Population health management A Canadian Perspective on the Future of Health Systems

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ABSTRACT: Internationally, two trends in healthcare are becoming increasingly well established. One is the growing recognition that healthcare is just one determinant of health status. Prevention and health promotion have a large role to play by affecting the social determinants of health and the sectors that represent them. The second trend is experimentation with approaches to systems funding that increasingly aim to share risk and benefits between funders and providers. Together, these trends form the impetus for what is becoming known as population health management (PHM). Canada has been a pioneer in developing the concepts, but international experience suggests that it has been a laggard in their implementation. In moving forward, critical success factors for Canada include health information management, multisectoral collaboration, and clinical leadership.

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A Canadian perspective

A large majority of Canadians continue to see healthcare improvement as a primary concern for government. Escalating costs, at least partly attributable to an aging population and a greater burden of chronic disease, demonstrate the need for change, but policymakers struggle to introduce effective innovation. Where should we turn to for inspiration? The healthcare system is obviously an important input with regard to individual health, but the 2009 Canadian Senate Subcommittee on Population Health Final Report highlights that 75% of health is attributable to other determinants. Long before this report, Canadians were playing a large role in the development of this line of social inquiry, yet the implementation of public health measures and the integration of these concepts into healthcare has been limited.

Understanding and accepting the social determinants of health in a society is an area in which Canadians have had an important impact, in terms of the development of population health models. Key to this work is acceptance of the 1946 World Health Organization constitutional statement that "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."

The record of the Canadian perspective and input begins with the Lalonde Report of 1974 entitled "A new perspective on the health of Canadians," which described the factors of health as human biology, lifestyle, the organization of healthcare, and the social and physical environments in which people live. The upstream determinants of health and health promotion impacting tools for these determinants, were central themes.

The Epp Report of 1986, entitled "Achieving health for all," continued in this vein by highlighting preventable disease, stress and chronic conditions as major challenges to health. This report also emphasized the importance of social support from both government and community, as well as coordinated healthy public policy.

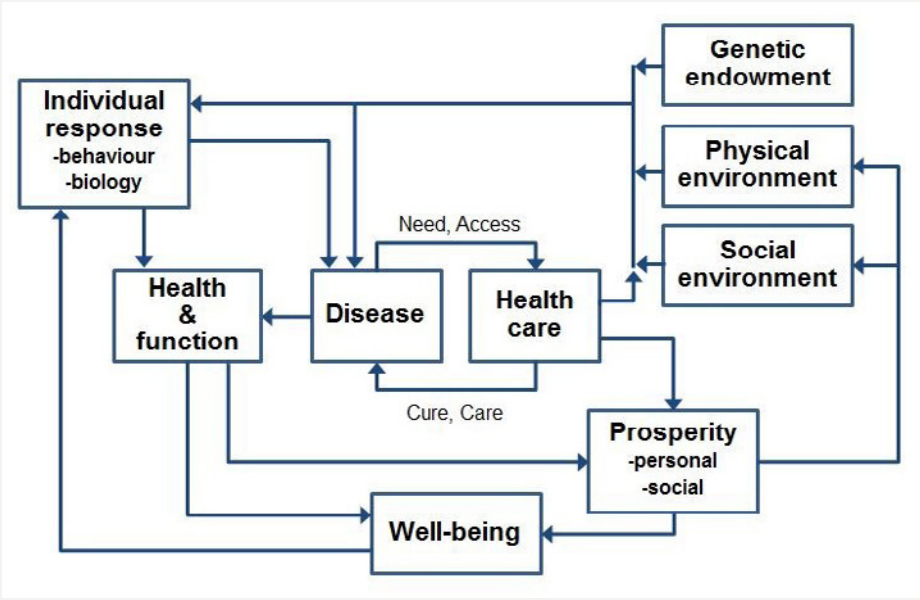
The influence of the Lalonde and Epp reports is palpable in World Organisation documents, including the 1986 Ottawa Charter for Health Promotion and the 2010 Adelaide Statement on Health in all Policies.

Further elaboration on the Lalonde framework was provided in 1990. In "Producing health, consuming healthcare," Evans and Stoddart advanced the Lalonde model to describe the interaction between social, environmental, and biological elements of health, their relation to general health and ultimately, the overall well-being of an individual. The authors effectively positioned healthcare alongside associated costs, within the

social feedback cycles that describe our society.

If Canadians were at the forefront in building these foundational ideas, why haven't they been implemented more effectively in the decades since? Although the Public Health Agency of Canada currently provides a framework for a population health management (PHM)-style approach, there is little evidence of an implementation strategy. Increased provincial reliance on regional health authorities is an example of the shift towards the management of geographically defined populations, a stance that reflects a core consideration of PHM approaches. However, there seems to be little acknowledgement of PHM as an option in Canadian health systems. A universal access-based system should surely favour the adoption of methods to impact health social determinants, so why is PHM currently a foreign concept, best exemplified south of the border?

Figure 1. The Evans-Stoddart population health framework.



Source: Adapted from Evans and Stoddart (Figures 1 and 5).

Defining population health management

PHM can be narrowly interpreted as the use of patient-level socioeconomic and geographic data to direct health resources and assess key population-level outcome indicators, such as life expectancy. Ideally, PHM is a strategy whereby population health status is improved by accounting for multiple determinants. Again, the current healthcare system is an important but relatively small contributor to life-long health.

As an approach to health system integration and improvement, PHM is arguably the contemporary extension of population health concepts that were shaped in Canada, but are rapidly being adopted elsewhere, especially in the United States

Risk sharing

There are two dimensions to provider risk sharing. The first is managing risk by contracting, to provide all necessary care for an individual, at a fixed rate of payment for a specified time. The second is sharing risk between the funder and provider by agreeing to share savings or losses, depending on whether care is provided at a return or loss, with regard to some predetermined benchmark (e.g., growth rate in the previous year's costs).

Integrated delivery systems

Integrated delivery systems typify risk-sharing behaviour and have evolved over the last few decades. A number of US healthcare providers neatly illustrate this model; perhaps the best example is Kaiser Permanente, which boasts operating revenues and a served population not dissimilar to those of the Ontario Ministry of Health and Long-Term Care. This healthcare provider was founded on the experience that charging individuals a flat yearly rate for healthcare services reduces financial barriers to care and leads to increased use of health interventions, limiting the scope and cost of long-term morbidities. Population health information thus became a great commodity in a competitive market, as resource development could be directed toward limiting upstream negative determinants.

Associated providers, generally led by physicians, are incentivized by capitated budgets and shared savings arrangements, to create efficiency and reinforce population well-being. In turn, this encourages continued service use as a result of greater user satisfaction. This model also encourages the rapid integration of new technologies and concepts to improve efficiency and user experience. Today, the assorted entities that make up the Kaiser Permanente (working cooperatively) have created a single integrated electronic record system, with online access for users. As such, population health data are readily available to inform best practices, identify problems, and shape tailored solutions.

Glossary

Public health – "Public health is the science and art of preventing disease, prolonging life and promoting health through the organized efforts of society."(Acheson, 1988)

Population health – "The health outcomes of a group of individuals, including the distribution of such outcomes within the group." (Kindig and Stoddart, 2003) (Generally taken to refer to a geographic population.)

Population health management – The application of population health concepts and measurements in reference to specific patient populations.(Kindig, 2015)

Population health approach – An approach "that aims to improve the health of the entire population and to reduce health inequities among population groups."(Public Health Agency of Canada, 2012)
Social determinants of health – The conditions in which people are born, grow up, live, work, and age, and the systems put in place to deal with illness.(Commission on the Social Determinants of Health, 2008)

Emergence of accountable care organizations

The Triple Aim framework, developed by Berwick, Nolan, and Whittington with the Institute for Healthcare Improvement (IHI) in 2008, succinctly describes the core concepts of PHM as they relate to service providers: improving the experience and quality of care, improving the health of populations, and reducing the per capita cost of healthcare. The proliferation of accountable care organizations (ACOs) in the US also falls into this time frame, following the *Patient Protection and Affordable Care Act* of 2010, which proved to be a major driver for PHM implementation. This legislation established a shared savings plan for the Medicare program, rewarding ACOs that are able to lower their growth in healthcare costs while meeting specified quality standards. ACOs can accept either one-sided (shared savings) or two-sided (shared savings or losses) risk-sharing models.

Overall, ACOs have experienced early success in improving quality of care and most of the original participant organizations have opted to continue under ACO frameworks. It should also be noted that the track record for cost savings is much less conclusive. Several of the obvious issues may not apply to the Canadian context, but it is becoming clear that appropriate incentivization for various aspects of healthcare provision are necessary to engender success. There is growing international interest in ACOs. For example, the English National Health Service has put forward an incentive framework for ACOs in new care models.

It is also becoming apparent that physician and clinical leadership have a very large role to play in the success of PHM approaches to healthcare. Physician involvement in redesigning health systems and overcoming resistance to change, both financial and procedural, is undoubtedly an important facet of the successful transition to a new paradigm. As evidenced by ACOs, the growing trend of risk sharing between funders and care providers is likely key to creating momentum towards the goal of healthcare improvement.

Limited Canadian exploration

Of relevance to this discussion are the projects supported by the Canadian Foundation for Healthcare Improvement indicating, in a similar fashion to the comparable examples south of the border, that switching to PHM is a complex realignment that requires concerted and sustained efforts along multiple social trajectories. Various other Canadian ventures into PHM approaches to solving various societal health concerns are detailed in a 2014 report from the Canadian Institute for Health Information. However, there is currently no large-scale (provincial) example of a fully integrated PHM-oriented healthcare network in Canada.

Critical factors for implementation

Instead of the generally accepted view that the healthcare system is the main mode of disease and illness treatment, the PHM paradigm integrates healthcare as one (albeit a pivotal) of several determinants of individual well-being and population health outcomes. As such, PHM frameworks require healthcare systems to engage with individuals and their communities, work with governments and population health agencies to intersect emerging issues, and develop multidisciplinary and inter-sectoral collaborations to provide higher care standards. The PHM approach acknowledges that relevant and timely information is critical to decision-making and therefore requires the measurement of outcomes at the population level, irrespective of population size.

Interest in PHM continues to develop, as evidenced by a broadening body of Canadian academic literature revolving around the social determinants of health and aimed at policymakers. The chaotic state of the diverse terminology and confusion regarding roles and responsibilities requires delineation of what is likely necessary to achieve successful implementation in a large-scale context, such as within an entire provincial healthcare system. Therefore the three following concepts are critical in determining the successful establishment of PHM in Canada. Similar to the IHI's Triple Aim, all three facets are contingent on one another, helping to explain why progress in this area has been slow, devoid of a concerted effortby policymakers, population health agencies, and the medical community.

Information management

Health data is integral to care delivery, research, and policymaking. Electronic health records are currently in varying states of implementation across Canada and despite steady progress in adoption, there is limited records integration across healthcare environments.

A single, compulsory set of standards for all health-related services allows any provider to quickly understand patients' history and needs and communicate treatment options and other lifestyle recommendations more effectively. With regard to population health, an integrated health records system allows for the necessary research to assess population outcomes, appropriately uses of limited resources, and stakeholder mobilisation.

Patient engagement is also served by the accessibility of a system-wide electronic platform. Not only can this platform serve as an educational repository and a source of public health information, but it can also enable the online provision of services, especially where access to appropriate expertise is an issue. Citizen engagement in the healthcare system should not be underestimated, as it has the potential to affect change in a broader, societal sense. Information management is a key factor in this endeavour, empowering patients by enabling greater access to necessary tools and understanding for them to have an impact on health.

Multisectoral collaboration

In a broader, societal sense, cooperation between governments, public health agencies, the health system, and many other stakeholders is necessary to facilitate any PHM-style approach. Collaboration with social services and education sectors are evident connections, but other sectors that could

affect long-term health trends include agriculture, transportation, and land use, to name but a few. Governments should aim to facilitate knowledge-sharing between all levels and districts, especially between public health and health sectors.

The 2009 final report of the Senate Subcommittee on Population Health positions the necessary outlook as a "whole-of-government" approach, with direct involvement of the Prime Minister in a Cabinet committee overseeing participation of various departments and agencies encompassing education, finance, employment, health, and the environment. The framework for incentivization of PHM approaches will also be an evolving issue to be negotiated among healthcare professionals, stakeholders, and policymakers. Medical leadership will be vital to this process, as the funding formulas for various services and regions will require different solutions that speak to both the professional performance of healthcare providers and the implementation of public-health-derived measures of success.

From the standpoint of cooperation within and between health sectors, PHM methodology requires an individualized, patient-focused standard that aims to address health concerns through integrative needs assessment and delivery. As such, the onus is on primary care to ensure that individuals receive support, resources and referrals to a broader range of services than is traditionally available.

This, in turn, relies on cooperation outside the primary care setting to ensure integrated delivery. Outreach and collaboration require local relationship building to successfully affect upstream determinants of health, thereby reducing costs related to chronic and complex diseases.

Examples of this kind of outreach are becoming more common, with work by Minnesota-based HealthPartners standing out as an early effort to create sustained partnerships between healthcare, education, non-profits, and government, by adopting a community business model.

Clinical leadership

A critical point in the development of PHM is that medical practitioners need a greater voice in their areas of expertise and that those areas represent a dynamic, shifting landscape of problems, needs and solutions. "Chief population health officer" is an emerging position in the US, in response to the proficiency essential for designing and implementing population health strategies. This position is often integrated into clinical executive bodies and is likely vital to creating an environment that facilitates sustained progress.

From a ground-level standpoint however, clinicians are ultimately in the best position to make changes reflecting both increased quality of patient care and efficiency within their practices. The current CanMEDS competency framework from the Royal College of Physicians and Surgeons of Canada addresses many concepts required for undertaking this endeavour. Within the Leader role, the stewardship of healthcare resources is a key competency engagement. Within the Health Advocate role, an enabling competency indicates that physicians should improve clinical practice by applying a process of continuous quality improvement to disease prevention, health promotion, and health surveillance activities.

The need for clinical leadership also extends beyond particular areas of expertise and into the broader policymaking environment. There is no doubt that the experience and drive exists for this venture in the Canadian context. Enabling leadership on both provincial and national stages is primarily an issue of building appropriate venues and opportunities to allow the medical community to truly take part in the restructuring of healthcare systems. Unifying the profession behind shared values of conduct as well as a modern ethical framework is a first step towards providing the landscape for clinical leadership. As new and old medical associations take on greater roles in health advocacy, members will need to be more willing to participate in forums establishing direction and policy positions.

Implications for physicians

Without the ability to prioritize patient health and population health concurrently, real positive progress within the Canadian health system will continue to be elusive. Dynamic situations, such as the modern health system, require communication, a willingness to implement new ideas, disruptive innovation, and the perspective that no one framework is infinitely applicable. Consensus and commitment to a strategic direction will ultimately shape the effectuality of implementation.

The foregoing suggests three key implications for physicians and medical organizations in engaging in PHM approaches. First, physicians can get involved in reform and transformation initiatives. Second, physicians can play a key role in establishing intersectoral collaboration and partnerships, both through their workplaces and through the medical associations to which they belong. Finally, physicians need to facilitate the development of timely, population-based data systems integrating individual clinical records, indicators of the social determinants of health, and information from other parts of the health and social services delivery system.

Conclusion

Canada has been a leader in the development of the population health perspective, raising awareness on the impact of lifestyle on well-being as well as the multiple determinants of health. There is a growing interest in PHM for all of the previously described reasons. Examples and comparisons required to conceptualize an approach of this style in the Canadian context have been detailed, and the framework for application within the Canadian health system continues to develop. It is also noteworthy that Accreditation Canada has introduced standards for population health and wellness.

In realigning the delivery of healthcare, emphasis on improvement in health outcomes may be what is needed in Canada, as both the driving impetus for change and the evaluation tool to make change possible. However incentivization is conceived, the US experience would suggest that a focus on outcomes, with risk–benefit sharing of costs, will be necessary to decrease the rates of preventable disease and health system use, ultimately reducing costs and increasing prosperity. Health really does matter for the well-being of society and the economic outlook of the future, however, to improve the health of Canadians beyond what has been achieved to date, there is a need to look past today's work in managing costs, with a shift towards the long-term benefits of understanding true population health status outcomes.

Biographies

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References

Acheson D. 1988. *Public health in England: the Report of the Committee of Inquiry into the Future Development of the Public Health Function*. London: Her Majesty's Stationery Office.

Accreditation Canada. 2017. *Population health and wellness*. Ottawa.

Berwick D, T Nolan and J Whittington. "The Triple Aim: Care, Health, and Cost." *Health Affairs (Millwood)* 27 (3): 759-69.

Blackstone E. and J. Fuhr Jr. 2016. "The Economics of Medicare Accountable Care Organizations." *American Health and Drug Benefits* 9 (1): 11-9.

Buckley J., A. Bernard, E. Gruenwoldt, C. Bensimon C and J. Blackmer. 2017. "Medical Professionalism and Physician Leadership: the Time for Action is Now." *Canadian Journal of Physician Leadership* 3 (5): 85-90. https://tinyurl.com/mp3pdl2.

Canada, The Standing Senate Committee on Social Affairs, Science and Technology. 2009. *Healthy, Productive Canada: a Determinant of Health Approach*, by Wilbert Joseph Keon and Lucie Pépin. Final Report of Senate Subcommittee on Population Health, Ottawa.

Canada Health Infoway. 2016. *A Conversation About Digital Health: Annual Report 2015-2016*. Toronto.

Chang F. and N. Gupta. 2015. "Progress in Electronic Medical Record Adoption in Canada." *Canadian Family Physician* 61 (12): 1076-84.

Centers for Medicare & Medicaid Services. 2016. "Accountable Care Organizations: What Providers Need to Know." Baltimore, MD.

Commission on the Social Determinants of Health. 2008. *Closing the gap in a generation: health equity through action on the social determinants of health*. Geneva: World Health Organization.

Cohen D, T. Huynh, A. Sebold, J. Harvey, C. Neudorf, A. Brown. 2014. "The Population Health Approach: a Qualitative Study of Conceptual and Operational Definitions for Leaders in Canadian Healthcare." *SAGE Open Medicine*. 2:2050312114522618

Colla C., V. Lewis, S. Shortell and E. Fisher. 2014. "First National Survey of ACOs Finds that Physicians are Playing Strong Leadership and Ownership Roles." *Health Affairs (Millwood)* 33 (6): 964-71.

Epp J. 1986. *Achieving Health for All: a Framework for Health Promotion*. Ottawa: Health and Welfare Canada.

Evans R. and Stoddart G. 1990. "Producing Health, Consuming Healthcare." *Social Science & Medicine* 31 (12): 1347-63.

Farmanova E., C. Kirvan, J. Verma, G. Mukerji, N. Akunov , K. Phillips et al. 2016. "Triple Aim in Canada: Developing Capacity to Lead to Better Health, Care and Cost." In *International Journal for Quality* in Healthcare 28 (6), ed. Frank J., L. Snell and L. Sherbino J, 830-837. ISQua

CANMEDS 2015 *Physician Competency Framework*. Ottawa: Royal College of Physicians and Surgeons of Canada.

Huynh T. 2014. *Population Health and Healthcare: Exploring a Population Health Approach in Health System Planning and Decision-Making*. Ottawa: Canadian Institute for Health Information.

Huynh T., G. Baker, A. Bierman, D. Klein, D. Rudoler, G. Sharpe et al. 2014. *Exploring Accountable Care in Canada: Integrating Financial and Quality Incentives for Physcians and Hospitals*. Ottawa: Canadian Foundation for Healthcare Improvement.

Ipsos Canada. 2017. "Priorities, Values, and Leadership: Canadian Public Opinion." Toronto.

Isham G., D. Zimmerman, D. Kindig, G. Hornseth. 2013. "HealthPartners Adopts Community Business Model to Deepen Focus on Nonclinical Factors of Health Outcomes." *Health Affairs (Millwood)* 32 (8): 1446-52.

Kindig D. 2015. "What are we talking about when we talk about population health?" Bethesda, Md.: Health Affairs Blog. https://tinyurl.com/y8p3zn5t.

Kindig D. and G.Stoddart. 2003. "What is population health?" *American Journal of Public Health* 93 (3): 380-3.

Lalonde M. 1974. *A New Perspective on the Health of Canadians: a Working Document*. Ottawa: Government of Canada.

Law M., A. Kapur and N. Collishaw. 2004. *Health Promotion in Canada, 1974-2004: Lessons Learned*. Ottawa: Canadian Medical Association.

Lucyk K. and L. McLaren. 2017 "Taking Stock of the Social Determinants of Health: a Scoping Review." *PLoS One* 12 (5): e0177306.

Neudorf C. 2012. "Integrating a Population Health Approach into Healthcare Service Delivery and Decision Making." *Healthc Manage Forum* 25 (3): 155-9.

NHS England. 2017. *The Incentives Framework for ACOs*. Supporting document, England

Punke H. 2014. "Health System C-suiters, Meet the Chief Population Health Officer." *Becker's Hospital Review* March. 14. Available: https://tinyurl.com/y725upek

Public Health Agency of Canada. 2012. "What is the population health approach?". Ottawa. https://tinyurl.com/y7s2cwxu.

Townsend M. 2014. *Learning from Kaiser Permanente: Integrated Systems and Healthcare Improvement in Canada*. Ottawa: Canadian Foundation for Healthcare Improvement. Report.

Van Aerde J. and G. Dickson. 2017. "Accepting our Responsibility: a Blueprint for Physician Leadership in Transforming Canada's Healthcare System (white paper)." Ottawa: Canadian Society of Physician Leaders.

Wise A. 2017. *A Health Outcomes Fund for Canada: How Paying for Outcomes Could Improve Health and Deliver Better Value for Money*. Toronto: MaRS Centre for Impact Investing.

World Health Organization. 1946. "Preamble to the Constitution of WHO as Adopted by the International Health Conference, New York, 19-22 June , 1946". Geneva.

World Health Organization. 1986. *Otawa Charter for Health Promotion*. Geneva.

World Health Organization and Government of South Australia. 2010. *Adelaide Statement on Health in All Policies*. Geneva.

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