

TECHNOLOGY-ENABLED HOME CARE

Ensuring the dignity, independence, and quality of life for all Canadians

Submission to the Advisory Panel on
Healthcare Innovation

November 2014



Innovation is essential to a high-performing economy, a sustainable health care system, and ensuring Canadians have access to high quality health and social care. Without investments in innovation, our health care system will continue to be ranked in a lower percentile in areas such as timeliness of care, efficient care and safe care relative to that of its peer countries (The Commonwealth Fund, 2014). Innovative solutions are needed now more than ever to address our current ‘epidemiological transition’ (Mattke et al., 2010). That is, an aging population which is living longer with increasing chronic (long-term) care needs (Mattke et al., 2010). Exacerbating the challenge of our epidemiological shift is a shortage of health human resources and barriers to providing health services to vulnerable populations in rural and remote regions of Canada. Technology-enabled community-based care solutions can be the breakthrough our system urgently needs to reduce the growth rate of health care costs, while raising productivity and improving health outcomes.

“Expanded technology-enabled home care offers a promising pathway to bend the cost curve for ever-growing health care expenditures. Independent of the economic benefit, the moral value of enabling older members of society to live in grace and dignity in their own homes, with a ripple effect on their caregivers, is arguably the most important – if unquantifiable – benefit of home care.” (Kayyali et al, 2011).

Meeting the Needs of our Aging Population

Seniors, those aged 65 and older, account for a growing proportion of the Canadian population. Between 2011 and 2031, all members of the baby boomer generation – Canada’s largest birth cohort, born between 1946 and 1965, will turn 65 (CIHI, 2011). Today, 15% of the Canadian population is age 65 and older (Statistics Canada, 2013). By 2036, this number will increase to almost 25%, or 10 million people (Statistics Canada, 2013). As Canadians are living longer, the rates of chronic diseases, for example diabetes, congestive heart failure, high blood pressure, chronic obstructive pulmonary disease and dementia, will increase (CIHI, 2011-b). Seniors are four times more likely to report having at least one chronic condition than adults age 18 to 24 (CIHI, 2011-b). Currently, nearly one quarter (24%) of all Canadian seniors report being diagnosed with three or more chronic conditions (multi-morbidity), and 50% of seniors reported having either 1 or 2 chronic conditions (CIHI, 2011-b). Chronic diseases can lead to premature death, decrease the quality of life of those who have them, and have a negative economic impact on families and on society as a whole (CIHI, 2011-b). The cost of illness, disability, and death due to chronic diseases exceeds \$80 billion annually (CADTH, 2008). Evidence has shown that the amount of health care services Canadians will use is largely driven by the number of chronic conditions they have, not their age (CIHI, 2011-b). Chronic conditions are often impacted by lifestyle choices and should be effectively managed in the home and community. Preventing, delaying and reducing the severity of chronic conditions will enhance the quality of life of individuals as they age, and reduce the demand on limited health care resources.

Why Technology-Enabled Home Care?

There is increasing research evidence that shows the potential of technological innovation in accelerating the quality and efficiency of care. According to the World Health Organization (2011), the use of technologies to support the achievement of health objectives has the potential to transform health service delivery across the globe. As technology has become an integral part of our lives, so to can it have significant impact on our health and social care systems. The following facts demonstrate this:

- Global internet users in 2000: 360 million; in 2013: 2.8 billion
- Network speeds have increased an estimated 18 million times in the last 15 years
- Fixed broadband prices dropped by 82% between 2008 and 2012
- Wi-Fi and mobile-connected devices will generate 68% of Internet traffic by 2017
- The global “app economy”, in existence for less than a decade, is projected to be worth US\$151 billion by 2017

(KPMG & Mowat Centre, 2014)

Technological advancements have created new options for care delivery. Today’s innovations enable the integration of monitoring and therapeutic systems, provide educational opportunities for providers, care recipients and their families, and facilitate effective and timely communication and data flow between members of the health care team. These mobile, user-friendly solutions can fundamentally change our approach to health care, supporting a more efficient and person-centred approach regardless of the care setting.

With the emergence of new technologies there are seemingly endless possibilities to support people in their homes. A variety of new technologies such as telemonitoring applications, mobile phone devices, personal digital assistants (PDAs), web-based platforms and smart homes are enabling the shift of care away from institutional and professional settings into individuals’ homes.

We have an opportunity to enable a transformative shift toward a health system that is fully immersed in a range of technologies that improve the quality of care, facilitate greater access to care, reduce inappropriate hospitalizations and emergency room use, reduce medical errors, and enable the right care at the right place by the right person.

Home care is important to Canadians. In July 2014, Ipsos, on behalf of the College of Family Physicians of Canada (CFPC), interviewed 2,000 Canadians for their impression of home care. Four in five said that providing quality home care is an expression of Canadian health care values. But more than three-quarters of those polled said that the Federal Government is not doing enough with respect to home care (CFPC, 2014). Strategic investments in technological innovations will enable individuals to be more independent in their homes, remain in their homes longer, and be more engaged in the self-management of chronic conditions. Technology innovations also empower action and support the vital role of family caregivers in providing support and care for individuals in their homes.

It is evident that the factors driving change are mounting and can positively impact the health and well-being of Canadians. The Federal Government can play a significant role through support and investment in technology-enabled home care that will not only support independence but also ensure resources are used appropriately to create a high performing health care system. Thereby, achieving the best value for our health care system.

Investments in a Range of Innovative Technology-Enabled Home Care Solutions

Through strategic investments, the Federal Government can facilitate the implementation and uptake of a variety of innovative community-based care solutions including:

1. Telehomecare and Mobile Health

Enhancing patient access to, and allowing for more options in the delivery of health services in the community.

This innovative patient management approach uses technologies to monitor patients at a distance and is particularly beneficial for patients who are unable to travel, or those living in rural or underserved urban areas. New technologies that support ‘telemonitoring’ include mobile smart phones and personal digital assistants (PDAs) that enable the accurate transmission of a diverse array of data (e.g., physiological, biological and behavioral data and images) from individuals (patients and clients) to health care professionals so that their conditions can be monitored and evaluated in a timely manner, and sometimes in real time. Mobile technologies such as cell phones hold considerable appeal because of their portability, their high computational power, the relative low cost when compared to dedicated remote monitoring hardware. The fact that they enable patients and clients to be monitored anywhere that there is cellular reception, which is almost everywhere these days, is also appealing (Seto et al, 2010). Mobile technologies engage patients in the management of their health and promote self-care among through education and training tools, as well as self-monitoring system.

Successful pilot projects using this technology have been implemented in various regions across Canada, resulting in an estimated annual system cost avoidance of \$55 million and personal travel cost savings of \$70 million (Gartner Inc. & Praxia Information Intelligence, 2011). In 2010, there were about 94,000 Telehealth consults in rural and remote areas of Canada (Gartner Inc. & Praxia Information Intelligence, 2011). Videoconferencing that eliminates the need for travel has been shown to reduce wait times for specialist consultations anywhere from 20–90% (Gartner Inc. & Praxia Information Intelligence, 2011).

Our challenge is supporting the implementation across the country; in order to realize the benefits of this innovation, a coordinated national approach must be leveraged in which the Federal Government plays a key enabling role.

2. Telemedicine

Supporting and ensuring a safe home care environment for seniors with complex medical conditions through reminders and prompts.

Incorrect medication adherence is one of the major causes of illness and of treatment failure (Hayes et al., 2009). Innovations such as electronic medication prompt reminder systems have shown significant improvement in medication adherence. The medication prompt reminder uses user friendly technology (i.e. watch, a phone, TV) that is customized to the individual patient and their family caregivers.

Included as a key component of New Brunswick's Home First Strategy to support seniors to live independently in their homes, is technology that allows for real time monitoring and communication between seniors and their family. The application of innovations such as this requires the direct involvement of the Federal Government to support the migration of pilot projects and enable jurisdictions to accelerate adoption through targeted investment.

3. Sensor Technologies

Enabling independence and self-management for seniors with cognitive and physical challenges.

A networked system of sensors can range from wearable devices to the use of motion sensors in one's home, or even extend throughout his or her property. Sensor technologies can measure any number of characteristics and detect heart attacks, seizures, and falls and send alarm signals to caregivers or medical response teams.

Wearable sensors, such as pendant or bracelet-type, have for some time provided peace of mind for seniors and caregivers who fear a fall injury or medical emergency. GPS devices in ID bracelets or watches, even in shoes, now help to keep track of the whereabouts of people with dementia. Alberta Health Services is currently evaluating the use of GPS technology to support dementia clients and their caregivers. From preliminary results, this is an effective approach to a growing challenge of meeting the need of seniors with dementia, given that 63% of community-dwelling seniors with dementia experience wandering. A national targeted approach to using this application in home and community care programs across the country requires the leadership and involvement of the Federal Government.

4. Social Networking and Communication Technologies

Keeping seniors healthy through social connections.

Communication technologies such as senior-friendly smartphones, computers with accessibility features such as Skype, social networking sites have helped seniors to keep in touch with family, friends, and the world. Motivation for health behavior-change can be increased through access to the success stories found in an individual's social network (Stewart, 2009; Frost, 2008). Effective applications of this type of innovation are occurring in isolated areas across the country. According to a recent study, investment in technologies that can help older people live independently is one of the top three changes which are needed to combat age discrimination (Revera and the International Federation on Ageing, 2012). 76 % of seniors reported they use social networking sites to keep in touch with family and friends (Revera, 2012). Supporting innovations to connect seniors with caregivers, family, friends and their health care team requires a multi-faceted approach that needs to be led by the Federal Government.

What are the Benefits?

Technology-enabled home care emphasizes prevention, independence and quality of life. For frail seniors with complex care needs, this innovative approach can mean the difference between being an active participant in their community or living their remaining years isolated or in institutional care. There are numerous studies that demonstrate care and cost effectiveness with a range of technological innovations in a variety of different contexts. Overall, well-known benefits of technologies include:

- Proactive care management through ongoing, automated monitoring of health conditions
- Effective care responses based on the generation of alerts for the individual and health professionals
- Increased care efficiency by reducing data entry errors, duplication and travel costs
- Enhanced self-care and supports person-centred care through provision of education functions and active patient engagement
- Improved safety and medication management for people in their homes
- Increased patient safety, satisfaction, and outcomes
- Increased access to appropriate care in rural, remote and hard to service areas
- Increased health care efficiencies by reducing inappropriate hospital visits, facilitating early hospital discharge, and delays need for long-term institutional care
- Supporting the vital role of family caregivers who provide \$25 billion of unpaid care to the health care system (Hollander, 2009)

Clarke et al (2011), Dang et al (2009), Maric et al (2009), Polinesa et al (2009)

Federal Leadership and Investment is Required to Realize these Benefits

Innovation in the home and community care sector is not a single event or activity, it is a process. It requires a strategic approach that includes incremental goals, long-term investment, policy changes and change management approaches. It must involve dedicated efforts from many stakeholders including both the public and private sectors. These efforts need to be guided by the leadership of the Federal Government in partnership with a national home care association. There are no quick fixes, but strong and capable leadership and champions are required to drive the shift to a more virtualized health care system that enables Canadians to receive effective care in their homes. The Canadian Home Care Association is committed to supporting this agenda and working with the Federal Government to promote and support technology innovation in the home care sector.

The Canadian Home Care Association recommends that the Federal Government:

1. Engage stakeholders to build a vision and road map for paradigmatic technology-based transformational change in the home care sector
 - a. Create an innovation fund specifically targeted to technology-enabled home care that supports public and private partnerships and scalable technology applications that are proven to be beneficial from cost and outcomes perspective

2. Provide financial incentives for seniors and their family caregivers to support the use and application of in-home monitoring and telecommunications technology (potential tax credits, rebates)
3. Support the awareness and sharing of technology-enabled home care best practices through targeted investment in the Canadian Home Care Association Knowledge Network, a pan-Canadian initiative that is systematically identifying, capturing, interpreting, sharing and re-framing knowledge (based on research and experience).

Given Canada's large geography, an aging population and shortage of health human resources, it is in our best interests to optimize technology in home care. Technological advancements have created new options for care delivery; it can improve people's health and at the same time improve efficiencies and reduce the cost of care. The Canadian Home Care Association looks forward to working with the Federal Government to accelerate innovation in the home and community care sector.

About the Canadian Home Care Association

The Canadian Home Care Association is a national not-for-profit membership association dedicated to ensuring the availability of accessible, responsive home care and community supports to enable people to safely stay in their homes with dignity, independence, and quality of life. Members include governments, administration organizations, service providers, researchers, educators and others with an interest in home care.

The Canadian Home Care Association advances excellence in home care and continuing care through leadership, awareness, advocacy and knowledge.

The CHCA brings value to the home care sector and our members by:

- Increasing the understanding of the role and value of home care.
- Informing and influencing policy and practice.
- Initiating conversations that catalyze change.
- Facilitating continuous learning through partnerships and networks.

For more information, please contact:

Nadine Henningsen

Executive Director, Canadian Home Care Association

T: 289-290-4376 | E: nhenningsen@cdnhomecare.ca

www.cdnhomecare.ca

References:

Canadian Agency for Drugs and Technologies in Health (CADTH). (2008). Technology Report: Home Telehealth for Chronic Disease Management. [Technology report number 113]. Ottawa: Canadian Agency for Drugs and Technologies in Health.

CIHI. (2011). Health Care in Canada, 2011: A Focus on Seniors and Aging. Retrieved from: https://secure.cihi.ca/free_products/HCIC_2011_seniors_report_en.pdf

CIHI. (2011-b). Seniors and the Health Care System: What Is the Impact of Multiple Chronic Conditions? Retrieved from: https://secure.cihi.ca/free_products/air-chronic_disease_aib_en.pdf

Clarke, M., Shah, A. and U. Sharma (2011). Systematic review of studies on telemonitoring of patients with congestive heart failure: a meta-analysis. *Journal of Telemedicine and Telecare*, 17, 7-14.

Dang, S., Dimmick, S. and G. Kelkar (2009). Evaluating the evidence base for the use of home telehealth remote monitoring in elderly with heart failure. *Telemedicine and e-Health*, 15, 8, 783-796.

Davis, K., Schoen, C., Stremikis, K., & Squires, D. (2014). *Mirror, Mirror on the Wall: How the Performance of the U.S. Health Care Systems Compares Internationally*, 2014 update. New York: The Commonwealth Fund.

Frost, J.H., Massagli, M.P. (2008). Social Uses of Personal Health Information Within Patients Like Me, an Online Patient Community: What Can Happen When Patients Have Access to One Another's Data. *Journal of Medical Internet Research*, 10:e15.

Gartner Inc. & Praxia Information Intelligence. (2011). *Telehealth Benefits and Adoption: Connecting People and Providers Across Canada*. Commissioned by Canada Health Infoway. Retrieved from https://www2.infoway-inforoute.ca/Documents/telehealth_report_summary_2010_en.pdf

Hayes, T., Cobbinah, K., Dishongh, T., Kaye, J., Kimel, J., Labhard, M., Leen, T., Lundell, J., Ozertem, U., Pavel, M., Philipose, M., Rhodes, K., and S. Vurgun (2009). A study of medication-taking and unobtrusive, intelligent reminding. *Telemedicine Journal and E-Health*. 15, 8, 770-6.

Hollander, J. M., Liu, G., & Chappell, N. (2009). Who cares and how much. *Healthcare Quarterly*, 12(2), 42-49

Kayyali, B., Kimmel, Z., and S.van Kuiken (2011). Spurring the Market for High-tech Home Health Care; *McKinsey Quarterly*.

KPMG & Mowat Centre. (2014). *Reprogramming Government for the Digital Era*. Retrieved from: http://mowatcentre.ca/wp-content/uploads/publications/100_reprogramming_government_for_the_digital_era.pdf

Maric, B., Kaan, A., Ignaszewski, A. and S. Lear (2009). A systematic review of telemonitoring technologies in heart failure. *European Journal of Heart Failure*, 11, 506-517.

Mattke, S., Klautzer, L., Mengistu, T., Garnett, J., Hu, J., and H. Wu (2010). Health and Well-Being in the Home A Global Analysis of Needs, Expectations, and Priorities for Home Health Care Technology. RAND HEALTH. Occasional Paper.

Polinesa, J., Coyle, D., Coyle, K. and S. McGill (2009). Home telehealth for chronic disease management: a systematic review and an analysis of economic evaluations. *International Journal of Technology Assessment in Health Care*, 25, 3, 339-349.

Revera & the International Federation on Ageing (IFA). (2012). *Revera Report on Ageism*. Retrieved from: http://www.reveraliving.com/About-Us/Media-Centre/Revera-Report-on-Ageism/docs/Report_Ageism.aspx

Revera. (2012). *Revera Report on Tech-Savvy Seniors*. Retrieved from: <http://www.reveraliving.com/About-Us/Media-Centre/Revera-Report-on-Tech-Savvy-Seniors.aspx>

Seto, E., Leonard, K., Cafazzo, J., Barnsley, J., Masino, C., and H. Ross (2012). Mobile Phone-Based Telemonitoring for Heart Failure Management: A Randomized Controlled Trial, *J Med Internet Res* 14, 1, e31

Statistics Canada. (2013). *Annual Demographic Estimates: Canada, Provinces, and Territories*. Ottawa: Minister of Industry.

Stewart, D. (2009). Socialized Medicine: How Personal Health Records and Social Networks are Changing Health Care. *EContent*, 32:30-34

The College of Family Physicians of Canada (CFPC). (2014). *From Red to Green. From Stop to Go*. Retrieved from: http://www.cfpc.ca/uploadedFiles/Health_Policy/PDFs/CFPC_Red_to_Green_2014_EN.pdf

World Health Organization. (2011). *New Horizons for Health Through Mobile Technologies*. Switzerland: WHO.