactions involving individual group members and other emotional and social forces) impact our decision-making, and return on investment (ROI) analyses help get the money to make things happen.

- Canadians want access to the very best, yet Canada is lagging behind other countries in our ability to derive benefits from innovation—comparator countries that spend the same or support innovation in different ways are getting more for their investment.

- Canadian businesses do not invest enough in R&D (i.e., business enterprise R&D); among the OECD countries, the Conference Board’s Innovation Report Card shows that the only jurisdictions that do worse on BERD than Canada are the provinces in Canada. We need to figure out how to incent our businesses to invest in R&D and innovation activities.

- Canada’s population will demand EMRs, new digital technology, and ICT Investments for innovation.

- With health care expected to consume 45 per cent of GDP by 2035, Canada faces a large fiscal challenge—innovation means more money that health administrators do not have to spend.

1) How can we change the health system to allow the latest and greatest to be adopted without increasing health care funding? Where would you start? What would you do? What are the top opportunities?

- Goals: Canada needs a laser focus on health care innovation with unifying goals that are owned by everyone (federal and provincial governments, private payers, employers, and citizens), a central repository for priorities, and a process to vet them for action. Making primary care a federal, rather than a provincial, responsibility was also proposed.
• **Outcomes and value**: at the provincial and national level, Canada needs to change how it thinks about and measures outcomes (not just inputs) and value. Canada also needs to collect data and evaluate success as we can’t improve what we don’t measure. We need to stop doing things that are not working and prioritize implementing new methods.

• **Funding**: Canada needs to reconsider how it fund care and create economic incentives (siloed models produce siloed care). Systems within the health regions where the insurer and the providers are the same (e.g., LHINs fulfilling Kaiser Permanente system roles) incentivize providers to keep people out of the health system and prevention-based savings can go towards new devices, treatments, etc. Canada needs to align money with key priorities and decrease the cost of prescription drugs by re-visiting funding model. It can do this through existing levers (e.g., the tax and education systems).

• **Prevention**: Canada needs to redefine health by focusing more on prevention and increasing prevention efforts through employer and community channels. Prevention should be incentivized at the level it currently incentivizes sick care, with bonuses for those who prevent upcoming problems. Canada need to incent integrated solutions by increasing flexibility, adapting to new learnings, redefining ownership as a shared responsibility (between employers, federal and provincial government, and partners), building a pipeline from process to implementation, and creating a framework based on successful economic cases.

• **Partnerships**: Canada needs to continue to develop innovative partnerships between the public and private sectors that re-evaluate traditional risks and rewards. It can learn from existing examples (both domestic and international) of how to improve outcomes and reduce costs. Innovative partnerships (e.g., big banks and pharma care) can act as a disrupter that drives change.

• **Pharmacogenetic testing**: the costs associated with screening all patients coming into long-term health facilities with pharmacogenetic tests could be offset by reduced drug interactions and hospitalizations. Pharmacogenomics can provide early detection, help people avoid taking drugs that impact them negatively, and avoid deterioration through treatment.

• **Technology**: Canada needs to invest in technology that helps with early detection and remote care management (to reduce hospital visits). Virtual and telehealth solutions are convenient (making people more likely to use the services) and reduce real estate costs.

• **System realignment**: Canada needs to use tried and true innovation principles that are free and cheap (e.g., design thinking, low-tech design, and failing responsibly and quickly). Canada also needs to decrease the level of care through patient service prioritization and enhanced private sector options for health services. Closing emergency to departments to low acuity patients through an urgent care central triage system (using nurse practitioners) was also proposed.

2) If $10 billion in funding were made available to help move Canada forward to becoming a health innovation leader, how would you use the funding?

• **Ensuring results**: Canada could reduce pilot fatigue by committing pilots to a process and even tying them to procurement. It should focus on tying ideas to outcomes, and achieving upstream outcomes, positive (pre-disease) health, and results in at-risk focus areas.

• **Innovation incubation body**: an arms-length innovation incubation body could be created to better coordinate regional innovation.

• **National profiles and revenue streams**: a competition-based genomic profile of the entire nation could be turned into a revenue stream to third party research or commercially-based
companies. Those who participate would receive dividends to the company (a health care spending account that is transferrable or assignable to future medical needs).

- **Living lab**: Canada could fund R&D by become a “living lab”. A CIHR style competition with 10 invited organizations could be curated by existing start-up technology organizations and tech lab incubators like MaRS. The winner would be guaranteed sales in Canada where we would try it here first and then support an export model. The competition would focus on early interventions in primary, secondary, or tertiary care. Targeted areas could include dementia, aging well, early diabetes prevention, and education (making children health champions). As Canada is not large enough to generate enough income for this entity, solutions would be built and developed in Canada then exported to the world.

- **Personalized health**: investing in behavioural motivation and learning will help changes cascade down to the individual level. Canada could incent people by teaching, assessing, giving them the tools to change, and helping them make their own way. Individualized preventative care could be funded through technological assessment, education, and health promotion efforts and tax credits could be given to health promotion tools. Canada needs to teach society how to better value health early in life. Every Canadian should have access to their health status and a plan to incrementally improve their health. Personalized outcomes, personalized prevention benchmarks, long-term road maps, and a plan for the final years of life should all be included. Improved personalized data will not only help empower individuals, but will also help stakeholders build big data analytics and identify trends.

- **Consumer demand**: Canada can decrease health care system demand by reducing the number of people receiving care they don’t need. Canadians should want better, not more.

- **Technology**: Canada needs to invest in its digital architecture and educate the public about new digital health services. It also needs to create a collective repository for data, tools, and financial incentives.

- **System supports**: Canada should surround patients with a caregiver support system, care packages (specifically tailored to what patients need), remote primary care (which should be the default), and easily accessible patient health records. Canada should continue to invest in a system that is value-based, multicultural, representative, and that supports the social determinants of health.

**Concurrent Session 1**

**Innovation in Health Promotion and Active Living**

Innovation in public health has gained momentum in Canada. Nudging and social impact investing are a few innovative approaches that have been implemented at a federal and regional level to support healthier lifestyles amongst Canadians. However, are these innovations reaching the right populations and do they/will they work? Innovative strategies can create conditions for successful health promotion and active living both in and outside of the workplace, providing benefits to employees, their families, and society at large.

**Moderator:**

Gerry Gallagher  
Acting Director General, Centre for Chronic Disease Prevention  
Public Health Agency of Canada

In this session, Gerry Gallagher asked speakers in this session to focus on innovation relating to health promotion, chronic disease prevention, and healthy active living.
Breaking Bad: A Behavioural Solution to the Sedentary Workplace

Laura Pratt
National Practice Leader, Organization Health
Great-West Life Assurance Company

Key Highlights:

- 30 per cent or more of employer costs with respect to absence and disability are related to mental health.
- 10 years ago, Great-West Life created the Great-West Life Centre for Mental Health in the Workplace which funds research in this area.
- The Centre’s website, www.WorkplaceStrategiesforMentalHealth.com, provides workplaces with practical tools to support employees, develop the skills of managers and leaders, and foster a mentally healthy workplace.
- The Centre’s website is a public site, available to all Canadians.
- The Centre focuses on the workplace because the workplace is where people need to be productive; the workplace therefore also provides the opportunity to identify when people are starting to struggle.
- Management, co-workers, and senior leadership all have a role to play in supporting mental health.

Workplace Wellness: Strategies to Support Mental Health in the Workplace

Brad Gerard
Program Director, UPnGO
ParticipACTION

Key Highlights:

- To be their best healthy selves, people need to be physically active and mindful of the 10 hours a day they spend as adults being sedentary—they need to sit less and move more at work.
- People working full-time spend about a third of their lives at their desks, so reducing this time will have large impacts and benefits (as sitting for 20 per cent of the day is causing 80 per cent of the problems associated with sedentary behaviour).
- Two years ago, ParticipACTION started developing a workplace wellness program designed to tackle the core barriers to implementing health and wellness programs (e.g., securing executive buy-in, building internal resources, proving necessary supports, and incorporating internal ownership components).
- The program is built on three core components: (1) a behaviour change curriculum and behaviour economics model tackling the capabilities, opportunities, and motivations of employees in the workplace; (2) a digital platform to reach busy employees and increase participation; and (3) the organizational culture supporting the program.
- The 12-month-long program features monthly themes (e.g., mental health and sleep months) with real objectives, specific challenges for employees to participate in, people on the ground to help implement, and a strong support network (both digital and real-world).
• Participant data sets provide a wealth of data regarding who people are, what they are interested in, and what they are engaging with—knowing how the audience is engaging allows program designers to test different kinds of content, challenges, and objectives in real time to see what is working, and whether adjustments or changes need to be made.

New Tools to Drive Towards Improved Health Outcomes
Alexis Wise
Health Advisor and Capital Advisory Manager
MaRS Centre for Impact Investing
MaRS Discovery District

Key Highlights:
• A partnership established last fall between PHAC, MaRS, and the Heart and Stroke Foundation has created Canada’s first national social impact bond and is one of the first around the world to focus on health (there are 70 of these types of bonds around the world, but less than 10 focus on health).
• A social impact bond model is based on an outcomes-based agreement; a contingent grant ensures if a set of pre-determined outcomes are achieved, money will flow to the Heart and Stroke Foundation.
• Private capital provides the up-front capital used is an investment—the private investors funding the Heart and Stroke Foundation expect (if all goes well) to receive their initial investment back plus a return.
• This model changes risk dynamics and allows private investors, non-profits, and governments to work together in a new way—in the U.S., the model involving paying for outcomes, impact investing, and private sector facilitation is called a Pay for Success Deal).
• A strong data foundation is needed for any kind of outcome-based relationships (e.g., for payment, evaluation, etc) which tracks people over time and compares with control groups.
• Work is underway to articulate what outcomes are important to PHAC (e.g., physical activity and how this successfully improvements the health of Canadians), what methods of measurement are needed for better comparative analysis across interventions, and how this changes the way PHAC may choose to fund particular programs or ask programs to report on the type of impact they are having.

Combining Nudges and Carrots to Change an Entire Country
Andreas Souvaliotis
Founder and Chief Executive Officer
Carrot Insights

Key Highlights:
• Carrot is the world’s first app reward program created jointly between Carrot Insights, the government of BC, and PHAC.
• The app serves as a national engagement platform for responsible behaviour and encourages people to live healthier lives.
• By harnessing public appetite for smart phones and loyalty points, the app disrupts the
traditional way health promoters reach Canadians (as the outreach impacts of different kinds of
mass advertising are difficult to assess).
• People are rewarded with their favourite points every time they interact with the app.
• The app generates an incredible wealth of data—with a direct connection to individuals, health
promoters know who they are reaching, can target even more precisely, and can better measure
the success of the program.
• Carrot is available in British Columbia, Newfoundland, and Ontario.

Concurrent Session 2
Innovation in the Health Care System
Innovation in health care ranges from new ways of doing things, including funding models and health
care delivery, to the development and use of new products to enhance health while delivering value-for-
money. Although there are pockets of innovation in Canadian health care, transformative change has not
yet been realized. Identifying what is working and what is not, and finding ways to better scale and
spread, are essential in moving past Canada’s reputation as a “land of pilot projects”.

Moderator:

William Falk
Partner – Health Industries
PwC Management Services LP

William Falk asked the speakers in this panel to share some of the exciting innovations that are
happening in Canada and highlight how we can further build on these successes.

Measuring What Matters: Innovation Adoption and the Shift to Value-Based
Health Care

Neil Fraser
President, Medtronic Canada
Regional Vice-President, Canada Medtronic plc

Key Highlights:

• Canada is moving toward value-based health care—in 5 years, value-based frameworks will likely
account for 50 per cent.
• Value can be defined as outcomes dived by costs, but we are not yet good at measuring either.
• Although value can be defined in many ways, the patient view is the best measure and we
need to ensure we are measuring what matters to patients (e.g., Patient Reported Outcome
Measures (PROMs)).
• Dr. Robert S. Kaplan has developed robust methodologies that can calculate any cost (e.g.,
measuring an episode of care, from surgical consult through to surgical intervention).
• All costs must be measured to understand the full cost of a particular care path (e.g., therapy
optimization, chronic care management, episodic care, and post-surgery infections).
• To improve its health care system, Canada needs to improve its spread and scale measurement
capabilities, use technology to address infections, leverage clinical trials and health care
The Future of Healthcare: Socially Assistive Robots that Can Help Provide Care

**Dr. Goldie Nejat**  
**Associate Professor, Mechanical Engineering**  
**Canada Research Chair, Robots for Society**  
**Director, Institute for Robotics & Mechatronics, University of Toronto**

**Key Highlights:**

- The development of socially assistive robots for elder care (e.g., for adults living with dementia) can provide cognitive and social interventions.
- They can promote independence, aging-in-place, assist with daily living at home (e.g., provide meal assistance), engage users in leisure activities and memory games, and encourage social interactions.
- They can also improve user engagement and compliance, and overall experience by personalizing systems for individuals.
- Important study measures include acceptance, use, and user attitudes towards the robot.
- Studies conducted have shown older adults are interested in using the robots and they find the robots’ behaviours helpful. Trust with such technology can be experienced through multiple interactions.
- Robots can work in private homes, retirement homes, and long-term care facilities to provide one-on-one assistance or assistance to groups of users at the same time.

The Power of Partnerships... Caring for People (and not their disease)

**Patti Cochrane**  
**Senior Vice-President, Clinical Strategy and Chief Innovation Officer**  
**Trillium Health Partners**

**Key Highlights:**

- The way Canada funds health care creates policy barriers and silos, and is based on a provider-centric mentality.
- Through integrated funding models with bundled care, approved agencies and hospitals are creating partnership agreements and new patient experiences.
- The Putting Patients at the Heart (PPATH) program provides pathways for patients from acute care to the home—its patient-centered team approach removes hospital/home siloes, funds both together, and creates care pathways between communities, hospital providers, patients, and families.
- Key principles include identifying what is best for the patients, trust, respect, transparency, accountability, a shared pot, and working collaboratively to be fiscally responsible.
- The programs are low intensity (one nurse visit is needed in the home, a 24 hour helpline is available, and patients receive other virtual, integrated community, and hospital access supports), and the costs associated with direct care, virtual care (e.g., telephone support), and travel are measured through a risk-sharing model that controls costs at the back end.
• Key benchmarks include a reduction in both overall and the length of hospital stays (length of stay savings equate to 8 beds costing $1 million per year) and lower costs associated with keeping patients in the community.

Scaling-Up: Ontario’s Health Innovation Agenda

Melissa Farrell
Assistant Deputy Minister, Health System Quality and Funding Division
Ontario Ministry of Health and Long-Term Care

Key Highlights:

• Ontario’s innovation agenda focuses on putting patients first and scaling up innovative approaches to appropriate, evidence-based care.

• The Ministry of Health and Long-Term Care (ministry) has appointed a Chief Health Innovation Strategist, has accepted all of the recommendations in the Ontario Health Innovation Council’s Catalyst report, and is implementing innovative funding models that will drive improved patient care and improved patient experiences across the province.

• By effectively engaging health system stakeholders, patients, families, and caregivers in health system planning and policy development, through organizations and advisory bodies like the new Minister’s Patient and Family Advisory Council (PFAC), LHIN Patient and Family Advisory Committees, the Ontario Health Technology Advisory Committee (OHTAC), and MaRS Excite, the ministry is doing more to foster ideation and identify innovative approaches to health care delivery.

• The ministry is also developing/updating and implementing new funding models to incentivize change and improved patient care, including Quality Based Procedures (QBPs), Health System Funding Reform (HSFR), Rural Health Hubs, and bundled care (an extension of the QBP pathway).

• In order to facilitate the delivery of appropriate, evidence-based care, the ministry is working with Health Quality Ontario and key health system stakeholders to develop Quality Standards, which will help patients, families, and caregivers know what to ask for in their care; help health care providers know what care they should be offering, based on evidence and expert consensus; and help health care organizations measure, assess, and improve their performance.

• Overall, Ontario is also doing more to identify innovative approaches to patient care, developing new funding models to incentivize and scale up appropriate, evidence-based care, and engaging key health system stakeholders - including patients, families, and caregivers - in health system decision-making.

SOAR Facilitated Session—Strengths, Opportunities, Aspirations, and Results
Meeting delegates participated in a facilitated group discussions that identified current strengths and opportunities in Canada’s health care system, as well as desired aspirations and results.

Strengths:

• **Attitudes and urgency**: Canada has the right values and attitudes towards health care (e.g., surrounding equity and access). Awareness is increasing over the urgency to innovate. Stakeholders have recognized Canada’s health care sustainability challenges and are looking for solutions. They are aware of demographic shifts, increased longevity and life-expectancy, and
community channels. There is a move to engage patients and families as drivers who force change.

- **Innovation & R&D Capacity**: Canada has a great history of innovative diversity, interest in aligning innovation with procurement, and strong basic research/discovery capacity. Its market is small and nimble, and it has a start-up landscape, successful pilots, and lots of key learnings to work with. It has developed pockets of significant investment, evidence, and expertise where it functions as a world thought leader. In these areas, Canada functions as a talent incubator that attracts both domestic and international talent.

- **Collaboration**: Canada has large collaborative capability and a mindset for collaboration. It encourages innovative partnerships between the public and private sector and has early state coordinating mechanisms (e.g., agencies helping to focus). Partnerships allow Canada to break down health care silos.

- **Funding**: key stakeholders recognize the instability of Canada’s current funding models and have demonstrated the will and commitment to change to ones that are more flexible and outcome-based. While a large budget for health care exists, increasing constraints are driving creativity, innovation, and lean principles.

- **Public system**: Canada has a public health care system, which should facilitate setting a common policy agenda (e.g., within provinces) and data sharing across the system. Canada’s system is one of the best for catastrophic illness and it has government support for the development of innovative programs (e.g., bundling, Carrot Rewards, research, and white papers).

- **Technology**: Canada has a high population of online users and has the potential to incorporate, improve, and develop innovative technology.

**Opportunities:**

- **Priorities**: Canada is increasingly taking a targeted, preventative approach to health care. Other priority areas include social determinants and culture changes (e.g., in workplaces).

- **Engaged populace**: Canada’s populace is increasingly engaged and consumers/patients are becoming more empowered. Opportunities exist to engage more with less inclined, “hard to reach” groups. Opportunities to increase user awareness surrounding striving for better health, preserving resources, fostering user change, and nudging health policy also exist.

- **Technology**: the technology is available to make connected health a reality in Canada. Leveraging big data, data capture, access, and the full integration of health data will provide opportunities to optimize outcomes and draw actionable insights.

- **Funding**: a more holistic view of patient care, budgeting, and financing provides the opportunity to implement incentives and disincentives to improve both funding models and the standard of care (where best practices become the de facto standard of care, such as the uptake of bundled care for cardiovascular disease). Moving some money from acute care to prevention can help fuel new areas of commercialization and economic growth. Many mechanisms are already in place to share, scale, and commercialize successful initiatives.

- **Partnerships**: increased collaboration of all stakeholders will help Canada overcome its silo challenges. Incentives to create and share can fuel cross-industry partnership (e.g., with banks and financial literacy experts) and collaboration on a global scale. Opportunities exist to spread and scale the growing bodies of evidence, share innovation pocket successes, and lower the duplication of services and research.

- **Education and awareness**: increased education and awareness for both consumers (e.g., on the need to preserve resources and strive for better health) and health care providers (e.g., regarding innovation opportunities and improving education and awareness of their patients) will help make Canada’s health care system more sustainable.
Aspirations:

- **Vision:** Canada will continue to deliver on its health promise. It will provide better quality, value of care, and better service. The next generation will live longer than the one before and have a high quality of life right until the end. Canada will also have the world’s lowest child obesity rate.

- **Breaking down silos:** Canada will break down silos and develop holistic health model where stakeholders across jurisdictions and organizations work together to deliver the highest quality of care. Physical and mental health will be fully integrated and cross-sector collaboration will drive positive change (e.g., urban planning will encourage active transportation to help meet health goals).

- **Economic engine:** Canada will achieve the best outcomes at lowest cost in the OECD. It will have a thriving and sustainable system of publicly-funded health care that acts as a leading economic engine (rather than as a liability or expenditure). This health system will be able to accommodate a reduction in resources (e.g., when the number of nurses and MDs retiring is larger than the new work force).

- **Technology:** Canada will achieve full integration of health data (connecting, harmonizing, and merging e-health technologies) to optimize outcomes. Public-private partnerships will help it develop emerging health care technology and patients will be able to easily access their own health data.

- **Implementation:** Canada will show its commitment to health innovation by adopting research recommendation. Its implementation rate will match its rate of innovation, and implementation will be supported by agility in regulation and funding.

- **Personal responsibility:** Canada’s population will take personal responsibility for better health outcomes and supports will be in place to support it in doing so. Patients and families will be engaged to drive better care.

Results:

- **Patients first:** Under responsive, patient-centered systems, Canada will achieve better patient outcomes. It will ensure patient safety, deliver the right level of care, and provide individualized health plans. With 50 per cent of Canadians meeting Canada’s recommended physical activity guidelines, Canada will lower its child obesity and adult chronic disease rates. Patients will experience increased happiness and personal satisfaction, and health system consumers will be encouraged and empowered to give feedback.

- **Prevention:** Canada’s health care system will focus on prevention, rather than sickness.

- **Measurement:** all health outcomes will be improved, especially health and cost outcomes and patient experience. Canada will improve its health care quality and outcome indicators (e.g., as measured by the OCED’s commonwealth fund).

- **Ingenuity:** Canada will employ three key levers to overcome its ingenuity gap: a liberal democracy, market forces, and science knowledge discourse.

- **Cost curve:** Canada will succeed in bending the cost curve. Through a better allocation and use of finite resources, it will succeed in providing enough funding to cover the needs of its aging population while increasing investments in innovation. Its health care rate of inflation will match its overall inflation rate, which will reduce the strain on its health care system.

- **Workforce:** by adjusting the number, rate, and scope of its health care providers (e.g., nurses, personal care workers, general practitioners, specialists, etc), Canada’s health care workforce will successfully meet patient demands.
Conclusion
Canada has a great deal of innovative capacity and can position itself as a health system innovation leader. As the ideas, programs, and discussions explored at this collaborative meeting show, a precision health approach to interventions across key health pillars, such as public health and health promotion, health care system design and intervention, and workplace health and wellness, present unique opportunities to enhance health and well-being for all Canadians while delivering value-for-money. By working together, stakeholders across sectors can help Canada achieve its innovation and health system goals.

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